A New Lutjanid Fish, *Lutjanus stellatus*, from Southern Japan and a Related Species, *L. rivulatus* (Cuvier)

Masato Akazaki  
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Abstract The Japanese lutjanid which is known as “fuedai” in Japanese has been identified as *Lutjanus rivulatus*. However, this Japanese form is completely different from *L. rivulatus* in body forms and coloration. Since this fish has not been named scientifically, it is described as *Lutjanus stellatus* sp. nov. in this paper. This new species occurs only in southern Japan from Ibaraki to Okinawa. The differences between *L. rivulatus* and *L. stellatus* are as follows: Head length and pectoral fin length of *L. rivulatus* are longer than those of *L. stellatus*; in *L. rivulatus* 22–24 wavy, thin and blue lines are present on the snout and cheek, but in *L. stellatus* one longitudinal band is present on the snout; a grayish white dot on each scale of the body is present in *L. rivulatus*, but absent in *L. stellatus*; the posterior edge of the anal fin is pointed in *L. rivulatus*, but round in *L. stellatus*.

*Diacope rivulata*, a lutjanid species (snapper), was originally reported by Cuvier in 1828 on the basis of specimens from Pondicherry (India), Malabar (India), Colomandel (New Zealand), Java and Red Sea. Since then the generic name was changed to *Genyoroge* ( Günther, 1859), *Lutianus* (Day, 1875–89), *Lutjanus* (Bleeker, 1876–1877), *Mesoprion* (Klunzinger, 1884), and *Lutjanus* which is now used as valid name.

*Lutjanus rivulatus* is widely distributed from the Red Sea, the east coast of Africa, India, Andaman, Indonesia, Philippines, New Guinea to New Zealand. In regard to Japanese lutjanid fish, the scientific name *Lutjanus rivulatus* was applied for the first time by Jordan and Snyder to a certain species based on a specimen from Yokohama in 1901. Since then many ichthyologists, for instance, Jordan and Thompson (1911), Kamohara (1950), Asano (1952) and Matsubara (1955), applied *Lutjanus rivulatus* to this fish. This form, called fuedai in Japanese, has a white spot above the lateral line below the origin of the soft dorsal.

The true *L. rivulatus* also has a white spot on the lateral line. Strangely enough, these two forms were not sufficiently compared of their characters other than the white spot on the body. Under the same scientific name *L. rivulatus*, both forms have been confused for a long time.

The writer collected two specimens of the true *Lutjanus rivulatus* from Ishigaki Island of the Yaeyama Islands in Okinawa Prefecture and compared them in detail with fuedai specimens from Miyazaki and Mie Prefectures. As a result, it was confirmed that these two are distinct species, different from each other in body form and coloration except for the white spot (Table 1). Thus it is revealed that the application of *Lutjanus rivulatus* to the fuedai is a mistake and a new species name must be applied. The writer reported “On the homonym of *Lutjanus rivulatus*” at the Autumn Conference of Japanese Society of Scientific Fisheries, 18 Oct., 1973. After that, Masuda et al. (1975) distinguished *L. rivulatus* and the true fuedai (*L. sp*) as separate species.

In this paper, the writer proposes a new species *Lutjanus stellatus*, referring to its stellar white spot, for the fuedai. Masuda et al. (1975) gave this species a substitute Japanese name “hoshifuedai”. However, since many ichthyologists have used the name fuedai for a long time, the writer proposes to use “fuedai” for the sake of stability. The two species are described below.

*Lutjanus rivulatus* (Cuvier)  
(Japanese name: Namifuedai)  
(Figs. 1, 3A)


Specimens examined. 2; M. 7402 (specimen stored in Miyazaki University), 195 mm in standard length, Ishigaki Island (Okinawa Prefecture), 20 September 1973; M. 2537, 417 mm, Ishigaki Island (Okinawa Pref.), 8 August, 1972.


D. X, 15; A. III, 8; P₁, 17–18; P₂, 1, 5. L1. 48 + 3 = 51; Ltr. 8 + 10 + 20; scale series on cheek + opercle 3 + 5 – 7. Number of gill rakers 6 + 10. Number of vertebrae 10 + 14 = 24.

Body ovoid and slightly compressed. Snout not projecting and nearly rectangular. Upper outline of snout a little convex and upper profile on eye slightly concave. Mouth moderately large and oblique, posterior edge of upper jaw reaching below the anterior nasal. Suborbital wide. Interorbital naked and well convex.

Four or six canines on the anterior part of upper jaw, three weak canines on lower jaw. One series of weak conical teeth on lateral outer side of both jaws and patches of villiform teeth on lateral inner side on both jaws. A crescent band of villiform teeth on vomer and short patches on each palatine. Hind edge of preopercle serrated, and a slight gash at the central part of the posterior margin of preopercle.
Pectoral fin elongate and foliated, its posterior edge reaching anus. Anal fin a little pointed at the posterior soft portion. Caudal fin moderately bifurcate. Caudal peduncle high.

Series of scales above lateral line running obliquely upward, and scales below lateral line running in horizontal series. Scale sheath on the base of dorsal and anal fins moderately high.

Color: Body uniformly purple brown, belly pale brown. Each fin yellowish brown. Head with 22~24 wavy, thin and bluish lines running parallel horizontally. A white spot on lateral line below soft dorsal bases. Each scale on the back and sides of body with a small white or gray dot.

**Distribution.** In Japan, *L. rivulatus* is only known from Ishigaki Island of Okinawa Prefecture. But, this species is widely distributed from the Southwest Pacific, Indian Ocean, Red Sea, to the east coast of Africa.

Comparison between a syntype of *Lutjanus rivulatus* (*Diacope rivulata* Cuvier) in the Paris Museum (MNHN 7989) and the two specimens (M. 7402, M. 2537) from Ishigaki Island showed that both agree in many points of external characters, i.e., teeth (3~6 canines and 1 series of 9~10 conical teeth on both jaws), number of transverse scales above the lateral line (8 below the middle dorsal spine) and speckles (a small white dot on each scale of the body and one white spot on the lateral line under the origin of soft dorsal).

**Lutjanus stellatus** sp. nov.  
(Japanese name: Fuedai (Hoshifuedai))  
(Figs. 2, 3B)

*Lutjanus rivulatus*: Jordan and Snyder, Annot.

<table>
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<tr>
<th>Items</th>
<th>L. stellatus sp. nov.</th>
<th>L. rivulatus</th>
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<tr>
<td></td>
<td>Holotype</td>
<td>Paratypes</td>
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<td></td>
<td>ZUMT 54350, BSKU. 38360</td>
<td>M. 7406, FRSKU-S-4085</td>
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<td>M. 7408, HUMZ-97092</td>
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<td>Standard length in mm</td>
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<tr>
<td>Dorsal fin</td>
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<td>Anal fin</td>
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<tr>
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<td>16 ~ 18</td>
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<td>46 + 9 + 7 = 49 + 56</td>
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<td>line (+ on caudal)</td>
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<td>49 + 6 = 55</td>
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<td>Transverse scales above</td>
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<tr>
<td>No. of vertebrae</td>
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<td>Snout length</td>
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<td>Length of upper jaw</td>
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<td>Interorbital width</td>
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<tr>
<td>3rd anal spine length</td>
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<td>3.01 ~ 3.80</td>
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Fig. 2. Lateral aspect of holotype of *Lutjanus stellatus* sp. nov., M. 7407, 304.5 mm in standard length, from Udo, Nichinan City, Miyazaki Pref., Japan.

Zool. Japon, vol. 3, 1901: 76 (Yokohama); Kamohara, Description of the fishes from the provinces of Tosa and Kishu, Japan., 1950: 132 (southern Japan); Tanaka and Abe, Description and figures of one thousand useful fishes of Japan, 1955: 119 (southern Japan); Matsubara, Fish morphology and hierarchy, 1955: 661 (southern Japan).

*Lutjanus* sp.: Masuda, Araga and Yoshino, Coastal fishes of southern Japan, 1975: 238, pl. 64-D (southern Japan).

**Holotype.** M. 7407, 304.5 mm in standard length, caught by a trap net at Udo, Nichinan City, Miyazaki Prefecture, Japan, on 10 August 1981.


**Diagnosis.** *Lutjanus stellatus* is distinguished in the following characters from other lutjanid fishes in southern Japan. A. *L. stellatus* has a white spot on the body side, but other species have not such a white spot except for *L. bohar* and *L. rivulatus*. The position and size of the white spot are different from those of *L. bohar* and *L. rivulatus*. B. There are no black spots on the body of *L. stellatus* (present in *L. russellii*, *L. monostigma*, *L. fulviflamma*), no black streak (present in *L. vitia*), no blue lines (present in *L. kasmira* and *L. spilurus*) and no yellow lines (present in *L. lineolatus*, *L. lutjanus*, *L. lineatus*, *L. rufolineatus*, *L. caeruleovittatus*). C. *L. stellatus* is close to *L. vaigiensis*, but the latter has each fin fringed with a yellow margin. D. Further differences between *L. stellatus* and *L. rivulatus* are: a) head and pectoral fin of *L. rivulatus* are longer than those of *L. stellatus*; b) grayish white dot on each scale of the body is present in *L. rivulatus*, but absent in *L. stellatus*; c) posterior edge of anal fin is pointed in *L. rivulatus*, but round in *L. stellatus*; d) a white spot is present on lateral line in *L. rivulatus*, but between soft dorsal origin and lateral line in *L. stellatus*; e) head with 22~24 wavy and bluish lines in *L. rivulatus*, but snout with one longitudinal blue bar in *L. stellatus*. Young specimens of *L. stellatus* always have 2~3 longitudinal blue bars, of which upper and lower bars disappear in alcohol.

**Description of holotype.** Head length 2.70,
body depth 2.50, body width 5.32, pectoral fin length 2.98 in standard length. Snout length 2.45, length of upper jaw 2.51, interorbital width 3.89, eye diameter 5.42, suborbital width 4.03, 4th dorsal spine length 2.83, 2nd anal spine length 3.47, 3rd anal spine length 3.27, pelvic fin length 1.71 in head length. Suborbital width 0.74 in eye diameter. Body width 2.13 in body depth.

D. X, 14; A. III, 8; P₁. 18; P₂. 1, 5. Ll. 49 + 7 = 56; Ltr. 12 + 21; scale series on cheek + opercle 3 + 7. Number of gill rakers on 1st arch 5 + 12. Number of vertebrae 10 + 14 = 24.

Body slightly elongate, oval and well compressed. Snout projecting at an acute angle. Upper profile of head nearly straight, but becoming slightly concave on nasal region. Mouth large and oblique. Posterior margin of upper jaw reaching below middle of eye. Suborbital width wide. Interorbital space well convex.

Four canines on the anterior part of upper jaw, three canines on lower jaw. A series of 12 ~
14 weak conical teeth on lower jaw laterally and a short patch of villiform teeth on lateral inner side on both jaws. Tooth band on vomer inverted V-shaped and teeth on palatines in a short bar. Posterior margin of preopercle finely serrated and its lower margin with somewhat large denticulations. A gentle and shallow notch at the posterior margin of preopercle. Spinous part of dorsal fin continues to soft ray part, with a slight notch. Pectoral fin slightly shorter than head length and its posterior edge reaching the origin of anal fin. Pelvic fin originates below the origin of pectoral fin. Posterior margin of caudal fin slightly bifurcate. Caudal peduncle somewhat high. Series of scales above lateral line running obliquely upward and below lateral line horizontally. Scale sheath on the base of dorsal and anal fins slightly high. The caudal fin densely scaly. A series of scales on cheek and opercle respectively. Elongate, somewhat small, triangular scales present outside the origin of pelvic fin. Ctenoid scales on the side of body pentagonal in shape. Gill rakers flat and long, comb-like in shape at center and on lower arch, but those on upper arch and the edge of lower arch knob-like. Color: Body brown, tinged with orange, belly pale yellowish brown or pale orange. A longitudinal blue bar from snout to opercle. Each fin yellowish brown, vertical fins with dark grayish tint. A pearl white spot on side below soft dorsal origin, occupying about three scales 2 – 3 rows above lateral line. In alcohol, body grayish brown with a slightly distinct grayish white spot above lateral line. A dark gray bar tinged with pale blue running horizontally from snout to suborbital. Description of paratypes. Head length 2.47 – 2.80, body depth 2.28 – 2.62, body width 4.63 – 6.24, pectoral fin length 2.91 – 3.16 in body length. Snout length 2.14 – 2.86, length of upper jaw 2.39 – 2.78, interorbital width 3.45 – 4.65, eye diameter 4.00 – 6.45, suborbital width 3.84 – 5.20, 4th dorsal spine length 2.89 – 3.08, 2nd anal spine length 2.44 – 3.64, 3rd anal spine length 3.01 – 3.80, pelvic fin length 1.57 – 1.91 in head length. Body width 1.93 – 2.50 in body depth. Suborbital width 0.59 – 0.88 in eye diameter.

D. X, 13 – 15 (mostly 14 – 15); A. III, 8; P. 16 – 18 (17 – 18); P. I, 5. L. 46 – 49 + 2 – 7 = 49 + 56; Ltr. 11 – 12 + 19 – 23; scale series on cheek + opercle 3 – 4 + 5 – 8. Number of gill rakers on 1st arch 5 – 6 + 11 – 13 = 17 – 22. Number of vertebrae 10 + 14 = 24. Body form of paratypes similar to that of holotype. One or three pairs of canines on the anterior part of both jaws, and 13 – 20 weak conical teeth on the lateral outer sides of both jaws. Anus located at posterior one-third between the origins of pelvic and anal fins. Color: Typical color of body the same as that of holotype. A pearl white spot between soft dorsal origin and lateral line, extending on two or three scales. Internal characters (Fig. 4). The description below and Fig. 3 are based mainly on a specimen of 230 mm in standard length except for the shoulder girdle, hyoid arch and gill arch which are described from a specimen of 264 mm in standard length (M. 7403). Jaws: Premaxillary pedicel slightly shorter than lamina. Angle formed by premaxillary pedicel and lamina about a right angle. Arti...
cular connects with dentary, but upper margin of the joint notched deeply.

Cranium: Cranium slightly elongate. Parapharynx with a flat process on lower side. Anterior part of vomer projecting forward as a rod. Frontals separated by a deep longitudinal groove at middle part. Opisthotic bones visible. Epiotic not fucrate at the edge.

Orbital bones: Lachrimal ten times as large as 1st suborbital bone and a trapezoid in shape. Suborbital bones 5 in number, 2nd~5th suborbital bones short and bar-like in shape. Suborbital shelf projecting inward from 2nd suborbital, and elliptical in shape.

Suspensorium: Palatine M-shape, anterior part tapering and bar-like. Endopterygoid slightly inclined obliquely inward and upward, and elliptical in shape. The post-lower margin of preopercle finely serrate, with about 30+15 teeth, and with a shallow notch at middle part.

Shoulder girdle: Post temporal V-shape. Upper-posterior margin of cleithrum gently curved, not incised at a right angle or more. Position of the 4th actinost between scapula and coracoid.

Hyoid arch: Branchiostegal rays 7 in number, anterior 5 rays attach to ceratohyal, posterior 2 to epihyal. Urohyal flat, elongate and trapezoid in shape.

Anterior abdominal vertebrae: First and second neural spines close to each other. Imperfect interneural spines 3 in number, 1st one before 1st neural spine, 2nd one between 1st and 2nd neural spines, 3rd one with 1st interneural spine between 2nd and 3rd neural spines. Second and 3rd interneural spines between 3rd and 4th neural spines. Pattern of neural and interneural spines 1–1–1.1–II (Arabic numerals –imperfect interneural spines; Roman numerals –interneural spines).

Caudal skeleton: Around urostyle, which forms the posterior end of the vertebral column, are arranged from top to bottom, 3 pieces of epurals, one urocentral spine, one specialized neural process and 6 pieces of hypural bones.


**Distribution.** This new species of the Lutjanidae occurs along the coast of the southern Japan, from Ibaraki Prefecture (Asano, 1952) to Okinawa (Gushiken, 1972), but is not known from the Yaeyama Islands (Ishigaki and Miyako Islands) and from Southwest Pacific and Indian Ocean.

**Acknowledgments**

I would like to thank Mr. Sōkō Gushiken for supplying a specimen (M. 7402) of *L. rivulatus*. I am also indebted to Mr. Yasuo Jūso of my laboratory for drawing the holotype of *L. stellatus*.

**Literature cited**


Akazaki: New Lutjanid


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日本産フエダイの1新種 Lutjanus stellatus とその類似種 L. rivulatus

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日本のみから知られるフエダイ科魚類の1種フエダイ


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