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STUDY ON THE CHROMID FISHES (CHROMINAE: POMACENTRIDAE) OF TAIWAN[1]

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ABSTRACT

Shih-Chieh Shen and Shing-Kwang Chen (1978). *Study on the Chromid Fishes (Chrominae: Pomacentridae) of Taiwan* Bull. Inst. Zool., Academia Sinica, 17(1): 25-41. Fourteen species of chromids, including one new species, belonging to two genera, are recognized from Taiwan. They are *Dascyllus trimaculatus, D. aruanus, D. reticulatus, Chromis miratonis, C. vanderbiliti, C. weberi, C. bicolor, C. xanthura, C. chrysura, C. flavomaculata, C. analis, C. atripectoralis, C. caudofasciata* n. sp., *C. notatus* All species except *D. aruanus, C. chrysura, C. bicolor* and *C. xanthura* are new records from Taiwan. Keys to genera and species, together with diagnosis or description of each species are presented in this report.

Chromids (Chrominae: Pomacentridae) appear to be an unique group of damselfishes. They are morphologically similar to other demoiselles, but distinguishable by having conical maxillary teeth and with 2 to 3 spiniform procurrent caudal rays on both upper and lower margins of caudal origin. At least fifty-eight species are known in the world, among them forty-three species are found in the "South Seas" (Allen 1975b)[2].

Study of this group of fishes from Taiwan is fragmentary, and most of them are not applicable for identification. In the present study, keys to genera and species, together with diagnosis or a brief description of each species, are presented. Fourteen species, including one new species, belonging to two genera, are recognized. They are *Dascyllus trimaculatus* (Rüppell), *D. aruanus* (L.), *D. reticulatus* (Richardson), *Chromis miratonis* Tanaka, *C. vanderbilti* (Fowler), *C. weberi* Fowler et Bean, *C. bicolor* (Macleay), *C. xanthura* (Bleeker), *C. chrysura* (Bliss), *C. notatus* (Temminck & Schlegel), *C. caudofasciata* n. sp., *C. atripectoralis* Welander et Schultz, *C. flavomaculata* Kamohara, and *C. analis* (Cuvier and Valenciennes). All fishes except *D. aruanus*, (=*C. isharae*) *C. chrysura, C. bicolor* and *C. xanthura* are new records from Taiwan.

MATERIALS AND METHODS

The materials used in the present study were collected from coastal coral reefs of Taiwan and adjacent islands, in depth of 0.5 to 10 meters, between November, 1963 and May, 1977. Specimens are deposited in the following in-

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stitutes: the Museum of the Department of Zoology, National Taiwan University (NTUM), and Taiwan Fishery Research Institute, Keelung (TFRI).

Methods of counts and measurements follow those of Allen (1975a)[1]. Except in descriptions of new species, only selected meristics and morphometrics are given.

KEY TO GENERA AND SPECIES OF CHROMIDS FROM TAIWAN

1. Body orbicular (greatest depth 1.4–1.7 in SL); suborbital margin serrated; caudal emarginate (Genus *Dascyllus*)..... 2
   Body elongate to ovate (greatest depth 1.8–2.7 in SL); suborbital margin usually entire or weakly ctenulated; caudal forked (Genus *Chromis*)..... 4
2. Body without vertical dark bar; body color dark with a pale spot on nape and sometimes with an additional pale spot on each side of body.....*D. trimaculatus* (fig. 1)
   Body with vertical dark bar; body color pale..... 3
3. Body with 3 vertical broad dark bars strongly contrasting with light ground color.....*D. aruanus* (fig. 2)
   Body with 1 vertical broad bar behind opercle, sometimes followed by a large light blotch on dorsal surface..*D. reticulatus* (fig. 3)
4. Dorsal spine XIV.....*C. miraonis* (fig. 4)
   Dorsal spine XII–XIII..... 5
5. Body elongate (Greatest depth 2.6–2.7 in SL); with 8 longitudinal dark broken lines on sides; lower caudal lobe with a dark band.....*C. vanderbilti* (fig. 5)
   Body ovate (greatest depth 1.8–2.3 in SL).. 6
6. Hind margin of preopercle dark.....*C. weberi* (fig. 6)
   Hind margin of preopercle not dark..... 7
7. Posterior portion of body abruptly lighter in color..... 8
   Posterior portion of body not abruptly lighter in color.....10
8. Pectoral base with a prominent dark blotch.....*C. bicolor* (fig. 7)
   Pectoral base without prominent dark blotch..... 9
9. Dorsal rays XII–XIII, 11; anal rays II, 11–12; vertical scale rows 29; body color dark.....*C. xanthura* (fig. 8)
   Dorsal rays XIII, 14–16; anal rays II, 13–14; vertical scale rows 25; body color pale.....*C. chrysura* (fig. 9)
10. Body color dark.....11
    Body color pale.....12
11. Entire pectoral base with a prominent large semi-circular black blotch; soft dorsal and anal slightly round..*C. flavomaculata* (fig. 10)
    Upper pectoral base with a deltic black mark; soft dorsal and anal pointed.....*C. notatus* (fig. 11)
12. Caudal pale, each lobe with a dark band; upper pectoral axil with a small dark dot.....*C. caudofasciata* n. sp. (fig. 12)
    Caudal pale without dark band on lobes; upper pectoral base with a dark strip...13
13. Body color uniform; preorbital with a longitudinal dark streak.....*C. atripectoralis* (fig. 13)
    Upper portion of body darker than lower; preorbital without dark strip.....*C. analis* (fig. 14)

Genus *Dascyllus* Cuvier, 1829

Dascyllus trimaculatus (Rüppell)

Fig. 1, Tables 2–4

Pomacentrus trimaculatus Rüppell, 1828: 39 (type locality, Massaua; Red Sea)[27].
Tetradrachrus trimaculatus Bleeker, 1877: 144.[6]
Pellochromis trimaculatus Whitley, 1929: 246.[32]
Dascyllus trimaculatus Cuvier et Valenciennes 1830: 441;[12] De Beaufort, 1940:463[13]; Fowler, 1954: 14[17]; Woods et Schultz, 1960: 64[34]; Allen, 1975b: 106[2]; Masuda *et al.*, 1975: 287[24].

Diagnosis: Dorsal rays XII, 14–16; anal rays II, 12–15; pectoral rays 18–20. Body depth 1.4–1.7 in SL. Color in life generally black with one white spot on nape and one above lateral line just below junction of spiny and soft dorsal, the latter may be indistinct in some individuals; all fins except pectorals black.

Margins of suborbital, preopercle and opercle finely serrated. Teeth pointed, biserial on both

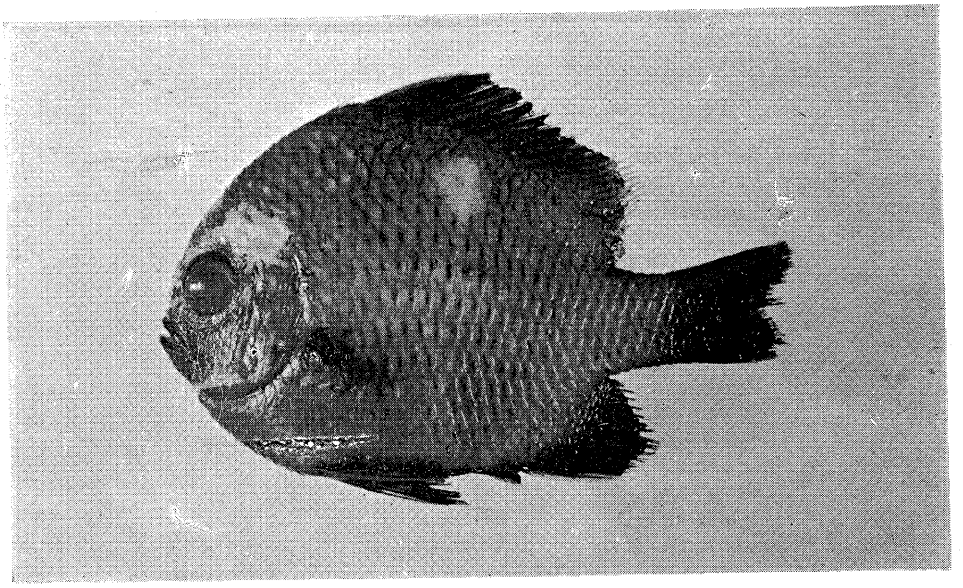

Fig. 1. *Dascyllus trimaculatus* Rüppell, 54.0 mm SL.

jaws anteriorly; outer row conic, large, widely spaced; inner row sub-conic, elongated.

Specimens examined: Hung-chai-kung: NTUM 02804, 1(54.0); NTUM 02810 2, (35.2-45.2); Nan-wan: NTUM 02821, 1(28.0).

Dascyllus aruanus (Linnaeus)

Fig. 2, Tables 3-4

Chaeton aruanus Linnaeus, 1758: 275 (type locality: Indies)[22].

Tetradrachrum aruanus Aoyagi, 1941: 190[3].

Dascyllus aruanus Cuvier et Valenciennes, 1830: 434[12]; De Beaufort, 1940: 467[18].; Fowler, 1954: 13[17]; Woods et Schultz, 1960: 62[8]; Allen, 1975b: 103[2]; Masuda *et al.*, 1975: 287[24].

Diagnosis: Dorsal rays XII, 11-12; anal rays II, 11-12; pectoral rays 16-17. Body depth 1.6-1.7 in SL. Color in life silvery white with three vertical black bars, dorsal and anal white except the black bars extended; pelvics black; pectorals and caudal dusky.

Margins of suborbital, preopercle and opercle serrated. Teeth conic, pointed, small, biserial on both jaws anteriorly.

Specimens examined: Hou-pi-hu: NTUM 02801, 1(48.8); NTUM 02816, (42.0); NTUM 02817, 1(53.2).

Dascyllus reticulatus (Richardson)

Fig. 3, Tables 3-4

Heliases reticulatus Richardson, 1846: 245 (type locality: China Seas) (not seen, see Woods et Schultz, 1960: 64)[34].

Dascyllus xanthosoma Bleeker, 1851: 147[4].

Pellochromis xanthosoma Whitley, 1929: 146[32].

Tetradrachrum marginatum Aoyagi, 1941: 192[3].

Dascullus marginatum Fowler, 1954: 16[17].

Dascullus reticulatus Jordan et Seals, 1960: 290[20]; Woods et Schultz, 1960: 63[34]; Allen, 1975b: 103[2]; Masuda *et al.*, 1975: 287[24].

Diagnosis: Dorsal rays XII, 13-15: anal rays II, 13-14; Pectoral rays 16-18. Body depth 1.5-1.6 in SL. Color in life silvery white or white brown with one vertical browish bar behind opercle; smaller specimens with a large white blotch on dorsal surface of body, but absent in larger specimens.

Suborbital, preopercle distictly serrated. Teeth small, conic, pointed, multiserial on both jaws with outer row enlarged.

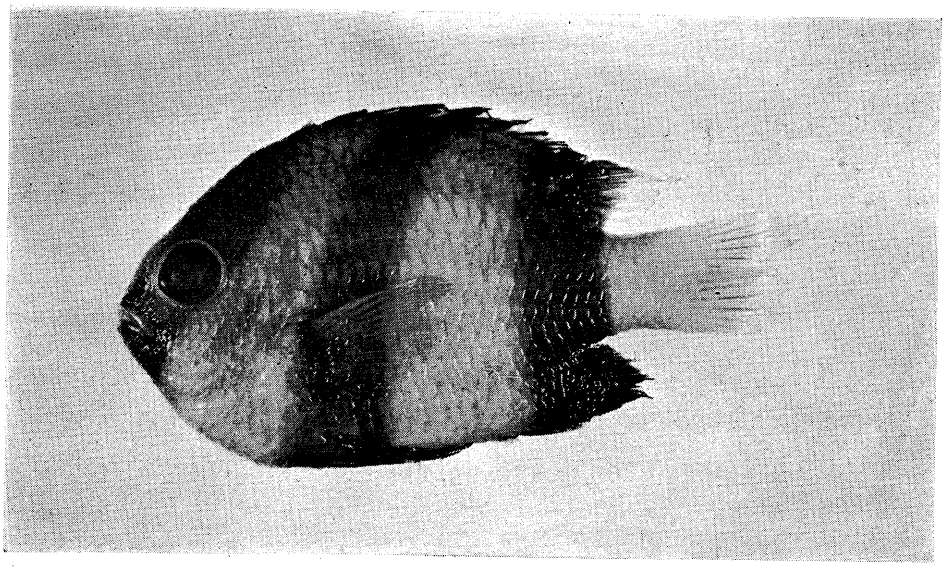

Fig. 2. *Dascyllus aruanus* (Linnaeus), 42.0 mm SL.

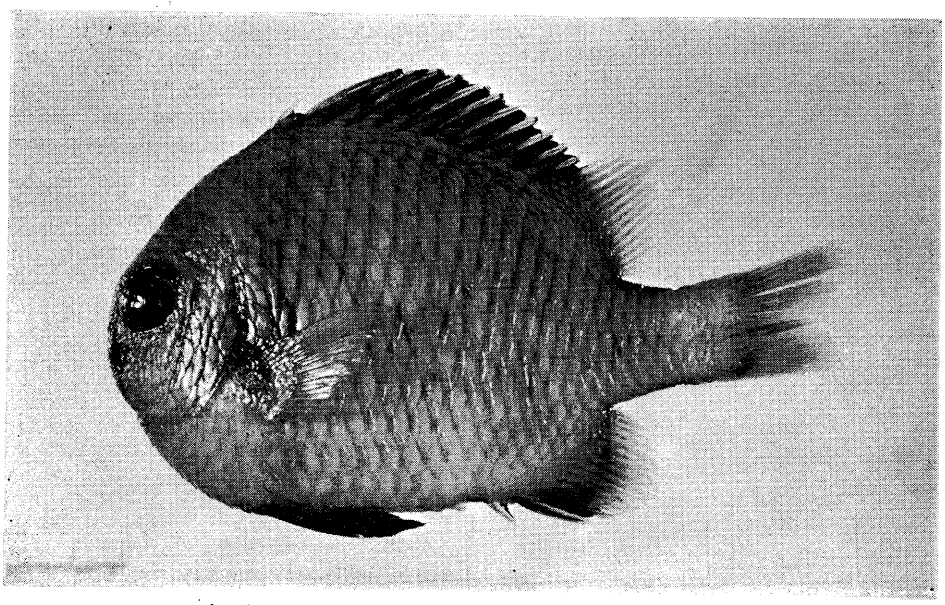

Fig. 3. *Dascyllus reticulatus* (Richardson), 66.0 mm SL.

Specimens examined: Hou-pi hu: NTUM 02814, 1(63.0); NTUM 02815, 1(66.0).

Genus Chromis Cuvier 1814

Chromis miratonis Tanaka

Fig. 4, Tables 3-4

Chromis miratonis Tanaka, 1917: 8 (type locality: Off Goto, Nagasaki, Japan)[30]; Aoyagi, 1941: 178 [3]: Kamohara, 1960: 3[20].

Diagnosis: Dorsal rays XIV, 12; anal rays II, 12, pectoral rays 17. Body depth 2.2 in SL. Color in formalin generally light metallic brown, darker above lateral line. Dorsal and anal light metallic brown except a small area on posterior soft rays; caudal dusky with both lobes light metallic brown; pectorals dusky; upper axil with a brown spot; pelvics dusky.

Specimens examined: Yeh-liu: NTUM 03126, 1(56.0).

Chromis vanderbilti (Fowler)

Fig. 5, Tables 3-4

Pycnochromis vanderbilti Fowler, 1941: 260 (type locality: Oahu, Hawaiian Island)[15].

Chromis vanderbilti Randall et Swerdloff, 1973: 329[26]; Allen, 1975b: 91[2]; Masuda *et al.*, 1975: 285[24].

Diagnosis: Dorsal rays XII, 10-12; anal rays II, 11-14; pectoral rays 16-17. Body depth 2.6-2.7 in SL. Color in life golden brownish with 8 or more longitudinal broken lines, extending from opercle to caudal peduncle; a dark streak on lower lobe of caudal.

Suborbital, preopercle and opercle entire. Teeth small, conic, tip rounded; upper jaw multiserial anteriorly, lower jaw biserial anteriorly, both widely spaced.

Specimens examined: Green Island: NTUM 02794, 1(41.6); Hung-chai-kung: NTUM 02812, 1(39.5).

Chromis weberi Fowler et Bean

Fig. 6, Tables 3-4

Chromis weberi Fowler et Bean, 1928: 41 (type locality: Philippines)[18], Allen, 1975b: 86[2]; Masuda *et al.*, 1975: 286[24].

Diagnosis: Dorsal rays XIII, 12; anal rays II, 11-12; pectoral rays 17. Body depth 2.3-2.4 in SL. Color in life generally pale brown, each scale edged with dark margin; preopercular margin dark brown; dorsal and anal pale brown; each caudal lobe dark brown.

Suborbital, preopercle and opercle entire. Teeth small, irregularly 3-serial on both jaws, outer row widely spaced; inner rows moderately closely spaced.

Specimens examined: O-luan-pi: NTUM 02866, 1(85.8). Keelung: TFRI 102948, 1(90.5).

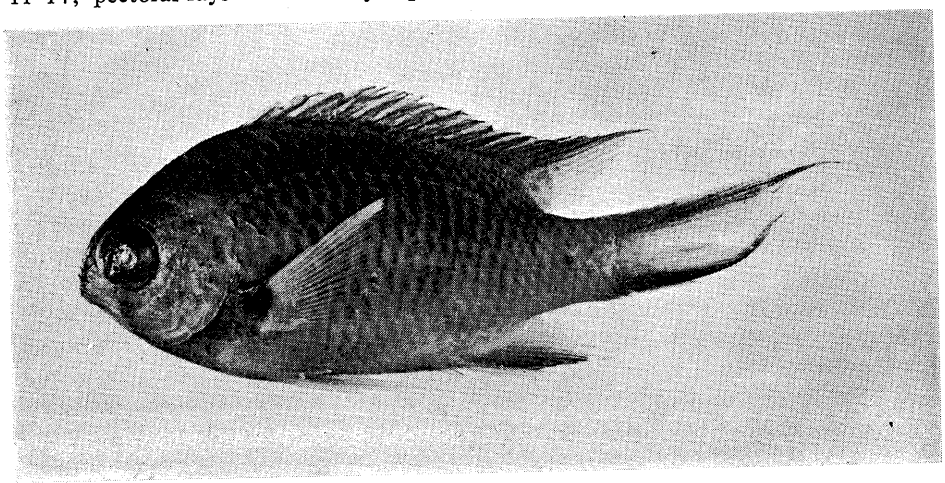

Fig. 4. *Chromis miratonis* Tanaka, 56.0 mm SL.

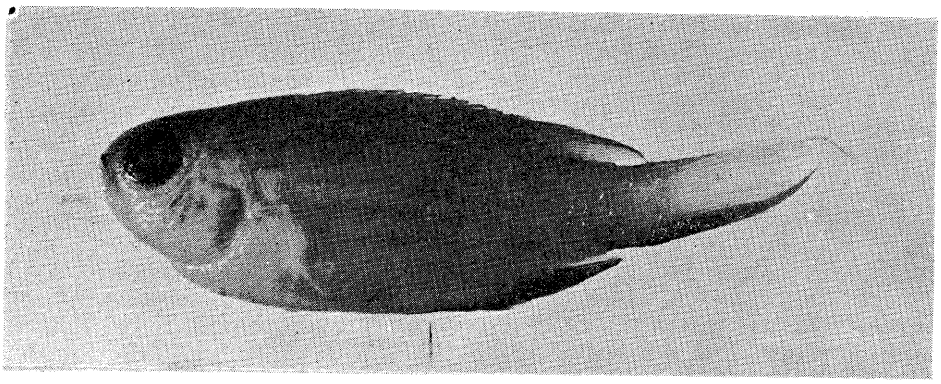

Fig. 5. *Chromis vanderbilti* (Fowler), 39.5 mm SL.

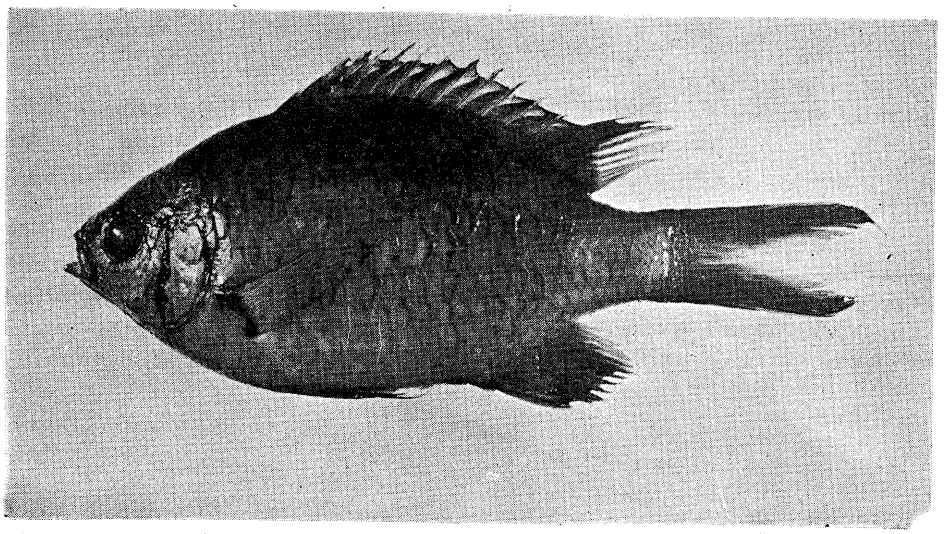

Fig. 6. *Chromis weberi* Fowler et Bean, 85.8 mm S. L.

Chromis bicolor (Macleay)

Fig. 7, Tables 3-4

Glyphidodon bicolor Macleay 1882: 365 (type locality: Australian)[23].

Chromis margaritifer Fowler, 1954: 28[17]; Allen, 1975b: 86[2]; *Masuda et al* 1975: 285[24].

Chromis dimidiatus Montalban, 1927: 33[25]; Fowler et Bean, 1928: 308[18] De beaufort, 1940: 46[18]; Aoyagi, 1941: 188[8]; Woods et Schultz 1960: 72[34]; Kamohara 1960: 7[22]; Jones *et al.*, 1972: 84[19].

Chromis dimidiatus marfaritifer Fowler, 1946: 140[16].

Diagnosis: Dorsal rays XII-XIII, 11-12; anal rays II, 11-12; pectoral rays 16-17. Body depth 2.1-2.2 in SL. Color in life brownish blue except posterior half of soft dorsal and anal, caudal fin and peduncle abruptly whitish; a large dark blotch on pectoral base.

Suborbital, preopercle and opercle entire. Teeth pointed, multiserial on both jaws, outer row much enlarged, closely spaced.

Specimens examined: Wan-li tung: NTUM 02970, 1(56.6); NTUM 02823, 1(43.6): Mao-pi-tou: NTUM 02811, 1(45.0).

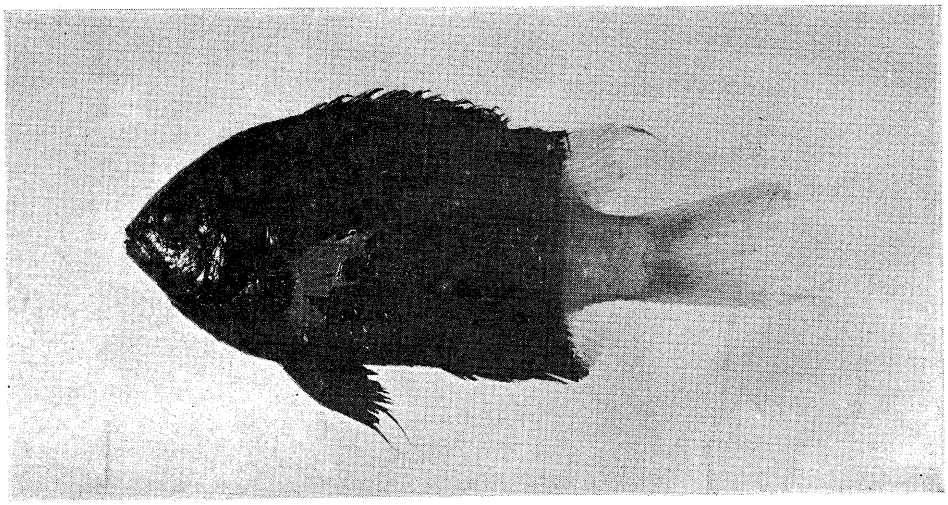

Fig. 7. *Chromis bicolor* (Macleay) 56.6 mm SL.

Chromis xanthura (Bleeker)

Fig. 8, Tables 3-4

Heliases xanthurus Bleeker, 1854: 107 (type locality: Banda, Indonesia)[5].

Chromis xanthurus Montalban, 1927: 29[25]; De Beaufort, 1940: 456[18]; Masuda *et al.*, 1975: 284[24]; Jones *et al.*, 1972: 84[19].

Chromis opercularis Fowler et Bean, 1928: 47[18].

Chromis xanthura Allen, 1975b: 91[2].

Diagnosis: Dorsal rays XII, 11; anal rays II, 11; pectoral rays 17. Body depth 2.1 in SL. Color in life generally dark brown, caudal fin and peduncle abruptly whitish; all fins except pectorals as body color.

Suborbital, preopercle and opercle entire. Teeth small conic, pointed, biserial on both jaws anteriorly, outer row much enlarged, widely spaced.

Specimens examined: Hou-pi-hu: NTUM 02793, 1(81.0).

Chormis chrysura (Bliss)

Fig. 9, Tables 3-4

Heliastes chrysura Bliss, 1883: 56 (type locality: Mauritus) (not seen, See Allen, 1975b: 79)[2].

Dascyllus isharae Schmidt, 1930: 67[28].

Chromis isharae Aoyagi, 1930: 179[3]; Chen, 1969: 332[9]; Masuda, *et al.*, 1975: 284[24].

Siphonochromis lepidosthicus Fowler, 1946: 145[16].

Lepicephalochromis westalli Whitley, 1964: 180[33].

Chromis chrysura Allen, 1975b: 79[2].

Diagnosis: Dorsal rays XIII, 16; anal rays II, 14; pectoral rays 18. Body depth 1.9 in SL. Color in life silvery green, caudal fin and peduncle abruptly whitish.

Suborbital entire, preopercle and opercle entire. Teeth round, multiserial on both jaws at least anteriorly, moderately closely spaced.

Specimens examined: Keelung: NTUM 03001, 1(138.9).

Chromis flavomaculata Kamohara

Fig. 10, Tables 3-4

Chromis flavomaculatus Kamohara, 1960: 5 (type locality: Susaki, Japan)[21].

Chromis kennensis Whitley, 1964: 182[33]; Allen, 1975b: 83[2].

Diagnosis: Dorsal rays XIII, 12; anal rays II, 11; pectoral rays 19. Body depth 2.3 in SL. Color in life brownish, a large black semi-circular blotch covered the entire pectoral base; Upper base of caudal peduncle with a pale spot.

Suborbital and opercle entire; preopercle roughly ctenulated. Teeth pointed, 2-3 serial on both jaws anteriorly, outer row enlarged, widely spaced.

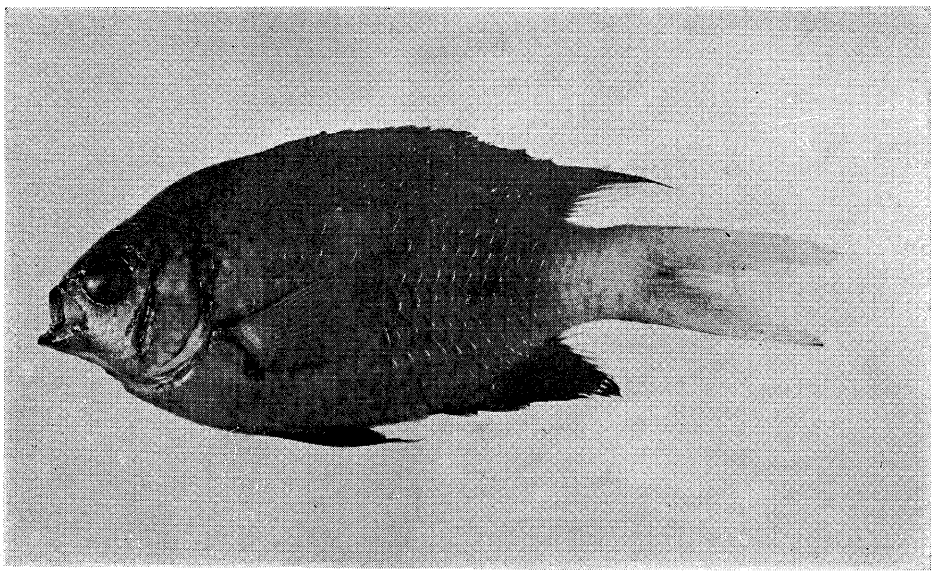

Fig. 8. *Chromis xanthura* (Bleeker), 81.0 mm SL.

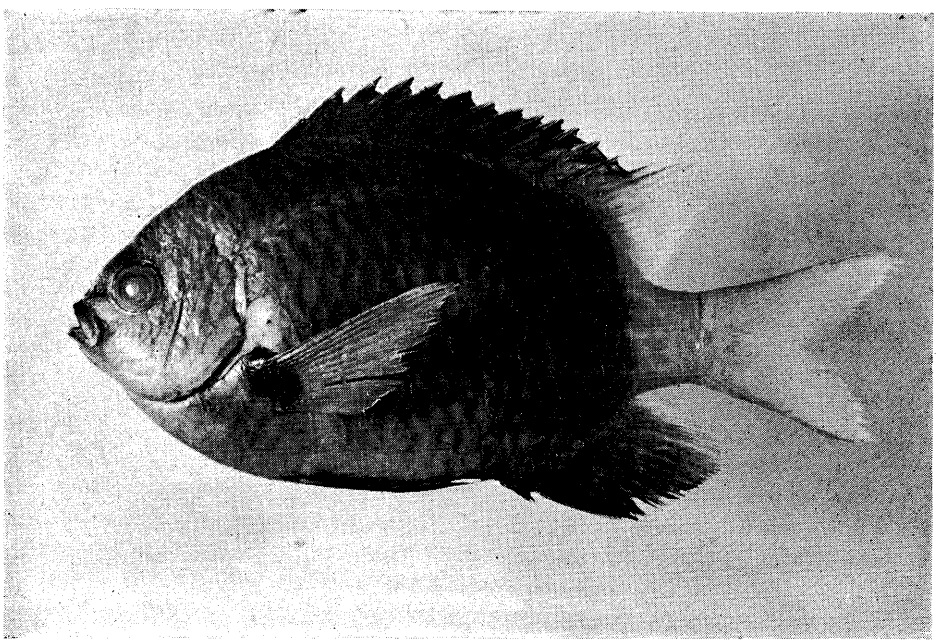

Fig. 9. *Chromis chrysura* (Bliss), 138.9 mm SL.

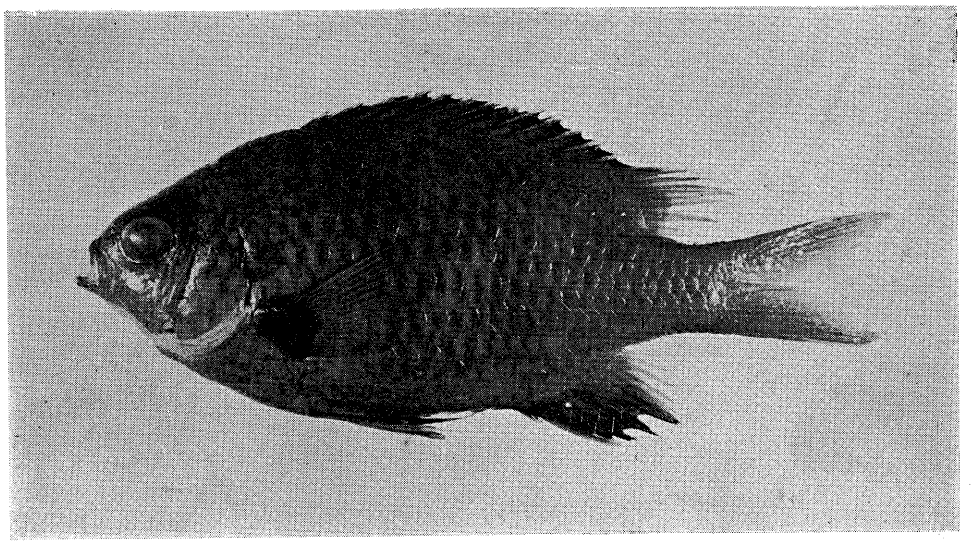

Fig. 10. *Chromis flavomaculata* Kamohara, 89.0 mm SL.

Specimens examined: O-luan-pi: NTUM 02797, 1(89.0); Pai-sha-wan: NTUM 04774, 1(69.5).

Chromis notatus (Temmi nck et Schlegel)

Fig. 11, Tables 3-4

Heliases notatus Temminck et Schlegel 1842: 66 (Japan)

Diagnosis: Dorsal rays XIII, 12-13; anal rays II, 11-12; pectoral rays 18-19. Body depth 2.1-2.2 in SL. Color in life generally yellowish brown; dorsal and anal yellowish brown except posterior soft rays; caudal lobes yellowish brown with dusky center; pectoral dusky, upper base with a large dark spot; pelvics dusky.

Suborbital, preopercle and opercle entire. Teeth 3-serial on both jaws anteriorly, outer row conic, pointed, inner row conic anteriorly, subconic on sides.

Specimens examined: O-de Harbour: NTUM 03128, 2(75.6-97.0); NTUM 02843, 2(88.6-104.3).

Remarks: We follow Ida, Moyer, and Randall (MS) in the use of the name *notatus* for this species. Three authors admit that their present use of this name is provisional.

Chromis caudofasciata n. sp.

Fig. 12, Tables 1-2, 4

Holotype: NTUM 02822, 54.4 mm SL, off Pa-dou-tzu, northern Taiwan, May 1, 1970.

Paratype: NTUM 02870, 38.9 mm SL, off Wan-li-tung, southern Taiwan, Auguest 1, 1976; NTUM 02876, 66.3 mm SL, off Da-shih, northeast Taiwan, March 28, 1977.

Diagnosis: Dorsal rays XIII, 12-13; anal rays II, 10-11; pectoral rays 18-20. Body depth 2.2-2.5 in SL. Color in life bluish green in general; each caudal lobe edged with a dark bluish green band; dorsal and anal darker; pelvics and pectorals dusky; upper pectoral axil with a dark spot.

Descriptions: Proportional measurements for the holotype and paratypes are expressed as thousands of SL in Table 2. Meristics of holotype are given below, each followed with range of paratypes in brackets.

Dorsal rays XIII, 13 (XIII, 12); anal rays II, 11 (II, 10-11); pectoral rays 20 (18); pelvic rays I, 5 (I, 5): branched caudal rays 7+6 (7+6).

Longitudinal scale rows from upper edge of gill opening to caudal base 25 (26-27), Transverse scale rows 3(3) between dorsal origin and lateral

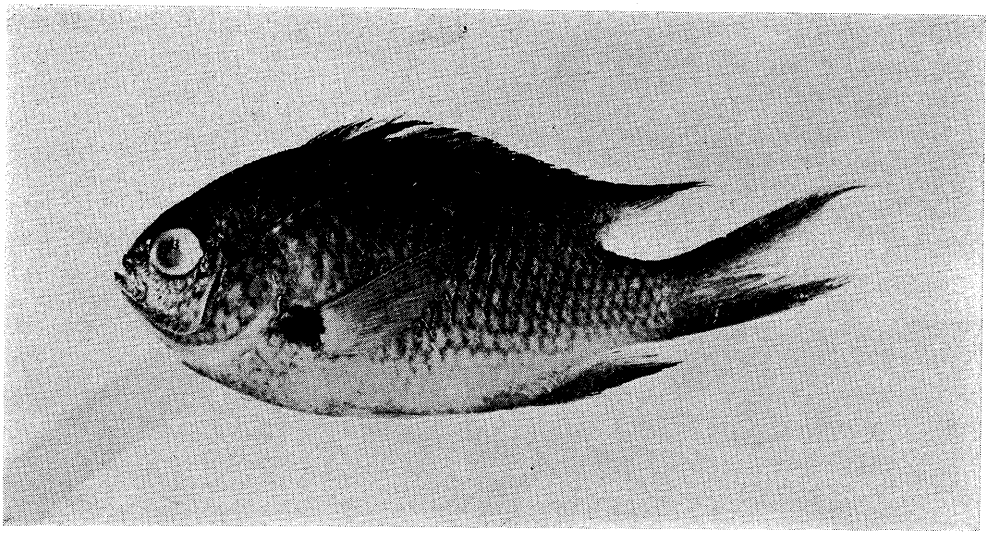

Fig. 11. *Chromis notatus* (Temminck et Schlegel), 97.0 mm SL.

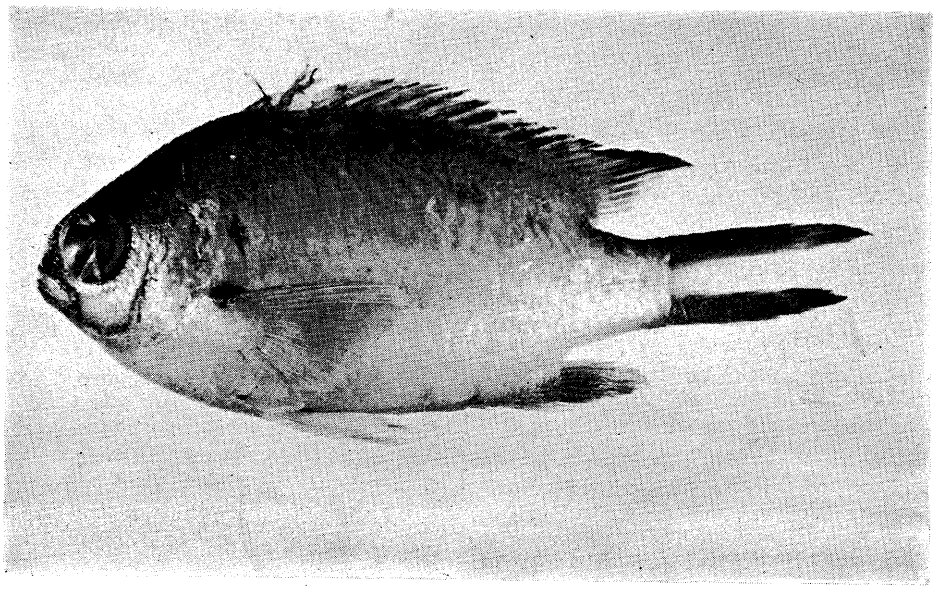

Fig. 12. *Chromis caudofasciata* n. sp. 54.4 mm S. L.

TABLE 1

Proportional measurements of *Chromis caudofasciata* n. sp., expressed as thousandths of SL.

Characters	Holotype NTUM 2822	Paratype NTUM 2870	Paratype NTUM 2876	Characters	Holotype NTUM 2822	Paratype NTUM 2870	Paratype NTUM 2876
Standard length (mm)	54.4	38.9	66.3	Length of:			
Greatest depth	460	458	409	Dorsal base	599	563	588
Head length	309	327	291	Anal base	197	203	189
Snout length	72	69	63	1st dorsal spine	99	105	88
Eye diameter	118	129	110	4th dorsal spine	154	162	167
Interorbital width	109	113	100	13th dorsal spine	127	95	124
Least depth of caudal peduncle	147	144	130	5th dorsal ray	211	242	255
Length of caudal peduncle	147	131	136	1st anal spine	74	75	62
Snout to:				2nd anal spine	191	216	199
Dorsal origin	305	330	136	7th anal ray	191	216	241
Anal origin	680	681	686	longest pectoral ray	285	280	250
Pectoral origin	296	314	287	pelvic spine	165	154	164
Pelvic origin	359	357	359	1st pelvic ray	259	303	299
				mid caudal	221		191

TABLE 2

Proportional measurements of *Chromis analis* expressed as thousandths of SL.

Characters	NTUM 2841	NTUM 2813-1	NTUM 2813-2	NTUM 2839	NTUM 2840
Standard length (mm)	114.1	71.8	83.8	112.0	112.1
Greatest depth	556	528	498	550	558
Head length	273	352	292	305	296
Snout length	72	64	61	72	61
Eye diameter	105	127	111	107	106
Interorbital width	113	111	111	119	123
Least depth of caudal peduncle	154	156	155	158	159
Length of caudal peduncle	103	111	118	104	115
Snout to:					
Dorsal origin	314	327	345	349	342
Anal origin	634	641	643	684	714
Pectoral origin	270	301	291	303	286
Pelvic origin	333	320	348	325	332
Length of:					
Dorsal base	619	605	595	622	591
Anal base	240	248	252	247	228
1st dorsal spine	70	75	74	60	71
7th dorsal spine	175	175	184	179	180
13th dorsal spine	140	138	141	139	140
5th dorsal ray	212	233	234	191	190
1st anal spine	67	82	80	77	82
2nd anal spine	175	192	183	179	184
7th anal ray	185	209	198	188	180
longest pectoral ray	298	286	296	280	283
pelvic spine	153	167	179	154	166
1st pelvic ray	302	348	334	321	296
mid caudal ray	178	210	191	179	186

TABLE 3

Fin ray counts of chromids from Taiwan

	Dorsal rays										Anal soft rays						Pectoral rays				
	XII	XIII	XIV	10	11	12	13	14	15	16	10	11	12	13	14	15	16	17	18	19	20
D. trimaculatus	4	—	—	—	—	—	—	2	1	1	—	—	1	—	2	1	—	—	3	—	1
D. aruanus	4	—	—	—	1	3	—	—	—	—	—	2	2	—	—	—	1	3	—	—	—
D. reticulatus	2	—	—	—	—	—	1	—	1	—	—	—	1	—	1	—	—	—	—	—	—
C. miratonis	—	—	1	—	—	1	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—
C. vanderbilti	2	—	—	1	—	1	—	—	—	—	—	1	—	—	1	—	1	1	—	—	—
C. weberi	—	2	—	—	—	2	—	—	—	—	—	1	1	—	—	—	—	2	—	—	—
C. bicolor	2	1	—	—	1	2	—	—	—	—	—	1	2	—	—	—	2	1	—	—	—
C. xanthura	1	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—
C. chrysura	—	1	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	1	—	—
C. flavomaculata	—	2	—	—	1	2	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—
C. notatus	—	4	—	—	—	1	3	—	—	—	—	3	1	—	—	—	—	3	1	—	—
C. caudofasciata n. sp.	—	3	—	—	—	2	1	—	—	—	—	1	2	—	—	—	—	—	2	—	1
C. atripectoralis	3	1	—	4	—	—	—	—	—	—	3	1	—	—	—	—	—	1	3	—	—
C. analis	—	5	—	—	—	3	1	—	—	—	—	1	3	1	—	—	—	—	—	4	1

TABLE 4
Body proportions and meristic counts of Chromids from Taiwan

	No. of Scale					In standard length	
	Longitudinal rows	Between L.l. and D. O.	Between L. l. and A. O.	Tubed L. l.	Straight portion	H. L.	Depth
Dascyllus trimaculatus	25-27	4	10-11	17-19	9-11	3.0-3.4	1.4-1.7
Dascyllus aruanus	26-28	3-4	9	17-18	9-13	3.0-3.2	1.6-1.7
Dascyllus reticulatus	26-27	4	10	17	9-10	3.7	1.5-1.6
Chromis miratonis	25	3	10	18	7	3.3	2.2
Chromis vanderbilti	27-28	2-2½	7-8	16-17	9	3.6	2.6-2.7
Chromis weberi	25-28	3	7-8	17-18	8-10	3.7	2.3-2.4
Chromis bicolor	25-26	2-3	8	17-18	7-9	3.1-3.6	2.1-2.2
Chromis xanthura	29	3	9	19	10	3.5	2.1
Chromis chrysura	25	3	9	17	9	3.5	1.9
Chromis flavomaculata	27-29	3-3½	9	18-19	10	3.7-3.8	2.3
Chromis notatus	27-28	3	9-10	17-18	7-9	3.5-3.7	2.1-2.2
Chromis caudofasciata n. sp.	25(26-27)	3(3)	9(8)	18(17-20)	7(7)	3.1-3.4	2.2-2.4
Chromis atripectoralis	24-27	1½-2	7-8	14-17	9-10	3.3	2.0-2.2
Chromis analis	25(24-25)	3(3)	8(8)	18(15-19)	7(7-9)	2.8-3.7	1.8-2.0

	In Head Length							
	Snout length	Eye diameter	Interorbital space	Least depth of C. P.	Length C. P.	Longest D. Spine	Longest P. ray	1st V. ray
Dascyllus trimaculatus	3.5-5.6	2.5-2.7	1.6-2.3	1.6-3.1	2.6-3.1	1.1-1.3	1.0-1.2	0.9-1.0
Dascyllus aruanus	3.7-3.9	2.6-2.8	2.3-2.6	1.7-1.9	1.9-2.5	1.6-2.0	1.2-1.4	0.9-1.2
Dascyllus reticulatus	3.7-4.0	2.5-2.6	2.2-2.3	1.6-1.7	2.0-2.1	1.3-1.4	1.0-1.1	0.9-1.2
Chromis miratonis	5.0	2.4	2.4	2.0	2.4	1.9	1.0	0.9
Chromis vanderbilti	4.5-5.1	2.8-2.9	2.4-2.7	2.0-2.1	1.5-1.6	2.4-3.2	1.5-1.6	1.0-1.1
Chromis weberi	3.4-4.0	2.7-3.1	2.5	1.9-2.0	2.0-2.1	1.9-2.1	1.0-1.1	1.1
Chromis bicolor	5.6-6.0	2.8-2.9	2.6-3.0	1.8-1.9	1.6-2.1	2.2-2.6	1.0-1.2	0.9
Chromis xanthura	3.6	3.4	2.8	1.8	2.1	2.1	1.0	0.9
Chromis chrysura	3.4	3.4	2.5	1.9	2.3	1.8	0.9	0.9
Chromis flavomaculata	4.6-4.7	2.8-2.9	2.5-2.6	1.9	2.0-2.1	1.8-2.0	1.0	1.0
Chromis notatus	4.3-4.4	2.8-3.0	2.5-2.9	1.8-2.4	1.9-2.2	1.8-2.2	0.9-1.1	0.9-1.1
Chromis caudofasciata n. sp.	4.3-4.7	2.5-2.6	2.7-2.9	2.1-2.3	2.1-2.5	1.7-2.0	1.1-1.2	1.0-1.2
Chromis atripectoralis	3.4-3.8	3.0-3.5	3.0-3.2	2.1-3.0	1.1-2.0	1.6-2.3	1.3-1.4	1.1-1.4
Chromis analis	3.8-5.5	2.6-2.9	2.4-3.2	1.8-2.3	2.5-3.2	1.6-2.0	0.9-1.2	0.9-1.0

line; 1(1) between base of last dorsal spine and lateral line; 1(1) between base of mid soft dorsal and end of lateral line; 9(8) between lateral line and anal origin. Tubed lateral lined scales 18(17–20), in straight pores 7 (7); predorsal scales about 30, reaching nostrials.

Teeth biserial on both jaws anteriorly, outer rows of large conic, widely spaced, inner row of small sub-conic, moderately widely spaced. Preorbital with 1 row of scales; suborbital entire hidden by 1 row of scales. Preopercle ctenulated on hind and lower margins, with 3 rows of scales; opercle entire, with 2 rows of large scales. All scales ctenoid; pored scales on mid lateral of caudal peduncle, ended at caudal base; dorsal and anal membrance with a row of scale basally. Caudal peduncle with 2 small spiniform procurrent rays on both upper and lower base.

Color in formalin generally grayish to brownish yellow, slightly darker on dorsal surface; both caudal lobes with a dark grayish to brownish band; upper base of caudal peduncle with faint pale brownish blotch; upper pectoral axial with a grayish brown dot.

Etymology: The name caudofasciata has a meaning of banded tail, referring to the dark bands on its caudal lobes.

Chromis atripectoralis Welander et Schultz

Fig. 13, Table 3-4

Chromis atripectoralis Welander et Schultz, 1951: 107 (type locality: Central and Western tropical Pacific)[31]; Woods et Schultz, 1960: 70[34]; Allen, 1975b: 78.[2]

Chromis careruleus (non Cuvier) Jordan et Seale, 1960: 290.[20] Montalban, 1927: 35[25]; Aoyagi, 1941: 187; Kamohara, 1960: 7[21].

Diagnosis: Dorsal rays XII–XIII, 10; anal rays II, 10–11; pectoral rays 17–18. Body depth 2.0–2.2 in SL. Color in life generally enamel green, paler on belly; a narrow dark streak on preorbital; pectoral base and axil dark.

Suborbital and opercle entire; preopercle weakly ctenulated. Teeth pointed, biserial on both jaws anteriorly, widely spaced.

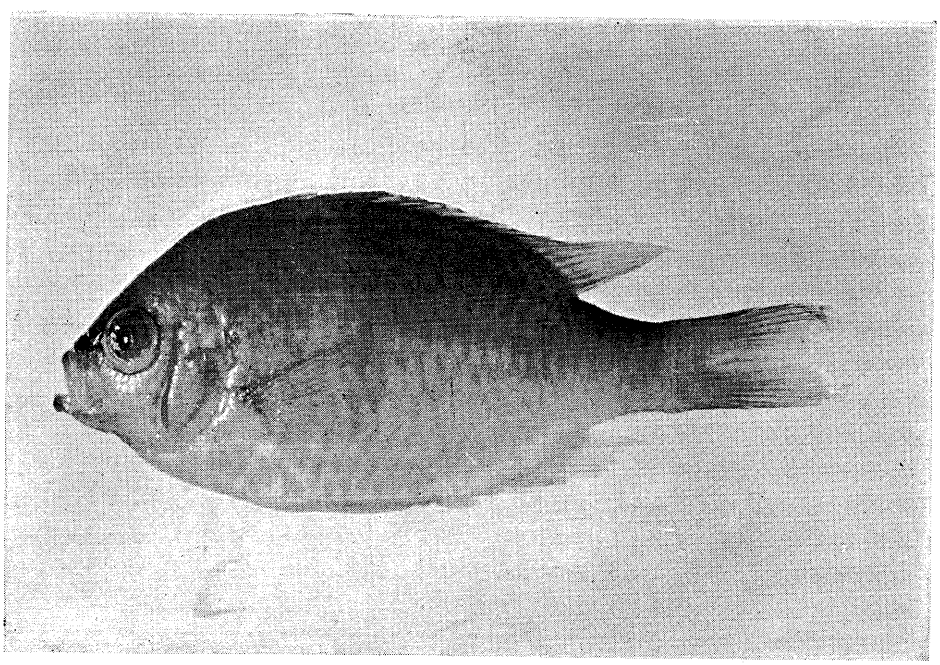

Fig. 13. *Chromis atripectoralis* Welander et Schultz, 65.7 mm SL.

Specimens examined: Hou-pi-hu: NTUM 02820, 3(45.4-57.4); NTUM 02824, 1(65.7): Hung-chun: NTUM 04801, 1(67.0).

Chromis analis (Cuvier et Valenciennes)
Fig. 14, Tables 2-3

Heliases analis Cuvier et Valenciennes, 1830: 496 (type locality: Amboina)[12].

Chromis analis Bleeker, 1877: 156[6]; Fowler et Bean, 1928: 60[18]; De Beaufort, 1940: 454[13]; Aoyagi, 1941: 178[3]; Kamohara, 1960: 4[21]; Allen, 1975b: 78[2].

Diagnosis: Dorsal rays XIII, 11-13; anal rays II, 11-13; pectoral rays 19-20. Body depth 1.8-2.0 in SL. Color in life generally golden orange on belly; vertical fins and pelvics similar to body color; pectorals dusky.

Descriptions: Proportional measurements see Table 2. Meristics of specimens are given bellow: dorsal rays XIII, 13 (XIII, 11-12); anal rays II, 13 (II, 11-12); pectoral rays 20 (19); pelvics rays I, 5 (I, 5); branched caudal rays 7+6 (7+6).

Longitudinal series of scale rows from upper edge of gill opening to caudal base 25 (24-25). Transverse scales rows 3(3) between dorsal origin and lateral line; 2(2-3) between last dorsal spine and lateral line; 1(1-2) between base of mid soft dorsal and end of lateral line; 8(8) between lateral line and anal origin. Tubed lateral line scales 18 (15-19), in straight pores 7(7-9). Predorsal scales about 30, reaching nostrils.

Teeth irregularly in 2 to 3 series on both jaws anteriorly, outer row of large conic, widely spaced, inner rows small subconic, moderately closely spaced. Preorbital with 2 rows small scales; suborbital entire, hidden by 1 row of minute scales; opercle entire, with 2 rows of large scales; lower margin of preopercle weakly ctenulated, with 3 rows of scales. All scales ctenoid; pored scales on mid lateral of caudal peduncle, ended at caudal base; dorsal and anal each with 1 row of scale on membrane. Caudal with 2 small spiniform procurrent rays on both upper and lower bases.

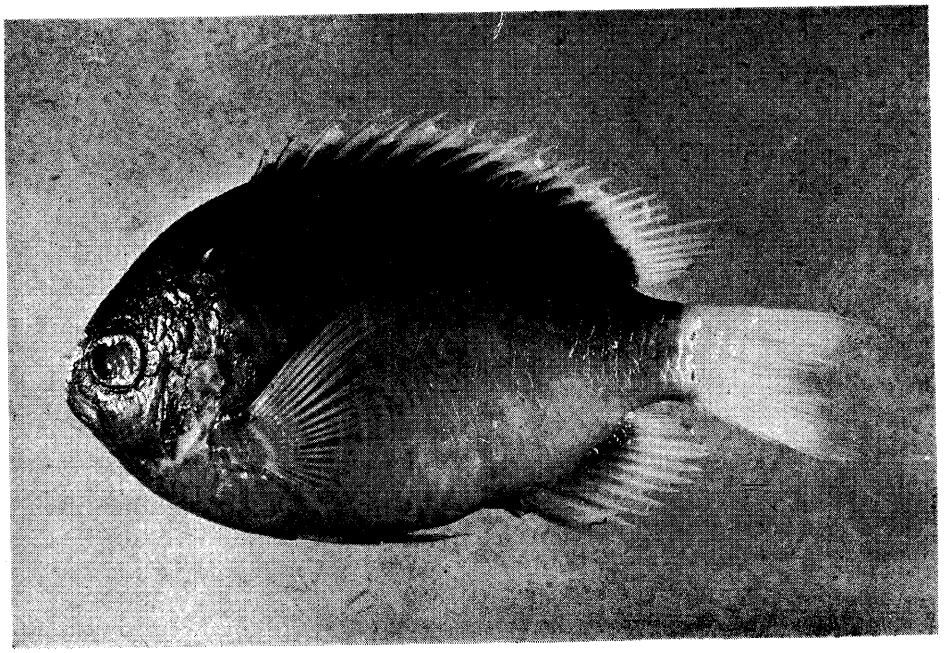

Fig. 14. *Chromis analis* 114.1 mm SL.

Color in life generally golden orange, somewhat dark above lateral line, pale on belly; vertical fins and pelvics similar to body color; pectorals dusky. Color in formalin dark tannish above lateral line, pale yellow on belly; scaled dorsal membrane pale dark tannish, unscaled area dusky; scaled anal membrane pale yellowish, unscaled areas dusky; caudal, pectorals and pelvics dusky.

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光鰓魚亞科之研究

沈世傑　陳承光

本文係報告臺灣產雀鯛科之光鰓魚亞科的十四種雀鯛魚類，即三點光鰓魚 *Dasyllus trimaculatus* (Rüppell)，三帶光鰓魚 *D. aruanus* (L.)，網紋光鰓魚 *D. reticulatus* (Richardson)，長尾光鰓魚 *Chromis miratonis* Tanaka，凡氏光鰓魚 *C. vanderbilti* (Fowler)，魏氏光鰓魚 *C. weberi* Fowler et Bean，二色光鰓魚 *C. bicolor* (Macleay)，紅尾光鰓魚 *C. xanthura* (Bleeker)，黃尾光鰓魚 *C. chrysura* (Bliss)，斑鰭光鰓魚 *C. notatus* (Temminck & Schlegel)，燕尾光鰓魚 *C. caudofasciata* n. sp.，黑腋光鰓魚 *C. atripectoralis* Welander et Schultz，黃斑光鰓魚 *C. flavomaculata* Kamohara 及黑臀光鰓魚 *C. analis* (Cuvier & Valenciennes)。其中除三帶光鰓魚 *D. aruanus*，黃尾光鰓魚 *C. chrysura*，二色光鰓魚 *C. bicolor* 及紅尾光鰓魚 *C. xanthura* 等四種外，均爲臺灣新記錄，並有一種係新種，各種分別予以簡短的描述，並附以屬及種之檢索表，以資鑑別。