

ADDITIONAL SEVEN NEW RECORDS OF DAMSELFISHES
(PISCES: POMACENTRIDAE) FROM TAIWAN, WITH
DESCRIPTION ON THE TWO ANOMALIES
OF DAMSELFISH SPECIMENS¹

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Kwang-Tsao Shao, Shih-Rong Kuo and Chien-Chi Lee (1986) Additional seven new records of damselfishes (Pisces: Pomacentridae) from Taiwan, with description on the two anomalies of damselfish specimens. *Bull. Inst. Zool., Academia Sinica* 25(2): 151-160. This paper additionally reports seven new records of damselfishes collected from southern part of Taiwan and Orchid Island. They are *Dascyllus melanurus* Bleeker 1854, *Chromis caeruleus* (Cuvier and Valenciennes) 1830, *Plectroglyphidodon phoenixensis* (Schultz) 1943, *Pomacentrus nagasakiensis* Tanaka 1917, *Stegastes albifasciatus* (Schlegel and Müller) 1839, *Stegastes insularis* Allen 1985, and *Cheiloprion labiatus* (Day) 1877. The color pictures of all above species are furnished together with their diagnosis, ecology, distribution, and remarks. Besides, this paper also firstly report the anomalies of damselfishes in the world. Two malformed damselfishes, one without caudal fin (*Pomacentrus tripunctatus*) and other partial albinism (*Pomacentrus* sp.) were collected from southern Taiwan by using SCUBA diving method. Both of these specimens were mature and had been reared in the aquarium for a long period of time.

Key words: *abnormalities, damselfish, fish taxonomy, new records, Pomacentridae.*

This paper is a supplement for a previous report on the six newly recorded damselfishes from Taiwan (Shao *et al* 1985). Through the identification of these additional new records, the total number of species of damselfishes in Taiwan has been increased up to eighty which belonging to sixteen different genera. The results of some numerical taxonomic studies on this group of fish and their zoogeographical distributions will be published elsewhere. The seven new records of damselfishes report in this paper are *Dascyllus melanurus* Bleeker 1854, *Chromis caeruleus* (Cuvier and Valenciennes) 1830,

Plectroglyphidodon phoenixensis (Schultz) 1943, *Pomacentrus nagasakiensis* Tanaka 1917, *Stegastes albifasciatus* (Schlegel and Müller) 1839, *Stegastes insularis* Allen 1985, and *Cheiloprion labiatus* (Day) 1877. Among these species, *Cheiloprion* is a new record of genus in Taiwan and was identified from the stock of old specimens. All of the rest species were collected recently from Ken-ting National Park at Hengchun and Orchid Island.

Numerous malformed fish specimens have been recorded previously in scientific journals. Dawson (1964, 1966) had even published an exhausted bibliography of anomalies of fishes. Examples of albino fishes, partial

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albinism, or ambicoloration have also been published frequently in early literatures. However, most of the fishes reported previously were mainly freshwater and occurred in the early development stage due to some improper artificial propagation; such as *Sparus aurata* (Paperna 1978), *Plecoglossus altivelis* (Noriyuki and Sugiyama 1976). For those marine fish species, most malformed specimens or albinism were captured by fishing boat in offshore; such as herring, flounders, rays, and salmon etc. It is really unusual to observe the anomalies from coral reef area since the characteristics of high competition and predation in the coral reef fish communities should eliminate any abnormal fish while they were young. The present two malformed damselfishes are not only the first report of the anomalies of this group of fish in the world, but also have grown up to adult size under the natural environment.

MATERIAL AND METHODS

Specimens were all collected by SCUBA diving methods. Measurements of body proportion and meristic counts were based on the formalin preserved specimens and follow previous paper (Shao *et al* 1985). The specimens used in this study are now kept in the Museum of the Institute of Zoology, Academia Sinica.

Dascyllus melanurus Bleeker

Fig. 1

Dascyllus melanurus Bleeker, 1854: 100; Montalban, 1927: 20-21; Fowler and Bean, 1928: 20-21; De Beaufort, 1940: 469-470; Munro, 1967: 400; Allen, 1975: 103; Ida *et al*, 1977: 213-214; Randall and Allen, 1977: 356-358; Masuda *et al*, 1984: 191, pl. 184-R.

Diagnosis: Dorsal rays XII, 12; anal rays II, 12; pectoral rays 18; tubed lateral line scales 16-17, above it 3, below it 8; gill rakers 5-6+17; depth of body 58.2%; head 33.6%; eye diameter 13.1%; interorbital width 12.9%; snout 8.6%; length of pectoral

rays 27.3%; of pelvic fin 36.7%; depth of caudal peduncle 17.4%; length of caudal peduncle 14.5%; length of 4th dorsal spine 20.9%; of 2nd anal spine 14.1% all in SL. Mouth very oblique, jaws equal the posterior end of maxillary under or a little before front margin of eye. Teeth conical pointed, in several rows. Color in alcohol: generally whitish with three black bands on sides. The first band from anterior part of nape and posterior part of interorbital space, through eye to chin, leaving the snout of a light color; second black band from front of spinous dorsal to ventral; the third black band crossing body from the soft dorsal to the anal fin. Caudal emarginate, the lobes rounded, whitish, with large blotch behind; pelvic fins black.

Ecology: Occures in aggregations associates with coral heads. Usually mixed with *D. reticulatus* or *D. aruanus* but not as common as *D. reticulatus* and even more rarely found than *D. aruanus*.

Distribution: From Ryukyu, Philippine, Melanesia to Caroline and Ponape.

Material examined: One specimen: ASIZP 055854, 42.8 mm SL, Sept. 1985, Orchid Island.

Remarks: This species can be distinguished easily from *D. aruanus* by its black bar on its posterior part of caudal fin.

Chromis caeruleus (Cuvier and Valenciennes)

Fig. 2

Heliases caeruleus Cuvier & Valenciennes, 1830: 497.
Heliases lepidurus Day, 1877: 389; Fowler and Bean, 1928: 61-63; De Beaufort, 1940: 450-452.

Chromis caeruleus Montalban, 1927: 34-35; Woods and Schultz, 1960: 68-70; Munro, 1967: 401; Allen, 1975: 79; Randall *et al*, 1981: 220-221; Masuda *et al*, 1984: 192, pl. 185-H.

Diagnosis: Dorsal rays XII, 10; anal rays II, 10; pectoral rays 16-17; tubular lateral line scales 16; transverse scales rows 2½ between dorsal spine and lateral line; 8 between lateral line and anal origin. Body depth 43.5-47.6%; head 30.1-33.%; depth of

caudal peduncle 13.2–14.3%; length of caudal peduncle 12.0–15.2%; eye diameter 8.2–9.6%; snout 8.4–11.3%; interorbital width 9.8–10.5%; third dorsal spine 10.2–13.1%; length of second anal spine 8.0–11.3% in SL. Teeth pointed in a single row, those in the upper jaw rather slender, the teeth near symphysis more conical. Upper and lower caudal rays filamentous, caudal deeply forked, with pointed lobes. Color brilliant blue-green when alive but shading to whitish especially ventrally when disturbed. Brilliant color usually completely disappear after die; a faint dusky spot at upper base of pectoral fin will appear contrarily.

Ecology: This species is closely associated to live branching coral. It seeks refuge among coral branches when frightened. The food habit of this species is the same as its closely related species *C. atripectoralis* in feeding on zooplankton. However, it is less common than *C. atripectoralis*.

Distribution: This species was recorded from Ryukyu Island, East Africa, Red Sea, New Guinea, Philippine, Queensland, Fiji, Samoa, to French Polynesia.

Material examined: Five specimens: ASIZP 055847, 61.4 mm SL, April 20, 1980, Orchid Island; ASIZP 055848, 63.2–69.0 mm SL, Sept. 10, 1983, Green Island; ASIZP 055849, 66.8 mm SL, May 10, 1985, Orchid Island.

Remarks: Since the morphology and coloration of this species is very similar to *C. atripectoralis*, the specimens of this species were easily to be refer to *C. atripectoralis* or even treat as a synonym, e.g. Shen & Chen (1978). However, this valied species is clearly distinguished from *C. atripectoralis* by Randall *et al* (1981) on the following two characters: 1) pectoral rays 17 or 18 for *C. caeruleus*, and 18 to 20 (rarely 18) for *C. atripectorals*; and 2) axil of pectoral fin pale to slightly dusky for the former and jet black for the latter.

Pomacentrus nagasakiensis Tanaka

Fig. 3

Pomacentrus nagasakiensis Tanaka, 1917: 7–12; Moyer

and Ida, 1975: 104–108; Matsubara, 1955: 873; Musuda *et al*, 1984: 196, pl 187-R.

Diagnosis: Dorsal rays XIII, 15; anal rays II, 16; pectoral rays 17; tubed lateral line scales 18–19, above it 4, below it 10; gill raker 6+15. Depth of body 45.6–47.4%; length of head 27.6–28.5%; snout length 7.2–8.6%; eye diameter 9.5–10.5%; interorbital width 9.4–9.7%; pectoral fin length 28.3–29.7%; caudal peduncle depth 15.3–15.8%; caudal peduncle length 8.4–8.7%; length of 4th dorsal spine 9.4–9.9%; of 2nd anal spine 13.8–14.1%; pelvic fin length 33.0–34.8% in SL. Color in formalin generally dark brownish with dusky brown to blackish scale margins giving an overall appearance of series of narrow transverse bands. The body is large and all of the fins except the pectoral are dark brown to black. A black spot on the soft dorsal fin; soft anal and caudal fins with marginally transverse, pale streaks.

Ecology: This species has been observed and collected only once at Hshai-hsue-ku, a place near Wan-li-tung. Several mature individuals lived along a small coral mount at 18 meters depth and refuged into reef hole solitarily when divers approached.

Distributon: Only recorded from southern Japan previously.

Material examined: Two specimens: ASIZP 055840, 88.7 mm SL, and 86.3 mm SL, Apr. 27, 1985, Hshai-hsue-ku.

Remarks: The body length of this species is slightly longer than other *Pomacentrus*. According to Masuda *et al* (1984: 196), the young individual of this species will have a black ocellus on the soft dorsal fin, and the dark triangular blotch on upper pectoral base becoming larger with growth.

Plectroglyphidodon phoenixensis (Schultz)

Fig. 4

Abudefduf phoenixensis Schultz, 1943: 190–192.

Abudefduf albofasciatus (not Hombron and Jacquinot), Fowler and Bean, 1925: 22 (not seen).

Plectroglyphidodon phoenixensis Allen, 1975: 198; Masuda *et al*, 1984: 197, pl. 188-N.

Diagnosis: Dorsal rays XII, 17; anal rays II, 14; pectoral rays 18; number of scales on lateral line 22, above it 3, below it 9; gill rakers 3+11; depth of body 53.4%; length of head 32.7%; orbit 10.2%; snout 9.6%; interorbital width 10.6%; 4th dorsal spine 13.2%; 2nd anal spine 15.0%; caudal peduncle depth 16.8%; caudal peduncle length 10.6% in SL. Color in formalin: the ground color in blackish with a brownish ting; the dorsal and posterior margin of the soft dorsal fin white; the first white bar begins about five scales in front of the dorsal origin and extends across the opercle, the second commences on the dorsal fin between the fifth and sixth dorsal spine and extends downward under middle of length of pectoral fin to just in front of the anus; the third white bar begins on the dorsal fin between the first to third soft rays and extends to middle of base of anal fin, the last white bar on the caudal peduncle reaches from just behind the base of the last dorsal soft ray to position behind soft anal, near the tips of the longest ray of the soft dorsal is a black spot, pelvics blackish.

Ecology: Very rare and only found in wave-swept area of coral reef platform with depth of 3 meters. Occurs solitarily.

Distribution: This species has been recorded in northward to Amamisshima in Japan, and in the Indo-Pacific including Phoenix Island, Aamoan Islands, and Wave Islands. It was named *phoenixensis* in reference to the group of Phoenix Islands where it was taken in great numbers.

Material examined: One specimen: ASIZP 055841, 49.5 mm SL, July 10, 1985, Orchid Island.

Remarks: This species is easily to be identified by its 3 to 4 narrow pale bars on side of body and a broad black bar on caudal peduncle.

Stegastes albifasciatus
(Schlegel and Müller)

Fig. 5

Pomacentrus albifasciatus Schlegel and Müller, 1839: 44-21 (Celebes) (not seen).

Stegastes albifasciatus Allen, 1975: 138; Masuda *et al.*, 1984: 194, pl. 186-H; Allen and Emery, 1985: 11, Fig. 4A.

Diagnosis: Dorsal rays XII, 15; anal rays II, 13; pectoral rays 19; tubular lateral line scales 19; above it 3, below it 9; gill rakers on first arch 19-26, 11-15 on lower limb; head length 31.2-34.5%; body depth 47.6-55.6%; orbit diameter 9.7-10.9%; interorbital width 8.5-10.1%; and third dorsal spine depth 11.5-13.3% in SL; least depth of caudal peduncle 43.5-52.6%; length of caudal peduncle 24.4-33.3%; pectoral fin 83.3-90.9% in head length. Color in formalin: dark brown to blackish, most of suborbital blue with scattered blue spots on side head, a black spot about pupil size, at base of upper most pectoral rays; either a pale black spot or black spot bordered anteriorly with white at base of posterior dorsal, extending slightly onto edge of caudal peduncle.

Ecology: This species only live in shallow surge area especially in small harbor bay with rubble and boulders in 0.5 to 3 meters.

Distribution: This species was recorded from Ryukyu and Indo-West Pacific from Indonesia as far east as Tuamtu and Line Islands.

Material examined: Six specimens: ASIZP 055845, 76.6 mm SL, July 18, 1979, Green Island; ASIZP 055856, 60.7 mm SL, Dec. 2, 1985, Hsian-jaw-wan; ASIZP 055844, 59.6 mm SL, March 30, 1980, Green Island; ASIZP 055842, 75.4 mm SL, 76.7 mm SL, and 80.2 mm SL, July 19, 1979, Green Island.

Remarks: This species is easy to be identified by its remarkable white bar on body side. A larger dark spot with white margin when alive at the base of posterior dorsal rays and darker body color can be used to distinguish from its similar species of *S. nigricans*.

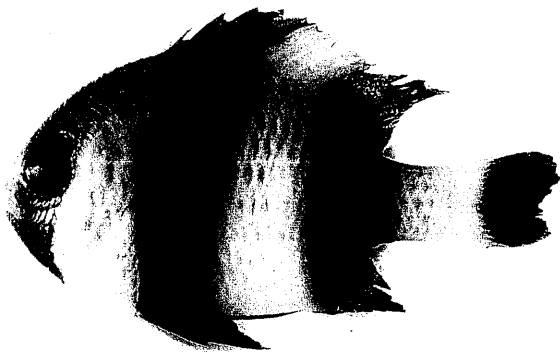


Fig. 1. *Dascyllus melanurus*, 42.8 mm SL, ASIZP 055854, Orchid Island.

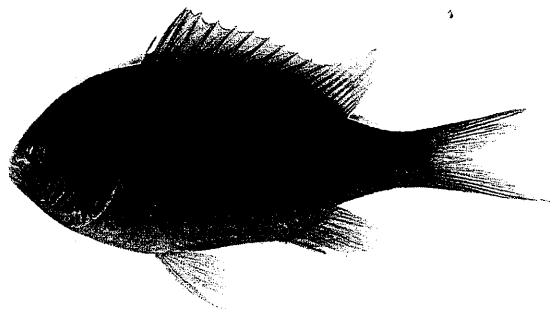


Fig. 2. *Chromis caeruleus*, 61.4 mm SL, ASIZP 055847, Orchid Island.

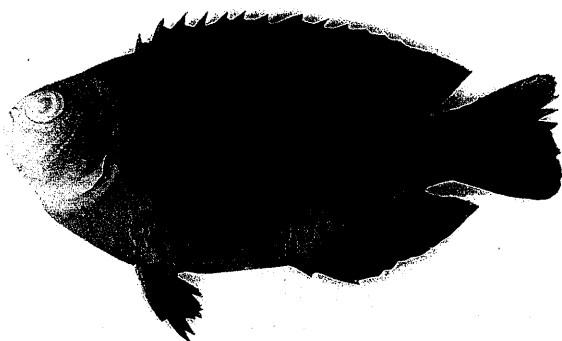


Fig. 3. *Pomacentrus nagasakiensis*, 88.7 mm SL, ASIZP 055840, Hshai-hsue-ku.

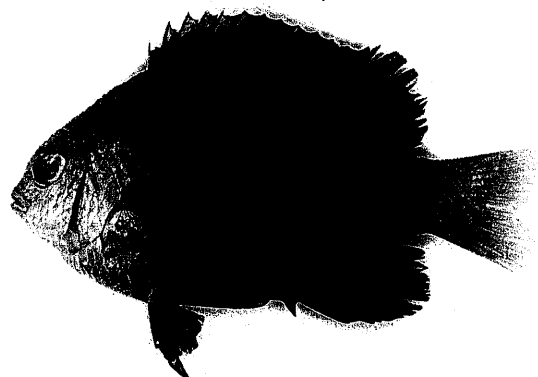


Fig. 4. *Plectroglyphidodon phoenixensis*, 49.5 mm SL, ASIZP 055841, Orchid Island.

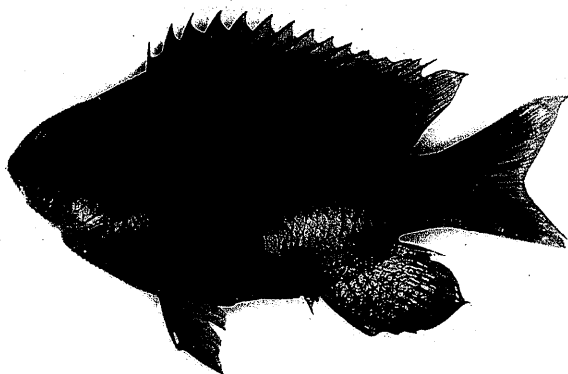


Fig. 5. *Stegastes albifasciatus*, 60.7 mm SL, ASIZP 055856, Hsian-jaw-wan.

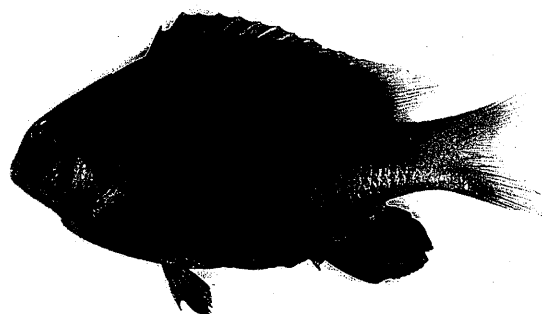


Fig. 6. *Stegastes insularis*, 69.7 mm SL, ASIZP 055939, Orchid Island.

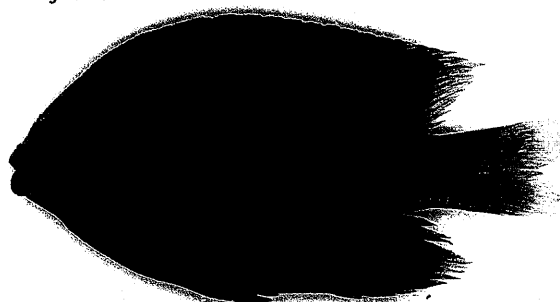


Fig. 7. *Cheiloprion labiatus*, 59.3 mm SL, ASIZP 055846, Orchid Island.

Stegastes insularis Allen

Fig. 6

Stegastes insularis Allen and Emery, 1985: 19, pl. II, Fig. G (Christmas Island).

Diagnosis: Dorsal rays XII, 16; anal rays II, 12; pectoral rays 20; tubed lateral line scales 20, scales above it 3, below it 11; gill rakers on first branchial arch 8+12; depth of body 47.6–52.6%; head length 32.2–34.5%; orbital diameter 9.4–10.4%; interorbital width 9.9–10.4%; snout length 8.4–9.2%; least depth of caudal peduncle 15.3–16.1%; length of caudal peduncle 9.5–11.6%; third dorsal spine 11.0–12.4%; second anal spine 15.3–16.4% in SL. Color in formalin generally brownish, grading to yellowish or tan posteriorly and on caudal peduncle. Scale margins dusky; caudal fin tan to slightly yellowish; pelvic and anal fins blackish to charcoal; pectoral fins translucent with a small black spot at base of upper most rays; an elongate black patch narrow blue margin on distal portion of dorsal fin between first and fourth spines.

Ecology: The specimens were collected from shallow reefs about 3–6 meters.

Distribution: This species is known only from Christmas Island in the eastern Indian Ocean and Marcus Inland in the western Pacific.

Material examined: Four specimens: ASIZP 055839, 69.7 mm SL, July 12, 1985, Orchid Island; ASIZP 055843, 57.0 mm SL, June 9, 1979, Tung-ao; ASIZP 055838, 68.5 mm SL, and 72.3 mm SL, July 11, 1985, Orchid Island.

Remarks: Allen and Emery (1985) named this species with reference to its apparent restriction to islands. This species occurs abundantly at Orchid Island but rare in Taiwan.

The general appearance of this species can be distinguished from another similar species of *S. altus* by its black anal fin. Other diagnostic differences between these two species were discussed in Allen & Emery (1985:12).

Cheiloprion labiatus (Day)

Fig. 7

Pomacentrus labiatus Day, 1877: 384.

Cheiloprion labiatus Montalban, 1927: 36–37; Allen, 1975: 126; Masuda *et al*, 1984: 194, pl. 186-F.

Diagnosis: Dorsal rays XIII, 13; anal rays II, 12; pectoral rays 17; scales above it 4, scales below it 10; gill rakers 2+9; depth of body 58.8%; head 34.8%; eye diameter 10.7%; snout 10.9%; interorbital width 13.3%; length of caudal peduncle 11.2%; depth of caudal peduncle 15.8%; length of pelvic 24.2%; of pectoral 28.0%; of 4th dorsal spine 7.3%; of 2nd anal spine 11.2% in SL. Lips swollen, curled back slightly. The teeth of both rows equal in length and biserial. Soft dorsal pointed, the longest rays about equal to head; margin of preorbital and suborbital finely serrate.

Ecology: Inhabits beds of branching corals on the reef flat in about 3 meters. Occurs solitarily.

Distribution: This species was known from Sulu Islands, Philippines, Samoa, Andamans, Nicobars, Solomon Islands, and New Hebrides. Northward to the Ryukyu Island in Japan.

Material examined: ASIZP 055846, 59.3 mm SL, and 45.3 mm SL, June 21, 1979, Orchid Island.

Remarks: This unique species of this genus is characterized by its greatly thickened lips. Allen (1975) suggested that this is an adaptation for feeding on live coral

Fig. 8. The malformed damselfishes *P. tripunctatus* without the caudal fin, 56.9 mm SL, ASIZP 055853, Wan-li-tung.

Fig. 9. Radiograph of the above specimen.

Fig. 10. The partial albinism of a damselfishes. *Pomacentrus* sp., 66.4 mm SL, ASIZP 055852, Green Island.



Fig. 8

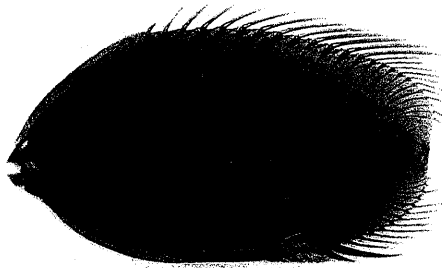


Fig. 9

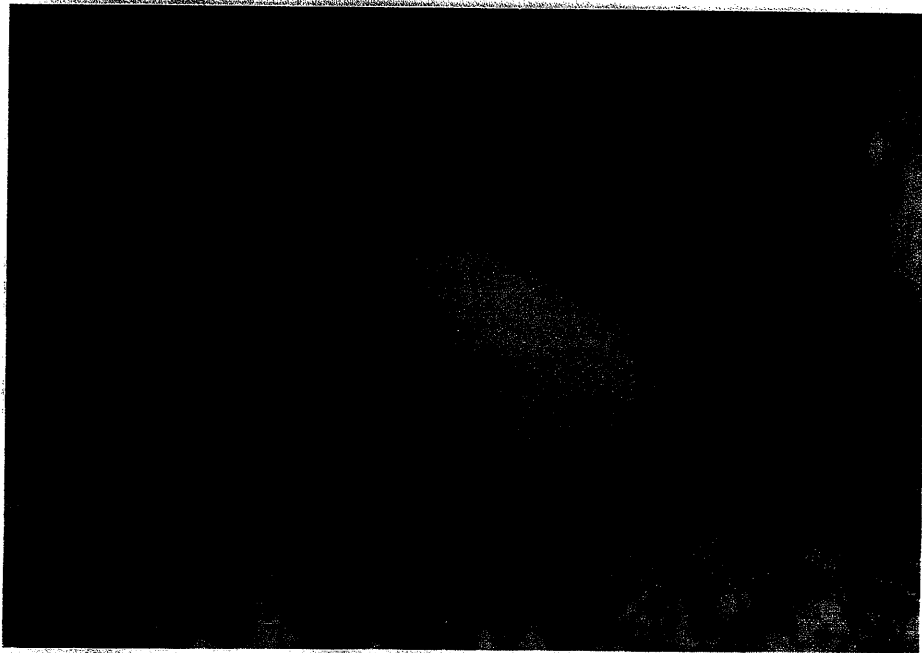


Fig. 10

polyps. We also had one specimen collected in Jan. 1981 from Tai-pin Island, a southernmost islet of the R.O.C. in south China Sea.

The two abnormalities specimens are described below:

Pomacentrus tripunctatus Cuvier

Fig. 8

Pomacentrus tripunctatus Cuvier, 1830: 421 (Vanicolo, Santa Cruz Island); Montalban, 1927: 64-66; Fowler, 1928: 89-96; De Beaufort, 1940: 388-392; Munro, 1967: 389; Allen, 1975: 228-229.

Material examined: A tailless specimen ASIZP 055853. 56.9 mm SL, Feb. 19, 1978, Wan-li-tung (at 2.5 meter depth).

Description: Urostyle serious degenerated with caudal fin rays coiled in the tail (Fig. 9) and covered by the integument or scales. Dorsal fin XIII, 14; anal fin II, 14; pectoral rays 18; lateral line 18; vertebrae bones (10+10); caudal vertebrae slightly bended downward. Total body length 62.9 mm, body depth 39.0 mm, head length 19.9 mm. Color, in life brownish black in the natural environment but change color from grayish white during the day time to black during the night when it living in the aquarium. Small dark spot at lateral line which is due to the lack of the caudal fin of the specimen. The ocellus on soft rays during juvenile stage is absent either since this specimen was adult.

Ecology: Inhabits harbors in 2.5 meters. Occur solitarily in the holes of small rocks on the sandy bottom with coral rubbles. Feeds chiefly in benthic algae. This specimen had been raised in the aquarium up to ten months. It finally died due to water spoiled. The swimming function of caudal fin is mainly compensated by the coordinate motion of both over developed posterior lobes of dorsal and anal fins. Its living and swimming situation have been recorded in a 8 mm movie film.

Pomacentrus sp.

Fig. 10

Material examined: A partial albinism specimen. One specimen of ASIZP 055852, 66.4 mm SL, March 10, 1978, Green Island.

Description: Dorsal rays XIV, 14; anal rays II, 14; pectoral rays 17-18; tubed lateral scales 18-19, above it 3, below it 8; gill rakers on first arch 19 to 21; depth of body 46.9%; length of head 30.4%; eye diameter 9.4%; snout 9.3%; interorbital width 9.5%; length of pectoral 27.4%; of pelvic 29.4%; depth of caudal peduncle 15.5%; length of caudal peduncle 9.6%; length of 4th dorsal spine 13.9; of 2nd anal spine 13.8% in SL. Body color in life whitish, the caudal peduncle, dorsal, anal and caudal fins brown. Heavy pigmentation on the base of the dorsal and anal fins. The unusual dark eye revealed that this specimen is a partial albinism.

Ecology: Inhabit outer reef slopes in 15 meters. Occurs solitarily. This specimen had been reared in the tank up to five months.

Remarks: The genus of this specimen was identified based on the characters of biserial teeth, snout scaled to about level of nostrils, and a prominent notch between pre-orbital and suborbital. However, the species name could not be given positively according to available literatures. This specimen has fourteen dorsal spines which is different from all current recorded species of *Pomacentrus* in Taiwan which are thirteen spines. Following Allen's (1975: 203) classification system, the specimen could be either *P. australis* since its body depth is 2.1 in SL, or *P. reidi* in having 19-21 gill rakers. Nevertheless, it should not be the former species since *P. australis* only confined to the area of South Great Barrier Reef, might not be the latter either since the body color of *P. reidi* is pale as well as its all fins although *P. reidi* has been recorded in Philippine.

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增列臺灣海域產七種新記錄之雀鯛科魚類 兼記兩尾異常之雀鯛標本

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本文增添南臺灣及蘭嶼一帶海域所產之七種新記錄之雀鯛科魚類。它們分別是 *Dascyllus melanurus* Bleeker, *Chromis caeruleus* (Cuvier), *Plectroglyphidodon phoenixensis* (Schultz), *Pomacentrus nagasakiensis* Tanaka, *Stegastes albifasciatus* (Schlegel & Müller), *Stegastes insularis* Allen 和 *Cheiloprion labiatus* (Day)。上述七種除記述其形態特徵、生態、分佈與附註之外並各附以彩色圖片。此外本文亦首次報導兩尾由潛水捕獲之異常雀鯛標本，一為缺尾之三斑雀鯛 (*Pomacentrus tripunctatus*)，另一為不完全白子之雀鯛 (*Pomacentrus* sp.)。此兩尾標本均曾蓄養於水族缸內達數月之久。