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Plectranthias sheni, a New Species and *P. kamii*, a New Record of Anthiine Fishes (Perciformes: Serranidae) from Taiwan

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Jeng-Ping Chen and Kwang-Tsao Shao (2002) *Plectranthias sheni*, a new species and *P. kamii*, a new record of anthiine fishes (Perciformes: Serranidae) from Taiwan. *Zoological Studies* **41**(1): 63-68. *Plectranthias sheni* is described as a new species of anthiine from 4 specimens obtained from fish markets in Taiwan. They were taken by long-line at 2 localities, southwestern and northeastern Taiwan. This species is characterized by having 32-33 lateral line scales, $4^{1}/_{2}$ scale rows above the lateral line, 5 oblique rows of scales on the cheek, the 3rd dorsal-fin spine the longest, and 2 longitudinal rows of blackish blotches on the body. This species has often been misidentified as *P. kamii* or *P. anthioides* in Taiwan. It can be separated from *P. kamii* by having fewer lateral line scales (32-33 vs. 36-38), fewer oblique scale rows on the cheek (5 vs. 6), fewer scale rows below the lateral line to the origin of the anal fin (12 vs. 15-18), and also by color pattern. It differs from *P. anthioides* in the shape of the caudal fin (emarginate vs. round), pelvic fin length (not reaching vs. reaching anus), and number of branched rays (13 vs. 15) and unbranched rays of the pectoral fin (1 vs. 3). A specimen of *P. kamii* was collected recently by the authors; it represents a new record for Taiwan. In the present paper, we describe this new species and document the new record. Color photos are provided for the new species and *P. kamii*, and a key to all 11 species of *Plectranthias* in Taiwan is presented. http://www.sinica.edu.tw/zool/zoolstud/41.1/63.pdf

Key words: New species, Anthiine fishes, *Plectranthias sheni*.

The genus *Plectranthias*, subfamily Anthiinae of the family Serranidae, is characterized as follows: dorsal fin rays X,13-20; anal fin rays III,6-8; pectoral rays 12-18; lateral line complete or incomplete; vertebrae 26; interorbital space narrow, flat to slightly concave; mouth large; vomer with a chevron-shaped patch tooth; palatines with teeth; preopercle with or without 1-3 antrorse spines; and body depth 2.3-3.4, head length 2.0-2.5 both in standard length (SL) (Randall 1980). The genera *Selenanthias* and *Ellerkeldia* are similar to *Plectranthias*. *Selenanthias* differs in having a broad flat interorbital space, more gill rakers (28-31), a triangular patch of teeth on the vomer (Katayama 1960), and a pair of canines directed to front and side at the front of the lower jaw (Randall 1995). *Ellerkeldia* species have 27 vertebrae (vs. 26 vertebrae in *Plectranthias* fishes) (Heemstra and Anderson 1983). The phylogeny of these genera are still not clear (Randall 1996).

Because most of these species are of small size (hence difficult to catch by hook and line), live in rugged-bottom habitat (hence not readily taken by trawling), occur in waters beyond scuba-diving depths, and have little commercial value, they are not well represented in museum collections. Randall (1980) revised this genus and noted that 18 of 30 valid species are known from only 1 or 2 localities, and 8 species had only a single specimen.

After Randall's (1980) revision, 14 new species of *Plectranthias* were described (Randall 1996). In that paper, Randall followed Lee (1990) who treated *P. chungchowensis* Shen and Lin, 1984 as a junior synonym of *P. whiteheadi*. Rodrigo-Rojas and Pequeno (1998) described a

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new species of *P. lamillai* as a new species from Chile, bringing the total number of valid species of this genus to 44.

In Taiwan, nine species of *Plectranthias* were reported by Lee (1990) and Shen et al. (1993): *P. anthioides*, *P. helenae*, *P. kelloggi*, *P. japonicus*, *P. longimanus*, *P. nanus*, *P. wheeleri*, *P. whiteheadi*, and *P. yamakawai*. Lin et al. (1994) recorded *P. randalli* from southwestern Taiwan. Randall (1996) suggested that Lee reexamine the 3 specimens of *P. anthioides* that Lee (1990) mentioned as intermediate to *anthioides* and *kamii*, and Lee agreed that these fish are *P. kamii*. In this study, we found that these specimens belong to a new species described below. On 21 Mar. 2000, the 1st author collected a specimen of *P. kamii*. It has $5^1/_2$ scales above the lateral line, 36 lateral-line scales, 6 oblique scale rows on the cheek, and a unique color pattern, and hence is consistent with those characters of *P. kamii* in Randall (1980) and the figure in Yoshino (1972) who misidentified it as *P. anthioides*. We also examined the specimens that were identified as *P. kamii* and listed in Shen and Lin (1984) (NTUM 03723 and NTUM 05657) and Lee (1990) (ASIZP 056173). We discovered that these 3 specimens are also the undescribed species. One specimen, NTUM 06425, listed in Shen (1988) as *P. kamii* and corrected to *P. anthioides* by Lee is also this undescribed species.

We herein describe this new species bringing the total number of species of this genus known in the world to 45, among which 11 species are found in Taiwan.

MATERIALS AND METHODS

The specimens of *P. sheni* were collected by both Dr. Lee and Dr. Shen from fish markets in Tashi, Ilan County, northeastern Taiwan and in Kaohsiung, southwestern Taiwan, respectively. They were caught by fishermen using a long-line method. Type specimens are deposited at the Museum of the Institute of Zoology, Academia Sinica (ASIZP) and the Museum of the Department of Zoology, National Taiwan University (NTUM). The specimen of *P. kamii* is deposited at the Institute of Zoology, AS (ASIZP).

Methods of counting and measuring species follow those of Randall (1980). Four specimens of *P. sheni* and 1 specimen of *P. kamii* were measured and tabulated as percentages of standard length (SL) (Table 1). In the description of the species below, data on the holotype are followed by that for paratypes in parentheses, and measurement data are rounded to the nearest 0.1 mm.

Key to the species of *Plectranthias* in Taiwan (modified from Randall 1996)

1a. No pectoral-fin rays branched; lateral line incomplete 2
1b. Some pectoral-fin rays branched; lateral line complete .. 3
2a. Pectoral-fin rays 14-16, lateral-line scales 16-22, and no serrae on interopercle; a vertical row of dark blotches forming a line on caudal peduncle ..... *P. nanus*
2b. Pectoral-fin rays 12-13, lateral-line scales 12-15, and 1-8 coarse serrae on interopercle; dark blotches on caudal peduncle but not forming a line ..... *P. longimanus*
3a. Head, including maxilla and chin, almost completely scaled 4
3b. Head not completely scaled (most of snout, chin, and often the maxilla scaleless) 5
4a. Caudal fin rounded to truncate with rounded corners; no prolonged dorsal-fin rays; no large canine teeth on lower jaw; no red bars on body or red spot on caudal fin .... *P. japonicus*
4b. Caudal fin emarginate; 2nd dorsal-fin soft ray prolonged as a filament; a pair of stout canine teeth at front of lower jaw; red bars on body and a red spot on upper base of caudal fin ..... *P. kelloggi*
5a. Lateral-line scales 37-39; no antrorse spine on ventral margin of preopercle; body moderately deep, depth 2.3 in SL ..... *P. randalli*
5b. Lateral-line scales 29-36 (except *kamii* with 36-37 scales); 2 antrorse spines on ventral margin of preopercle; body not deep, depth 2.4-2.9 in SL 6
6a. Lateral-line scales 28-30 7
6b. Lateral-line scales 31-35 (*whiteheadi* with 30-35) 8
7a. Dorsal-fin rays 16; 13 pectoral rays; whitish with large irregular orange-red blotches suffused with yellow .... *P. wheeleri*
7b. Dorsal-fin rays 15; 14 pectoral rays; whitish with irregular orange-red and yellow bars and spots which variously interconnect dorsally on body ..... *P. helenae*
8a. Third dorsal-fin spine longest 9
8b. Fourth or 5th dorsal-fin spine longest 10
9a. Lateral-line scales 32-33; check scale rows 5 ..... *P. sheni*
9b. Lateral-line scales 35-37; check scale rows 6 ..... *P. kamii*
10a. Body moderately deep, depth 2.4-2.7 in SL; pectoral-fin rays 14; numerous small dark brown blotches dorsally on head and body ..... *P. yamakawai*
10b. Body not deep, depth 2.85-3.0 in SL; pectoral-fin rays 15; without small dark brown blotches on head and body, body with 2 rows of dark red blotches above and 1 below lateral line ..... *P. whiteheadi*

Plectranthias sheni sp. nov

(Figs. 1, 2; Table 1)

Plectranthias kamii Shen and Lin (non Randall), 1984: 9, fig. 4.

Plectranthias anthioides Lee (non Gunther), 1990: 13, fig. 13.

Holotype: NTUM 03723, ♀, 106.7 mm SL, Chungchou fish market, Kaohsiung, southwestern

Taiwan, trawled by fishermen, 26 Feb. 1984.

Paratypes: NTUM 08690, ♂, 104.2 mm SL, collected with holotype; NTUM 07006, 115.1 mm SL, Tashi fish market, Ilan Co., northeastern Taiwan, 20 May 1986. NTUM 06425, 84.1 mm SL, Chungchou fish market, Kaohsiung, 17 Feb. 1986. ASIZP 056173, ♂, 101.2 mm SL, Chungchou fish market, Kaohsiung, 22 May 1987.

Diagnosis: Dorsal-fin rays X,17-18, 3rd spine longest 5.4-6.3 in SL; anal-fin ray III,7; pectoral-fin rays 13, uppermost unbranched. Lateral-line scales 32-33; oblique rows of scales on cheek 5; scales dorsally on head extending anterior to posterior nostril; no scales on maxilla or ventrally on head. Posterior margin of preopercle serrate, ventral margin with 2 antrorse spines; subopercle and interopercle smooth; gill rakers 17-18, 7-9 undeveloped. Body depth 2.3-2.8 in SL; caudal fin slightly emarginated with some prolonged filaments.

Description: Dorsal-fin rays X,18(17); pectoral-fin ray 13, uppermost unbranched; branched caudal rays 8+7, upper and lower segmented simple caudal rays 3; lateral-line scales 32 (32-33); scales above lateral line to origin of dorsal fin 4½; scales below lateral line to origin of anal fin 12; oblique rows of scales on check 5; gill rakers 17 (17-18), (2+8-9) developed.

Body moderately deep 2.5 (2.3-2.8); width 5.2 (4.9-6.2); head 2.3 (2.2-2.3) all in SL. Snout length 3.9 (3.3-3.9); orbital diameter 3.8 (4.0); interorbital space slightly concave; the least bony width 9.9 (9.3-10.9); least caudal peduncle depth 3.8 (3.4-3.9); caudal peduncle length 2.4 (2.3-2.5) all in head length (HL).

Mouth terminal and large, the maxilla reaching posterior to a vertical between center of pupil and rear edge of pupil, upper jaw length 2.2 (2.0-2.2); supramaxilla present. Opercle with 3 flat spines, middle one largest and most posterior, slightly closer to lower than upper spine; opercular flap pointed; posterior edge of preopercle serrated, ventral margin with 2 antrorse spines; subopercle and interopercle smooth; free edge of suprascapular bone smooth.

Lateral line complete, broadly arched over pectoral fin, its highest point below base of 7th dorsal spine, running parallel to dorsal body contour below dorsal fin, curving to near mid-lateral axis of body on caudal peduncle. Scales ctenoid; predorsal part of head scaled anteriorly to a vertical above posterior nostril; no scales on snout, maxilla, suborbital, or ventrally on head; small scales on base of all fins, more than 1/2 distance to margin of soft portion and anal fins, and more than 3/4 on caudal fin.

Origin of dorsal fin above the 3rd lateral-line scale, predorsal length 1.2 (1.0-1.1); 1st dorsal spine short 8.5 (7.1-8.5), slightly more than 1/2 length of 2nd dorsal spine; 2nd dorsal spine, 4.6 (4.3-4.8); 3rd spine longest, 2.5 (2.4-2.8); 10th dorsal spine, 6.1 (5.2-7.1); longest dorsal ray, 2.5 (2.4-2.5) all in HL. Origin of anal fin beneath 2nd dorsal ray; 1st anal spine 5.4 (4.9-6.2); 2nd anal spine longest, 2.6 (2.5-2.7); 3rd anal spine 3.2 (2.9-3.4); longest anal ray (2nd ray) 1.8 (1.8-1.9) all in HL. Pectoral fin pointed, reaching vertical through base of 3rd dorsal soft ray and base of 1st anal spine, length 1.3 (1.3-1.5) in HL. Origin of pelvic fin on a vertical through base of 1st dorsal fin; pelvic fins not reaching anus, their length 2.0 (1.9-2.1) in HL.

Color when fresh (Fig. 1): Upper part of head yellow orange, dorsally middle parts with golden

Fig. 1. Paratype of *Plectranthias sheni*, 104.2 mm SL NTUM 08690.

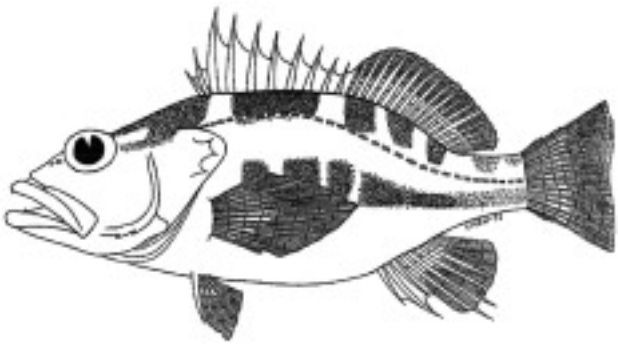

Fig. 2. Holotype of *P. sheni*, 106.7 mm SL NTUM 03723, after preservation in alcohol.

stripes; ventral part of head pale. Body yellowish pink with 2 series of golden blotches along body. First series of blotches with 5 different-sized blotches along back, not extending below lateral line, and 2 others on upper edge of caudal peduncle. The 1st one on nape joins middle predorsal stripes to 2nd dorsal spine, the lowest part extending forward to eye. The 2nd one beneath base of 4th to 9th spines, 1 of the type specimens with triangular pale area on middle part of this blotch; 3 to 5 blotches below soft rays and smaller than the upper two. Second row of golden-orange blotches with 4 blotches along middle part of body; 1st blotch beginning above pectoral fin base; 4th blotch largest, beneath a vertical of 6th dorsal ray to caudal fin base.

All fins yellowish, except pelvic fins with transparent membranes. First dorsal fin yellow orange, with darker orange area on base of 1st to 3rd and 8th to 10th dorsal membranes. Pectoral fin with a dark yellow spot at base. Membranes between 2nd anal spine and 1st rays also with orange-yel-

Table 1. Morphometric data and meristic counts for *Plectranthias sheni* and *P. kamii.* Measurements are presented as percentages of standard length. Standard length is given in millimeters

	Plectranthias sheni				*P. kamii*
	NTUM	NTUM	NTUM	ASIZP	ASIZP
	03723	08690	07006	056173	060514
Meristic counts					
Dorsal fin rays	X+18	X+17	X+17	X+17	X+18
Pectoral fin rays	13	13	13	13	13
Anal fin rays	III+7	III+7	III+7	III+7	III+7
Lateral scale rows	32	32	33	33	38
Scale rows on cheek	5	5	5	--	6
Morphometric measurements					
Standard length	106.7	104.2	115.1	101.2	152.5
Body depth	39.4	35.8	42.8	35.9	53.0
Body width	19.1	18.0	20.6	16.1	25.4
Head length	43.2	43.0	46.2	42.9	61.8
Snout length	11.2	10.9	13.1	11.2	14.1
Orbit diameter	11.5	10.9	11.0	10.6	15.6
Interorbital width	4.4	4.0	4.6	4.0	6.4
Upper jaw length	19.5	19.9	22.1	20.1	28.1
Caudal peduncle depth	11.5	11.2	12.9	11.4	15.7
Caudal peduncle length	18.2	17.0	19.1	17.7	24.9
Predorsal length	35.6	38.1	42.5	38.9	50.8
Preanal length	70.7	68.9	75.4	69.0	101.5
Prepelvic length	36.0	36.6	38.7	38.0	46.3
Dorsal fin base	53.8	49.1	57.1	47.9	73.7
First dorsal spine	5.1	5.1	6.1	5.6	7.8
Second dorsal spine	9.3	10.1	9.7	9.0	12.6
Longest dorsal spine	17.6	17.8	18.2	15.7	26.8
Tenth dorsal spine	7.0	8.4	7.1	6.1	9.2
Longest dorsal ray	17.4	17.9	17.8	17.2	23.9
Anal fin base	14.6	14.8	16.4	14.6	20.2
First anal spine	8.0	7.3	8.9	7.0	9.0
Second anal spine	16.6	15.9	17.7	16.4	21.7
Third anal spine	13.4	12.7	13.3	14.9	19.1
Longest anal ray	23.4	22.8	23.3	24.1	30.1
Caudal fin length	24.1	23.7	23.9	23.0	35.1
Pectoral fin length	33.5	34.1	33.9	29.1	48.4
Pelvic spine length	14.8	14.1	15.2	12.8	17.7
Pelvic fin length	21.2	22.1	22.4	20.8	30.7

low blotches. Caudal fin uniform yellow.

Color after preservation (Fig. 2): Body pale whitish, blotches on nape and 2 rows of blotches on body distinctly brown. All fins transparent.

Etymology: We have the pleasure of naming this species in honor of Prof. Shih-Chieh Shen who retired from the Department of Zoology in National Taiwan Univ. in 1999. He obtained the holotype and most paratype specimens and deposited them in the university (NTUM).

Distribution: *Plectranthias sheni* was collected from only 2 localities in Taiwan.

Remarks: *Plectranthias sheni* is closely related to *P. kamii* and *P. anthioides*. *P. sheni* differs from *P. kamii* by having fewer oblique scales rows on the cheek (5 vs. 6), fewer lateral line scales (32-33, mostly 32 vs. 33-38, mostly 36-38), fewer scales below lateral line to origin of anal fin (12 vs. 15-18), length of 2nd dorsal spine dividing length of 3rd dorsal spine (more than 0.53 vs. less than 0.5), and by color pattern. Both of these species have 2 series of darker blotches on the body. All blotches of the 1st series do not extend below the lateral line in *P. sheni*, but the 2nd-4th blotches in *P. kamii* extend below the lateral line (Fig. 2). The 2nd series of blotches also differ in number and shape of the blotches. *P. anthioides* is described as having indistinct blackish spots on the back and a blackish band along the median line of the nape. *P. anthioides* has a round caudal fin (emarginated in *P. sheni*), pelvic fin reaching anus and 1.75 in HL (pelvic fin not reaching anus, and 2.8-3.4 in HL in *P. sheni*).

P. jothyi Randall, 1966 and *P. sheni* are similar to each other in the number of lateral-line scales and in having the 3rd spine longest in the dorsal fin. *P. jothyi* differs by having 7 oblique scale rows on the cheek (5 in *sheni*); 14-15 pectoral-fin rays (13 in *sheni*); and predorsal scales extending forward to middle of interorbital (extending forward to posterior nostril in *sheni*). The color pattern of *P. jothyi* also greatly differs with the blotches on the body not forming 2 series as in *P. sheni*. *P. yamakawai* and *P. whiteheadi* also have 30-33 lateral line scales; *P. sheni* differs from these 2 species in having the 3rd dorsal-fin spine as the longest, but in the other 2 species the 4th spine is the longest.

***Plectranthias kamii* Randall, 1980**

(Figs. 3, 4)

Plectranthias kamii Randall, 1980: 141-145.

Material: ASIZP 060514. 152.5 mm SL. 21 Mar. 2000. Hobihu, collected by JP Chen.

Description: Dorsal-fin rays X,18; anal-fin rays III,7; pectoral-fin rays 13, uppermost unbranched; scales above lateral line to origin of dorsal fin 5½; scales below lateral line to origin of anal fin 18; oblique rows of scales on cheek 6; gill rakers 5+12 (1+9 elevated); supraneural bones 3; lateral-line scales 38.

Body depth 1.9, width 3.9, and head 1.6 in SL. Maxilla reaching posterior to a vertical at rear edge of pupil, upper jaw length 1.5 in HL. Orbital diameter 2.8, snout length 3.1, and interorbital width 6.7 in HL. Predorsal scales extending to anterior 1/3 of interorbital space.

Third spine longest, 3.7 in SL, more than twice length of 2nd (7.9), with cirrus from upper end of interspinous membrane. Second anal spine longest, 4.6 in SL. Pectoral fin 2.1 in SL, reaching a line through 6th dorsal soft ray and 1st anal spine. Pelvic fin not reaching anus, 3.3 in SL.

Color when fresh (Fig. 3): Body with 2 series

Fig. 3. *P. kamii*, 152.5 mm SL ASIZP 060514.

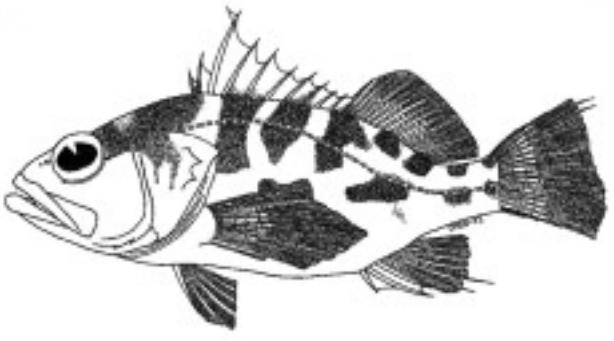

Fig. 4. *P. kamii*, 152.5 mm SL ASIZP 060514, after preservation in alcohol.

of darker blotches. First series on nape and upper 1/2 of body with 8 blotches. Second series with 4 blotches, the latter 2 fused with upper series at caudal peduncle. All fins reddish or reddish yellow and without dark spot. Color in preservative (Fig. 4): Body pale yellow with blackish blotches; all fins pale.

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臺灣產一新種花鱸：沈氏花鱸 (*Plectranthias sheni*) (鱸目：鮨科) 和新記錄種：黃吻棘花鱸 (*P. kamii*)

陳正平　邵廣昭

本文報導一新種的花鱸屬 (genus *Plectranthias*) 魚類，命名為沈氏花鱸 (*P. sheni*). 其標本分別於臺灣的大溪 (東北部) 和中洲 (西南部) 的漁市場採獲。此種魚的主要特徵有：側線鱗列數32-33，側線上鱗列數4 $^1/_2$，頰部鱗5列，第三背鰭棘最長，和體側具二列斑點帶。本種魚在臺灣常被誤鑑為黃吻棘花鱸 (*P. kamii*) 或擬棘花鱸 (*P. anthioides*)，本種魚與黃吻棘花鱸的區別在具有較少的側線鱗列數 (32-33 比 36-38)，頰部鱗列 (5 比 6)、側線至臀鰭鱗列 (12比15-18) 和體色。擬棘花鱸有圓形尾 (沈氏花鱸為中凹型)，較長的腹鰭且達肛門 (沈氏花鱸未達肛門)，及15根胸鰭鰭條 (沈氏花鱸為13條) 和有3根未分支鰭條 (沈氏花鱸有1根)。此外筆者最近亦採獲一尾真正的黃吻棘花鱸，故黃吻棘花鱸應為臺灣的新記錄種。本文除描述臺灣產的此一新種及一新記錄種魚類外，文中亦附有它們的彩色標本照及臺灣產此屬所有11種魚類的檢索表。

關鍵詞：新種，花鱸，沈氏花鱸。

中央研究院動物研究所