

A Rare Cirrhitid Fish, *Amblycirrhitus unimacula*
from the Ryukyu Islands, Japan

Gento Shinohara¹ and Koichi Shibukawa²

¹Department of Zoology, National Science Museum (Natural History),
3–23–1 Hyakunin-cho, Shinjuku-ku, Tokyo, 169–0073 Japan

²Laboratory of Ichthyology, Tokyo University of Fisheries,
4–5–7 Konan, Minato-ku, Tokyo, 108–8477 Japan

Abstract A rare cirrhitid fish, *Amblycirrhitus unimacula*, was collected from Yonaguni-jima Island of Ryukyu Islands, Japan. It represents the third known specimen of the species. Our examination of the holotype reveals that the original description includes errors including the standard length. Intraspecific variations were revealed by careful comparison of our specimen with the holotype. Collection data for our specimen in conjunction with literature records suggests that this species inhabits cryptic areas within rocky reefs.

Key words: Cirrhitidae, *Amblycirrhitus unimacula*, Ryukyu Islands, distribution, habitat.

In March 1997, a rarely encountered cirrhitid fish, *Amblycirrhitus unimacula* (Kamohara), was collected from Yonaguni-jima Island, one of the southernmost Ryukyu Islands, Japan. This species was originally described from a single specimen collected at Somachi, Kikai-jima Island of Satsunan Islands (Kagoshima Prefecture), Japan (Kamohara, 1957). Since the original description, only one additional specimen was reported; this specimen was collected from Lan Yu (=Orchid Island) in Taiwan (Randall, 1963; Araga, 1984; Hayashi, 1993). Recently, Senou & Yano (1996) presented an underwater photograph of the species taken off Iriomote-jima Island of Ryukyu Islands; however, the specimen was not captured. Hence, the present specimen represents the fourth known occurrence and the third collection of this species.

Materials and Methods

Our specimen is deposited in the Department of Zoology, National Science Museum, Tokyo (NSMT), whereas the holotype is deposited in the Department of Biology, Kochi University (BSKU). Methods for counts and measurements follow Hubbs & Lagler (1958). Vertebrae and other skeletal elements were examined from radiographs. Standard length (SL) is used throughout.

Amblycirrhitus unimacula (Kamohara, 1957)

[Japanese name: Kurohoshi-gonbe]

(Fig. 1, Table 1)

Cirrhitoides unimacula Kamohara, 1957: 29, fig. 19.*Amblycirrhitus unimacula*: Randall, 1963: 428, fig. 25; Araga, 1984: 199, pl. 351A; Hayashi, 1993: 836; Senou & Yano, 1996: 1, fig.

Material examined. NSMT-P 55276, sex undetermined, 53.4 mm SL, east coast of Yonaguni-jima Island, Ryukyu Islands, Japan (24°27.2'N, 123°2.5'E), tide-pool, 0–2.0 m depth, 28 Mar. 1997, coll. K. Shibukawa, R. Mimori, T. Koike & K. Kanou.

Diagnosis. An *Amblycirrhitus* species with 48–50 lateral line scales; pectoral fin short, not reaching origin of anal fin; and no black ocellus on opercle.

Description. Counts and measurements are shown in Table 1. Body moderately deep and compressed, its depth 3.1 in SL. Head large, its length 2.7 in SL. Snout pointed. Mouth terminal, slightly oblique. Both lips thick, upper lip projecting slightly anterior to lower lip. Posterior end of maxilla reaching a vertical line at anterior margin of pupil. Teeth in both jaws simple, conical; teeth in outermost row larger and stouter than inner row. Upper jaw with nine rows of teeth anteriorly, narrowing to one row posteriorly; lower with about seven rows anteriorly, narrowing to one row posteriorly. Outermost three teeth in middle of dentary largest, canine-like. Vomer and palatine with small conical teeth. Nostrils paired, anterior one with a spatulate, skinny flap bearing several long, finger-like cirri. Eye large and round. Interorbital space slightly concave, its width about half of orbit diameter. Branchiostegal membranes united ventromedially, free from isthmus. Origin of dorsal fin slightly anterior to a vertical line at posterior end of opercle. Upper half of posterior margin of preopercle weakly serrated. Opercle with a posteriorly directed spine. Tip of each dorsal spine with cirri. Pectoral fin pointed posteriorly, reaching a vertical line at anus but not reaching anal fin origin. Length of anal-fin base 26.7% of dorsal-fin base. Pelvic-fin length longer than orbital diameter, the posterior end not reaching to anus when the fin appressed. Fin membranes of spinous parts of dorsal and anal fins well incised. Caudal fin almost truncate. Cycloid scales covering cheek, operculum, interorbital region, body, pectoral-fin base and proximal 1/4 of dorsal-fin and anal-fin membranes, but spinous parts of these fins scaleless.

Color in Alcohol. Ground color of body pale brown dorsally and posteriorly, pale brown anteroventrally. Body with about ten irregular dusky brown vertical bars broader than pale brown interspaces. An eye-sized black ocellus edged with pale brown situated basally between the 7th and 10th soft dorsal-fin rays. About four faint, narrow brown longitudinal lines on ventral 1/3 of body between the terminal points of the pelvic and anal fins. Triangular, dusky brown blotch just posterodorsally to uppermost pectoral-fin base. Head pale ventrally, gray brown dorsally. Several, irregu-

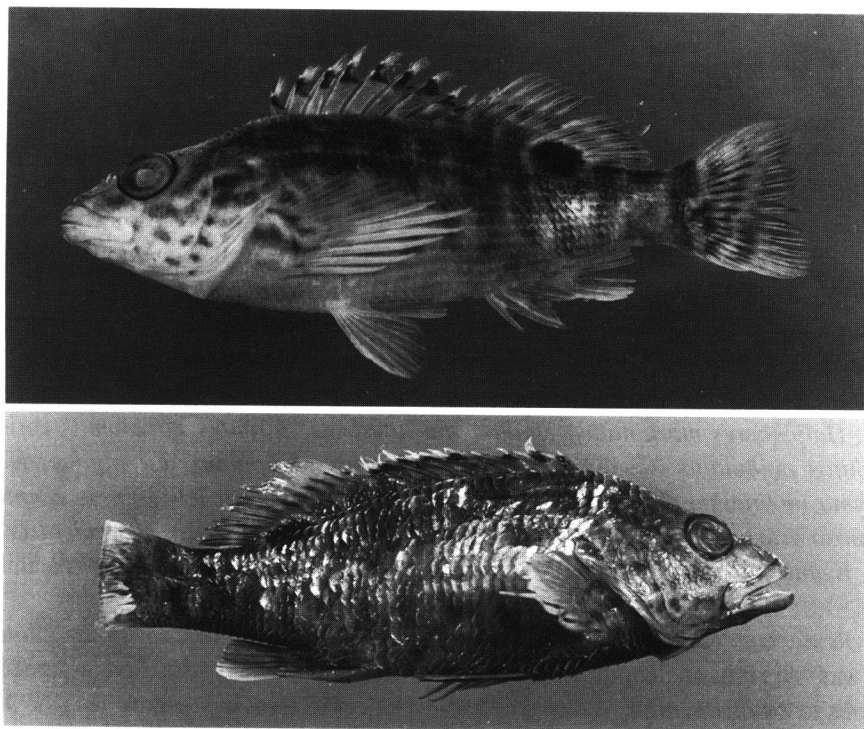


Fig. 1. Specimens of *Amblycirrhitus unimacula* from Japan. Above) NSMT-P 55276, 53.4 mm SL, Yonaguni-jima Island, Ryukyu Islands; below) BSKU 6387, 67.8 mm SL (holotype), Somachi, Kikai-jima Island, Satsunan Islands.

larly shaped, gray-brown to black blotches scattered on cheek and opercle. A minute black spot on gill membrane near the bases of both third and fourth branchiostegal rays. Two gray-brown stripes between upper lip and anterior margin of eye. Anterior tip of lower jaw gray-brown. Eye encircled with a narrow, vivid black edge. Iris entirely black. Distal portion of dorsal-fin membrane between first and 9th dorsal spines black. Cirri at the tip of dorsal spines pale. Distal half of soft portion of dorsal fin with a narrow, black longitudinal stripe. Distal margin of fin membrane of posterior half of soft portion of dorsal fin slightly blackish. Pectoral-fin membrane and dorsalmost simple and branched rays transparent, ventralmost simple rays pale. Two dusky brown and a pale brown longitudinal stripes on pectoral-fin base. Pelvic fin transparent with narrow gray portion at middle of each soft ray. Anal fin transparent with two indistinct gray-brown oblique stripes. Caudal fin pale gray, slightly blackish distally. Three narrow vertical or slightly oblique dusky brown bars on anterior 2/3 of caudal fin, posteriormost one restricted to ventral half of the fin.

Distribution. Japan: Somachi, Kikai-jima Island of Satsunan Islands (Kamo-

hara, 1957), and Iriomote-jima Island (Senou & Yano, 1996) and Yonaguni-jima Island (present study) of Ryukyu Islands; and Taiwan: Lan Yu (Randall, 1963).

Habitat. The specimen from Yonaguni-jima Island was captured in a relatively large-sized tidepool (<2 m depth) on an exposed rocky shore; this tidepool had a rocky substratum piled with large and small-sized rocks, and a narrow sandy bottom. The other fishes collected with *A. unimacula* were typical rocky-reef inhabitants in shallow waters, e.g., *Gymnothorax thyrsoideus* (Muraenidae), *Sargocentron punctatissimum* (Holocentridae), *Pterois radiata* (Scorpaenidae), *Cephalopholis argus*, *Epinephelus hexagonatus*, *E. melanostigma* (Serranidae), *Grammistes sexlineatus* (Grammistidae), *Labracinus cyclophthalmus* (Pseudochromidae), *Plesiops vercundus* (Plesiopidae), *Apogon taeniophorus* (Apogonidae), *Abudefduf sordidus*, *A. vaigiensis*, *Crysiptera glauca*, *Plectroglyphidodon leucozonus*, *Stegastes insularis* (Pomacentridae), *Halichoeres marginatus*, *Thalassoma lutescens*, *T. amblycephalum* (Labridae), *Cirrhitis pinnulatus* (Cirrhitidae), *Enneapterygius philippinus*, *E. tutuilae*, *Helcogramma inclinatum* (Tripterygiidae), *Entomacrodus striatus*, *Istiblennius edentulus*, *Nannosalarias nativatus*, *Praealticus margaritarius* (Blenniidae), *Heteroleotris poecila*, *Eviota prasina* (Gobiidae), *Acanthurus lineatus* and *A. nigrofuscus* (Acanthuridae).

Remarks. Kamohara (1957) reported that the holotype of *Cirrhitoidea unimacula* was “8.5 mm in length”. Subsequently Randall (1963), who first assigned the species to *Amblycirrhitis*, stated the “holotype ... is 85 mm. in standard length.” However, our examination of the holotype revealed it to be 67.8 mm SL. The other discrepancies between the original description and the holotype are as follows: i+7+vi pectoral-fin rays (vs. 1+7+5 in the original description); 5+13 gill rakers on outer surface of first arch (vs. 4+11); palatine with minute teeth (vs. palatine toothless: already pointed out by Randall, 1963); posterior end of pelvic fin just reaching to anus when the fin appressed (vs. “Ventrals ... not reach vent”).

Although counts and measurements of our specimen from Yonaguni-jima Island (hereafter referred as Yonaguni specimen) did not significantly differ from those of the holotype (Table 1), the following differences were found: the upper jaw projecting slightly anterior to the lower lip, the posterior end of the pelvic fin not reaching to the anus, and the black spots restricted anteriorly on the lower half of the opercle.

Intraspecific variation concerning the relationship of upper and lower jaws was first suggested by Randall (1963). He noted that the specimen of *A. unimacula* from Taiwan (hereafter referred as Taiwan specimen) had “the lower jaw not projecting anterior to the upper one.” Kamohara (1957) stated “upper jaw slightly shorter (than lower jaw)” in the holotype, and his illustration of this feature (Kamohara, 1957: fig. 19) showed that the lower jaw distinctly projects anterior to the upper jaw. However, the lower jaw of the holotype only slightly extends anterior to the upper jaw when the mouth closed. Considering the agreements in the other morphological features among the three specimens (the holotype, the Taiwan and the Yonaguni specimens),

Table 1. Comparison of counts and measurements between the present specimen and the holotype of *Amblycirrhitus unimacula*.

	Present specimen NSMT-P 55276 53.4 mm SL	Holotype BSKU 6387 67.8 mm SL
Counts		
Dorsal-fin rays	X, 11	X, 11
Anal-fin rays	III, 6	III, 6
Pectoral-fin rays	14 (i+7+vi)	14 (i+7+vi)
Caudal-fin rays	15 (1+7+6+1)	15 (1+7+6+1)
Lateral line scales	50	50
Scales above lateral line	5	5
Scales below lateral line	10	10
Gill rakers	6+12	5+13
Vertebrae	26 (10+16)	26 (10+16)
Supraneurals	3 (0/0/0+2/)	3 (0/0/0+2/)
Hypurals	5	5
Epurals	3	3
Uroneurals	2	2
Proportional measurements (% SL)		
Body depth	31.6	32.7
Predorsal length	37.6	37.0
Length of dorsal-fin base	51.9	54.0
Length of anal-fin base	13.9	14.5
Head length	36.9	36.1
Eye diameter	8.6	7.5
Interorbital width	4.9	5.5
Snout length	11.2	11.4
Upper jaw length	14.2	13.6
Postorbital head length	18.2	18.4
Caudal peduncle length	21.9	22.7
Caudal peduncle depth	12.0	12.5

such a minor difference is best described as intraspecific variation.

Kamohara's (1957) erroneous description of the pelvic fins in *A. unimacula* led Randall (1963) to state that the Taiwan specimen differed from the holotype in having the pelvic fins just reaching the anus instead of not reaching it. As stated above, the posterior tips of the pelvic fins of the holotype actually extend to the anus when the fin are appressed. The Yonaguni specimen differs from the holotype and Taiwan specimen in having the pelvic fins not reaching to the anus, although the distal ends of pelvic fins closely approach the anus in the former. This is also considered as intraspecific variation in *A. unimacula*.

The remaining difference between the Yonaguni specimen and the other known

specimens is in the number of black blotches on the opercle. The black blotches on the lower half of the opercle are restricted at the anterior half in the Yonaguni specimen, whereas the others possess two or more of the same-sized black blotches on the posterior half. Particularly, the largest specimen (about 15 cm in total length) photographed in Iriomote-jima Island by Senou & Yano (1996), hereafter referred as Iriomote specimen, possessed some additional minute black spots there. Lacking such blotches in the Yonaguni specimen may be due to its small size (53.4 mm SL vs. 63 mm SL or larger in the other specimens).

The holotype was collected from a tidepool on the east coast of Kikai-jima Island. Although detailed habitat information about the holotype was not included, Kamohara (1957) briefly noted substrate conditions along the coast of Kikai-jima Island, stating that the coast is "fringed with growing coral reefs, and the rocks near shore are conglomerates of disintegrate corals." Information about the specific habitat of *A. unimacula* was first provided by Senou & Yano (1996); they reported that the Iriomote specimen was found and photographed on a rocky reef that lacked corals at 8 m depth, and the specimen was found within interstices in large rocks. Except for its shallow occurrence (<2 m), the Yonaguni specimen's habitat was similar to that of the Iriomote specimen. This suggests that *A. unimacula* inhabits cryptic spaces within such rocky environments.

Comparative material. BSKU 6387 (holotype of *Cirrhitoides unimacula*), sex unknown, 67.8 mm SL, Somachi of Kikai-jima Island, Satsunan Islands (Kagoshima Prefecture), Japan.

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