

## FISHES OF THE FAMILY HAEMULIDAE (TELEOSTEI: PERCOIDEI) OF TAIWAN<sup>1</sup>

SIN-CHE LEE

Institute of Zoology, Academia Sinica, Taipei,  
Taiwan 115, Republic of China

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**Sin-Che Lee** (1985) Fishes of the family Haemulidae (Teleostei: Percoidae) of Taiwan. *Bull. Inst. Zool., Academia Sinica* 24(2): 257-272. This paper reports nineteen species of the newly revised family Haemulidae occurring in the surrounding waters of Taiwan. Among them, six species including *Plectorhinchus flavomaculatus*, *P. celebicus*, *P. goldmanni*, *P. chaetodonoides*, *P. albivittatus* and *P. lineatus* are new records of Taiwan. Another previously recorded species, *Pomadasys furcatus*, appeared in the book by Chen (1969), is provisionally removed from this report since specimen was not available. Keys, diagnoses, synonyms and figures of all studied species are given.

The fish family Haemulidae (or Pomadasydidae) are commonly known as grunts. The distinguishable characters of this family are defined as: Dorsal fin continuous, IX-XIV, 11-26; anal fin III, 6-18; mouth small with feeble cardiform teeth on jaws but absent on vomer or even on palatines; enlarged chin pores usually present; preopercular edge serrated; branchiostegal rays 7; vertebrae 10-11+16.

Grunts are medium-sized food fishes inhabiting shallow coastal waters, some of them are euryhaline which may enter the river even in permanent freshwaters. The bottom they live are variable from sands or muds to rocks or coral reefs. Most species particularly those live in coral reefs are brightly coloured while those live in sandy or muddy bottoms are mostly silvery with faint patterns if any. Color markings of most species vary with growth and sex, thus the identification of grunt species have been very much confused due to their unsolved taxonomic status. However, Nelson (1984) has

estimated a total of 175 species in 17 genera known to occur in the Atlantic, Indian and Pacific Oceans. Among them, 20 species are recorded in Taiwan.

In 1902, Jordan and Evermann listed 4 species including *Plectorhinchus ocyurus* (= *Parapristipoma trilineatum*), *P. radjaban* (= *p. pictus*), *Pomadasys hasta* (= *P. kaakan*) and *P. maculatus*. In 1909, Jordan and Richardson added another species *Plectorhinchus poecilopterus*, which is now recognized as the synonym of *P. pictus*. Later in 1951, Liang added 2 more species namely, *Plectorhinchus cinctus* and *Haplogenyus mucronatus*. In 1957, Chu added *Rhoniscus striatus* (not Gilchrist and Thompson) which is now confirmed as a misidentification of *Pomadasys stridens* after the recent reexamination of the specimens preserved in the Museum of Taiwan University. *Pomadasys quadrilineatus* Shen and Lin 1984 is now recognized as a synonym of this species. In 1969, Chen added 6 species, including *Plectorhynchus nigrus*, *P. diagrammus*, *Pomadasys argenteus*, *P. furcatus*, *Haplogenyus kishinouyei* and *H. maculatus*.

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Chang and Lee also reported *Plectorhynchus orientalis* (= *P. picus*) in the same year. As the result of present study, *Plectorhynchus flavomaculatus*, *P. celebicus*, *P. goldmanni*, *P. chaetodonoides*, *P. albovittatus* and *P. lineatus* are added to make a total of 20 grunt species known to Taiwan. *Pomadasys furcatus* appeared in Chen's list (1969) has not been available for this study period, and is then provisionally excluded from this report due to its uncertainty. Seven *Scolopsis* species including *S. eriomma*, *S. margaritifer*, *S. vosmeri*, *S. temporalis*, *S. cancellatus*, *S. monogramma* and *S. bilineata*, formerly placed in the family Haemulidae (Pomadasyidae; Chen, 1969), are now transferred to family

Nemipteridae.

## MATERIALS AND METHODS

Specimens were collected mainly from the coastal waters in the vicinities off Shimen, Wanli, Keelung, Tali, Pescadores, Tainan, Kaohsiung, Tungkang and Hengchun. They were caught mostly by longline and partly by ottertrawl. A colour photograph was taken immediately after capture. Measurements of body proportion and meristic counts were based on the formalin preserved specimens and followed Lee (1980) and the data are present in Tables 1-2. The specimens used in this study are now kept in the Museum of the Institute of Zoology, Academia Sinica.

TABLE 1  
Body proportions of the haemulid species

Species	Specimen No.	In standard length			In head length		
		HL	BD	PF	SN	ED	INT
<i>Pomadasys stridens</i>	9	3.03-3.39 (3.20)	2.84-3.16 (3.06)	4.22-4.56 (4.36)	3.52-3.91 (3.76)	3.24-3.59 (3.43)	3.01-3.33 (3.17)
<i>P. maculatus</i>	2	3.07-3.12	2.71-2.73	3.37-3.61	3.95-4.00	3.03-3.13	3.27-3.29
<i>P. kaakan</i>	5	2.72-2.94 (2.87)	2.72-2.85 (2.77)	3.19-3.45 (3.37)	3.35-3.65 (3.53)	4.26-4.51 (4.43)	3.39-3.75 (3.57)
<i>P. argenteus</i>	2	2.81-3.05	2.69-2.88	3.33-3.72	3.57-4.04	3.45-4.19	3.22-3.39
<i>Haplogenyx mucronatus</i>	4	2.66-2.83 (2.75)	1.86-1.98 (1.91)	4.22-4.48 (4.31)	3.30-3.67 (3.47)	3.18-3.50 (3.30)	3.75-3.93 (3.84)
<i>H. kishinouyei</i>	1	2.43	1.93	3.69	3.93	3.10	3.62
<i>H. nigripinnis</i>	2	2.52-2.54	1.83-1.91	4.35-4.38	3.33	4.33-4.57	4.14-4.51
<i>Parapristipoma trilineatum</i>	3	3.05-3.32 (3.20)	2.64-3.08 (2.82)	3.68-4.15 (3.92)	3.60-4.25 (3.91)	2.88-4.16 (3.48)	3.11-3.58 (3.32)
<i>Plectorhynchus pictus</i>	3	3.32-3.54 (3.44)	2.60-2.69 (2.65)	5.00-5.57 (5.35)	3.42-3.65 (3.56)	3.45-4.01 (3.79)	3.30-3.38 (3.33)
<i>P. nigrus</i>	1	3.25	2.35	4.74	4.85	3.94	3.28
<i>P. cinctus</i>	2	2.98-3.26	2.11-2.31	4.28-4.51	3.61-4.02	3.86-4.20	3.11-3.30
<i>P. flavomaculatus</i>	2	3.19-3.24	2.61-2.65	4.59-4.66	3.33-3.36	2.97-3.55	3.08-3.42
<i>P. celebicus</i>	1	3.58	2.73	5.08	3.85	3.49	2.88
<i>P. goldmanni</i>	1	3.64	2.97	4.73	3.08	4.14	2.84
<i>P. albovittatus</i>	1	3.06	2.67	4.97	3.29	4.17	3.38
<i>P. aiagrammus</i>	3	3.48-3.52 (3.50)	2.72-2.83 (2.78)	4.37-4.72 (4.56)	3.82-4.33 (4.13)	2.91-3.45 (3.11)	2.94-3.04 (2.98)
<i>P. chaetodonoides</i>	2	3.19-3.24	2.24-2.51	—	3.07-4.47	2.80-5.40	—
<i>P. lineatus</i>	4	3.17-3.41 (3.36)	2.94-3.06 (3.03)	4.50-4.82 (4.60)	3.18-3.78 (3.59)	2.86-3.28 (2.91)	3.19-3.76 (3.33)
<i>P. picus</i>	2	3.41-3.59	2.85-3.27	4.64-5.18	3.82-3.88	3.04-3.47	3.12-3.17

HL, head length; BD, body depth; PF, pectoral fin; SN, snout length; ED, eye diameter; INT, interorbital width.

TABLE 2  
Meristic counts of the haemulid species

Species	Specimen No.	Dorsal rays	Anal rays	Pectoral rays	Ll.	Ltr.	Gr.	No. vertebrae
<i>Pomadasys stridens</i>	9	XII, 13	III, 7	16	52-55	6	6+11-13	10+16
<i>P. maculatus</i>	2	XII, 13-14	III, 7	17	52-53	5-6	6-7+13-14	10+16
<i>P. kaakan</i>	5	XII, 14	III, 7	17	46-50	5	4-5+12	10+16
<i>P. argenteus</i>	2	XII, 14	III, 7	17	46-47	5	7-8+11-12	10+16
<i>Hapalogenys mucronatus</i>	4	XI, 15-16	III, 9	19	54-58	9-10	4-8+12-13	9+15
<i>H. kishinouyei</i>	1	XI, 15	III, 9	19	58	10	4+11	10+16
<i>H. nigripinnis</i>	2	XI, 15	III, 9	19	53-55	11-12	5+12	10+14
<i>Parapristipoma trilineatum</i>	3	XIV, 17	III, 8	19	102-107	15-17	12-13+23-24	11+16
<i>Plectorhinchus pictus</i>	3	IX-X, 21-23	III, 7	17	116-118	18-19	7+12-13	10+17
<i>P. nigrus</i>	1	XIV, 16	III, 7	17	59	10	9+16	11+16
<i>P. cinctus</i>	2	XII, 15-16	III, 7	17	70-71	14	8+14	10+17
<i>P. flavomaculatus</i>	2	XIII, 20	III, 7	16	70-73	13	14-17+18	11+16
<i>P. celebicus</i>	1	XIII, 19	III, 7	17	74	12	13+20	11+16
<i>P. goldmanni</i>	1	XIII, 19	III, 7	17	75	12	9+19	11+16
<i>P. albobittatus</i>	1	XIII, 17	III, 7	17	72	13	9+21	11+16
<i>P. diagrammus</i>	3	XIII, 19-20	III, 7	16	80-84	13	6+11-14	11+16
<i>P. chaetodonoides</i>	2	XII, 18	III, 8	17	54-57	—	10+27	11+16
<i>P. lineatus</i>	4	XII-XIII, 18-20	III, 7-8	18	90-93	13	10+20-21	11+16
<i>P. picus</i>	2	XIII, 19	III, 7	17	100-110	16	6-11+21-22	11+16

Ll, scales on lateral line; Ltr, number of scales between lateral line and median dorsal spine; Gr, number of gill rakers on first left gill arch.

## RESULTS AND REMARKS

### Systematic accounts

#### Key to genera of Haemulidae

- Chin with a deep longitudinal groove behind symphysis of lower jaw.....  
..... *Pomadasys*  
Chin without central groove .....2
- Chin with a cluster of short barbels or papillae; an antrose spine in front of dorsal fin; caudal fin rounded.....  
..... *Hapalogenys*  
Chin without barbels; no antrose spine before the dorsal fin; caudal fin truncated or shallowly bifurcated.....3
- Gill rakers on lower limb of the first gill arch 23-25 ..... *Parapristipoma*  
Gill rakers on lower limb of the first gill arch 11-20..... *Plectorhinchus*

### Genus *Pomadasys* Lacépède, 1803

#### Key to species of *Pomadasys*

- Body with large black blotches or small spots, arranged in transverse or longitudinal series .....2  
Body with 3-4 yellowish stripes .....  
..... *P. stridens*
- Body with 5 black cross bars on back; a black blotch on spinuous dorsal.....  
..... *P. maculatus*  
None of such conspicuous patterns mentioned above; dorsal spotted .....3
- The dorsal fin notch deeper, eleventh dorsal spine about  $\frac{1}{2}$  of first soft dorsal fin ray; upper part of body with 7-8 interrupted transverse bands, each formed by 1-4 brown spots..... *P. kaakan*  
The dorsal fin notch much shallower,

eleventh dorsal spine much longer than  $\frac{1}{2}$  of first soft dorsal fin ray; each scales on upper half of body with brownish spot, arranged in longitudinal series.....  
.....*P. argenteus*

1. *Pomadasy stridens* (Forsk., 1775)

Fig. 1

*Sciaena stridens* Forskal, 1775: 50 (type locality, Arabia)

*Pristipoma stridens*, Gunther, 1859: 300

*Pomadasy stridens*, Fowler, 1931: 319; Smith, 1962: 259; Masuda *et al.*, 1984: 173.

*Rhonciscus striatus*, Chu, 1957: 19 (not Gilchrist and Thompson).

*Pomadasy quadrilineatus* Shen and Lin, 1984: 6.

**Materials:** 2 specimens, 96.7, 120.3 mm SL, August 1977 and October 1981, respectively, Hengchun; 7 specimens, 97–118.2 mm SL, October 1979, Tungkan.

**Diagnosis:** D. XII, 13; A. III, 7; P. 16; Gr. 6+11–13; Ll. 52–55, Ltr. 6; Vertebrae including urostyle 10+16. Body moderately elongated, depth 2.84–3.16 (mean 3.06) in standard length. Scales on head to posterior nostrils. Maxilla reaching below anterior nostrils. Narrow band of small conical teeth on jaws. Scale rows above lateral line arranged obliquely in back and upward while those below lateral line horizontally. Caudal fin emarginated. Colour when fresh generally silvery with 3–4 yellowish longitudinal stripes on body sides.

**Remarks:** The present species resembles *P. striatus* but differs from *P. striatus* by having only 6 transverse scale rows instead of 10–12 in the latter, and the scale rows below lateral line running horizontally rather than in back and upward. *Rhonciscus striatus*, Chu, 1957 (not Gilchrist and Thompson), is a misidentification. *Pomadasy quadrilineatus* of Shen and Lin, 1984 is a synonym of this species.

2. *Pomadasy maculatus* (Bloch, 1797)

Fig. 2

*Anthias maculatus* Bloch, 1797: 7 (type locality, East Indies).

*Pristipoma caripa* Cuvier and Valenciennes, 1830: 261.

*Pomadasy maculatus*, Fowler, 1931: 309; Weber and de Beaufort, 1936: 400; Matsubara, 1955: 672; Chen, 1969: 398.

**Materials:** 2 specimens, 80.2 and 88.5 mm SL, July 1982 and August 1982, respectively, Kaohsiung.

**Diagnosis:** D. XII, 13–14; A. III, 7; P. 17; Gr. 6–17+13–14; Ll. 52–53; Ltr.  $4\frac{1}{2}$ – $5\frac{1}{2}$ ; Vertebrae 10+16. Scales on head to posterior nostrils. Narrow band of small pointed teeth on each jaw, the outermost series somewhat enlarged, canines absent. Preoperculum with coarsely serrated hind margin. Silvery with 5 black cross bars on back. Pectoral and ventral fins yellowish; dorsal fin brown with a black blotch on spinous part; anal fin dark brown; caudal fin brown.

3. *Pomadasy kaakan* (Cuvier, 1830)

Fig. 3

*Pristipoma kaakan* Cuvier in Cuvier and Valenciennes, 1830: 244.

*Pristipoma nageb* Ruppell, 1835: 124.

*Pristipoma hasta*, Day, 1878: 73.

*Pomadasy hasta*, Fowler, 1931: 313; Weber and de Beaufort, 1936: 402 (in part); Fowler, 1939: 163; Matsubara, 1955: 672; Lindberg and Krasnyukova, 1969: 267; Chen, 1969: 398.

*Pomadasy argenteus*, Kuroshima and Abe, 1972: 77.

**Materials:** 1 specimen, 177 mm SL, July 1982, Tungkan; 1 specimen, 134 mm SL, November 1982; 3 specimens, 170.3–181.4 mm SL, November 1984, Kaohsiung.

**Diagnosis:** D. XII, 14; A. III, 7; P. 17; Gr. 4–5+12; Ll. 46–50, Ltr. 5; Vertebrae 10+16. Head scales reaching posterior nostrils. Maxilla reaching posterior nostrils. Narrow band of small conical teeth on jaws. A deep notch in the middle part of dorsal fin, followed by a shortened eleventh dorsal spine measuring about  $\frac{1}{2}$  or slightly longer than  $\frac{1}{2}$  the length of first soft dorsal ray (1.72–2.05 in first soft dorsal ray). Length of eleventh dorsal spine much shorter than that of twelfth

dorsal spine (1.20–1.38 in twelfth dorsal spine). Second anal spine much longer than the third. Caudal fin nearly truncated when expanded with upper and lower tips rounded. Generally silvery with 7–8 interrupted transverse rows, each formed by 1–4 yellowish brown spots. Dorsal fin with 2–3 longitudinal series of black spots; caudal fin with dark distal margin.

4. *Pomadasys argenteus* (Forsk., 1775)

Fig. 4

*Sciaena argentea* Forskal, 1775: 51 (type locality, Djedda, Arabia).

*Pristipoma argenteum* Cuvier and Valenciennes, 1830: 249.

*Pomadasys argenteus*, Fowler, 1931: 311; Matsubara, 1955: 673; Chen, 1969: 398.

*Lutjanus hasta*, Bloch, 1790: 109.

*Pomadasys hasta*, Masuda *et al.*, 1980: 241; 1984: 173.

**Materials:** 1 specimen, 147 mm SL, September 1980, Tungkan; 1 specimen, 79.5 mm SL, June 1980, Kaohsiung.

**Diagnosis:** D. XII, 14; A. III, 7; P. 17; Gr. 7–8+11–12; Ll. 46–47, Ltr. 5; Vertebrae 10+16. The notch in the middle of dorsal fin shallow. Length of eleventh dorsal spine much longer than  $\frac{1}{2}$  of first soft dorsal ray (1.38–1.53 in first soft dorsal ray). The eleventh dorsal spine only slightly shorter than that of twelfth spine (1.08 in twelfth dorsal spine). Silvery, each scales on upper half of body with a small black spots arranged in longitudinal series.

**Remarks:** The present species differs from *P. kaakan* in having shallower notch in the middle of dorsal fin than is seen in the latter species. The markings on the body sides between these two species are also distinguishable.

Genus *Hapalogenys* Richardson, 1844

Key to species of the genus *Hapalogenys*

1. Third dorsal spine much longer than the fourth; vertical fins with black edges; body with 5 broad black vertical bands ..... *H. mucronatus*
- Third dorsal spine equal to or shorter than

the fourth; body side without vertical bands but with longitudinal or oblique bands.....2

2. Maxillary without scales; eyes large, much greater than  $\frac{1}{4}$  of the head length (3.10 in HL); body sides with 4 longitudinal dark brownish bands ..... *H. kishinouyei*
- Maxillary scaled; eyes smaller (4.33–4.57 in HL); fourth dorsal spine higher than third and fifth; two oblique bands on body sides..... *H. maculatus*

5. *Hapalogenys mucronatus* (Eydoux and Solueyet, 1841)

Fig. 5

*Pristipoma mucronatus* Eydoux and Souleyet, 1841: 161 (type locality, Macao, China).

*Hapalogenys analis* Richardson, 1846: 235.

*Hapalogenys mucronatus*, Gunther, 1859: 318; Fowler, 1931: 269; Fowler, 1939: 153; Matsubara, 1955: 673; Lindberg and Krasyukova, 1969: 278; Chen, 1969: 397; Masuda *et al.*, 1984: 173.

**Materials:** 2 specimens, 96.7–108 mm SL, 1 specimen, 102.5 mm SL and 1 specimen, 130.5 mm SL, July 1982, August 1982 and November 1982, respectively, Kaohsiung.

**Diagnosis:** D. XI, 15–16; A. III, 9; P. 19; Gr. 4–8+12–13; Ll. 54–58, Ltr. 9–10; Vertebrae 9+15. Scales on head extending to anterior nostrils. Narrow bands of curved conical teeth on jaws; canines absent. Opercle with a strong spine; preopercle with strongly serrated hind margin. An antorse spine before the dorsal fin; third dorsal spine much longer than the fourth. Pale brownish with 6 vertical broad dark bands on body side. Ventral fin, spinuous dorsal and anal fins black; pectoral fins yellowish; caudal, soft dorsal and anal fins yellowish with black margin.

6. *Hapalogenys kishinouyei* Smith and Pope, 1906

Fig. 6

*Hapalogenys kishinouyei* Smith and Pope, 1906: 476 (type locality, Urado); Fowler, 1931: 269; Matsubara, 1955: 673; Lindberg and Krasyukova, 1969: 273; Chen, 1969: 397; Masuda *et al.*, 1980: 241; 1984: 173.

**Materials:** 1 specimen, 79.3 mm SL, March 1983, Tungkang.

**Diagnosis:** D. XI, 14; A. III, 9; P. 19; Gr. 4+11; Ll. 58, Ltr. 10; Vertebrae 10+16. Head scales only absent from the snout. Narrow band of curved conical teeth on jaws. Opercle with a weak spine, preopercle with serrated hind margin. An antrose spine in front of dorsal fin; third dorsal spine shorter than the fourth; distal margin of caudal fin rounded. Pale greyish with 4 longitudinal dark brownish bands. Ventral, spinuous dorsal and entire anal fins black; soft dorsal, anal, caudal and pectoral fins pale.

7. *Hapalogenys nigripinnis* (Temminck and Schlegel, 1843)

Fig. 7

*Pogonias nigripinnis* Temminck and Schlegel, 1843: 59 (type locality, Nagasaki, Japan).

*Hapalogenys nigripinnis*, Gunther, 1859: 317; Fowler, 1931: 268; Chen, 1969: 275; Masuda *et al.*, 1980: 241; 1984: 173.

*Hapalogenys maculatus* Richardson, 1846: 235; Fowler, 1939: 156; Matsubara, 1955: 673; Lindberg and Krasnyukova, 1969: 275; Chen, 1969: 397.

**Materials:** 2 specimens, 151 and 173.8 mm SL, November 1982, Keelung.

**Diagnosis:** D. XI, 15; A. III, 9; P. 19; Gr. 5+12; Ll. 53-55, Ltr. 11-12; Vertebrae 10+14. Scales on top of head slightly beyond the anterior nostrils. Maxilla scaled, extending to the anterior edge of orbit. Conical tooth bands on jaws, the outer series enlarged. Eye diameter equal to or slightly smaller than suborbital width. Fourth dorsal spine longer than the third, longer or subequal to the length of fifth dorsal spine. Generally greyish brown with two oblique black bands. Fins almost black.

**Remarks:** The present species resembles *H. nitiens*, but distinguishable in having larger eyes (HL/Eye almost 4.5 in *H. nigripinnis* vs 5 in *H. nitiens*; eye diameter equal to suborbital width in *H. nigripinnis* but much less in *H. nitiens*, and in having a much

longer fourth dorsal spine in comparison to the third one.

Genus *Parapristipoma* Bleeker, 1873

8. *Parapristipoma trilineatum* (Thunberg, 1793)

Fig. 8

*Perca trilineata* Thunberg, 1793: 55 (type locality, Japan).

*Parapristipoma trilineatum*, Fowler, 1931: 229; 1939: 146; Matsubara, 1955: 674; Lindberg and Krasnyukova, 1969: 268; Chen, 1969: 397; Masuda *et al.*, 1980: 241; 1984: 171.

*Plectorhynchus ocyurus* Jordan and Evermann, 1902: 348.

**Materials:** 1 specimen, 167 mm SL, July 1979, Shimen; 1 specimen, 103.8 mm SL, January 1983, Kaohsiung; 1 specimen, 274 mm SL, November 1982, Keelung.

**Diagnosis:** D. XIV, 17; A. III, 8; P. 19; Gr. 12-13+23-24; Ll. 102-107, Ltr. 15-17; Vertebrae 11+16. Scales on head extending to anterior nostrils. Maxilla reaching anterior edge of orbit. Each jaw with narrow bands of villiform teeth, canines absent. Opercle without spine, preopercle serrated on posterior margin. Pale greyish with three longitudinal brownish bands on upper half of body side when young but disappeared in adult. Caudal fin pink, other fins yellowish.

Genus *Plectorhynchus* Lacépède, 1802

Key to species of the genus *Plectorhynchus*

1. Dorsal spines IX-X ..... *P. pictus*  
Dorsal spines more than XI ..... 2
2. Dorsal spines XIV, long and strong .....  
..... *P. nigrus*  
Dorsal spines XI-XIII, moderately strong ..... 3
3. Body with 3 wide dark oblique bands ...  
..... *P. cinctus*  
None of above mentioned bands present on body ..... 4
4. Bands and spots on body side orangish or yellowish ..... 5  
Bands and spots on body side black or brown ..... 6

5. Body with yellowish wavy lines and spots, the wavy lines are more numerous in adults and the number of spots increases with age; fins mostly brown or dark grey.....*P. flavomaculatus*  
Body with 7-8 horizontal yellowish bands; fins yellowish.....*P. celebicus*
6. Horizontal or oblique bands present both in young and adult, the number increases with age .....7  
Juvenile white with large dark irregular area which may form irregular bands or patches, becoming striped or dotted in adult .....9
7. About 20 black stripes, running up and back on dorsolateral side of body .....  
.....*P. goldmanni*  
Only 2-6 horizontal bands .....8
8. Two broad horizontal bands in juvenile, the bands almost retain the same pattern in adult; D. XIII, 17.....*P. albobittatus*  
Three broad horizontal bands in juvenile, the number increase with growth to about 6; D. XIII, 19-20...*P. diagrammus*
9. Body higher, 2.41 in standard length; height of soft dorsal markedly greater than  $\frac{1}{2}$  of its base...*P. chaetodontoides*  
Body height lesser, 2.85-3.27 in standard length; soft dorsal shorter than  $\frac{1}{2}$  of its base.....10
10. The dark patches of juvenile becoming horizontally striped in adult...*P. lineatus*  
The dark patches of juvenile partly retained in subadult, and broken into dots in fully grown adult .....*P. pictus*

9. *Plectorhinchus pictus* (Thunberg, 1792)

Fig. 9a-c

*Perca picta* Thunberg, 1792: 143 (type locality, Japan).

*Grammistes pictus*, Bloch and Schneider, 1801: 190.

*Diagramma punctatum*, Cuvier and Valenciennes, 1830: 302.

*Diagramma pictum*, Smith, 1962: 472.

*Plectorhynchus pictus*, Weber and de Beaufort, 1936: 426; Matsubara, 1955: 675; Lindberg and Krasnyukova, 1969: 271; Chen, 1969: 397; Masuda *et al.*, 1980: 243; 1984: 172.

*Plectorhinchus pictus*, Fowler, 1931: 260; Fowler, 1939: 153.

*Materials*: 1 specimen, 200 mm SL, July 1982, Pescadores; 2 specimens, 131-145 mm SL, August 1982, Wanli.

*Diagnosis*: D. IX-X, 21-23; A. III, 7; P. 17; Gr. 7+12-13; Ll. 96-103+14-16, Ltr. 18-19; Vertebrae 10+17. Mouth small; maxilla extending to posterior nostrils. Caudal fin nearly truncated when fully expanded. Color patterns varied with the state of growth; generally light bluish with 3 broad longitudinal black bands in young fishes of 84 mm SL, increasing to 7 at 102 mm SL; these bands broken into small black, brown or orange spots in old examples.

*Remarks*: The orangish spotted pattern of large adult is easily confused with that of *P. flavomaculatus*. However, the latter has fewer dorsal spines.

10. *Plectorhinchus nigrus* (Cuvier and Valenciennes, 1830)

Fig. 10

*Pristipoma nigrum* (Mertens), Cuvier and Valenciennes, 1830: 258 (type locality, Manila).

*Plectorhynchus crassispina*, Weber and de Beaufort, 1936: 410.

*Plectorhynchus nigrus*, Matsubara, 1955: 674; Chen, 1969: 397; Masuda *et al.*, 1980: 241; 1984: 172.

*Plectorhinchus nigrus*, Fowler, 1931: 233.

*Plectorhinchus niger*, Fowler, 1939: 148.

*Gaterin nigrus*, Smith, 1962: 490.

*Materials*: 1 specimen, 204.6 mm SL, August 1982, Tali, Ilan County.

*Diagnosis*: D. XIV, 16; A. III, 7; P. 17; Gr. 9+16; Ll. 51, Ltr. 10; Vertebrae 11+16. Head scales reaching rear end of posterior nostrils. Mouth small; narrow band of about 3 series of small conical teeth on each jaw; canines absent. Preopercle coarsely serrated at posterior edge. A deep notch between spinuous and soft dorsal fins. Soft dorsal, and caudal fins rounded. Body including fins (with the exception of pale pectoral fin) brown.

*Remarks*: The aged specimens of this species are easily confused with *P. pictus*. They

are distinguished from the latter by presence of a deep notch between spinuous and soft dorsal fins.

11. *Plectorhinchus cinctus* (Temminck and Schlegel, 1843)

Fig. 11

*Diagramma cinctum* Temminck and Schlegel, 1843: 61 (type locality, Japan).

*Plectorhinchus cinctus*, Matsubara, 1955: 674; Lindberg and Krasnyukova, 1969: 270; Chen, 1969: 397; Masuda *et al.*, 1980: 241; 1984: 172.

*Plectorhinchus cinctus*, Fowler, 1931: 241; 1939: 149.

**Materials:** 1 specimen, 157 mm SL, July 1982, Hengchun; 1 specimen, 169 mm SL, December 1982, Keelung.

**Diagnosis:** D. XII, 15-16; A. III, 7; P. 17; Gr. 8+14; Ll. 70-71, Ltr. 14; Vertebrae 10+17. Head scales reaching the rear end of posterior nostrils. Pale violet grey with 3 arched black bands and black spots on body side; a black band across the orbit. Ventral and anal fins black; pectoral brown, dorsal and caudal fins yellowish with black spots.

12. *Plectorhinchus flavomaculatus* (Ehrenberg, 1830)

Fig. 12

*Diagramma flavomaculatum* Ehrenberg in Cuvier and Valenciennes, 1830: 304 (type locality, Red Sea).

*Gaterin flavomaculatus*, Smith, 1962: 484.

*Plectorhinchus flavomaculatus*, Masuda *et al.*, 1980: 242; 1984: 172.

**Materials:** 2 specimens, 133 and 122 mm SL, April 1982 and September 1982, respectively, Wanli.

**Diagnosis:** D. XIII, 20; A. III, 7; P. 16; Gr. 14-17+18; Ll. 70-73, Ltr. 13; Vertebrae 11+16. Head scaled from anterior nostrils. Mouth small; maxilla reaching the anterior nostrils; narrow band of small conical teeth on jaws. Preopercle with serrated posterior margin. Caudal fin slightly concaved with rounded tips. Young with golden horizontal stripes forming reticulated pattern first and breaking up into numerous wavy lines and dots in adult. The color pattern shown in Fig. 12 is the transition

phase. Dorsal, caudal and pectoral fins brownish grey; ventral and anal fins brown tinged with greyish color.

13. *Plectorhinchus celebicus* Bleeker, 1873

Fig. 13

*Plectorhynchus celebicus* Bleeker, 1873: 285; Weber and de Beaufort, 1936: 420; Masuda *et al.*, 1980: 242; 1984: 172.

*Plectorhinchus faetela*, Fowler, 1931: 237.

**Materials:** 1 specimen, 225 mm SL, October 1982, Hengchun.

**Diagnosis:** D. XIII, 19; A. III, 7; P. 17; Gr. 13+20; Ll. 74, Ltr. 12; Vertebrae 11+16. Squamous area on head slightly extending beyond the anterior nostrils. Mouth small, maxilla reaching the posterior nostrils; jaws with narrow band of small conical teeth. Caudal fin slightly concaved behind, with rounded tips. Pale bluish grey with 8 bright yellowish longitudinal stripes, the number increased with age. All fins orangish.

**Remarks:** Juvenile *P. celebicus* is distinguishable from that of *P. flavomaculatus* by absence of reticulated pattern and spots.

14. *Plectorhinchus goldmanni* (Bleeker, 1853)

Fig. 14

*Diagramma goldmanni* Bleeker, 1853: 602 (type locality, Ternate)

*Plectorhynchus goldmanni*, Weber and de Beaufort, 1936: 418; Masuda *et al.*, 1980: 242; 1984: 172.

*Plectorhinchus goldmanni*, Fowler, 1931: 249.

**Materials:** 1 specimen, 437 mm SL, March 1982, Hengchun.

**Diagnosis:** D. XIII, 19; A. III, 7; P. 17; Gr. 9+19; Ll. 75, Ltr. 12; Vertebrae 11+16. Head scales reaching anterior nostrils. Mouth small, maxilla extending to posterior nostrils; each jaw with a narrow band of small conical teeth. Caudal fin almost truncated. Pale grey with 17 black oblique stripes on upper half of body, lower stripes breaking up into spots in large adult. The dark lateral stripes are less numerous and are more horizontally arranged in young. Lip and fins golden with black spots on dorsal, anal and caudal fins.



15. *Plectorhinchus albovittatus* (Ruppell, 1835)  
Fig. 15

*Diagramma albovittatum* Ruppell, 1835: 125 (type locality, Massaua); Klunzinger, 1884: 31.  
*Plectorhinchus albovittatus*, Fowler, 1931: 242.  
*Gaterin albovittatus*, Smith, 1962: 488.

**Materials:** 1 specimen, 153 mm SL, September 1984, Funkang.

**Diagnosis:** D. XIII, 17; A. III, 7; P. 17; Gr. 9+21; Ll. 72, Ltr. 13; Vertebrae 11+16. Yellowish brown with two broad horizontal black bands and two additional stripes running along dorsal base and ventral flank of body from pectoral base to ventral edge of caudal peduncle. Soft dorsal black with yellowish stripes medially; ventral and anal fins black; caudal fin with black bars.

**Remarks:** There is no great difference in color pattern between juvenile and adult. The two broad bands in juvenile almost remain unchange in adult. The juvenile pattern of this species is similar to that of *P. diagrammus*. However, it is distinguishable from the latter by having lower dorsal soft ray count of 17 against 19–20.

16. *Plectorhinchus diagrammus*  
(Linnaeus, 1758)

Fig. 16a–c

*Perca diagramma* Linnaeus, 1758: 293 (type locality not mentioned).

*Plectorhynchus diagrammus*, Matsubara, 1955: 675; Chen, 1969: 397; Masuda *et al.*, 1980: 242; 1984: 172.

*Plectorhinchus diagrammus*, Fowler, 1931: 244.

**Materials:** 1 specimen, 188 mm SL, November 1982, Hengchun; 2 specimens, 119–126.6 mm SL, November 1981, Hengchun; 1 specimen, 39 mm SL, June 1973, Hengchun.

**Diagnosis:** D. XIII, 19–20; A. III, 7; P. 16; Gr. 6+11–13; Ll. 80–84, Ltr. 13; Vertebrae 11+16. Scales on head extending forwardly to anterior nostrils. Maxilla reaching anterior edge of orbit. Caudal fin truncated. Color of adult pale grey with 6 black horizontal bands on head and 4 on body side while the juvenile (39 mm SL) with 3 broad horizontal

bands. Pectoral pale yellowish brown with a black spot at base; ventral fin white with black outer part; anal and caudal fins pale yellowish brown with rows of black spots; dorsal fin with a basal row of black spots which breaks up into two series at posterior half of soft dorsal; distal edge of dorsal fin black.

**Remarks:** *P. diagrammus* closely resembles the post juvenile phase of *P. lineatus* but is distinguishable by the absence of dark bands below pectoral fin. The earlier juvenile phase of this species also resembles that of *P. pictus*. However, difference in dorsal fin ray counts can help to distinguish them.

17. *Plectorhinchus chaetodonoides*  
Lacépède, 1800

Fig. 17a–b

*Plectorhinchus chaetodonoides* Lacépède, 1800: Pl. 13, fig. 2 (type locality unknown); Fowler, 1931: 257.

*Plectorhynchus chaetodonoides*, Weber and de Beaufort, 1936: 413.

*Plectorhinchus chaetodontoides*, Masuda *et al.*, 1980: 242; 1984: 172.

*Diagramma plectorhynchus* Cuvier and Valenciennes, 1830: 294.

**Materials:** 1 specimen, 97.4 mm SL, December 1973 and 1 specimen, 368.3 mm SL, April 1970, Hengchun.

**Diagnosis:** D. XII (rarely, XI), 18; A. III, 8; P. 17; Gr. 10+27; Ll. 54–57; Vertebrae 11+16. Soft dorsal much higher than  $\frac{1}{2}$  of its base (longest soft ray 58–73% of the length of soft dorsal base). Caudal fin slightly bilobed with round tips in young and sharp tips in adult. Colour marking of young is significantly different from the adult. Young with dark irregular bold spots and patches which always connected each other to form a reticulated pattern, leaving some pale blotches on body side; the dark patches break up into tiny spots when fully grown.

**Remarks:** Earlier juvenile phase of this species resembles that of *P. lineatus* and *P. pictus* while the older adult (368.3 mm SL) resembles

that of multi-spotted *P. picus* (=former *P. punctatissimum*, Burgess and Axelrod, 1976: 1878-1879). However, it is distinguishable by its higher soft dorsal.

18. *Plectorhynchus lineatus* (Linnaeus, 1758)

Fig. 18a-d

*Perca lineata* Linnaeus, 1758: 298 (type locality not known).

*Grammistes lineatus*, Bloch and Schneider, 1801: 186.

*Diagramma lineatum*, Cuvier and Valenciennes, 1830: 309; Day, 1878: 78.

*Plectorhynchus lineatus*, Weber and de Beaufort, 1936: 415; Masuda *et al.*, 1980: 242; 1984: 172.

*Plectorhynchus lineatus*, Fowler, 1931: 252.

*Gaterin orientalis*, Smith, 1962: 486.

*Diagramma orientale*, Cuvier and Valenciennes, 1830: 299.

**Materials:** 2 specimens, 52.7-68.5 mm SL, October 1972; 1 specimen, 52.5 mm SL, February; 1 specimen, 187 mm SL, November 1981; all from Hengchun.

**Diagnosis:** D. XII-XIII, 18-20; A. III, 7-8; Gr. 10+20-21; Ll. 90-93, Ltr. 13; Vertebrae 11+16. Head scales reaching anterior nostrils. Mouth small, maxilla extending slightly beyond the front edge of orbit; narrow band of small conical teeth on jaws. Color of adult pale grey with 6 or more numerous black horizontal bands on body side. All fins yellowish; base and distal edge of dorsal black; pectoral fin with a purplish red spot at base and with a large black spot in the middle; inner base of ventral fin with a purplish red spot; anal, caudal and posterior part of soft dorsal fins with a black lengthy spot or band. Juvenile with 3 large black blotches on upper half of body, connected by black longitudinal band to form contrasted pale blotches on body side. Black patches appear on snout tip and soft anal fin. Those broad black markings break up into 3 horizontal bands, the middle one bifurcated at both ends, number of bands increases with age.

**Remarks:** The earlier juvenile phase of this species is easily distinguishable from that

of *P. picus* in having black snout tip, dark soft anal and pectoral fins. As the fish grows larger, *P. lineatus* bears multihorizontal bands while *P. picus* becomes finely spotted on upper half of body though the fish may partly retain its juvenile color pattern in subadult. *P. lineatus* has long been confused with *P. picus* and *P. orientalis*. However, the adult phase of *P. orientalis* (Smith, 1962) is in fact *P. lineatus*. *Anthias orientalis* of Bloch (1793) and *Diagramma orientale* of Cuvier and Valenciennes (1830) are juvenile synonyms of *P. lineatus* (Linnaeus, 1758) and they are replaced by *P. picus* (= *Diagramma pica* Cuvier and Valenciennes, 1830). Adult phase of *P. lineatus* is also similar to that of *P. diagrammus*. However, the latter species has no stripes on ventral flank of body.

19. *Plectorhynchus picus* (Cuvier and Valenciennes, 1830)

Fig. 19a-d

*Diagramma pica* Cuvier and Valenciennes, 1830: 297 (type locality, Tahiti).

*Gaterin picus*, Smith, 1962: 482.

*Plectorhynchus picus*, Masuda *et al.*, 1984: 172.

*Plectorhynchus orientalis*, Chang and Lee, 1969: 121; Masuda *et al.*, 1980: 242.

*Gaterin punctatissimus*, Smith, 1962: 481.

**Materials:** 1 specimen, 170 mm SL, May 1968, Checheng; 1 specimen, 225 mm, SL, March 1982, Hengchun.

**Diagnosis:** D. XII-XIII, 19; A. III, 7; P. 17; Gr. 6-11+21-22; Ll. 100-110, Ltr. 16; Vertebrae 11+16. Head scales reaching anterior nostrils. Maxilla reaching anterior third of orbit; narrow band of small conical teeth on jaws. Caudal fin truncated when fully expanded. In a specimen of 170 mm SL, body pale grey with dark bold patches on head and bases of anterior spinous dorsal and posterior soft dorsal, connected ventrally by a horizontal band. These patches break up into numerous black spots reaching a standard length of 225 mm while the juvenile bold dark patches still retain.

**Remarks:** The dark bold juvenile patches

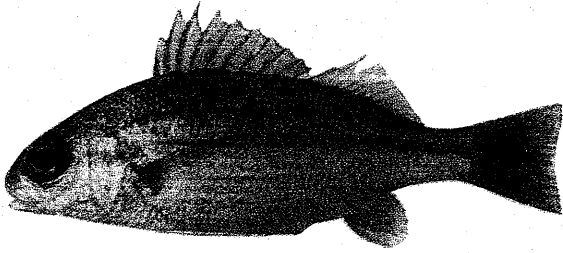


Fig. 1. *Pomadasys stridens*, 104 mm SL.

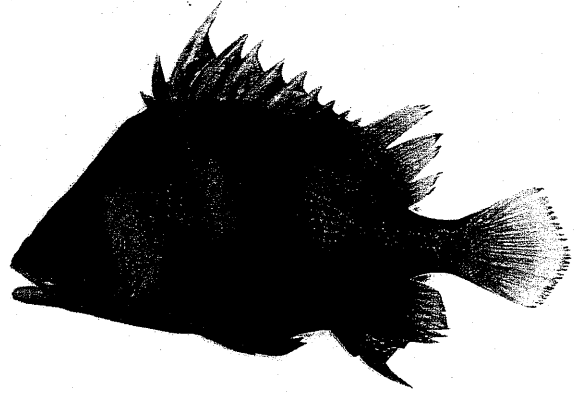


Fig. 5. *Hapalogenys mucronatus*, 130.5 mm SL.

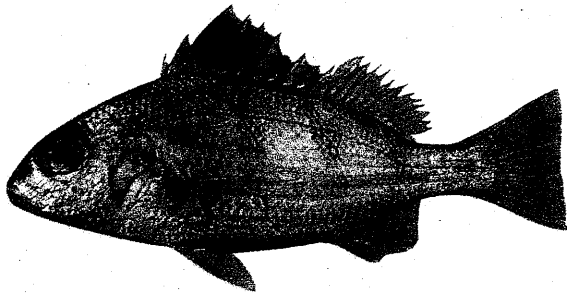


Fig. 2. *Pomadasys maculatus*, 89 mm SL.

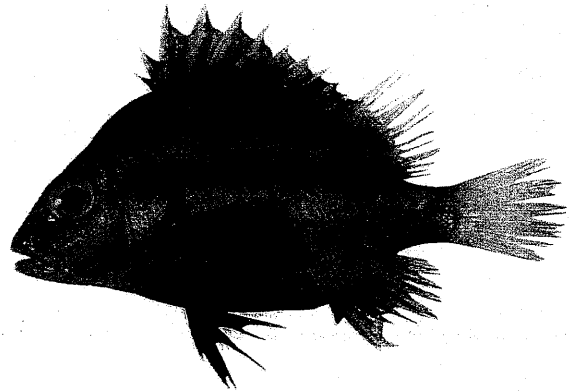


Fig. 6. *Hapalogenys kishinouyei*, 80 mm SL.

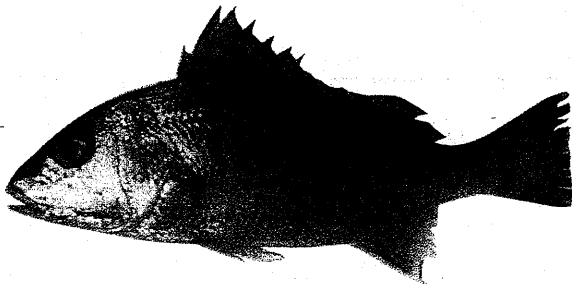


Fig. 3. *Pomadasys kaakan*, 179 mm SL.

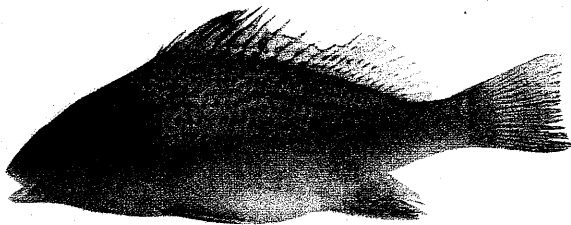


Fig. 4. *Pomadasys argenteus*, 147 mm SL.

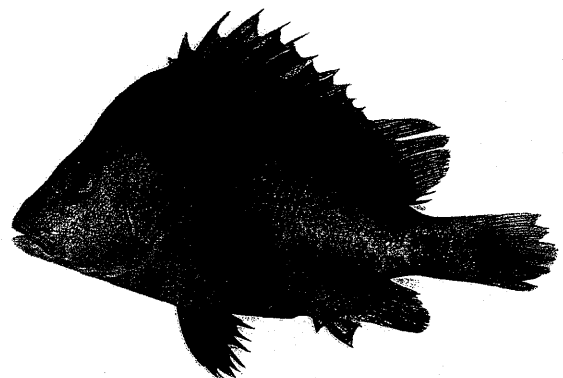


Fig. 7. *Hapalogenys nigripinnis*, 151 mm SL.

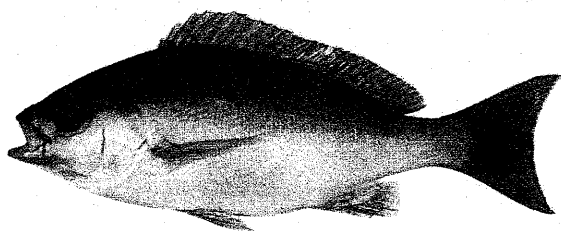


Fig. 8. *Parapristipoma trilineatum*, 274 mm SL.

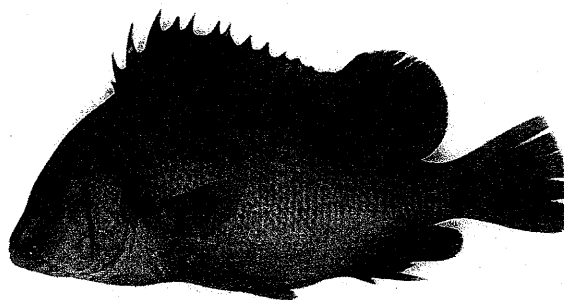


Fig. 10. *Plectorhinchus nigrus*, 202 mm SL.



Fig. 9a. *Plectorhinchus pictus*, 84 mm SL.

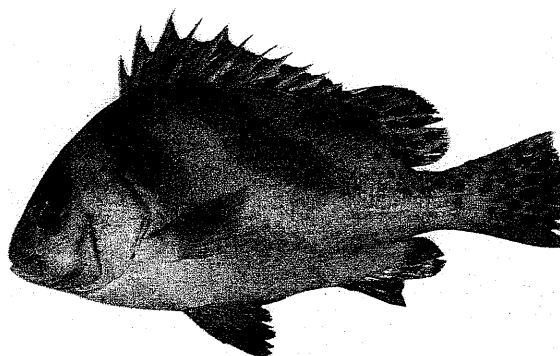


Fig. 11. *Plectorhinchus cinctus*, 169 mm SL.

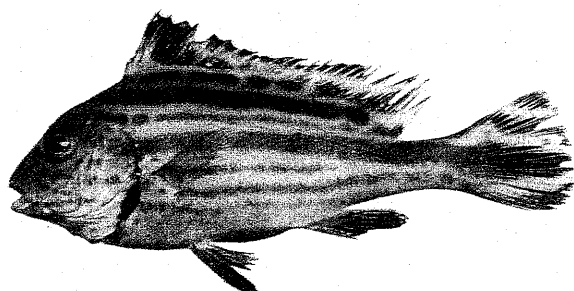


Fig. 9b. *Plectorhinchus pictus*, 102 mm SL.

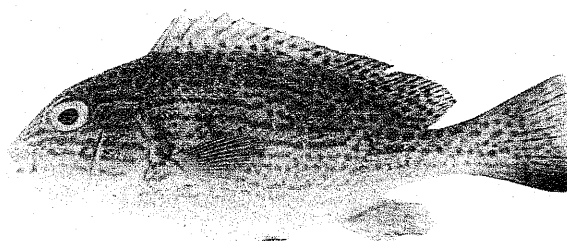


Fig. 12. *Plectorhinchus flavomaculatus*, 126 mm SL.

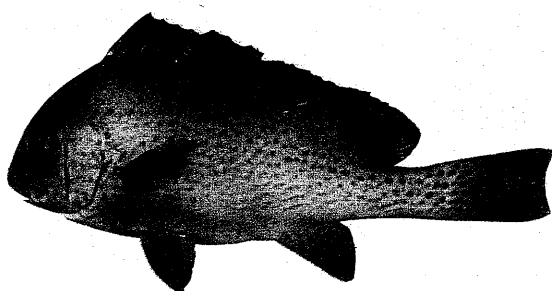


Fig. 9c. *Plectorhinchus pictus*, 260 mm SL.

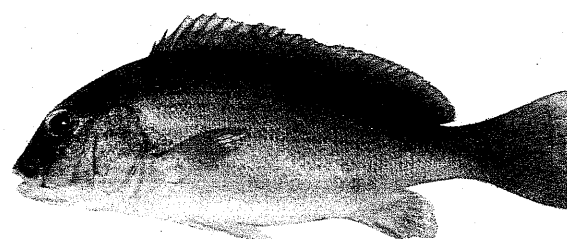


Fig. 13. *Plectorhinchus celebicus*, 235 mm SL.

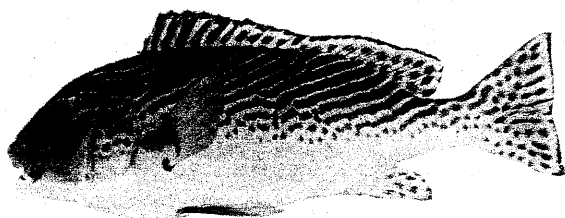


Fig. 14. *Plectorhinchus goldmanni*, 425 mm SL.

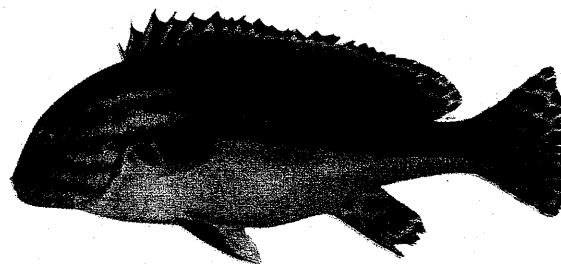


Fig. 16c. *Plectorhinchus diagrammus*, 188 mm SL.



Fig. 15. *Plectorhinchus albovittatus*, 153 mm SL.

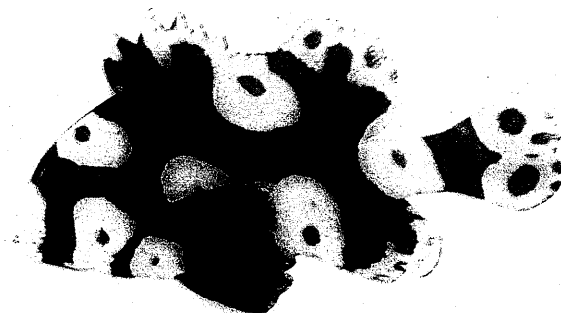


Fig. 17a. *Plectorhinchus chaetodonoides*, 97.4 mm SL.



Fig. 16a. *Plectorhinchus diagrammus*, 39 mm SL.

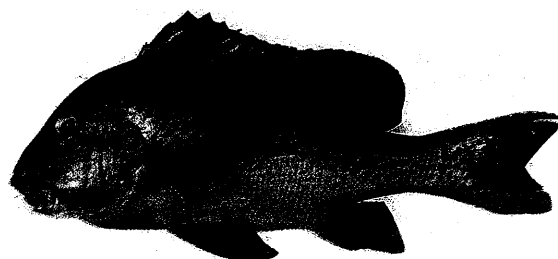


Fig. 17b. *Plectorhinchus chaetodonoides*, 368.3 mm SL.

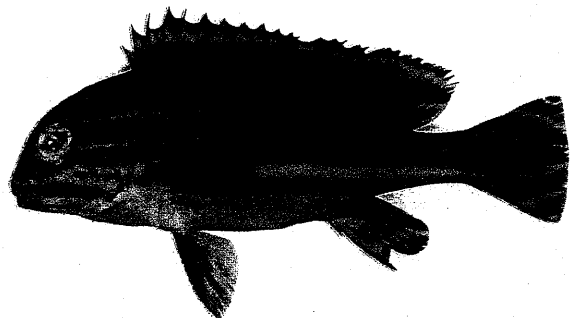


Fig. 16b. *Plectorhinchus diagrammus*, 123.6 mm SL.



Fig. 18a. *Plectorhinchus lineatus*, 52.5 mm SL.

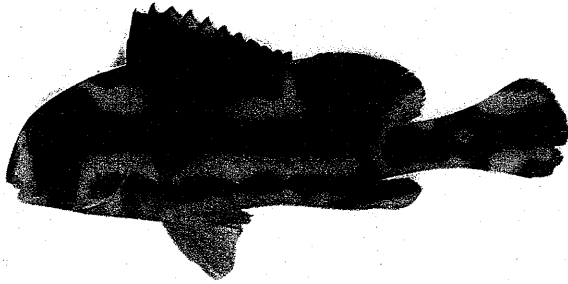


Fig. 18b. *Plectorhinchus lineatus*, 105 mm SL.

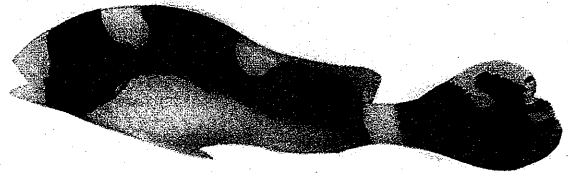


Fig. 19a. *Plectorhinchus picus*, 88 mm SL.

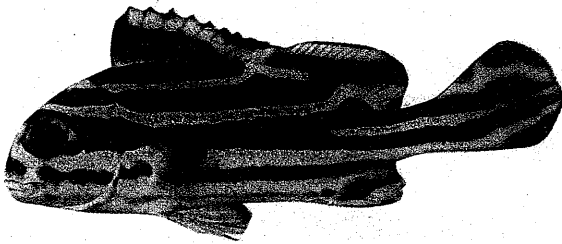


Fig. 18c. *Plectorhinchus lineatus*, 134 mm SL.

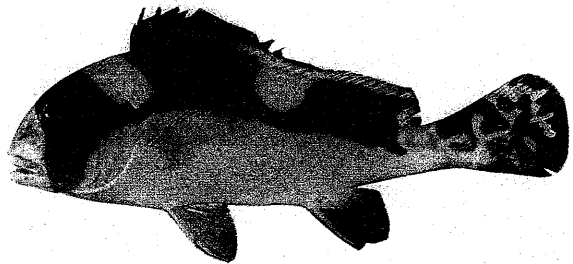


Fig. 19b. *Plectorhinchus picus*, 167 mm SL.

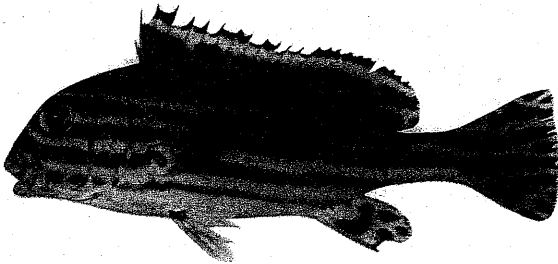


Fig. 18d. *Plectorhinchus lineatus*, 187 mm SL.

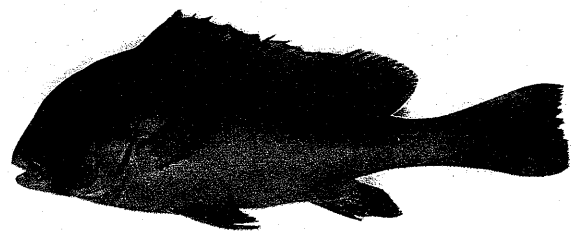


Fig. 19c. *Plectorhinchus picus*, 224 mm SL.

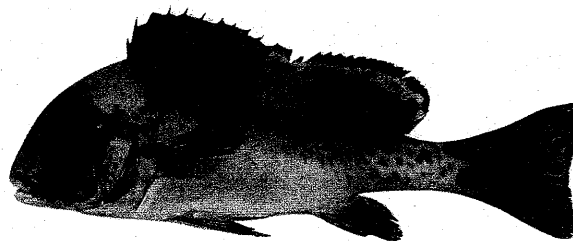


Fig. 19d. *Plectorhinchus picus*, 225 mm SL.

may disappear gradually and completely replaced by small spots in much large adult which was previously placed under the name *P. punctatissimus* by several authors (Smith, 1962; Burgess and Axelrod, 1976). The partly retaining juvenile pattern shown on p. 1878 in the book by Burgess and Axelrod (1976) is subadult of the present species.

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## REFERENCES

- BLEEKER, P. (1850) Bijdrage tot de kennis der Sciaenoidea van den Soenda-Molukschen Archipel, met beschrijving van 7 nieuwe soorten. *Verh. Bat. Gen.* 33(5): 1-31.
- BLOCH, M. E. (1790) *Naturges ausland fische*, vol. 4.
- BLOCH, M. E. and J. G. SCHNEIDER (1801) *Systema ichthyologiae iconibus ex illustratum*. Sanderiano Commisum, Berlin (Reprinted 1967). 584 pp.
- BURGESS, W. and H. R. AXELROD (1974) *Pacific marine fishes*. V. *Fishes of Taiwan and adjacent waters*. T. F. H., Neptune. pp. 1113-1381.
- BURGESS, W. and H. R. AXELROD (1975) *Pacific marine fishes*. VI. *Fishes of Melanesia*. T. F. H., Neptune. pp. 1387-1654.
- BURGESS, W. and H. R. AXELROD (1976) *Pacific marine fishes*. VII. *Fishes of the great barrier reef*. T. F. H., Neptune. pp. 1657-1925.
- CHANG, K. and S. C. LEE (1969) Additions to the notes on the fishes found in the waters around the coastal line of the southernmost part of Taiwan. *Ann. Rept. Sci., Taiwan Mus.* 12: 119-129.
- CHEN, J. T. F. (1969) *A synopsis of the vertebrates of Taiwan*. I. Commercial Books Co., Taipei. 548 pp.
- CHU, K. Y. (1957) A list of fishes from Pescadore Islands. *Rept. Inst. Fish. Biol., Minst. Econ. Aff. and Natl. Taiwan Univ.* 1(2): 14-23.
- CUVIER, M. B. and M. VALENCIENNES (1830) *Histoire naturelle des poissons* (reprinted in 1969, A. Asher & Co.). 5. Paris. 497 pp.
- DAY, F. (1878) *The fishes of India: being a natural history of the fishes known to inhabit the seas and freshwater of India, Burma and Ceylon*. Today and Tommow's Book Agency, New Delhi. 2 vols (reprinted in 1962). 778 pp.
- FOWLER, H. W. (1931) The fishes of the families Pseudochromidae, Lobotidae, Pempheridae, Priacanthidae, Lutjanidae, Pomadasysidae and Teraponidae, collected by the United States Bureau of Fisheries Steamer "Albatross" chiefly in Philippine Seas and adjacent waters. *U. S. Natl. Mus. Bull.* 100, 11: 1-388.
- FOWLER, H. W. (1939) A synopsis of the fishes of China VII (continued). *Hong Kong Nat.* 9(3): 141-164.
- GUNTHER, A. (1859) *Catalogue of the fishes in the British Museum (Natural History)*. Vol. 1. Taylor and Francis, London (reprinted in 1964). 524 pp.
- JORDAN, D. S. and B. W. EVERMANN (1902) Notes on a collection of fishes from the island of Formosa. *Proc. U. S. Nat. Mus.* 25(1289): 315-368.
- JORDAN, D. S. and R. E. RICHARDSON (1909) A catalog of the fishes of the island of Formosa, or Taiwan, based on the collection of Dr. Hans Sauter. *Mem. Carneg. Mus.* 4(4): 159-204.
- KLUNZINGER, C. B. (1884) *Die fische des Rothen Meers*. I. *Theil acanthopteri veri owen*. E. Schweizerhart'sche Verlagshandlung (K. Koch), Stuttgart. 133 pp.
- KURONUMA, K. and Y. ABE (1972) *Fishes of Kuwait*. Kuwait Inst. Sci. Res., Kuwait. 123 pp.
- LEE, S. C. (1980) The family Priacanthidae of Taiwan. *Quart. J. Taiwan Mus.* 33(1 & 2): 43-54.
- LIANG, Y. S. (1951) A check-list of the fish specimens in the Taiwan Fisheries Research Institute. *Rept. Lab. Biol., Taiwan Fish. Res. Inst.* 3: 1-35.
- LINDBERG, G. U. and Z. V. KRASYUKOVA (1969) *Fishes of the sea of Japan and the areas of the sea of Okhotsk and the Yellow sea*. Part 3. Acad. Sci. USSR (translated from Russian in 1971, IPST). 498 pp.
- LINNAEUS, C. (1758) *Syst. Nat.* (ed. 10). Vol. 1. Holmiae.
- MASUDA, H., C. ARAGA and T. YOSHINO (1980) *Coastal fishes of southern Japan* (revised edition). Tokai Univ. Press, Tokyo. 382 pp.

- MASUDA, H., K. AMAOKA, C. ARAGA, T. UYENO and T. YOSHINO (1984) *The fishes of the Japanese Archipelago*. Tokai University Press, Tokyo. 437 pp.
- MATSUBARA, K. (1955) *Fish morphology and hierarchy*. Part 1. Ishizaki-shoten, Tokyo. 789 pp.
- NELSON, J.S. (1984) *Fishes of the world* (2nd edition). John Wiley and Sons, New York, Chichester, Brisbane, Toronto and Singapore. 521 pp.
- RICHARDSON, J. (1846) Report on the ichthyology of the seas of China and Japan. *Rept. Brit. Assoc. Adv. Sci.* **1845**: 187-320.
- SHEN, S. C. and W. W. LIN (1984) Some new records of fishes from Taiwan, with descriptions of three new species, *Spec. Rept. Taiwan Mus.* **4**: 1-25.
- SMITH, J. L. B. (1962) Fishes of the family Gaterinidae of the western Indian Ocean and the Red Sea, with a resume of all known Indo-Pacific species. *Ichthyol. Bull. Rhodes Univ.* **25**: 469-502.
- TEMMINCK, C. and H. SCHLEGEL (1842-1850) Pisces. In *Siebold's fauna Japonica*. Leiden. 323 pp.
- WEBER, M. and L. F. de BEAUFORT (1936) *The fishes of the Indo-Australian Archipelago*. Vol. 7. E. J. Brill, Leiden. 607 pp.

## 臺灣之石鱸科魚類

李 信 徹

本文報導十九種棲息於臺灣環海之石鱸科魚類，其中 *Plectorhinchus flavomaculatus*, *P. celebicus*, *P. goldmanni*, *P. chaetodonoides*, *P. albovittatus* 及 *P. lineatus* 等六種為臺灣新記錄種。另有一種 *Pomadasys furcatus* 雖曾列記於陳著 (1969) 臺灣脊椎動物誌，然因一直未獲標本無從查證，故暫不列入本報告中。所有研究過之魚種，均經分別敘述種別特徵、異名錄，並附加分類檢索表及照片以利查考。