

A REVIEW OF THE OPLEGNATHOID FISHES OF JAPAN.

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In the present paper is given a review of the *Oplegnathidae* found in the waters of Japan.

Family OPLEGNATHIDÆ.

Body rather short and deep, moderately compressed, covered with very small ctenoid scales; lateral line continuous; mouth small, the teeth continuous with the substance of the bones forming a sharp trenchant edge to the jaws; no teeth on palate; lower pharyngeal bones separated; gills 4; 6 or 7 branchiostegals; gill-rakers 20 or 21; gill-membranes free from the isthmus; pseudobranchiæ large. Dorsal fin with about 12 spines, the spinous portion longer than the soft, the soft fins scaly at base; anal similar to soft dorsal, with 3 spines; ventrals thoracic, I, 5; post-temporal forked, not fused with the epiotic.

A single genus with few species inhabiting the Pacific Ocean, one on the coast of Peru, two in Australia, and two in Japan. The nearest relationships of the family are apparently with the *Hæmulidæ* and other Perciform fishes, but it shows some traits of affinity with the *Chætodont* forms. The family differs from all allied forms in the united teeth, which resemble those of the Parrot fishes, although without doubt independently developed. It has no relation to any other group having fused teeth.

The following notes on the skeleton of *Oplegnathus* are given us by Mr. Edwin Chapin Starks:

The genus in certain characters resemble the *Ilarchidæ* (*Ephippidæ*), though it is much more typically percoid. It is certainly not related to the *Chætodontidæ* except as through the *Ilarchidæ*. Post-temporal forked, its lower limb short as in *Chætodipterus*, its upper limb rather loosely overlying the epiotic and not attached to it by a suture by its anterior edge.

The skull is very much like that of *Chætodipterus*, though the supraoccipital crest is not so high nor does it extend so far forward. The temporal crest extends farther forward. It does not meet the occipital crest, but stops with it at the frontals. There is a well-developed process descending from the basisphenoid which is absent in the *Chætodipterus*. Both have a process from the basisphenoid to which the

pharyngo-branchials are attached. The facial bones are in no way peculiar. The angular bone on the lower jaw is present. The maxillaries are widely separated by premaxillaries. The suborbital ring has a well-developed under shelf. The hyoid arch and shoulder girdle do not differ from the percoid type. Branchiostegals seven. Three pairs of tooth-bearing pharyngo-branchials of about equal size. Lower pharyngeals separate. Vertebrae $10 + 14 + \text{hypural} = 25$. Vertebrae not crowded as in *Harchida*. Parapophyses developed on all the abdominal vertebrae except the first three. They begin abruptly and are low on the centra.

OPLEGNATHUS Richardson.

- Oplegnathus* RICHARDSON, Proc. Zool. Soc. Lond., 1840, p. 27 (*conwayi*).
Hoplegnathus RICHARDSON, Ichth. China, 1846, p. 247 (corrected spelling).
Scarodon SCHLEGEL, Fauna Japonica Poiss., 1844, p. 89 (*fasciatus*).
Ichthyorhamphos CASTELNAU, Poiss. Afrique Austr., p. 35 (*pappei*).
Scarostoma KNER, Sitzg. Ak. Wiss. Wien, 1867, p. 715 (*insigne*).

Characters of the genus included above.

(ὄπλον, armature; γνάθος, jaw.)

- a. Body with seven black cross-bands; D. XII, 17; A. III, 13; scales, 95... *fasciatus*.
 aa. Body everywhere coarsely spotted with blackish; D. XII, 15; A. III, 13; scales,
 110 *punctatus*.

OPLEGNATHUS FASCIATUS (Schlegel).

ISHIDAI¹ (STONE TAI, OR PERCH), SHIMAYOKODAI (CROSS-BANDED PERCH), YOKOSHIMADAI.

- Poisson Perroquet Noir* TILESUS, Krusenstern's Reise, 1809, pl. LI, fig. 2; near Nagasaki.
Scarodon fasciatus SCHLEGEL, Fauna Japonica, Poiss., 1844,² p. 89, pl. XLVI, figs. 1, 2; Nagasaki.
Hoplegnathus fasciatus RICHARDSON, Ichth. China, 1846, p. 247; Canton.—BLEEKER, Ichth. Fauna Japonica, 1853, p. 6; Kaminoseki.—GÜNTHER, Cat. Fish., III, 1861, p. 357; Japan.—WAITE, Records Austral. Mus., III, 1900, p. 214 (discussion of synonymy).
Hoplegnathus fasciatus STEINDACHNER and DÖDERLEIN, Fische Japans, II, 1883, p. 24; Tokyo, Kochi.—NYSTROM, Svensk. Vet. Handl., 1887, p. 38; Nagasaki.—ISHIKAWA, Prel. Cat., 1897, p. 33; Nugata, Kigo.—STEINDACHNER, Reise H. M. S. Aurora, 1898, p. 214; Kobe.
Oplegnathus fasciatus JORDAN and SNYDER, Check List, 1901, p. 82; Yokohama; Hakodate.
Hoplegnathus krusensterni GÜNTHER, Zool. Record, V, 1869, p. 146, substitute for *H. fasciatus*, supposed to be preoccupied by *H. fasciatus* Krøyer (Nat. Tyds. N. R., I, 1845, p. 213), a synonym of the Peruvian species *Oplegnathus insigne*.

Head, 3; depth, $1\frac{3}{4}$ to 2; D. XI or XII, 17 to 18; A. III, 12 to 13; P. I, 16; V. I, 5; scales 17-95-50. Body deep, strongly compressed and covered with very small etenoid scales. Head moderately deep,

¹The name Tai (written dai in compound words) in Japan is applied to *Pagrus major* primarily, a most valuable and characteristic Japanese fish, sacred to the fish god Ebisu. The particle enters into the name of most perch-like fishes and corresponds to our word perch or more exactly to porgy (*Pargo*, *Pagrus*, πάγρος). Uwo in Japanese means fish.

²According to Waite, the date of the fascicle of Fauna Japonica containing the account of *Scarodon* was published in 1844.

the upper profile oblique with the snout projecting; eye rather high, $4\frac{2}{3}$ in head and $1\frac{2}{3}$ in snout; mouth moderate, the maxillary reaching below the second nostril; teeth with sharp cutting edge; lips moderately thick; interorbital space convex; gill-opening moderately long, the membrane folding over and free from the isthmus; gill-rakers moderately long and in moderate numbers; base of dorsal and anal scaled; first dorsal spine short, before the pectoral, the other dorsal spines highest in the middle and sloping behind; soft dorsal high and rounded in front, sloping downward behind; first anal spine the shortest; anal highest in front and sloping behind; pectoral deep and rounded, $1\frac{1}{2}$ in head; ventrals longer than the pectorals, their spines $2\frac{1}{2}$ in head; caudal deep, the lobes pointed and the edge emarginate; lateral line arched, high, and concurrent with the back; caudal peduncle $2\frac{2}{3}$ in the head, compressed.

Color in spirits brown, dark above, with seven dark, distinct, black, vertical bands, the first through the eye; ventrals black; caudal broadly edged with black; lower margin of the anal blackish. Length, $6\frac{2}{3}$ inches. Here described from Tokyo examples.

This species is common in the bays of southern Japan, occurring frequently in the markets and valued as food, ranking with percoid fishes generally. Our specimens are from Aomori, Tokyo, Misaki, Wakanoura, Kobe, Onomichi, Hiroshima, Tsuruga, and Hakata.

(*fusciatus*, cross-banded.)

OPLEGNATHUS PUNCTATUS Schlegel.

ISHIGAKIDAI (STONEWALL PERCH, FROM THE COLORATION); KIKOBISHA (MOVE OF THE KNIGHT IN CHESS).

Scorodon punctatus SCHLEGEL, Fauna Japonica, Poiss., 1846, p. 91; Nagasaki.

Hoplegnathus punctatus RICHARDSON, Ichth. China, 1846, p. 247; Canton.—GÜNTHER, Cat. Fish., III, 1861, p. 358; China.

Hoplegnathus punctatus STEINDACHNER and DÖDERLEIN, Fische Japans, II, 1883, p. 24; Tokyo, Kobe, Kanagawa, Hakodate.—NYSTROM, Svensk, Vet. Handl., 1887, p. 38; Nagasaki.—ISIKAWA, Prel. Cat., 1897, p. 34; Boshu, Tokyo, Kagoshima.

Oplegnathus punctatum JORDAN and SNYDER, Check List, 1901, p. 82; Yokohama.

Hoplegnathus maculosus RICHARDSON, Ichth. China, 1846, p. 247; Canton.

Head $3\frac{1}{6}$; depth $1\frac{2}{3}$; D. XII, 15; A. III, 13; P. I, 16; V. I, 5; scales about 25–110–60. Body deep, strongly compressed and covered with very small ctenoid scales. Head moderately deep, the upper profile oblique and with the snout projecting; eye high, $4\frac{1}{2}$ in head. $1\frac{2}{3}$ in snout; mouth moderate, the maxillary reaching below the second nostril; teeth with sharp cutting edge; lips moderately thick and broad; interorbital space strongly convex; gill-opening moderately long, the membrane free over the isthmus; gill-rakers moderately long and in moderate number; base of dorsal and anal scaled; first dorsal spine short, before the base of the pectoral, the others highest

in the middle; soft dorsal high and rounded in front; spinous anal low, the first spine the shortest; soft anal highest in front, and with rounded edge; pectoral short and rounded, $1\frac{1}{2}$ in head; ventrals a little longer than the pectorals; not reaching the origin of the anal, and the spine $2\frac{1}{2}$ in the head; caudal deep, the lobes not pointed much, and its edge emarginate; lateral line arched and nearly concurrent with the back; caudal peduncle compressed, rather deep, and about $2\frac{1}{8}$ in head.

Color in spirits brown, coarsely spotted and mottled all over with blackish-brown; on the caudal, soft dorsal, and anal the spots are smaller; nostrils blackish. Length $6\frac{1}{8}$ inches. Here described from a specimen from Nagasaki. Our largest example is from Wakanoura and measures $8\frac{1}{8}$ inches.

Color in life, light olive gray with black spots.

This species occurs with the preceding in the bays of southern Japan, but in rather less abundance. Our specimens are from Tokyo, Misaki, Wakanoura, Kobe, and Nagasaki.

(*punctatus*, spotted.)