New Records of Two Sharks, Nebrius concolor and Negaprion acutidens from Japanese Waters

New Records of Two Sharks, *Nebrius concolor* and *Negaprion acutidens* from Japanese Waters.

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Abstract

Two sharks, *Nebrius concolor* and *Negaprion acutidens*, were collected from the Ryukyu Islands. Although the occurrences of both sharks in the Ryukyu Islands are well known among the local fishermen, there has been no scientific record from Japanese waters. In this report Japanese specimens of both species are described and figured for the first time.

In the Ryukyu Islands sharks are rarely found at the fish-markets and in most cases they are useless for identification because their head and fins are cut off before landing. Hence, our knowledge about sharks found around this islands is very poor.

Recently damages caused by sharks to hooked fishes and fishing gears became unpardonable to the fishermen in the Yaeyama Islands, southern Ryukyus. In 1979, an effort to hook and get rid of sharks from the fishing grounds around the Yaeyama Islands was conducted by Ishigaki Municipal Government with request of the fishermen. During 16 to 17 of November, a total of 56 specimens of sharks were hooked and landed at Ishigaki Fishing Port in intact state. Among them, 39 specimens were hooked with long lines and composed with 5 shallow water species as follows : *Carcharhinus albimarginatus* (Rüppell), (15 specimens) : *Galeocerdo cuvieri* (Lesueur), (10) ; *Triaenodon obesus* (Rüppell), (10) ; *Nebrius concolor* Rüppell, (2) ; *Negaprion acutidens* (Rüppell), (2). The last two species are unreported from Japanese waters and thus merit special attention. In this report we describe and illustrate these two species for the first time from Japan.

The scientific name of the two sharks and method of measurements are based on Bass *et al.* (1975 a and b).

Nebrius concolor Rüppell

(Japanese name : Ōtenjikuzame)

(Figs. 1, 2A and B, 3A)

Material examined. Two male specimens, 2810 and 3045 mm in total

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length, Nov. 17, 1979, off Iriomote Island, Ryukyu Islands, the jaw of the 2810 mm male preserved in the collection of Department of Marine Sciences, University of the Ryukyus. One male specimen, 1640 mm in total length, Dec. 18, 1978, collected with gill net at Nago Bay, Okinawa Island, this specimen is preserved in the collection of Aquarium in the Okinawa Expo Memorial Park after reared for 76 days.

Distinctive characters. Among the members of the family Orectolobidae, this species is characterized as follows : spiracle small, less than half of eye diameter ; teeth with a large central cusp and about four to six slightly smaller cusps in each side ; first dorsal origin over pelvic origin ; anal origin under middle of second dorsal base.

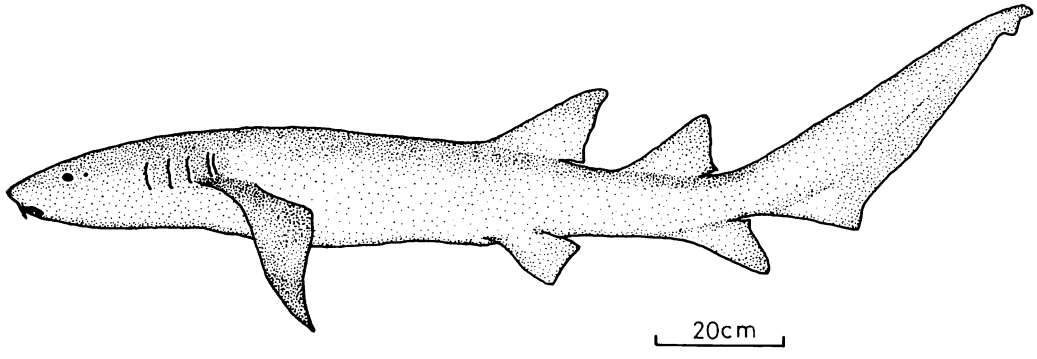

Fig. 1. *Nebrius concolor*, drawn from photographs and measurements of a 1640 mm male from Okinawa Island.

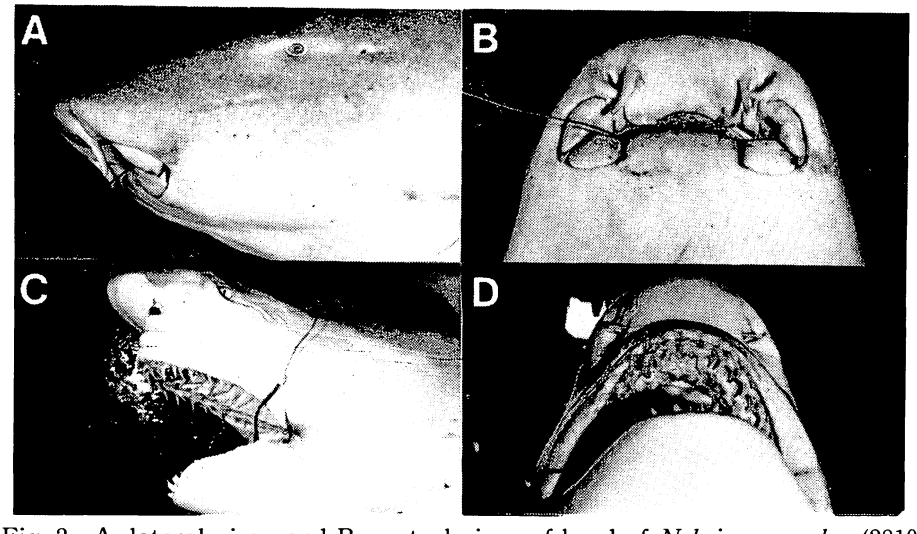

Fig. 2. A, lateral view, and B, ventral view, of head of *Nebrius concolor* (2810 mm male). C, lateral view, and D, ventral view, of head of *Negaprion acutidens* (2603 mm female).

Table 1. Proportional dimensions in percent of total length of *Nebrius concolor* taken from the Ryukyu Islands.

Sex	male	male	male
Total length (mm)	3045	2810	1640
Snout to mouth	2.2	2.2	2.5
eye	5.8	5.8	5.5
spiracle	—	—	6.6
1st gill-slit	13.3	17.0	13.3
pectoral	18.7	18.9	18.1
1st dorsal	42.4	42.6	39.6
pelvic	40.1	43.8	40.0
Eye diameter	0.7	0.6	0.8
Spiracle length	0.3	0.2	0.3
1st to 5th-gill slits	6.8	5.7	5.3
1st to 2nd dorsal origins	16.6	15.7	15.0
Between dorsal bases	7.6	6.7	—
Pectoral to pelvic	21.6	24.7	21.9
Pelvic to anal	17.9	17.4	17.3
Anal to lower caudal	9.9	9.4	9.4
Internasal distance	3.8	3.7	—
Mouth width	6.4	6.9	—
1st gill-slit	2.8	3.0	—
3rd gill-slit	3.4	3.3	—
5th gill-slit	3.4	3.2	—
1st dorsal base	8.8	8.8	8.8
height	9.4	9.4	7.8
lobe	2.9	3.7	—
2nd dorsal base	7.0	7.4	7.6
height	7.5	7.7	6.8
lobe	2.9	3.1	—
Anal base	6.5	6.7	6.6
height	7.1	7.1	7.0
lobe	2.4	2.6	—
Pectoral base	6.1	6.0	—
inner edge	4.6	—	—
length	18.6	18.8	—
Pelvic-lateral lobe	11.5	11.4	—
median tip	13.5	13.8	10.7
Caudal upper lobe	32.5	30.8	—
base of notch to tip	3.7	3.8	—
lower lobe	9.5	9.5	—

Description. The proportional dimensions in percent of total length are summarised in table 1.

Trunk very broad anteriorly, tapering rearward. Caudal peduncle com-

Negaprion acutidens **(Rüppell)**

(New Japanese name : Remonzame)

(Figs. 2C and D, 3B, 4)

Material examined. Two female specimens, 2705 and 2603 mm in total length, Nov. 16 and 17, 1979, off Iriomote Island, Ryukyu Islands, the jaw of 2603 mm female and three embryos of about 50 cm in tatal length are preserved in the collection of Department of Marine Sciences, University of the Ryukyus.

Distinctive characters. Among the members of the family Carcharhinidae, this species is characterized as follows: erect single-cusped teeth with smooth edge; second dorsal fin almost as large as the first; often with yellowish body coloration.

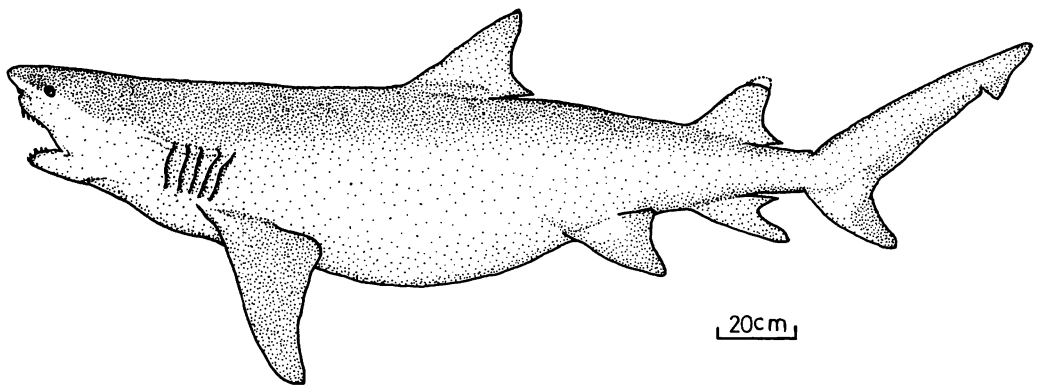

Fig. 4. *Negaprion acutidens,* drawn from photographs and measurements of 2603 mm pregnant female from Yaeyama Islands. Apex of the second dorsal fin damaged.

Description. The proportional dimensions in percent of total length are summarised in table 2.

Trunk stout, tapering only slightly rearward. Caudal peduncle slightly compressed, with precaudal pits and no lateral ridges. Dermal denticles moderately closely spaced, partially overlapping, oval in shape with three to five ridges and three posterior teeth.

Head short, depressed, its length to fifth gill-slit about one fifth of total length. Snout short, broadly rounded, its length in front of mouth about one fifth of head length. Nostril large, oblique, situated nearer to tip of snout ; anterior margin expanded as a triangular lobe as long as broad. Mouth large, ovate. its width about two times greater than its length. Labial furrow very short, invisible unless mouth opened. Eye small, oval, with developed internal nicti-

Table 2. Proportional dimensions in percent of total length of *Negaprion acutidens* taken from the Ryukyu Islands.

Sex	female	female
Total length (mm)	2705	2603
Snout to nostrils	2.3	2.3
mouth	4.1	3.2
eye	4.6	4.3
lst gill - slit	15.9	16.2
pectoral	—	20.7
lst dorsal	35.3	34.8
pelvic	—	52.1
upper caudal	76.9	77.3
Eye diametes	1.0	0.8
lst to 5th gill-slits	5.2	4.7
lst to 2nd dorsal origins	28.1	29.1
Between dorsal bases	18.3	18.8
Pectoral to pelvic	31.6	32.5
Pelvic to anal	15.0	13.3
Anal to lower caudal	12.0	11.1
Nostril length	1.3	1.4
Internasal distance	4.4	4.1
Mouth width	8.7	10.6
Mouth length	4.4	4.2
Upper lip groove	—	1.1
Lower lip groove	—	0.2
lst gill-slit	3.9	4.1
3rd gill- slit	4.3	5.0
5th gill-slit	3.9	3.6
lst dorsal base	10.0	10.1
height	9.8	8.9
lobe	4.9	4.8
2nd dorsal base	7.6	7.1
height	7.8	7.0+
lobe	3.7	3.9
Anal base	5.7	—
height	6.8	7.1
lobe	3.5	3.5
Pectoral base	7.2	6.3
inner edge	5.9	6.3
length	19.6	19.7
Pelvic-lateral lobe	9.3	9.6
median tip	9.5	9.2
Caudal upper lobe	24.4	24.9
base of notch to tip	6.8	7.5
lower lobe	10.9	11.7

tating lower eyelid. Spiracle absent. Teeth erect, smooth-edged and single-cusped ; upper teeth with narrow triangular cusps and broad bases, symmetrical and erect in central part of jaw but increasingly oblique toward its corners ; lower teeth similar in general to uppers, except somewhat more slender and more erect ; two small smooth-edged teeth at symphysis in upper jaw and three in lower ; outermost three or four teeth in each jaw small ; one row functional ; edges of basal sectors of upper jaw minutely and irregularly serrated ; dental formula 14-2-14/13-3-13 (one specimes). Gill-slits all about equal in length, about one fourth to one fifth of head length, evenly spaced ; the last two over pectoral fin. Origin of first dorsal fin slightly behind inner pectoral corner ; its anterior margin slightly concave or nearly straight ; apex narrowly rounded : posterior margin concave : free rear margin about half of the base. Second dorsal fin similar in shape and size or a little smaller than first dorsal. No interdorsal ridge. Anal fin a little smaller than second dorsal ; apex more sharply pointed ; posterior margin deeply concave ; its origin opposite to second dorsal origin. Caudal fin about one fourth of total length ; subterminal notch developed ; lower anterior corner expanded as a definite lobe ; length of lower lobe a little smaller than half of upper lobe. Pectoral fin long, its anterior margin as long as length from snout tip to fourth gill-slit ; posterior margin concave ; apex slightly pointed ; free rear tip rounded. Pelvic fin with slightly convex anterior margin and concave posterior margin.

In fresh, greyish brown and tinged with yellow above, paler below.

Remarks. Our specimens agree well with the descriptions and figures given by Bass *et al.* (1975 a), Gohar and Mazhar (1964) and Johnson (1978). There are several nominal species of *Negaprion* known from Indo-Pacific region. We follow Bass *et al.* (1975 a) and Bigelow and Schroeder (1948) in placing *Odontaspis madagascariensis* Fourmanoir, 1961 and *Aprionodon sitakaiensis* Herre, 1934 in the synonyms of *N. acutidens*. In addition to these, also treat *Aprionodon acutidens queenslandicus* Whitley, 1939 and *Cemigaleops fosteri* Schultz et Welander, 1953 as the synonyms of this species. Whitley (1939) described *A. acutidens queenslandicus* and differentiated from *A. acutidens acutidens* in the shape of snout and pectoral fin. However, these characters are known to vary widely with growth or condition in preserving specimens. In fact, our embryo specimens have more wedge-shaped snout and concave posterior marign of pectoral fin than adults. *Cemigaleops fosteri* was described by Schultz and Welander (1953) without comparing to the species of *Negaprion*. The characters of *C. fosteri* agree well with those of *N. acutidens*.

Bigelow and Schroeder (1948) pointed out *N. acutidens* with one strong denticle on basal sectors of some of the teeth and this character was used in their key to separate from Atlantic congener, *N. brevirostris*. Whereas our specimens have no definite strong desticles on basal sectors of teeth as stated by

Bass *et al.* (1975 a) in abult specimens from Indian Ocean. Therefore, this tooth character is not reliable in distinguishing the two species.

The specimen of 2603 mm in total length was pregnant and contained 15 embryos (8 in right uterus, 7 in left) averaging about 50 cm in length.

The local fishermen in Ishigaki Island call this shark as "Mābuka" (meaning common or true shark). The occurrence of this shark is well known among the fishermen.

Prior to this report, *N. acutidens* (including the synonyms noted above) has been known widely distributed the tropical Indo-West Pacific, north to the Red Sea in the Indian Ocean and to the Philippines in the Pacific Ocean.

Acknowledgments

We wish to thank Mr. Seikō Yabiku of Ishigaki Municipal Government and Yaeyama Fishermen's Cooperation for giving us a chance to examine shark specimens. And we are also indebted to Mr. Kazuhiko Shimada of University of the Ryukyus for assistance in preparing the manuscript.

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