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Description of a New Squaloid Shark, *Centroscyllium kamoharai*, from Japan*

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Among the fishes taken by experimental deep-water line-fishing in Suruga Bay during 1964-1965 were found from time to time damaged examples of a squaloid shark. It is small-sized, soft, nearly naked, and believed to be new to science. The damage of the skin is most probably due to bites by other fishes. The present writer takes pleasure in expressesing here his sincere thanks to Dr. Toshiji KAMOHARA who has been most generous for ichthyologists. It is a pleasing duty of the present writer to thank the Japanese Society for the Promotion of Science for the partial financial support of this study through a grant from this society as a part of the Japan—U.S. Cooperative Science Program.

Centroscyllium kamoharai, new species

"Hadaka-kasumizame" (new Japanese name)
Figs. 1-8

Holotype. Cat. No. 52310, Zoological Institute, Faculty of Science, University of Tokyo; mature female measuring 440 mm. in total length; lined in Suruga Bay, off Yaizu, on September 8, 1964.

Paratypes. Cat. No. 52311, of the same institute as above; mature female measuring 420 mm. in total length; lined near the same place as above on November 26, 1964. Cat. No. 52312, of the same institute as above; pregnant female measuring *ca.* 440 mm. in total length; lined near the same place as above in February, 1964. Only two embryos have been taken out; they measure 67 mm. and 70 mm. respectively, in total length. Proportional measurments and description of general appearance have not been taken from the last-named paratype which is in a bad state in alcohol.

Proportional measurements in percent of total length. Parenthesized figures refer to one of the paratypes (Cat. No. 52311).

Trunk at pectoral origin: depth 11 (*ca.* 9); width 15 (*ca.* 13). Trunk at origin of lst dorsal fin: depth 16 (*ca.* 16); width 13 (*ca.* 6; compressed artificially).

Caudal peduncle at lower posterior end: depth 4 (3); width 3 (3).

Snout length in front of: eyes** 4 (*ca.* 4); outer nostrils** 1 (*ca.* 2); upper jaw 8(*ca.* 7).

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* Contribution B No. 452 from the Tokai Regional Fisheries Research Laboratory.

** Distance from snout tip to the line connecting anterior ends of orbits or nostrils.

Nostrils: distance from outer end of outer nostril to inner end of inner nostril 3 (left & right) [3 (l. & r.)]; greatest diameter* of outer nostril 1 (l. & r.) [2 (l.) & 1 (r.)]; greatest diameter of inner nostril 2 (l. & r.) [2 (l. & r.)]; distance between inner corners of inner nostils 4 (4).

Orbits: horizontal diameter 6 (l.) & 5(r.) [*ca.* 5 (l. & r.)]; greatest vertical diameter 1(l.) & 2 (r.) [2 (l. & r.)].

Spiracles (inclusive of spiracular valve): horizontal diameter 2 (l. & r.) [*ca.* 1 (l.) & 2 (r.)]; vertical diameter 2 (l. & r.) [2 (l. & r.)].

Interorbital width: above eye-centers 10 (*ca.* 10); below eye-centers 10 (10).

Distance between inner corners of spiracles 8 (8).

Mouth: width 11 (10); height of lower jaw measured from anterior end to the line connecting posterior corners of mouth 3 (3).

Labial furrow lengths: upper 2 (l. & r.) [*ca.* 2 (l. & r.)]; lower 1 (l. & r.) [*ca.* 2 (l. & r.)].

Distance from snout tip to the line connecting: anterior ends of 1st gill-openings *ca.* 16 (*ca.* 15); anterior ends of pectoral bases *ca.* 20 (*ca.* 21); anterior ends of pelvic bases *ca.* 53 (*ca.* 55).

Distance from snout tip to: lst dorsal** *ca.* 32 (*ca.* 32); 2nd dorsal** *ca.* 59 (*ca.* 62); upper caudal** *ca.* 77 (*ca.* 79).

Verical lengths of gill-openings: lst 2 (r.; left damaged) [*ca.* 3 (l.) & *ca.* 2 (r.)]; 5th 2 (r.; left damaged [*ca.* 2 (l.) & 3 (r.)].

Distance between anterior rim of 1st gill-opening and that of 5th gill-opening *ca.* 5 (r.; left damaged) [*ca.* 5 (l. & r.)

First dorsal fin: height† 9 (*ca.* 9); length of spine (*ca.* 3); length of base *ca.* 10 (9); length of base behind spine which is damaged in the holotype 5 (*ca.* 6).

Second dorsal fin: height 9 (9); length of spine 7 (6)); length of base 9 (9); length of base behind spine 5 (5).

Caudal fin: length of upper margin (to hindmost point of the fin) 23 (24); length of lower anterior margin 13 (12); length of lower posterior margin 11+4 (13+5).

Pectoral fins: length of upper margin *ca.* 9 (l.) & *ca.* 10 (r.) [*ca.* 10 (l.) & *ca.* 11 (r.)]; length of base 5 (l.) & 4 (r.) [5 (l. & r.)]; width 6 (l.)& 7 (r.) [*ca.* 7 (l. & r.)].

Pelvic fins: length from origin to posterior end 14 (l. & r.) [13 (l.) & 14 (r.)]; length from anterior corner of cloaca to posterior end 9 (l. & r.) [9 (l.) & 10 (r.)]; length of base 10 (l. & r.) [8 (l.) & 9 (r.)].

Inteaspace between: bases of lst and 2nd dorsal fins (measured by dividers)

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* Including pigmented rim.

** Measured parallel to the longitudinal axis of body to a point where the dorsal contour rises for the fin.

† Measured obliquely at a point a little behind the spine.

18 (21); bases of 2nd dorsal and upper caudal fins 9 (8); bases of pelvic and lower caudal fins 12 (13).

Distance (measured by dividers) from origin to origin of: lst dorsal and pelvic fins 25 (l. & r.) [25 (l. &. r.)]; pelvic and 2nd dorsal fins 11 (l.) & 12 (r.) [12 (l. & r.].

Body nearly naked; skin soft and slippery. Head depressed, wide, nearly rounded anteriorly and large-eyed. Trunk fairly robust; belly more of less swollen. Caudal pedencle little compressed, slightly concave medially behind second dorsal fin, and without lateral keels and precaudal pits. Origin of first dorsal fin behind, or nearly over tips of, pectorals when latter are laid back. Interspace between second dorsal and dorsal lobe of caudal about as long as from orbit to a point between dorsal corners of 1st and 2nd gill-openings (holotype) or to dorsal corner of 1st gill-opening (paratype). Spine of first dorsal fin (damaged in holotype; perfect in paratype) very much lower than horny part of the fin. Spine of second dorsal fin slightly curved, with a groove near anterior margin and another near posterior margin on either side as in the spine of first dorsal fin, much higher than spine of first dorsal fin, and considerably lower than horny part of second dorsal fin; base of former spine in advance of rear ends of pelvic fins. Caudal fin gently rounded dorsally, concave posteriorly on ventral lobe, and notched at rear end of ventral lobe, thereafter being nearly straight. Pectoral fins placed low down, outer (or ventral) side being nearly flush with ventral side of body. Dorsal, pectoral and pelvic fins rather small in size.

Pores of lateral line distinct in holotype and indistinct in paratype, mostly widely apart from each other, numbering *ca.* 36 (left) & *ca.* 33 (right) from above pectoral to below origin of dorsal lobe of caudal fin.

Mucous pores on head large, widely separated from each other, interspaces being mostly wider than apertures.

Nostrils paired, large, oblique, and anterior to line connecting orbit on either side. Partition between anterior (namely, antero-lateral) and posterior (postero-inner) nostrils incomplete; attenuated anterior nasal flap projecting outwards from postero-inner corner of anterior nostril laps over broad posterior nasal flap which is placed at antero-lateral corner and directed inward.

Spiracles fairly large. Gill-openings rather small in size and placed low down. Teeth of both jaws similar in shape, erect, symmetrical, or nearly so, with 3-5 cusps, the median cusp being the largest. Outermost row of jaw teeth and subsequent row very close to one another, forming nearly a single row and rendering the counting difficult.

Dermal denticles very small, thorn-like with polygonal base, almost absent on body, and scattered on all fins; their number smaller in proximal parts of fins and much smaller on ventral side of pelvic fins.

The color is entirely dark brown with minute black dots scattered on body and fins and arranged in a very short row on the anterior part of the ceiling of the orbit*. This supraocular dots remind the present writer of the luminous organs of *Centroscyllium ritteri* JORDAN & FOWLER reported upon by IWAI, 1961. If the skin is not rubbed off, the distal part of all the fins is not broadly white; in the paratypes fins are black to the margin.

Diagnostic characters and relationships. The present new species is readily distinguishable from the congener of Japanese waters (*ritteri*) by its nearly naked skin and coloration, and from another congener *nigrum* from the eastern tropical Pacific and Hawaii by the nearly naked skin, coloration (the dorsal and pectoral fins contiune white tipped to maturity in *nigrum*) and in the higher number (9 in the two paratypes) of the circuits in the intestinal spiral (4 or 5 in *nigrum*, after GARMAN, 1899, p. 30, pl. 5, fig. 3), and resembles *Centroscyllium fabricii* (REINHARDT) and *C. ornatum* (ALCOCK) more closely than the other congeners. The differences between the present new species and *fabricii* of the North Atlantic are the more developed dermal denticles in the latter (*cf.* BIGELOW & SHROEDER, 1957, p. 41) and the size of the body at maturity. The female specimens of the present new species are matured at the total length of 420-440 mm., whereas in *fabricii* even males seemingly do not mature until at least 600 mm. long (after BIGELOW & SCHROEDER, 1957, p. 45). In so far as the present writer knows, the females of squaloid sharks reach maturity at much larger size than males.

The differences between the present new species and the closeset ally *ornatum* of the Indian Ocean are again more developed dermal denticles in *ornatum* and the distribution of the light-organs (or similar dots) (*cf.* BURKHARDT, 1900).

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* BIGELOW & SCHROEDER's expression (1948, p. 485), "inner edge of anterior part of upper eyelid densely pigmented with dark brown or blackish", applies to the corresponding place.

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日本産深海鮫の一新種ハダカカスミザメ *Centroscyllium kamoharai* について

阿 部 宗 明

録　　抄

東海区水産研究所業績 B422 号に発表したニセカラスザメを入手したのと同じ方法で採集された深海性鮫類中の一新種についての記載である。カスミザメと同じ属の一員であるが，鱗が甚だ少く，深海鮫延縄で漁獲されると，多分他の魚に咬まれたためと思われる傷痕が多く，記載に適する標本が得難い。全長 440mm の雌が既に性熟していた例から推察して，この新種は比較的小形の鮫であると言えよう。

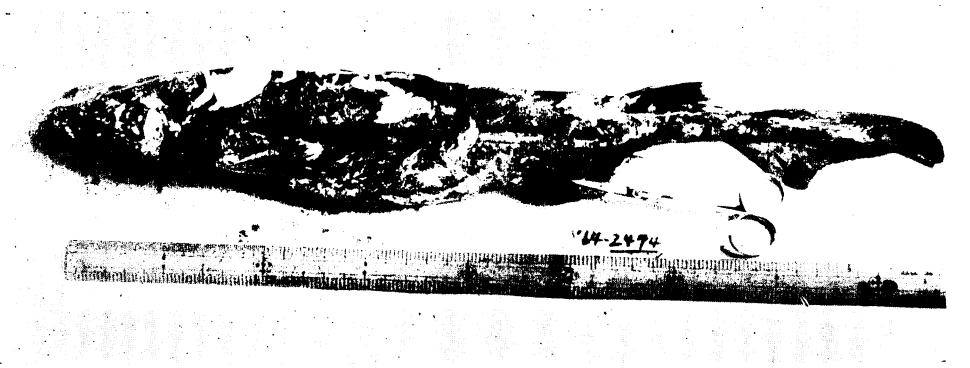

Fig. 1. *Centroscyllium kamoharai*, new species. Holotype (No. 52310, Zoological Institute, Faculty of Science, University of Tokyo) (ABE '64-2474). Total length 440 mm.

Fig. 2. The same specimen as above.

Fig. 3. The same specimen as above.

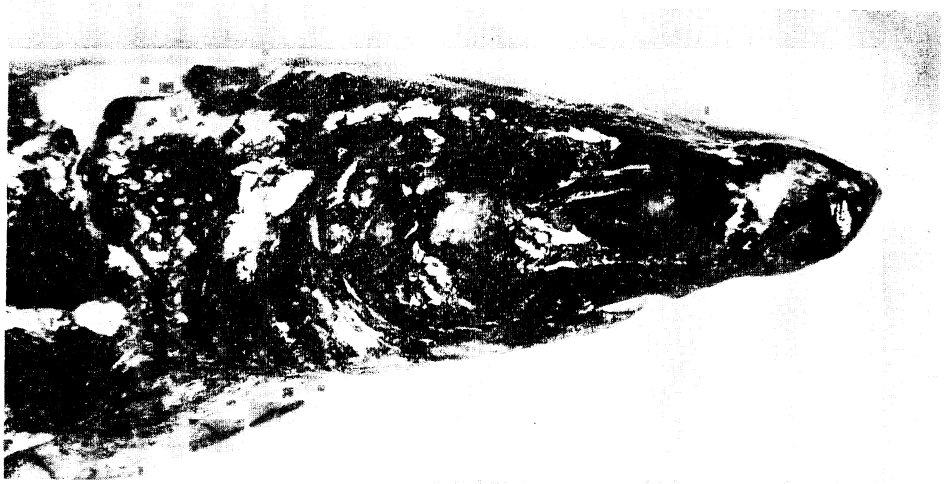

Fig. 4. The same specimen as above.

Fig. 5. The same specimen as above.

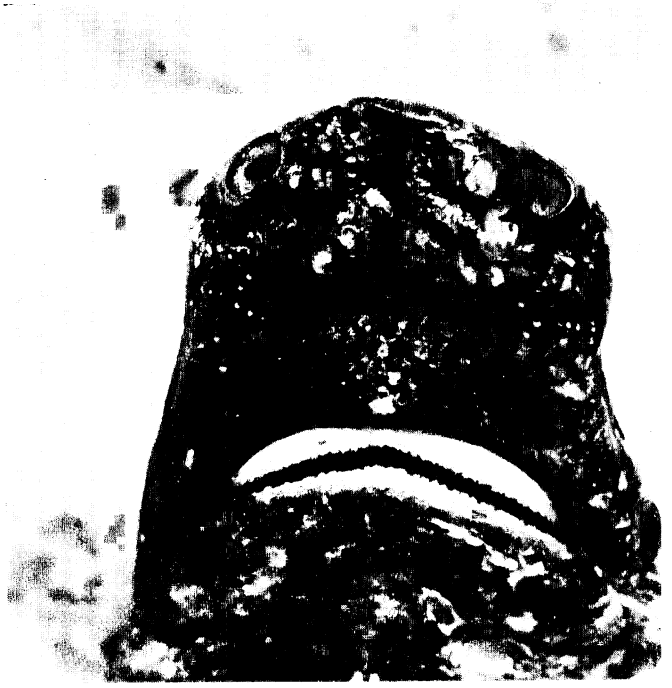

Fig. 6. The same specimen as above.

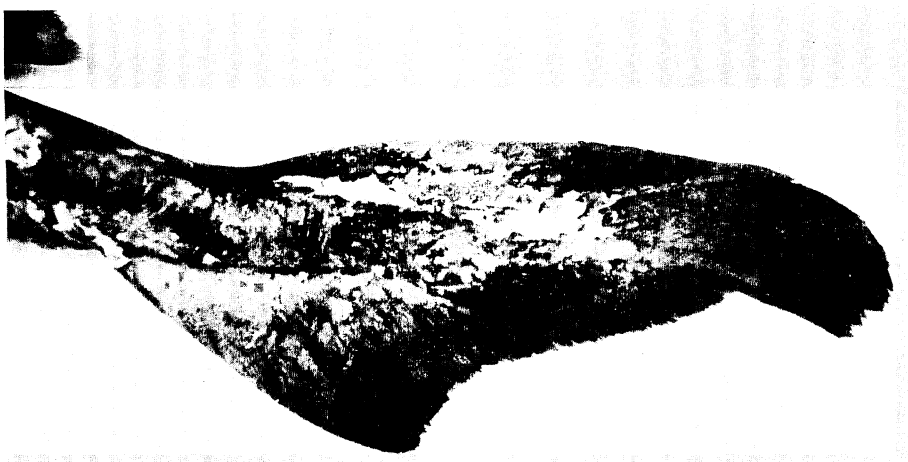

Fig. 7. The same specimen as above.

Fig. 8. The same specimen as above.