

New, Rare or Uncommon Fishes from Japanese. VI.
Notes on the Rare Fishes of the Family
Histiopteridae

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A. "Kusakari-tsubodai",* *Pseudopentaceros richardsoni* (SMITH) from near Tokyo. On May 1, 1957, the writer found some 40 kilograms of *Pseudopentaceros richardsoni* (SMITH) at a middleman's shop at the Central Wholesale Market of Tokyo. The fish were undoubtedly shipped from a nearby village, probably from southern part of Bôshô Peninsula (south of Tokyo). They were of about the same size, measuring some 340-390 mm in total length and weighing some 1 kilogram. The writer purchased four specimens, and two ladies from the Women's College of Dietetics who accompanied him bought three. The skeleton of the two of the latter specimens have been presented for study to the writer. This species seems to be very rare in Japanese waters, and believed to have been unrecorded there. The specimens mentioned above agree fairly well with the description and figure by A. SMITH, 1849 (Illustrations of the zoology of South Africa; consisting chiefly of figures and descriptions of the objects of natural history collected during an expedition into the interior of South Africa, in the years 1834, 1835, and 1836; fitted out by "The Cape of Good Hope Association for Exploring Central Africa". Pisces, plate 21, description on two pages). Just a century later, Prof. J. L. B. SMITH, 1949 (2nd print, 1950) (The sea fishes of South Africa, p. 242) stated for the present species that "Known mainly from a few specimens taken off New Zealand, though the original type was found at Cape Point before 1845. None since found here. Specimens wanted"; and for the family *Histiopteridae* he stated that "Rather curious fishes of southern seas, mostly from deep water, everywhere rare, seldom seen. Flesh excellent, but all specimens should be preserved..."

Description of an adult example (Cat. No. ABE '57-125). Collected at the Central Wholesale Market of Tokyo; data given above. Total length (from tip of lower jaw) 340 mm, fork length (from tip of lower jaw) 332 mm, standard length (from tip of upper jaw to hind end of vertebral column) 286 mm. The following measurements are given in hundredths of the standard length: Greatest depth of body (at ventral origin) 41.3, greatest breadth of body (at ventral origin) 17.5, least depth of caudal peduncle 9.3,

* This new Japanese name means Mr. T, KUSAKARI's "Tsubo-dai" (*Quinquarius japonicus*). A few years ago, he kindly presented to the writer for study a fine specimen of *Pseudopentaceros richardsoni* taken at Hachijô Island. In addition, some examples representing young stages of the fishes of *Histiopteridae* have been sent to the writer from the island by Mr. KUSAKARI and Mrs. T. SHIGETA. The writer takes pleasure in giving a new Japanese name to *Pseudopentaceros richardsoni* after Mr. KUSAKARI, member of staff at the Hachijô Branch Station, Fisheries Experiment Station of Tokyo Prefecture. The writer wishes here to express his sincere thanks to Mr. KUSAKARI and Mrs. SHIGETA for co-operation.

length of head 32.5, horizontal diameter of orbit 8.7 on both sides, vertical diameter of orbit 8.2 on both sides, length of snout 11.5 (left) & 11.9 (right), bony interorbital breadth above eye-centers 11.5, distance between outer margins of ventral origins 10.2, length of longest (3rd) dorsal spine 16.1, length of longest (1st) soft dorsal fin-ray 12.1, length of longest (4th) anal spine 10.5, length of longest (1st) anal soft fin-ray 12.1, length of longest (5th on left side; 4th-6th on right side) pectoral fin-rays 29.0 (left) & 29.4 (right), length of left ventral spine 19.4 (right spine damaged), length of longest (outermost) ventral soft fin-ray 19.4 on both sides, length of longest (uppermost of lower limb) gill-raker on 1st arch 2.8-3.1 on both sides.

In general appearance, and more especially in general tint prior to preservation, this specimen resembles the adult of *Plectorhynchus cinctus* (TEMMINCK & SCHLEGEL), and the shape and squamation of the belly reminds the writer of *Xenocyttus nemotoi* ABE. The bony surface of the head reminds him further of the young of *Chaedontina*.

The body is compressed and deep. The caudal fin is slightly emarginate. The dorsal profile of the head and the nape is nearly straight, slightly concave behind the nostrils; the interorbital area is broad and very gently convex; the nape up to the dorsal origin is weakly carinate. The surface of the head appears to be bony excepting for the upper part of the preoperculum and operculum, cheek below sub-orbitals, lips, maxillary, anterior end of snout, narrow area surrounding nostrils and about half of the lower jaw; the two former parts have scales. The uncovered head bones and those of the pectoral girdle are finely striated (or rugose) and somewhat rough to touch.

The under surface of the body from the ventral origins (which are placed fairly far back from the pectoral bases) forward is nearly flat, and triangular. This triangular space is much narrower than long, and not well delimited anteriorly. This space is covered by hard juxtaposed scales which form mosaic. From between the ventral origins backward to the vent, the mid-ventral part of the belly is feebly keeled, and covered by hard, quadrangular, or pentagonal or hexagonal scales as in preventral area.

The pectoral and ventral fins are fairly long, but the latter do not reach the vent. The length of the ventral spine and that of the outermost soft fin-ray of the fin on each side are nearly equal to (or, slightly less than) the distance from the anterior margin of the pupil to the hind margin of the operculum. The length of the pectoral fin on each side is a little more than the distance from the anterior nostril to the hind margin of the operculum.

The dorsal spines are received in a fairly wide, longitudinal, furrow. The 1st spine, which is much shorter than the others, is in the mid-dorsal line; the 2nd and the succeeding spines are not rooted in the mid-dorsal line; the 2nd spine originates from a point just behind the 1st and slightly left to the mid-dorsal line, and, when depressed, fits to the left margin of the 1st and 3rd spines. The 3rd spine originates from a point slightly right to the mid-dorsal line, and more or less inclined to the left, thus, when laid down, fits to the right side of the 2nd and 4th spines, the latter of which, in turn, originating from left side of the mid-dorsal line, is inclined to the right. The

same holds true with the successive spines. As in *Quiquarius capensis* (SMITH, 1951, pp. 875 & 878) the 3rd and a few subsequent dorsal spines each have proximally an anterior lobate projection.

In the anal fin also the spines are received in a groove. The 1st spine (the shortest of all the anal spines) is in the mid-ventral line; the 2nd, as in the 2nd dorsal spine, originates from a point slightly left to the mid-ventral line and inclined to the right, thus, when laid down, fitting to the left margin of the 1st and 3rd spines; the 3rd spine originates from a point slightly right to the mid-ventral line, directed to the left, and, when all the spines are laid down, its fore margin fits to the hind margin of the 1st spine, and its hind margin fits to the right margin of the 4th spine which is in the mid-ventral line. The dorsal and anal soft fin-rays are covered basally by scaled skin. Otherwise these fins are scaleless.

The basal part of the pectoral fin on each side is scaled.

The caudal fin is scaled basally, and the membranes between the fin-rays are proximally scaled; otherwise the fin is scaleless.

The lateral line is strongly arched anteriorly; almost parallel to the dorsal profile of the body below the 5th-11th dorsal spines, then descending gradually to a point below the 2nd or 3rd soft dorsal fin-ray, and becomes nearly straight on the side of the caudal peduncle.

The nostrils are paired on each side; the anterior one is placed nearly midway between the snout tip and the fore margin of the eye, and provided with a raised skinny projection along its hind margin; the posterior nostril is placed just behind and dorsally to the anterior, elliptical in shape (whereas the anterior is rounded), and its long diameter is a little greater than the diameter of the anterior nostril. The distance between the inner margin of each anterior nostril is slightly less than 1/2 of the horizontal diameter of the orbit and equal to the distance between the hind margin of the posterior nostril and the fore margin of the orbit where a conspicuous soft groove delimits the upper edge of the preorbital.

There are 3 pairs of small pores along the anterior part of the lower jaw, of which the anteriormost pair are rather inconspicuous. These chin pores remind the writer of *Hapalogenys*.

The hind margin of the preoperculum is nearly perpendicular to the longitudinal axis of the body, very weakly and broadly produced at the lowermost part, and provided with very low denticulations which are the hind ends of the striae of the bone.

D. XIII-I-9 (or XIV 9) (all soft fin-rays branched; 9th ray bifid to base; 8th and 9th rays slightly close together, but the majority of observers may not regard these as one ray). A. IV 7 (all soft fin-rays branched; 7th ray bifid to base; 6th and 7th rays slightly close together, but may not be regarded as one ray). P. 17 (=ii+14+i) on both sides. V. I 5 (all soft fin-rays branched). C. 8+7 (principal branched fin-rays only have been counted; for rudimentary fin-rays, see notes on the other specimens which follow).

The scales of the flank and the dorsal part of the body are imbricate, arranged

fairly regularly; they are cycloid, the exposed part being rugose. Each of these scales bear a whitish spot near the center. The number of the pored scales in the lateral line is somewhat difficult to count exactly, but *ca.* 68 (left) and *ca.* 69 are countable back to the hindmost pored scale on the skin covering the caudal base. The number of the slightly oblique vertical scale rows just below the lateral line is 44 (left) and 46 (right) between the top of its anterior arch and its turning point above the 3rd or 4th anal spine. The number of the scales above the lateral line is somewhat difficult to count exactly because of the smaller, and irregularly arranged scales near the dorsal margin of the body; and, furthermore, near the dorsal origin are found very small scales rendering the exact counting in ordinary method almost impossible. Fortunately, however, the number of the scales of the nape can be counted fairly exactly; the number of the scales in an oblique row from the scale just behind the hind end of the occipital superficial bone to the scale just above the anterior part of the lateral line is 20 (left) and 23 (right); the number of the scales in an oblique row from the edge of the groove receiving the dorsal spines down to the one just above the lateral line is 7-9 near the 7th spine (the counting is made easier when started, contrary to the ordinary method, from top down and forward). The scaly part of the cheek is wider anteriorly; at the anteriormost part the number of the scales counted from top downward is *ca.* 6 or 7 on both sides. The number of the scales just in front of the upper corner of the preoperculum is only 6 or 7 on each side, and that of the scales above the operculum is also only *ca.* 7 on each side. The scales on the ventral part of the body are juxtaposed, pentagonal or hexagonal in outline, thick and hard, bearing radiating striae. The size of these scales varies considerably, and the larger scales have each a central dark colored pit-like depression, which corresponds to the central elevation in each of the scales of the other parts of the body.

The inner fold of the left branchiostegal membrane laps over the right one*. The number of the branchiostegals is 4+3 on both sides. The pseudobranchiae are well developed. Gills are four in number, and there is a conspicuous slit behind the 4th gill-arch. The gill-rakers on the 1st arch are stout and rather short; their number is 7+1+17 on both sides. The tongue is broad proximally, but pointed at the anterior end.

Teeth are present only on the jaws and vomer. The jaw teeth are very fine and sharp, forming a band on each jaw. There is a narrow edentulous area at the symphysis. The vomerine teeth are also very small, and forms a small patch on the head of the bone.

The lips and chin are villous. The membranous fold just inside of the upper jaw is well developed as in *Decapterus*, and whitish. The mouth, prior to preservation, is more or less protrusible.

Notes on the other examples (Cat. Nos. *ABE* '57-126; '57-127; '57-128; 57-130; '57-131). All collected along with the example described above. Total length 374-

* In other specimens, the right membrane laps over the left.

390 mm, fork length 364–378 mm, standard length (measured from the snout tip to the hind end of the vertebral column) 313–325 mm. Three specimens (ABE '57-128, '57-130, '57-131) have been skeletonized. Total number of vertebrae 25 (=12+13) (counting the hindmost segment as 1) in all three specimens. The 3rd proximal dorsal radial (interneural) is much wider than the 1st and 2nd which bear no dorsal spines, keeled laterally and inserted between the neural spines of the 2nd and 3rd vertebrae. There are 2 proximal dorsal radials between the neural spines of the 3rd and 4th vertebrae. Between each of the pairs of the successive neural spines is only a single proximal dorsal radial for the support of a dorsal spine. The hindmost proximal dorsal radial is placed just above the tip of the neural spine of the 18th vertebra in the three specimens. The number of the proximal dorsal radials is $2+21+i$ in one specimen and, with the exception of the anteriormost and hindmost radials which were not counted exactly, the number is the same for the other two specimens. The distal segments of the dorsal radials are well developed for the spinous portion of the fin, the posteriorly projecting horn of each segment fitting to the small tunnel at the root of the dorsal spine just behind; the anteriormost is inserted between the 2nd and 3rd dorsal spines, and the successive distal radial segments increase in size, forming dorsally concave depression between the dorsal spines. The distal segments of the dorsal radials for the soft fin-rays are cartilaginous, rounded, each being clipped by the roots of the left and right halves of each fin-ray.

The number of the proximal segments of the anal radials (interhaemals) is 9 in one specimen, and 10 in two specimens. The anteriormost segment is placed in front of the haemal spine of the 13th vertebra and bears the 1st and 2nd anal spines in the three specimens, and the hindmost is just in front of the haemal spine of the 18th vertebra. The distal segments of the anal radials are absent for the 1st and 2nd spines; the 3rd and 4th anal spines have each a bony distal segment of the radial just in front of the base, where a small tunnel receives a posteriorly projecting horn of the distal segment. The distal segments of the anal radials for the soft fin-rays are more or less rounded, and clipped by the bases of left and right halves of each fin-ray.

The number of the caudal fin-rays is vii/8/vii in one specimen, viii/8/7/vii in one specimen and viii/8/7/vi+x in one specimen.

The structure of the hindmost and penultimate vertebrae is somewhat complicated; the anteriormost ventral element of the hindmost vertebra has a fairly strong postero-dorsally projecting spine at its postero-dorsal corner on each side; there are three free neural elements between the neural spine of the antepenultimate vertebra and the urostyle; there are three fairly broad, nearly triangular, fan-like, flattened bones between the latter and the anteriormost ventral element of the hindmost vertebra mentioned above; furthermore, in one specimen, there are two small bones just below the ventral end of the haemal spine of the penultimate vertebra. *(to be concluded)*