

# AMERICAN MUSEUM NOVITATES

Number 224

Published by  
THE AMERICAN MUSEUM OF NATURAL HISTORY  
New York City

Oct. 5, 1926

59.7(51)

## SOME CHINESE FRESH-WATER FISHES<sup>1</sup>

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### XVIII.—NEW SPECIES IN RECENT AND EARLIER FUKIEN COLLECTIONS

On his return to China Mr. Clifford H. Pope continued his work on fresh-water fishes and has sent in collections made in 1925 from three localities in the province of Fukien. These contain a new catfish and a new loach, described herewith, together with other forms which are apparently new in Mr. H. R. Caldwell's earlier collections from the same province.

#### *Liobagrus anguillicauda*, new species

DESCRIPTION OF TYPE.—No. 8474, American Museum of Natural History, from Chungan Hsien, northwest Fukien, June–July, 1925; collected by C. H. Pope.

Length to base of caudal, 75 mm. Depth in length, 5.3; head, 4.4. Eye in head, 9; snout, 2.8; maxillary, 2.4; interorbital, 2.5; maxillary barbel, 1.5; width of mouth, 1.8; greatest width (at back of head), 1.4; pectoral, 1.7; pectoral spine, 4; ventral, 2; dorsal spine, 4; longest dorsal ray, 2; longest anal ray, 1.4; space between dorsals, 1; caudal, 1.1.

Dorsal, I, 7; anal, 16.

Head depressed, flattish on top with a trough in the center, tail compressed; bones of head and nape deeply buried. Lips flaring, wrinkled; the upper jaw slightly the longer; eye superolateral, beneath the skin, placed over the end of the maxillary; maxillary barbel slightly shorter than the outer mental, which is situated immediately behind corner of mouth; the former, when laid back, does not reach gill-cleft by a distance greater than the diameter of the eye; gill openings wide, the membranes joining where they meet the isthmus. Dorsal origin slightly nearer snout than to tips of ventrals; ventrals placed well behind the dorsal; dorsal and pectoral spines small, smooth, sheathed in the skin of the fins; pectoral reaching  $\frac{1}{2}$  the distance to ventral; ventral  $\frac{3}{8}$  to anal; adipose low, a mere keel in front; confluent with pre-current caudal rays behind; caudal rounded, subtruncate. Body, and especially fins, with the exception of the caudal, covered with lax skin; lateral line not evident.

Purplish gray; paler below; the end of caudal somewhat darker, its margin pale.

We have several specimens of this species with the same data. It shows some individual variation, and variation with size, and is close to *L. nantoensis* Oshima from Formosa, than which it has a longer anal fin.

<sup>1</sup>Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 68.

<sup>2</sup>Drawings of type specimens by Mrs. Louise Nash.

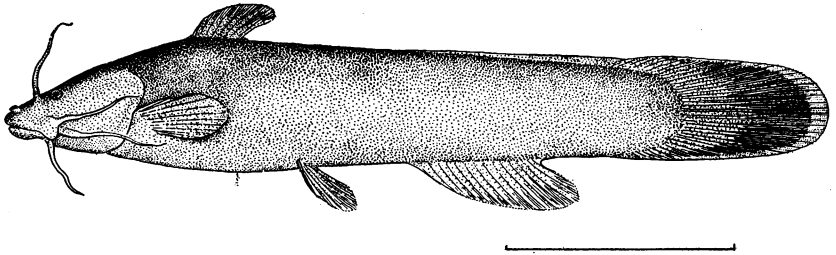


Fig. 1. *Liobagrus anguillicauda*, 75 mm. standard length.

Greater depth, longer dorsal, shorter anal, and color hold to differentiate it from *L. styani* Regan from South Hupeh; included lower jaw and longer dorsal differentiate it from *L. formosanus* Regan. Measurements of 4 specimens of *L. anguillicauda* give an idea of its variation as follows.

Length (to base of caudal)	85 mm.	75 mm. (type)	74 mm.	72 mm.
Depth	4.8	5.3	5.5	5.4
Head	5	4.4	4.4	4.4
Width of head in its length	1.1	1.4	1.2½	1.4
Dorsal	I, 6	I, 7	I, 7	I, 6½
Anal	16	16	16	16

#### ***Crossostoma fascicauda*, new species**

DESCRIPTION OF TYPE.—No. 8475, American Museum of Natural History, from Fuching Hsien, Fukien, August–October, 1925; collected by C. H. Pope.

Length to base of caudal, 81 mm. Depth in length, 6; head, 4.1. Snout in head, 1.9; interorbital, 3; width of mouth, 3.6; distance mouth to snout, 5; chord of gill opening, 3.3; greatest width of body, 1.6; depth of peduncle, 2.2; its length, 2.1; pectoral, 1; ventral, 1.2; longest dorsal ray, 1.3; longest anal ray, 1.6; caudal, 1.1. Eye in snout, 3.8. Maxillary barbel in eye, 1; outer rostral barbel, 0.9; next longest rostral barbels, 1.4.

Dorsal, 11; anal, 8. Scales about 95.

Depressed anteriorly, head and snout notably so, compressed behind dorsal; lower surfaces flattened as far back as the ventrals; pectorals and ventrals in a horizontal plane; vent at  $\frac{3}{5}$  the distance from ventral axil to anal origin. Top of head flattish; snout and cheeks sloping; eye superolateral, with a free rim; mouth transverse, well under the tip of snout, a thick fleshy lip or membrane overhanging the upper jaw; lower jaw rather firm; a small, doubly rounded flap, free in front, in the center of chin at the base of the lower jaw, and a minute barbel at either side of this flap; a fringe of 13 thickish, rather weak barbels around the edge of the snout before the mouth, separated by a trough from the membrane which overlaps the upper jaw; the two outer of these barbels decidedly longer than the others, about equal in size

to a (maxillary) barbel at the corner of mouth, which last has a minute nob or barbel beside its base on the inside; gill-membranes joined to lower surface below and before origin of pectoral. Dorsal origin equidistant from tip of snout and base of caudal, slightly in advance of ventral origin; pectoral extending  $\frac{2}{3}$  the distance to ventral, ventral  $\frac{1}{4}$  to anal; caudal slightly lunate, the lower angle the longer. Scales firm, with conspicuous concentric striae, absent from breast, except a linear-oval patch of small imbedded scales in its center; lateral line complete, straight, in the center.

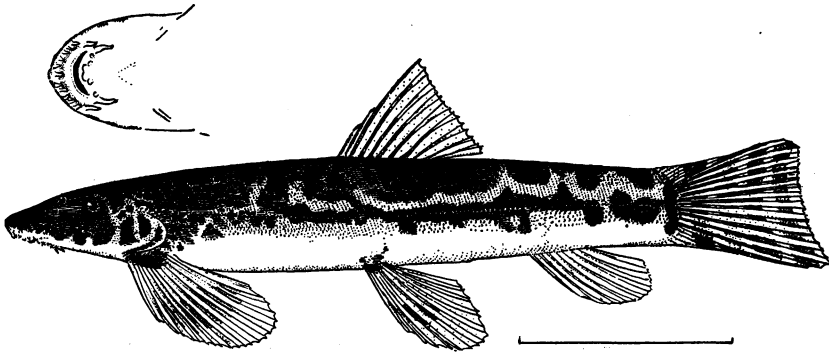


Fig. 2. *Crossostoma fascicauda*, 81 mm. standard length.

Upper surfaces mostly dark, separated from an irregular dark lateral stripe (best marked posteriorly) by a pale line, which cuts across the back at the dorsal origin, and three times behind that fin, to separate off saddle-like blotches. A conspicuous small black mark in the axil of the ventral origin. Opercle crossed by vertical pale marks. Lower surfaces whitish. Front of dorsal with 3 dark bands; caudal crossed by 4 bold black bands; lower fins each with a vague dark touch.

This fish, of which there are several specimens, is not distantly related to the type of *Crossostoma*, *C. davidi*. From this it may be most conveniently separated by its shorter barbels and color. It is close or parallel to *C. gilberti* (Oshima), from Formosa, type of *Formosania*, Oshima 1919, and belongs in *Formosania*, a subgenus of *Crossostoma*. It is intermediate between *C. davidi* and the more specialized fish next to be described, probably also intermediate between *C. davidi* and certain members of the genus *Homaloptera*. The many barbelled *Crossostoma davidi* seems to be primitive, and *Homaloptera* as recognized by the writer at present is probably polyphyletic, but nominal genera into which it has been divided are probably based on degree of specialization rather than relationship.

***Crossostoma stigmata*, new species**

DESCRIPTION OF TYPE.—No. 8476, American Museum of Natural History, from Fukien; collected by H. R. Caldwell.

Length to base of caudal, 53 mm. Depth in length, 6; head, 4.5; Snout in head, 1.6; interorbital, 2.5; width of mouth, 3; width of gill-opening, 3.5; greatest width (the back of head), 1.3; depth of peduncle, 2.4; its length, 1.5; pectoral, 0.9; ventral, 1.1; longest dorsal ray, 1.2; longest anal ray, 1.3; caudal, 0.9. Eye in snout, 2.4. Maxillary barbel in eye, 2.5; longest rostral barbel, 1.6.

Dorsal, 10; anal, 8. Scales about 90.

Head strongly depressed, gently curving above, front outline of snout rounded; body somewhat compressed back of the ventrals; lower surfaces flat from snout to ventrals, pectorals and ventrals in a horizontal plane; vent equidistant from ventral axil and anal origin. Eye superolateral, with a slight free rim; mouth well under the

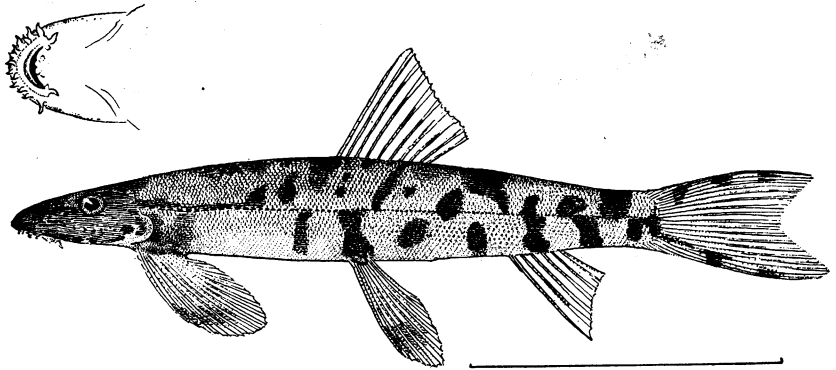


Fig. 3. *Crossostoma stigmata*, 53 mm. standard length.

snout, small, transverse, curved; snout with a fringe of 13 small barbels, somewhat irregular in size and in an uneven row; behind these a fleshy membrane or lip overhanging the upper jaw; lower lip represented by a slightly double-rounded flap, free in front, a minute barbel at its base on either side; a small barbel at the tip of the maxillary; gill opening narrow, the membranes joined to side of breast below and in front of base of pectoral. Dorsal origin equidistant from tip of snout and tip of anal; pectoral extending  $\frac{3}{4}$  the distance to ventral, ventral  $\frac{3}{4}$  to anal; caudal sharply forked for  $\frac{1}{4}$  of its length. Scales firm, strongly sculptured with concentric striæ, absent on breast and on a narrow strip over pectoral to gill opening; lateral line complete, straight, in the center.

Lateral line pale, in a dusky streak; irregular bold dark blotches above and below it and on caudal lobes, those above and below not corresponding; fins with faint vague markings.

The type is our only specimen of this well-marked species, which is sufficiently close to the preceding (*C. fascicauda*) to be included with it in Oshima's subgenus *Formosania*.

***Pseudogobio fukiensis*, new species**

DESCRIPTION OF TYPE.—No. 8477, American Museum of Natural History, from Fukien province; collected by H. R. Caldwell.

Length to base of caudal, 49 mm. Depth in length, 4.9; head, 4. Eye in head, 3; snout, 2.6; interorbital, 3.5; maxillary, 2.6; width of mouth, 3.5; greatest width of body, 1.5; depth of peduncle, 2.5; its length, 1.7; pectoral, 1.; ventral, 1.3; dorsal broken; longest anal ray, 1.7; caudal broken. Barbel in eye, 1.5.

Dorsal, 10; anal, 8. Scales, 35. Teeth (in the single cotype), apparently one-rowed; 5, small, hooked, with a pronounced shoulder, on a short raised crest which stands out obliquely from the pharyngeal bone.

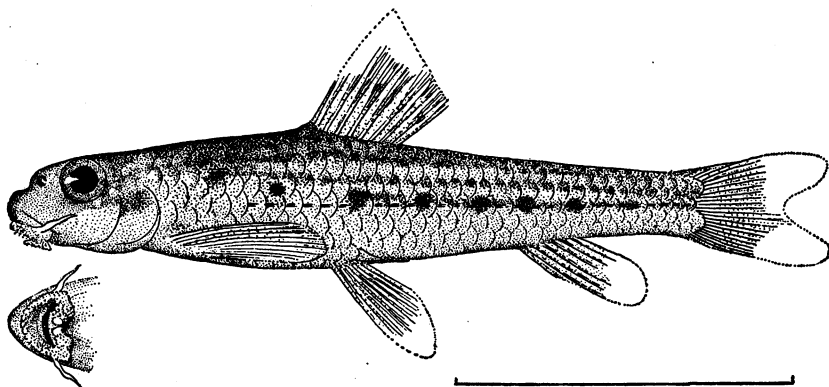


Fig. 4. *Pseudogobio fukiensis*, 49 mm. standard length.

Little compressed, flattened below anteriorly, head squarish; paired fins more or less in a horizontal plane; vent at about  $\frac{1}{4}$  the distance from ventral axil to anal origin. Top of head flat; orbital rim raised so that interorbital is slightly concave; eye placed high, slightly superolateral; a dent between nostrils and snout; mouth inferior, curved protractile downward; with thick papillose lips, free behind on the lower jaw, flaring at the corners; 2 enlarged broad flat papillæ at the chin, and 2 less enlarged ones corresponding to them on the upper lip; gill membranes joined to isthmus beneath the flap of the opercle, about under the edge of the preopercle. Dorsal and anal without spines; dorsal origin very slightly nearer anal axil than to end of snout; ventral origin under first third of dorsal base; pectoral reaching ventral origin; ventral  $\frac{3}{8}$  to anal. Scales with close-spaced radiating striæ; breast without scales; lateral line complete, straight in the center, rising slightly at its front end.

About 7 small dark spots along middle of side, and 2 faint, broken lengthwise streaks indicated above them; fins plain.

Apparently a representative form of *P. chinssuensis* from Shansi and *P. tungtingensis* from Hunan, from which it differs in fewer scales, and other particulars.

***Opsariichthys minutus*, new species**

DESCRIPTION OF TYPE.—No. 8478, American Museum of Natural History, from Fukien province, collected by H. R. Caldwell.

Length to base of caudal, 37 mm. Depth in length, 3.5; head, 3.3. Eye in head, 3.6; snout, 3.4; interorbital, 2.8; maxillary, 2.5; width of body, 2; depth of peduncle, 2.5; its length, 2; fins broken.

Dorsal,  $9\frac{1}{2}$ ; anal,  $10\frac{1}{2}$ . Scales, 45 (3 between lateral line and ventral; 9 rows between lateral line and dorsal).

Compressed, breast and belly rounded, vent immediately before anal origin. Head pointed, interorbital slightly convex; lower jaw slightly projecting; maxillary somewhat oblique, to under front of pupil; the 2 jaws interlocking along an S-shaped curve precisely as in *Opsariichthys bidens*, but less pronouncedly so; gill membranes joined to center of isthmus under hind margin of pupil. Dorsal and anal without spinous rays; dorsal origin equidistant from base of caudal and front of eye, over that of the ventrals; pectoral placed low. Lateral line complete, sloping down over the pectoral and running low, sloping up on the peduncle to run in its center for the last few scales.

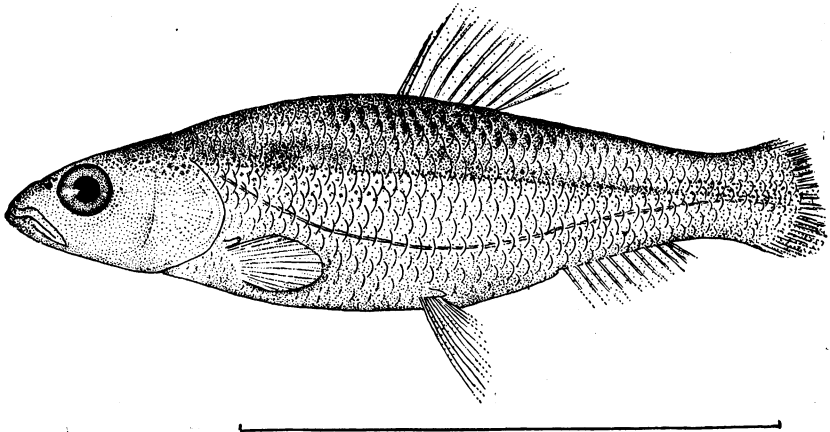


Fig. 5. *Opsariichthys minutus*, 37 mm. standard length.

Nape, and a streak from nape to dorsal dark; a fine dark streak in the center of the peduncular region; otherwise mostly pale.

Based on two small imperfect specimens, which would appear to be approximately adult. In its technical characters this little fish is like the larger predaceous species of *Opsariichthys*, from which it differs in greater depth and smaller size. It may be considered a dwarf form of that genus, or perhaps a primitive form if one assumes that *Opsariichthys* was developed from Rasbora-like fishes which run small.

***Parapelecus fukiensis*, new species**

DESCRIPTION OF TYPE.—No. 8479, American Museum of Natural History, from Fukien province; collected by H. R. Caldwell.

Length to base of caudal, 95 mm. Depth, 4.6; head, 4.4; Pectoral as long as head; lower jaw slightly included; dorsal origin equidistant from margin of gill-cover and base of caudal.

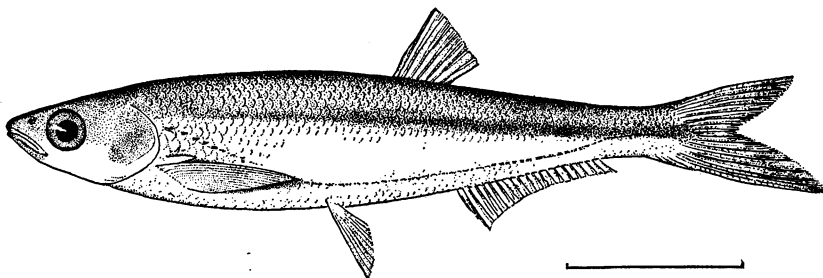


Fig. 6. *Parapelecus fukiensis*, 95 mm. standard length.

Close to *P. argenteus* Günther from Kiangsi and to *P. nicholsi* (Fowler) from Anhwei, but anal shorter, of 21 rays (versus 25). Scales (largely lacking) estimated as 65; teeth 3-rowed, 5, 3, 2.

*P. machaerius* Abbott from Chihli has a still longer anal (29). All may be races of one species. *P. fukiensis* is based on a single specimen not in very good state of preservation.

