

A REVIEW OF THE CLING-FISHES (GOBIESOCIDÆ) OF THE WATERS OF JAPAN.

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In this paper is given an account of the *Gobiesocidæ*, two in number, known to inhabit the waters of Japan.

Family GOBIESOCIDÆ.

CLING-FISHES.

Body rather elongate, tadpole-shaped, broad and depressed in front, covered by smooth, naked skin; mouth moderate; upper jaw protractile; teeth various, sometimes villiform, sometimes incisor-like, and posterior canines sometimes present; suborbital ring wanting; no bony stay from suborbital across cheek; opercle reduced to a spine-like projection concealed in the skin; behind the angle of the large preopercle this spine sometimes obsolete; palatine arch considerably modified; pseudobranchiæ small or wanting; gills 3 or $2\frac{1}{2}$; gill-membranes broadly united, free, or united to the isthmus; dorsal fin on the posterior part of the body, opposite to the anal and similar to it, both fins without spines; ventral fins wide apart, each with 1 concealed spine and 4 or 5 soft rays. Between and behind the ventrals is a large sucking disk, the ventrals usually forming part of it. No air-bladder; intestines short, pyloric caeca few or none; skeleton firm; vertebrae 13 or $14+13$ to $22=26$ to 36.

Carnivorous fishes of small size, chiefly of warm seas, usually living among loose stones between the tide marks and clinging to them firmly by means of the adhesive disk. Their relations are obscure, but they are probably descended from allies or ancestors of the Trachinidæ or Batrachoididæ.

- a. Lepadogasterina.* Gill-membrane attached to the isthmus; posterior part of the sucking disk with a free anterior margin.
b. Gills $3\frac{1}{2}$; each jaw with one row of conical teeth; dorsal and anal with very short, well-developed rays *Aspasua*.

ASPASMA Jordan and Fowler.

Aspasma JORDAN and FOWLER, new genus (*minimus*).

Body moderately broad, depressed anteriorly; snout prominent, depressed, suggesting the bill of a duck; jaws with rather strong, conical teeth in one series in each jaw; gills $3\frac{1}{2}$; pseudobranchiæ rudimentary; branchiostigals 5; gill-membranes attached to the isthmus; anterior margin of sucking disk free, the posterior part attached to the shoulder girdle; dorsal and anal short, with well-developed rays, both fins well separated from the caudal; no scales.

Small fishes of the warm seas of Japan, apparently closely allied to the *Lepadogaster*¹ of the Mediterranean, but the latter has longer fins (D. 15 to 18; A. 8 to 14) and a different dentition, the very small teeth being in a patch in each jaw, and one row on the scales. In *Mirbelia bimaculata*, which has also very short fins, the teeth are in a villiform patch anteriorly, as in *Lepadogaster*. The genus *Mirbelia* was originally proposed for those species of *Lepadogaster* which have the caudal free from the dorsal and anal.

(ἄσπασμα, an embrace.)

- a. Dorsal rays 6; anal rays 5; depth 7 in length; last ray of dorsal and anal not adnate to caudal peduncle *minima*, 1.
 aa. Dorsal rays 10 to 12; anal rays 9; depth $5\frac{2}{3}$ in length; last ray of dorsal and anal adnate to caudal peduncle *ciconia*, 2.

1. ASPASMA MINIMA (Döderlein).

Lepadogaster minimus DÖDERLEIN, in Steindachner, Fische Japans, IV, 1887, p. 270; Sagami Bay in 100 to 150 fathoms.

Head $3\frac{1}{2}$; depth 7. D. 6; A. 5. Body, elongate, much compressed below in front, and the laterally compressed posteriorly. Head rather long, broad, compressed, and its breadth $1\frac{3}{8}$ in its length; snout depressed, rather pointed, about 4 in the head, and 1 in the interorbital space; eyes small, lateral, 4 in the head and about equal to the snout; interorbital space, together with the upper part of the head, broad and flat; mouth with the jaws about equal and the maxillary reaching the eye. Gill-openings lateral, directly in front of the pectoral, and the isthmus very broad across; origin of the dorsal nearer the base of the caudal than the tip of the pectoral; anal very slightly behind the origin of the dorsal, the posterior edges of both fins nearly even, leaving a free caudal peduncle; pectorals very broad, short, rounded, and nearly $1\frac{3}{8}$ in the head; disk rounded, its edge entire and about $1\frac{1}{3}$ in the head; caudal short, rounded, and nearly $1\frac{3}{8}$ in the head; caudal peduncle free, strongly compressed, and its depth equal to the interorbital space.

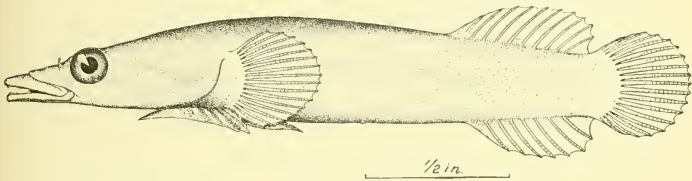
¹Gouan, Hist. Pisc., 1770, p. 177, *rostratus*.

Color in alcohol uniform lemon-yellow. Described from a specimen from Misaki about $1\frac{5}{16}$ inches long.

This little fish is known to us from two examples from tide pools at Misaki near the original locality from which the species was described. (*minus*, smallest.)

2. *ASPASMA CICONIÆ* Jordan and Fowler, new species.

Head $2\frac{3}{4}$ to 3; depth $5\frac{1}{2}$ to $5\frac{2}{3}$; D. 11 or 12; A. 9; P. 20; V. 4. Body elongate, much compressed anteriorly below so that it is more or less flattened; back convex. Head rather broad, its breadth about $1\frac{1}{2}$ in its length; snout depressed, rather pointed, about $3\frac{1}{3}$ in the head, flattened, and its length three-fourths its breadth; eyes small, lateral, about 5 in the head, $1\frac{2}{3}$ in the interorbital space, and $1\frac{2}{3}$ in the snout; interorbital space broad and flat; mouth broad, the maxillary reaching the eye; lips rather thin and broad; teeth sharp and in a single series in each jaw; gill-openings lateral, directly in front of the pectoral, and



ASPASMA CICONIÆ.

the isthmus very broad across. Origin of the dorsal nearer the tip of the pectoral than the base of the caudal, and its last ray united to the caudal peduncle by a membrane; anal beginning behind the origin of the dorsal, its last ray even with the last dorsal ray and also adnate to the caudal peduncle by a membrane; pectorals broad, rounded, and short; disk rounded, its edge fringed, about $1\frac{1}{3}$ in the length of the head; caudal short, rounded, and a little greater than the pectoral; posterior portion of the body compressed laterally so that the depth of the caudal peduncle is equal to the interorbital space.

Color in alcohol uniform pale brown with a red tint behind the eyes and on the caudal. This description from two examples from Wakanoura, measuring $2\frac{3}{8}$ and $2\frac{1}{2}$ inches respectively.

This species is distinguished from *Asparma minima* by the ends of the dorsal and anal reaching the caudal and thus their bases are upon the caudal peduncle; it also differs in the larger number of fin rays.

Our specimens from the tide pools, near Wakanoura, No. 7136, Leland Stanford Junior University museum.

(*ciconiæ*, of the Stork, in allusion to the bird for which this picturesque "Bay of Romantic Song" was once famous. The poem "Over Waka-no-ura¹ the storks fly a crying," etc., is well known in Japan.)

¹ Waka-no-ura ni
Shio michi kureba
Kara wo nami
Ashebe wo sashite
Tazu naki-watara.

Translated literally:

On the shores of Waka
When the tide flows in,
Dry land being none,
Toward the place of reeds
The storks fly crying.