

## *Pristigenys multifasciata*, a New Priacanthid Fish from the Ryūkyū Islands

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**Abstract** A new species of the priacanthid fish, *Pristigenys multifasciata*, is described based upon 8 specimens from the Ryūkyū Islands. This is the second species of *Pristigenys* from the western Pacific, and characterized by 10 or more vertical dark red stripes and strong ctenoid scales.

During deep-sea exploratory cruises in 1967, scientists aboard the research submarine Yomiuri-Go took photographs of an unusual priacanthid fish referable to the genus *Pristigenys* at depth of about 140 m off Miyako Island, one of the Ryūkyū Islands. But no specimen was captured at that time. Afterward the first author had the opportunity to visit the Ryūkyū Islands several times during 1967 to 1971, and was able to collect some specimens of the priacanthid fish of *Pristigenys nipponia* (Cuvier) and the other species resembling that seen from Yomiuri-Go. These were taken by fishermen with hooks from banks around the Ryūkyū Islands at the depths of 100 to 200 m. One of the species that is different from *P. nipponia*, proves to be new as described below.

Counts and measurements were made in accordance with Caldwell (1962 a, b). The scales observed were removed from the right side of the fish midway between the lateral line and anal spines.

*Pristigenys multifasciata* sp. nov.

(Japanese name: okinawa-kurumadai)

*Pristigenys* sp. Gushiken, 1972: 24, fig. 104 & p. 100 (Japanese name, okinawa-kurumadai).

**Holotype.** FAKU (Department of Fisheries, Faculty of Agriculture, Kyoto University) 44569, 204.2 mm in standard length, May 23, 1969, taken from Hōzan-Sone (one of the banks, depth ca. 200 m) northeast of Miyako I.

**Paratypes.** Males: FAKU 44571 and 44572, 200.1 and 210.2 mm in standard length, September, 1969, off Okinawa I.; FAKU 44575, 189.0

mm in standard length, August 23, 1971, off Okinawa I. Females: FAKU 44570, 223.2 mm in standard length, May 30, 1969, same locality as holotype; FAKU 44573, 202.2 mm in standard length, December 4, 1970, off Okinawa I.; FAKU 44574 and 44576, 199.1 and 209.6 mm in standard length, August 1971, off Okinawa I.

### Diagnosis

A compressed ovate, light reddish-yellow species of *Pristigenys* with 10 or more vertical dark red stripes, the first passing through opercular margin. Many vertical rod-like blotches of the same color on head and interspaces of vertical stripes of body. Dorsal fin rays X, 11 to 12, usually X, 12. Anal fin rays III, 11 to 12, usually III, 11. Scales strongly ctenoid; comb-like, slender spinules sharply pointed, some of middle ones basally reach near focal area; number of spinules of each scale about 20 (Fig. 2A).

### Description

Counts and proportional measurements are shown in Table 1. Body oval, deep and compressed, tapering from near the anal origin rearwards; caudal peduncle short and deep; profile slightly concave from tip of snout to interorbital space, and abruptly convex near nape. Mouth large, oblique and protractile; lower jaw slightly projects beyond the upper when mouth closed. Maxillary much expanded distally, reaching to a vertical through a little behind anterior margin of pupil. Teeth on jaws, villiform in bands, outer series on upper jaw somewhat enlarged; villiform teeth in an

angular band on vomer, in narrow bands on palatines. Tongue smooth. Eye very large. Interorbital space narrow and concave. Nostrils

2, close together, situated just in front of eye; anterior nostril small pore, posterior one widely open, triangular or crescent in shape.

Table 1. Counts and proportional measurements of *Pristigenys multifasciata*.

| Items                                 | Holotype   | Paratypes  |            |            |            |            |            |            |
|---------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Catalogue number                      | FAKU 44569 | FAKU 44570 | FAKU 44571 | FAKU 44572 | FAKU 44573 | FAKU 44574 | FAKU 44575 | FAKU 44576 |
| Sex                                   | unknown    | ♀          | ♂          | ♂          | ♀          | ♀          | ♂          | ♀          |
| Standard length in mm                 | 204.2      | 223.2      | 200.1      | 210.2      | 202.2      | 199.1      | 189.0      | 209.6      |
| Dorsal fin                            | X, 12      | X, 12      | X, 11      | X, 12      | X, 12      | X, 12      | X, 12      | X, 12      |
| Anal fin                              | III, 11    | III, 11    | III, 11    | III, 11    | III, 11    | III, 11    | III, 11    | III, 12    |
| Pectoral fin                          | 17         | 18         | 18         | 19         | 19         | 18         | 19         | 19         |
| Pored lateral-line scales             | 32         | 31         | 30         | 32         | 31         | 32         | 30         | 30         |
| Gill rakers                           | 7+17=24    | 7+17=24    | 7+17=24    | 7+17=24    | 7+16=23    | 7+16=23    | 7+17=24    | 7+18=25    |
| In standard length:                   |            |            |            |            |            |            |            |            |
| Head length                           | 2.45       | 2.48       | 2.62       | 2.42       | 2.50       | 2.40       | 2.43       | 2.45       |
| Depth A*                              | 1.94       | 1.85       | 1.84       | 1.83       | 1.84       | 1.92       | 1.82       | 1.83       |
| Depth B**                             | 2.37       | 2.35       | 2.47       | 2.43       | 2.39       | 2.41       | 2.34       | 2.30       |
| Snout to dorsal-fin origin            | 2.75       | 2.72       | 2.64       | 2.56       | 2.57       | 2.56       | 2.48       | 2.62       |
| Snout to anal-fin origin              | 1.37       | 1.32       | 1.43       | 1.38       | 1.36       | 1.36       | 1.41       | 1.33       |
| Snout to pectoral-fin origin          | 2.38       | 2.25       | 2.40       | 2.37       | 2.29       | 2.30       | 2.38       | 2.38       |
| Pectoral-fin origin to midcaudal base | 1.54       | 1.59       | 1.53       | 1.69       | 1.62       | 1.59       | 1.57       | 1.58       |
| Dorsal-fin origin to midcaudal base   | 1.44       | 1.48       | 1.45       | 1.45       | 1.46       | 1.45       | 1.42       | 1.44       |
| Anal-fin origin to midcaudal base     | 2.32       | 2.35       | 2.19       | 2.41       | 2.47       | 2.34       | 2.40       | 2.27       |
| Dorsal fin base                       | 1.79       | 1.84       | 1.81       | 1.84       | 1.87       | 1.83       | 1.75       | 1.77       |
| Anal fin base                         | 3.58       | 3.42       | 3.47       | 3.68       | 3.61       | 3.38       | 3.54       | 3.52       |
| In head length:                       |            |            |            |            |            |            |            |            |
| Snout length                          | 4.37       | 3.86       | 4.77       | 4.32       | 4.18       | 3.50       | 3.71       | 3.60       |
| Postorbital length                    | 4.63       | 4.88       | 3.82       | 4.28       | 4.13       | 3.95       | 4.17       | 4.20       |
| Eye diameter                          | 1.97       | 1.85       | 1.72       | 1.81       | 1.77       | 1.86       | 1.74       | 1.86       |
| Interorbital width                    | 4.79       | 4.71       | 4.00       | 4.34       | 4.54       | 4.58       | 4.28       | 4.92       |
| Least depth of caudal peduncle        | 3.49       | 3.43       | 3.07       | 3.35       | 3.26       | 3.59       | 3.39       | 3.43       |
| Pelvic spine length                   | 1.60       | 1.71       | 1.79       | 1.58       | 1.62       | 1.64       | 1.71       | 1.70       |
| 2nd pelvic soft-ray length            | 1.22       | 1.26       | 1.16       | 1.26       | 1.29       | 1.28       | 1.25       | 1.11       |
| 3rd dorsal soft-ray length            | 1.81       | 1.88       | 1.65       | 1.93       | 1.79       | 1.79       | 1.75       | 1.65       |
| 3rd anal soft-ray length              | 1.70       | 1.62       | 1.58       | 1.78       | 1.65       | 1.71       | 1.67       | 1.55       |

\* Distance from anterior edge of insertion of pelvic spine to midpoint of base of third dorsal spine (Caldwell, 1962a: 104).

\*\* Distance from midpoint of base of third anal spine to midpoint of base of last dorsal spine (Caldwell, 1962a: 104).

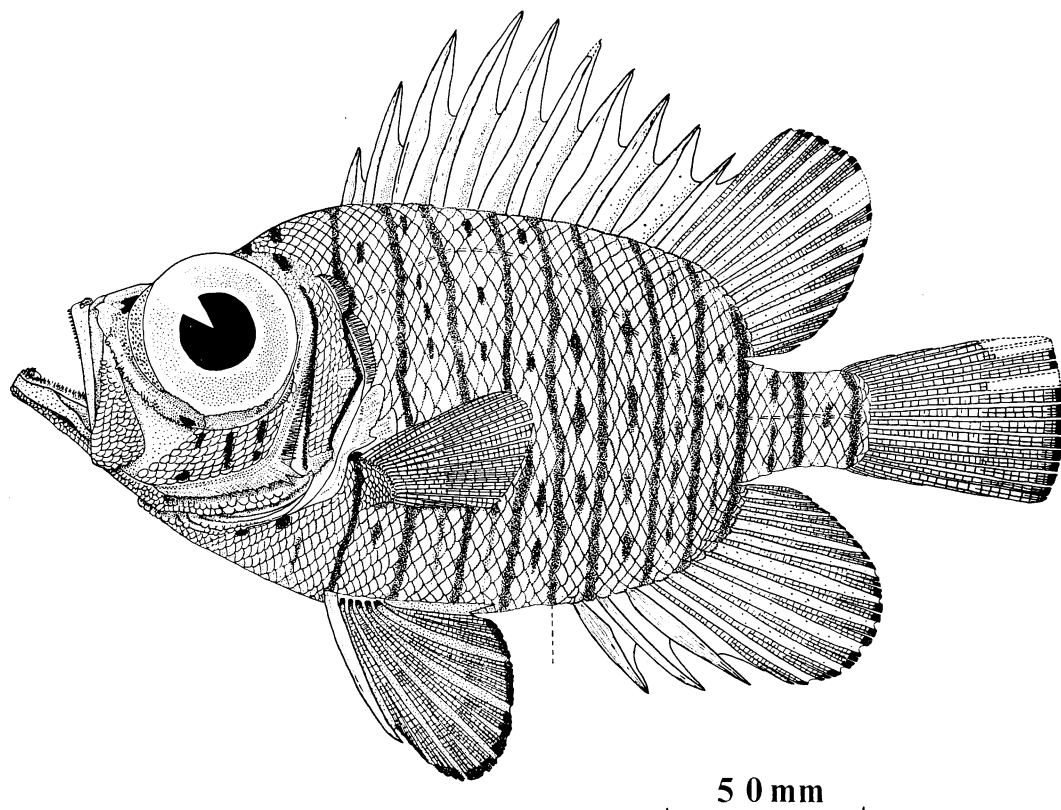


Fig. 1. *Pristigenys multifasciata* sp. nov. (Holotype, FAKU 44569; Drawing by T. Yoshino).

Preopercle with numerous horizontal ridges having fine spinules on its rear surface, the lower angle with 2 small spines. Opercular margin smooth, with a spine. Interopercle feebly serrated posteriorly. Lower angle of subopercle feebly serrated. Lower margin of preorbital serrated, with some triangular spinules. Upper margin of anterior 3 suborbitals with ridge. Post-temporal and supracleithrum exposed, with many horizontal ridges serrated to form fine spinules. Cleithrum and postcleithrum exposed, with some oblique striae on the surface. Branchiostegals 7. Gill rakers lanceolate, longer than gill filaments.

Dorsal spines strong, 4th or 5th one longest. Anal spines similar to dorsal ones; 3rd one longest. All dorsal and anal fin spines striate but smooth, depressible in groove. Fin membranes of spinous dorsal and anal deeply notched between spines. Pectoral fin rounded, rays branched except uppermost one. Pelvic fin large, reaching to anal origin, inserted slightly

before a vertical through pectoral base; innermost ray attached to body by membrane. Caudal fin slightly rounded, with 14 branched rays.

Scales moderately large, adherent, strongly ctenoid; comb-like slender spinules sharply pointed; middle one longest; some of middle ones basally reaching near focal area; number of spinules less than 23, usually about 20 (Fig. 2A). Scales  $9\frac{1}{2} \sim 10\frac{1}{2}$  in a series from origin of dorsal to lateral line,  $3\frac{1}{2} \sim 4\frac{1}{2}$  in a series from middle part of spinous dorsal to lateral line and  $25\frac{1}{2} \sim 27\frac{1}{2}$  from origin of anal to lateral line. Head closely scaled except snout, circumorbital bones, lips and preopercle. Branchiostegals with small but more or less specialized scales. The exposed parts of post-temporal, supracleithrum and postcleithrum without scales. Lateral line evenly curved; pored scales in lateral line somewhat irregularly arranged, difficult to count pored scales exactly.

**Coloration.** In life, body light reddish-yellow

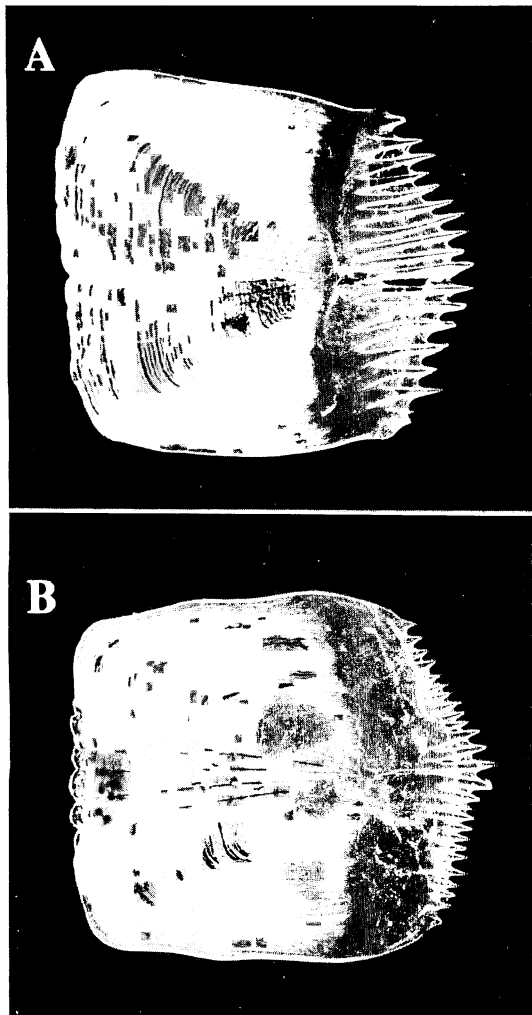


Fig. 2. Scales of two species of *Pristigenys*, especially showing spinules on the exposed area. A. *P. multifasciata* (Paratype, FAKU 44570, 223.2 mm in standard length). B. *P. nipponia* (FAKU 44580, 205.7 mm in standard length).

with 10 or more dark red vertical stripes, the first somewhat irregular, extending from anterior base of 1st dorsal spine to pelvic base, passing through opercular margin and pectoral base. Many vertical rod-like blotches of the same color on head and interspaces of vertical stripes of body. Spinous dorsal membrane with black bands along anterior margins of spines. Soft dorsal, soft anal, caudal, and pelvic fins margined with black band; pelvic fin membrane dark red; all other fin membranes reddish (cf. Gushiken, 1972: 24, fig. 104, color

photo).

In formalin, body pale; dark red vertical stripes indistinct; soft dorsal, soft anal, caudal, and pelvic fins edged with black; fin membranes of spinous dorsal with black bands along anterior margins of spines; pelvic fin membrane black.

#### Etymology

The name “*multifasciata*” refers to many vertical stripes on the body.

#### Remarks

According to Myers (1958) and Smith (1966) 3 living species belonging to the genus *Pristigenys* are recognized: *P. nipponia* (Cuvier) from tropical and temperate Indian Ocean and western Pacific, *P. serrula* (Gilbert) from tropical and subtropical eastern Pacific, and *P. alta* (Gill) from tropical and temperate western Atlantic, though Smith (1966) doubted specific distinction between *P. serrula* and *P. nipponia*. In fresh, *P. multifasciata* can be easily distinguished from these 3 species by a peculiar coloration, though it is difficult to distinguish it from the other species once preserved. A comparison of scales among 3 Pacific species revealed that *P. multifasciata* differ from the other 2 species, *P. nipponia* and *P. serrula* in details of structure of scales which will be a valuable character to distinguish preserved material. In the latter 2 species, irregularly arranged spinules on the scales (more than 25 in number in adult though rather fewer in young) are broad and short, and basally the spinules lie posteriorly far from the focal area (Fig. 2B).

In the description of *P. nipponia*, Fowler (1931) counted 19~20 spinules on the scales. A reexamination of the scales of one of the specimens (USNM 57582, 102.0 mm), on which Fowler described showed 21~26 spinules.

As shown in Table 2, *P. multifasciata* differs from other 3 species in having slightly higher number of dorsal and anal fin rays. Günther (1871) described *Pseudopriacanthus meyeri* from Celebes by a specimen having 12 dorsal and 11 anal soft rays, but he noted its color to be uniform reddish rose. Thus his species seems to be referable to *P. nipponia* as Boulenger (1895) and Myers (1958) suggested. We also examined an exceptional red specimen (FAKU 44581, 219.0 mm) in which the fin formula is

Table 2. Frequency distribution of number of dorsal and anal fin rays of *Pristigenys*.

|                         | Number of specimens | Dorsal fin |       |       | Anal fin |         |         |         | Remarks                                  |
|-------------------------|---------------------|------------|-------|-------|----------|---------|---------|---------|--|
|                         |                     | X, 10      | X, 11 | X, 12 | III, 9   | III, 10 | III, 11 | III, 12 |  |
| <i>P. multifasciata</i> | 8                   |            | 1     | 7     |          |         | 7       | 1       | Ryūkyū Is.<br>(this report)              |
| <i>P. nipponia</i>      | 24                  | 1          | 23    |       | 1        | 23      |         |         | Japan to Formosa<br>(this report)        |
| <i>P. serrula</i>       | 3                   |            | 3     |       |          | 3       |         |         | Pacific coast of Mexico<br>(this report) |
| <i>P. alta</i>          | 233                 | 12         | 220   | 1     | 3        | 228     | 2       |         | Western Atlantic<br>(Caldwell, 1962a)    |

D. IX, 12; A. III, 10. This specimen is an aberrant form of *P. nipponia* and excluded from Table 2. Several authors reported *P. nipponia* having 12 dorsal and 11 anal soft rays. In order to ascertain whether these counts are correct, reexaminations are much needed. Based on the data presented by Caldwell (1962a) and by us, it is expected that *P. nipponia* having 12 dorsal and 11 anal soft rays is very rare.

#### Comparative material examined

*Pristigenys nipponia*: 14 specimens, 65.2~219.0 mm in standard length, Japan (from Kii Peninsula to Ryūkyū Is.), deposited in our laboratory; 6 specimens, LSKU (Biological Laboratory, Kochi University) 1145, 1212, 9216, 13743, 13827 and 13861, 45.0~135.0 mm in standard length, Tosa Bay; 1 specimen, USNM (U. S. National Museum) 57582, 102.0 mm in standard length, Japan; 1 specimen, CAS (California Academy of Sciences) 13611, 112.7 mm in standard length, East China Sea; 1 specimen, SU (Stanford University) 23997, 144.9 mm in standard length, Yokohama; 3 specimens, SU 49392~49394, 82.8~96.2 mm in standard length, Formosa.

*Pristigenys serrula*: 2 specimens, CAS 13423, 99.9 and 126.1 mm in standard length, Mexico (Gulf of California) and Baja California (Isla Las Animas); 1 specimen, SU 37470, 61.0 mm in standard length, Mexico (Oaxaca, Chachaua Bay).

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#### Literature cited

- Boulenger, G. A. 1895. Catalogue of the perciform fishes in the British Museum. 1. i~xix, 1~394, 15 pls.
- Caldwell, D. K. 1962a. Development and distribution of the short bigeye *Pseudopriacanthus altus* (Gill) in the Western North Atlantic. Fish. Bull., U. S. Fish and Wildlife Serv., 62 (203): 103~150, 32 figs.
- Caldwell, D. K. 1962 b. Western Atlantic fishes of the family Priacanthidae. Copeia, 1962 (2): 417~424, 4 figs.
- Fowler, H. W. 1931. The fishes of the families Pseudochromidae, Lobotidae, Pempheridae, Priacanthidae, Lutjanidae, Pomadasysidae, and Theraponidae, collected by the United States Bureau of Fisheries steamer "Albatross," chiefly in Philippine seas and adjacent water. U. S. Nat. Mus. Bull., 100 (11): i~ix, 1~388, 29 figs.
- Günther, A. 1871. Report on several collections of fishes recently obtained for the British Museum. Proc. Zool. Soc. London, 21 (47): 652~675, 18 pls.
- Gushiken, S. 1972. Fishes of the Okinawa Islands. Taigā Insatu Co., Urazoe, Okinawa, 247 pp., 379 figs.
- Myers, G. S. 1958. The priacanthid fish genus *Pristigenys*. Stanford Ichthyol. Bull. 7(3): 40~42.

Smith, J. L. B. 1966. The rare big-eye *Pristigenys niphonia* (C & V), in South Africa. Dept. Ichthyol. Rhodes Univ., Occ. Pap., (9): 97~102, 1 fig., 1 pl.

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琉球海域から得られたクルマダイ属の一新種オキナワクルマダイについて 吉野 哲夫・岩井 保

琉球列島各地で採集したクルマダイ属魚類を研究中、クルマダイには同定できない種があることに気づき、本属の既知種と比較検討した結果、新種と考えられたので、オキナワクルマダイ (*Pristigenys multifasciata*) として記載した。本種は、体側に 10 条以上の暗赤色の横しまがあること、鱗の露出部の小棘が著しく長いことなどで、クルマダイと区別できる。

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