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ART. XVI.—DESCRIPTIONS OF THE FISHES OF LAKE ERIE, THE OHIO RIVER, AND THEIR TRIBUTARIES. BY JARED P. KIRTLAND, M. D.

(Continued from page 32.)

CATOSTOMUS. Le Sueur.

C. communis. The Brook Sucker.

<i>Catostomus communis.</i>	Le Sueur.	J. A. N. S. Vol. I. p. 96, and fig.
"	<i>gracilis.</i> The Brook Sucker.	Kirtland, Rep. on Ohio, pp. 169, 193.
"	<i>communis.</i>	" " Dekay's Report, p. 196, pl. 33, fig. 106.
"	"	" " Hist. Nat. des Poissons. Cuv. et Vol. t. xvii. p. 426.

Plate XIX. Fig. 1.

Head slightly elongated, small, quadrangular, narrower than the body; *eyes* small; *iris* silvery; *nostrils* double.

Mouth and *lips* delicate, rather small.

Body sub-cylindrical, slightly compressed laterally, fusiform, the scales minute behind the operculum, gradually enlarging towards the caudal-fin; *lateral line* straight, running above the middle of the body.

Dorsal fin quadrangular, the ribs of the rays blackish.

Caudal fin small, obtuse, rather lunated than lobed. The rays at their extremities are usually blushed with red.

Anal fin narrow, attains to the base of the caudal.

Pectoral fin ovate.

Color. The back and head olive and iridescent; sides silvery; beneath, pearly white.

Length, 12 to 18 inches.

Hab. Big and Little Miami, and the Mahoning Rivers, and also in most of the smaller streams.

D. 14; C. 18; A. 8; V. 10; P. 18 rays.

Observations. A fish, which I suppose to be the male of this species, may be seen on the ripples of the small streams, collecting in great numbers in the spawning beds during the month of June. At that time the rays of the anal fin are

studded with prominent tubercles, which appear to be deciduous at the close of the spawning season. Its body is so poor and slender at that time, that it has very little resemblance to the females or to itself at other seasons.

C. bubalus. Raf. Buffalo Sucker. Brown Buffalo.

Catostomus bubalus. Rafinesque. Ichthyol. Ohiensis, p. 55.

" " " Kirtland's Rep. on Zool. of Ohio, pp. 169, 192.

Plate XIX. Fig. 2.

Head one fifth of the total length, rounded, rapidly declivous, gibbous between the eyes and on the forehead, compressed laterally; *back* gibbous, sub-carinate; *abdomen* rectilinear, thicker than the back; *lateral line* straight; *scales* large, somewhat radiate with minute lines. *Dorsal fin* long, commencing as far forward as the ventral, and terminating over the middle of the anal fin, the anterior portion elevated, the posterior low and horizontal.

Caudal fin bilobed, the lobes equal in length, the lower broader.

Anal fin trapezoidal, acutely terminated, extending as far as the base of the caudal.

Ventral fin nearly medial.

Pectoral fin does not extend as far back as the commencement of the dorsal.

Color. *Back* and *head* brown, *sides* bronzy and metallic, *abdomen* whitish, *iris* gilt.

Length, from one to three feet.

Hab. Ohio river.

D. 28; C. $18\frac{2}{2}$; A. $11\frac{1}{2}$; V—; P. 16 rays.

Observations. This is the largest species of *Catostomus* found in the western waters. Its flesh is eatable, but coarse, and not highly esteemed.

The color and form vary with age. The young is nearly elliptical in its outline, and is often sold in the market as a distinct species, under the name of *Buffalo Perch*.

C. elongatus. Le Sueur. Missouri Sucker. Black Horse of the fishermen.

<i>Calostomus elongatus</i> .	Le Sueur.	Jour. Acad. Nat. Sc.	Vol. I. p. 103, and fig.
" <i>niger</i> .	Raf.	Ich. Obiensis,	p. 56.
" <i>elongatus</i> .	Le Sueur.	Kirtland's Report,	pp. 169, 192.
" "	"	Dekay's Report,	p. 203.
" "	"	Hist. Nat. des Poiss.	t. xvii. p. 455.

Plate XIX. Fig. 3.

Head conic-cylindrical, elongate, and glaucous. *Nose* projects beyond the mouth; *nostrils* double, circular, the anterior smaller. *Mouth* small, semicircular; *lower lip* with prominent papillæ, posterior edge acute. *Eyes* small, circular; *iris* narrow, yellow or silvery. The *head* is one-sixth of the total length, and narrower than the body.

Body regularly fusiform, gradually widening from the base of the head to the dorsal fin; and, from thence to the tail, more gradually tapering. At the dorsal, the diameter of the body is one-fifth the total length. *Abdomen* full between the pectoral and ventral fins, and the body cylindrical at that point.

Dorsal fin long, equal to one-third the length of the fish, low, with its anterior portion elevated and falciform. It extends posteriorly as far as the anal fin.

Caudal fin acutely lunated, the superior lobe the longer and narrower, scales extend upon the base and terminate abruptly.

Anal fin small, trapezoidal, scaly upon its base.

Ventral and pectoral fins falcate.

Color. The head dusky above, coppery on its sides. Back black, often slightly mottled. Sides and beneath dusky and cupreous. Fins dusky and livid.

Length 2 to 3 feet, and *weighing* from 2 to 15 pounds.

Hab. Ohio River.

D. 35; C. 18; A. 8; V. 9; P. 15 rays.

Observations. This singular fish is not uncommon in the Cincinnati market at certain seasons of the year, especially in

the spring and autumn. It migrates down the river at the approach of winter. The peculiar color and form distinguish it from all the other species of the *Catostomi*. As an article of food, it is esteemed more highly than any other of this family.

Le Sueur drew his figure, published in the 1st vol. of the Journal of the Acad. of Nat. Sciences, at Philadelphia, from a dried specimen; and, with the exception of the dorsal fin, it has little or no resemblance to the recent fish.

C. Duquesnii. Le Sueur. Pittsburg Sucker. Red Horse of the fishermen.

<i>Catostomus Duquesnii</i> .	<i>The White Sucker</i> .	Le Sueur.	Jour. Acad. N. Sc. Vol. I.
			p. 105, and fig.
"	"	"	Kirtl. Report, pp. 169, 192.
"	"	"	Dekay's Report, p. 203.
"	"	"	Hist. Nat. des Pois. t. xvii.
			p. 458.

Plate XX. Fig. 1. Male.

Plate XXI. Fig. 2. Female.

MALE. *Head* small, protuberant before the eyes; *mouth* and *lips* not large; *eyes* circular.

Body regular fusiform, back slightly gibbous before the dorsal fin, rectilinear behind it.

Dorsal fin trapezoidal, falcated on its upper edge, the two first rays elongated and recurved, color a bright carmine.

Caudal fin deeply and acutely bilobed; the lobes produced, falcated, and at their extremities incurved; color the same as the dorsal.

Anal fin extends beyond the base of the caudal, oval, acute at its extremity; color bright carmine.

Ventral fin terminates posterior to the dorsal, orange-color.

Pectoral fin at its point extends as far as the commencement of the dorsal, ovate, slightly falcate; color the same as the ventral.

Length from 12 to 18 inches.

Color of the back and forehead dusky olive and coppery,

sometimes iridescent with pale blue; sides coppery; beneath the throat and abdomen white. The colors vary in specimens from different localities, and in different seasons of the year.

Hab. The Ohio River and all its larger tributaries.

FEMALE. The female differs from the other sex by having a larger head, mouth, and lips, larger trilobed scales, a quadrangular dorsal fin, with the caudal fin less deeply bilobed and the lobes broader. The color of the fins is also different; the caudal, anal, and dorsal of the female being of a dusky olive or brown, and the pectoral and ventral a dull orange.

Length from 1 to 2 feet.

Hab. Ohio River and its tributaries.

Observations. The size, contour, and color of the male and female, as well as the forms of their fins, differ so much, that they are often mistaken for different species. Hence, I have deemed it expedient to give a drawing of each sex. It is also very difficult to distinguish the male of this species from the male *C. anisurus*. The absence of the deep sulcation before the eyes and of the elevated protuberance on the nose in the one, and their presence in the other, will always enable us to decide the point correctly. The color of the former is also darker and more cupreous.

The Red Horse Sucker remains permanently in our waters, and, during the winter, collects into numerous shoals in the deeper waters. It rarely, if ever, bites at a baited hook, but is taken in great numbers by seines and nets. As an article of food, it is not highly valued.

C. anisurus. Raf. White Sucker. White nose of the fisherman.

Catostomus anisurus. Ohio Carp Sucker. Raf. Ichth. Ohiensis, p. 54.

Plate XX. Fig. 2.

Head elongate; *nose* prominent, with an elevated protuberance; between the protuberance and nostrils is a trans-

verse sulcation. *Lips* of the female large and prominent; those of the male smaller.

Body short, thick, and slightly compressed on the sides.

Dorsal fin emarginate, quadrangular, the angles rounded. The tip extends nearly as far back as the vent.

Caudal fin large, bilobed, the upper lobe narrower, longer, and falcate.

Anal fin oval-acuminate, and reaching the base of the caudal.

Ventral fin extends beyond the base of the dorsal.

Pectoral fin attains near to the dorsal, but not to the ventral, as described by Rafinesque.

Length, from one to two feet.

Color. The body and head brownish above, sides and abdomen silvery. *Dorsal* and *caudal fins* olive, *anal* reddish, *ventral* and *pectoral* orange-colored.

Hab. Ohio river, and most of its tributaries.

D. 17; C. $22\frac{4}{4}$; A. $8\frac{3}{2}$; V. — P. 15 rays. The number differs in different specimens.

Observations. A superficial observer would hardly distinguish this species from the Red-Horse Sucker (*C. Duquesnii*) yet its specific characters are evident, and are permanently established. The deep, transverse sulcation before the eyes, the elevated protuberance on the nose, and the silvery lustre of the sides and abdomen will, under all circumstances, distinguish it.

The drawing was made from a female eighteen inches in length. The males are smaller, more elongate, and less gibbous on the back and forehead.

This species is common, and is taken in great quantities by means of weirs, seines, and sometimes with a hook. Its flesh is soft, tasteless, and abounding with numerous small bones. It does not migrate from the small streams during the winter.

C. melanops, Raf. Black-nosed Sucker. Spotted Sucker.*Catostomus melanops*. Black face Sucker. Raf. Ichthyol. Ohiensis, p. 57.

" " Spotted Sucker. Kirtland's Rep. pp. 169, 193.

Plate XX. Fig. 3.

Head conical, one-fifth the total length, *nose* somewhat depressed, forehead slightly elevated behind the eyes; *eyes* small, circular; *iris* dusky; *nostrils* anterior to the eyes; *lips* of a medium size.

Body uniform, elliptic, full, cylindric; *back* slightly gibbous before the dorsal fin; sides hardly compressed; *abdomen* tumid; diameter equal to one-fourth the length.

Dorsal fin quadrangular, small in proportion to the body.

Caudal fin of medium size, slightly lunated.

Anal fin reaches the base of the caudal.

Pectoral fin short, small and elliptical, does not extend to the commencement of the dorsal.

Color. The nose, forehead and back dusky or blackish, the sides of the head and upper portions of the operculum marked with irregular patches of the same color; the mouth and lips white; the sides of the body often reflect a steel grey or metallic lustre, and the base of each scale is impressed with a number of abbreviated, dusky lines, which give the sides a striped or banded appearance, like the *Labrax chrysops*.

Lateral line obsolete; scales rather large.

Length 18 inches.

Hab. Ohio and Big Miami Rivers.

D. 13; C. $18\frac{4}{4}$; A. 9; V. 9; P. 16 rays.

Observations. Rafinesque's descriptions do not well apply to this rare species, but I believe it is the one for which they were intended, I therefore retain his name. The form and color distinguish it from the other members of this family. It is not esteemed for food even as highly as many of them.

EXOGLOSSUM. Raf.

E. dubium. Kirtland. The Sucker-mouthed Chub.

Exoglossum Lesueurianum. Rough-nosed Dace. Kirtland's Rep. pp. 169-193.

Plate XXI. Fig. 1.

Head somewhat elongated; *eyes* small, prominent; *upper jaw* projects two lines beyond the lower, which is small, semi-circular, and mostly concealed by the projection of the upper when the mouth is closed; *lips* circular, the lower reflected, after the manner of the *Catostomi*, only smaller and less fleshy.

Body gibbous on the back, before the dorsal fin, cylindrical, slightly compressed on the sides; abdomen full; scales small oval.

Dorsal and *anal fins* trapezoidal; *caudal fin* bilobed, the upper lobe acuminate, the lower obtuse; *pectoral fin* falcate, subovate.

Color. *Irides*, golden yellow, *head* and *back* olive, operculum iridescent, sides dusky, *abdomen* white, *fins* fulvous.

Length, from 4 to 6 inches.

Hab. Yellow Creek, Poland, Trumbull Co., Ohio.

D. 8; C. 20; A. 7; V. 8; P. 14.

Observations. The only locality in which we have met with this fish is in the deep and dark glens of Yellow Creek, below the village of Poland. It there confines itself to the ripples in the most retired situations, where the stream, overshadowed with clusters of the spruce pine, winds among the rocks. During the spring it readily bites at a baited hook, and may be taken in considerable numbers. At that season the males are thickly armed, on both the head and body, with spinous tubercles, which are deciduous, and drop off at the approach of summer.

We formerly supposed it to be the *Cyprinus Maxilingua* of Le Sueur, the *Exoglossum Lesueurianum* of Raf., but a

closer examination renders it certain that it is not that species.

In the peculiar form of its mouth it resembles some of the *Catostomi*, but the form of the body and fins more nearly assimilate it to the genus under which we have placed it. We usually find it associated with the *Semotilus biguttata*, and in the habits of the two there is a strong resemblance.

C. nigricans. Le Sueur. Mullet. Mud Sucker.

<i>Catostomus nigricans.</i>	Le Sueur.	Jour. Acad. Nat. Sc. Vol. I. p. 102.
"	"	Storer's Rep. on Fishes of Mass. p. 86.
"	"	Kirtland's Report, pp. 169, 193.
"	"	Dekay's Rep. p. 202.
"	"	Hist. Nat. des Poiss. t. xvii. p. 453.

Plate XXI. Fig. 3.

Head large, quadrangular, more than one-fifth of the total length of the fish; *eyes* oblong, with a profound impression beneath.

Body subquadrangular at its junction with the base of the head; cylindric and tapering from the dorsal-fin to the tail; *abdomen* full and rounded.

Dorsal fin quadrangular, elevated before.

Caudal fin deeply lunate.

Anal fin, at its tip, reaches the base of the caudal.

Ventral fin falcate, extends beyond the dorsal.

Pectoral reaches as far back as the commencement of the dorsal.

Color. The back and head dusky brown; sides olive and brown, blotched with 4 or 5 transverse dusky brown bars, which are interrupted in their course on the sides; abdomen and sides cupreous; sides of the head iridescent and cupreous.

Length 12 to 16 inches.

Hab. Every permanent stream in the west.

D. 11; C. 18; A. 8; V. 9; P. 18 rays.

Observations. This is the most common species of Sucker,

and is taken in great numbers by means of seines. It is common in the streams of the middle, northern and western States. During winter it is a permanent resident, and does not even seek the deeper waters. As an article of food it is not valued.

LEUCISCUS. Klein.

L. dorsalis. Raf. Common Chub.

Semotilus dorsalis. *Bigback Chubby.* Raf. Ich. Ohien. p. 49.
 " " *Smooth-headed Chubby.* Kirtland's Rep. p. 169.

Plate XXII. Fig. 1.

Head full, round and conical, united to the back with a deep suture.

Body cylindric, back gibbous before the dorsal fin, and longitudinally sulcate.

Caudal fin slightly bilobed, the other fins rather small; the *pectoral* do not attain to the *ventral*, the *dorsal* is anterior to the vent.

Length 6 to 10 inches.

Color. Fins fulvous, the anterior part of the base of the dorsal and the centre of the base of the caudal marked with a dark brown or black spot; head and back bronzed; a brown stripe extends from the base of the tail to the head above the lateral line; abdomen white and silvery.

D. 8; C. 20; P. ?; V. 8; A. 8.

Hab. All of the western streams.

Observations. We have been disposed to consider this as only the female of the *S. cephalus*, but dissections do not sustain us in that view, and we are compelled to follow Rafinesque's arrangement. He makes it a distinct species.

It is difficult to distinguish the young of the two species, but the smaller size of the head and mouth, and the more graceful form of the body of the present species, will always enable us to draw the lines of distinction between the two that are full grown.

SCLEROGNATHUS. Val.

S. cyprinus. The Carp. Le Sueur.

- Catostomus cyprinus*. *The Carp*. Le Sueur. J. A. N. S. Vol. I. p. 91, and fig.
Labeo cyprinus. Regne Animal, Griffith's translation, p. 381.
- Catostomus velifer*. *The Sailing Sucker*. Raf. Ich. Obiensis, p. 56.
- " *carpio?* *Olive Carp Sucker*. A variety from age. Raf. Ich. Obiensis, p. 56.
- " *velifer*. *Carp of the Ohio*. Kirtland's Report, pp. 169, 192.
- Labeo cyprinus*. *The Long-finned Chubsucker*. Dekay's Report, p. 194.
- Sclerognathus cyprinus*. Hist. Nat. des Poissons, t. xvii. p. 474.

Plate XXII. Fig. 2.

Head short, small, compressed laterally, about one-sixth of the total length; *operculum* radiated with diverging, iridescent lines; *mouth* and *lips* small; *nose* rounded.

Body oval, compressed, the relative diameter varies with age; *abdomen* thicker than the back, slightly flattened beneath. Back carinated under the anterior half of the dorsal fin.

Dorsal fin deeply falcated, the anterior rays longer than the diameter of the body in young specimens, but the proportion decreases in the old.

Caudal fin deeply bilobed, lobes equal.

Anal fin acute, reaches the base of the caudal.

Ventral fin short.

Pectoral fin ovate.

Color. The dorsal and anal fins dusky olive, the other fins faint vermilion or orange. The head, back, and sides silvery, sometimes a little shaded with olive and blue; iridescent; belly white.

Length 12 to 18 inches.

Hab. Ohio River and Lake Erie.

D. $25\frac{3}{2}$; C. $18\frac{4}{4}$; A. $8\frac{2}{2}$; V. $10\frac{1}{2}$; P. 16 rays.

Observations. It is very rare in Lake Erie, but abundant

during the whole year in the Ohio. As an article of food, it is not much valued in the market of Cincinnati. It is called the Lake Shad by the fishermen at Cleveland.

L. diplemia. Raf. Red Sides. Warty Chub.

Semotilus diplemia. Warty Chubby. Minny. Red-fin. Raf. Ich. Ohien. p. 50.
 " " Red-sided Chub. Kirtland's Rep. p. 169.

Plate XXII. Fig. 3.

Head compressed laterally, flat between the eyes; snout rounded, and in the males warty; *operculum* bordered behind with a diaphanous membrane. *Eyes* flat, circular, situated near the top of the head. *Under jaw* slightly projecting.

Back elevated, sides flattish, lateral line flexuous; scales on the sides oval and elongated perpendicularly.

Color. The back olive, abdomen white and silvery, the sides iridescent and violaceous, marked with irregular and interrupted black lines on the posterior edges of the scales. Fins orange color in the females, violet or red in the males.

Length 2 to 4 inches.

Hab. All the western streams.

D. 9; C. 22; A. 9; V. 8; P. 14.

Observations. The number of rays in the different fins vary in different specimens, which will account for a discrepancy between the descriptions of M. Rafinesque and myself.

Great numbers of this fish collect on the ripples in the smaller streams during the spring of the year, and excavate extensive beds, in which they deposit their spawn. After this period, they return to deeper waters, and lose much of the brilliancy of their colors during the remainder of the year.

Fig. 1.

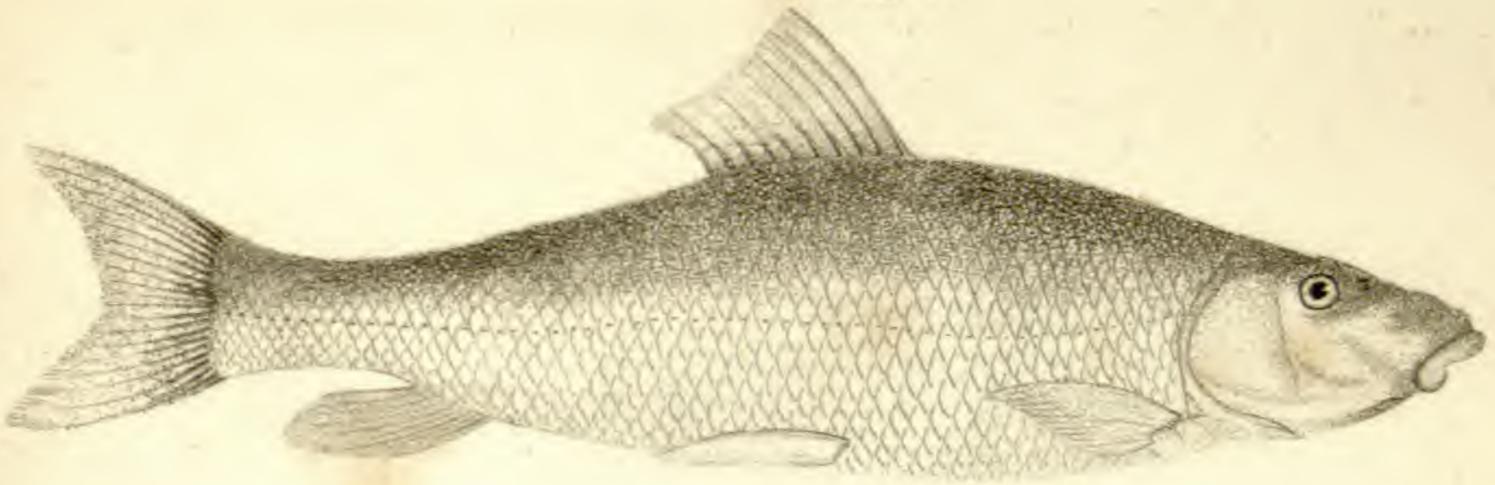


Fig. 2.

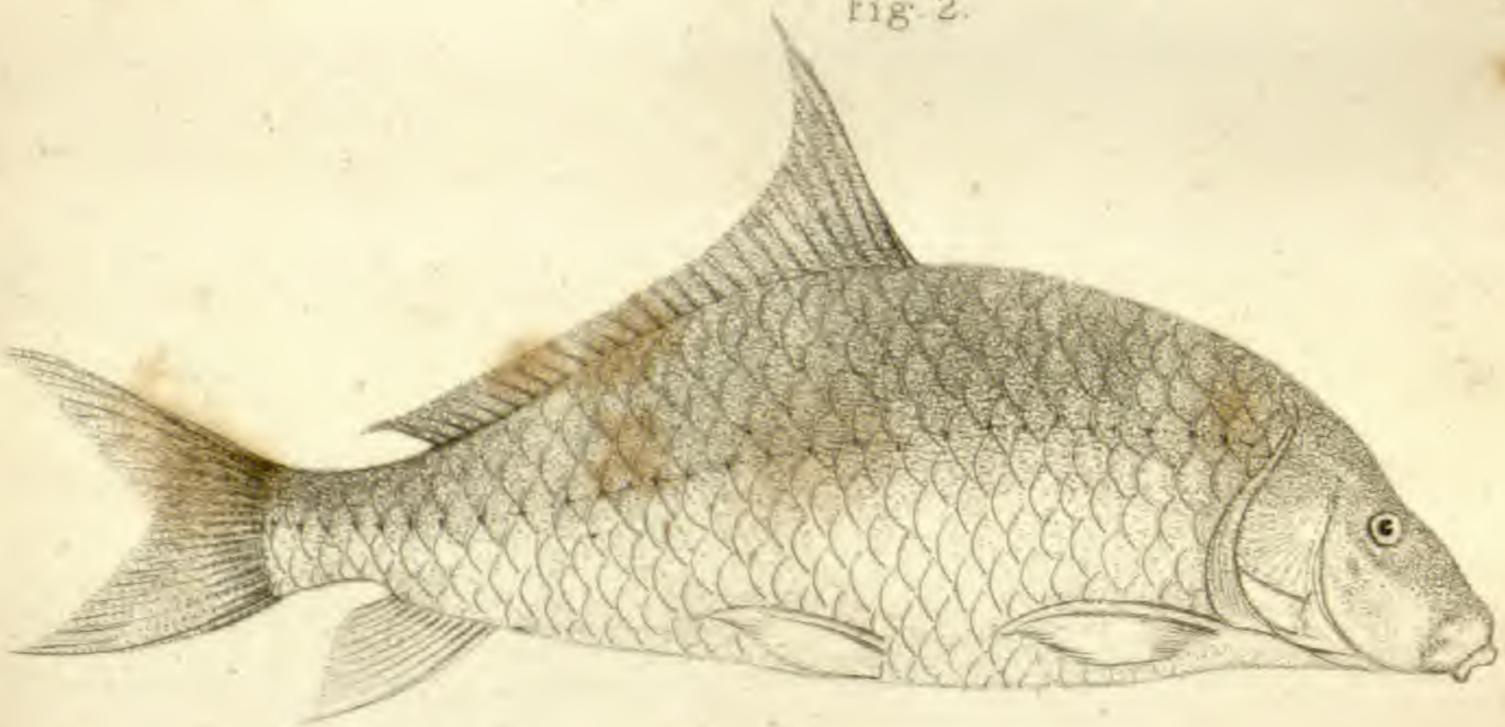


Fig. 3.



Kirtland, del.

W. H. Tappan, Sc.

Fig. 1-Catostomus communis Les. — Fig. 2-Catostomus bubalus. Raf
Fig. 3-Catostomus elongatus Les.

Fig 1.

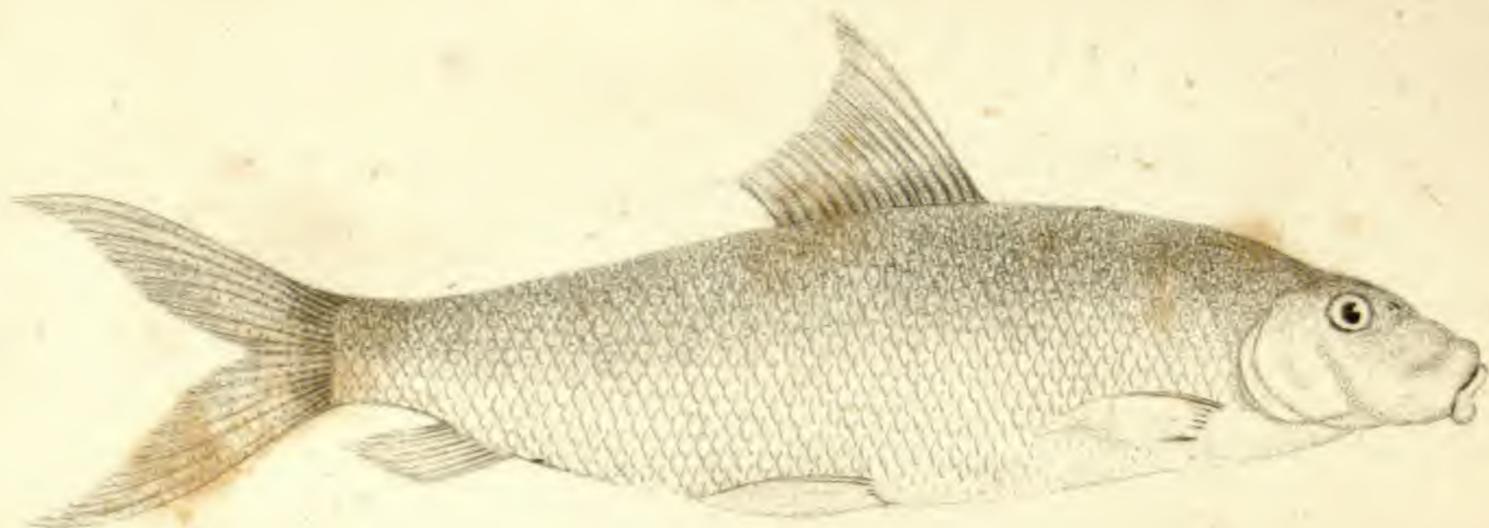


Fig 2.



Fig 3.



Kirtland del.

W H Tappan Sc.

Fig 1-Catostomus Duquesnii Les (male) Fig 2-Catostomus anisurus Raf.
 Fig 3-Catostomus melanops Raf

Fig. 1.

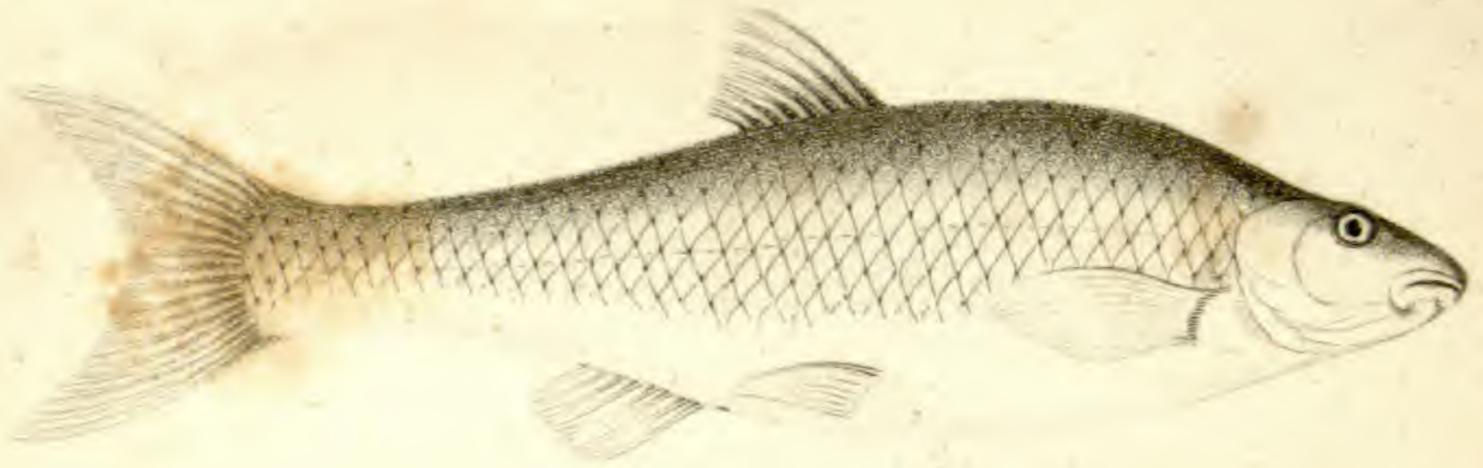


Fig. 2.

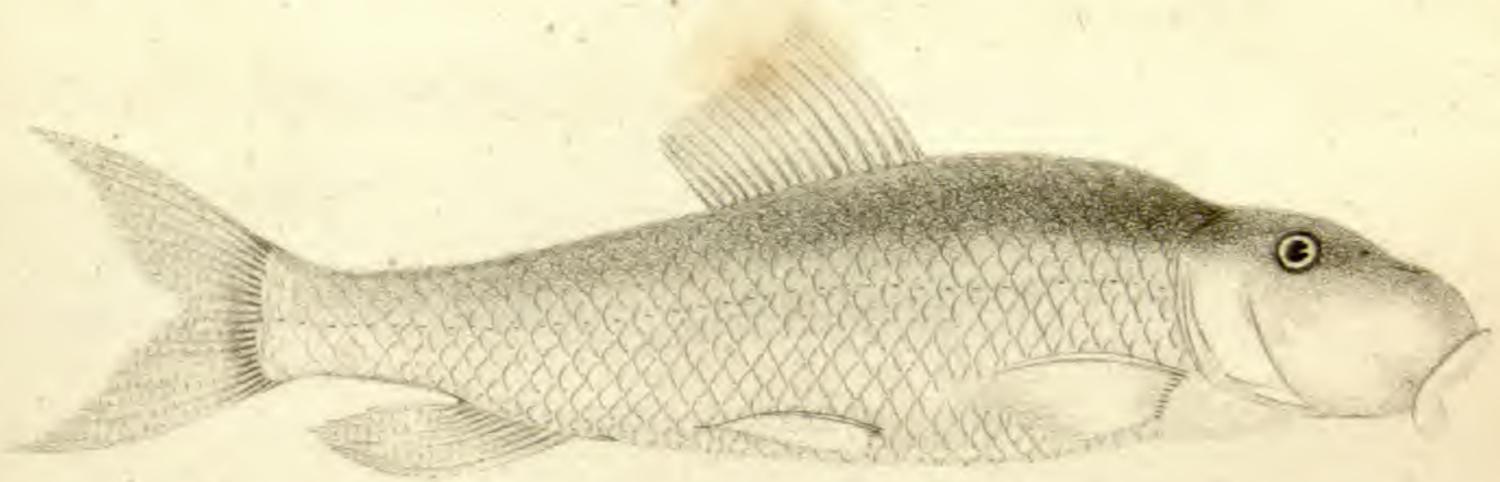
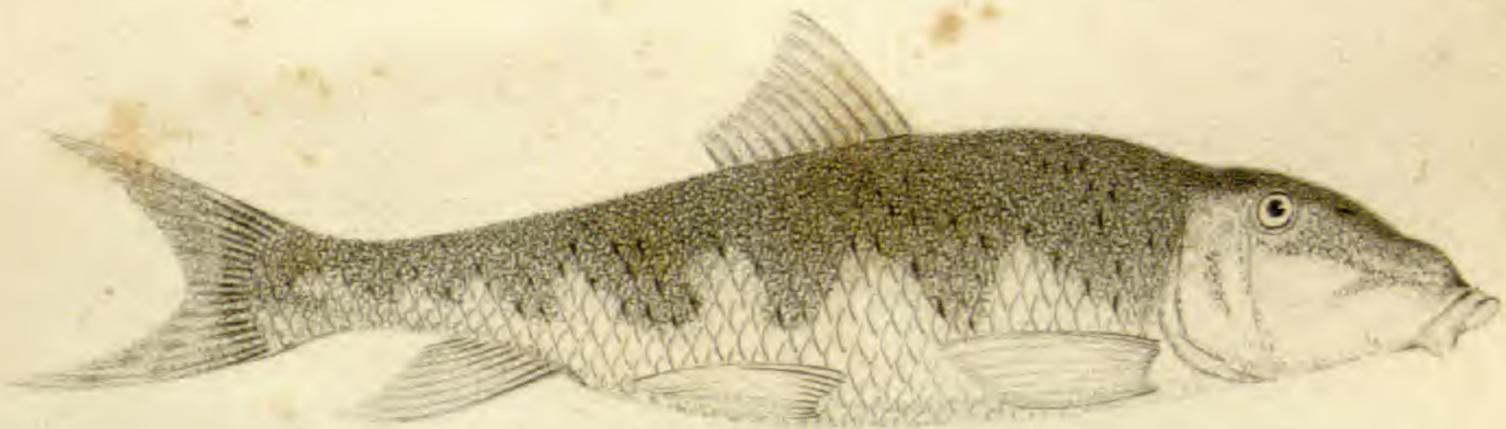


Fig. 3.



Kirtland del.

W.H. Tappan Sc.

Fig. 1-*Exoglossum dubium* Kirtland — Fig. 2-*Catostomus Duquesni*. Les (female)
 Fig. 3 *Catostomus nigricans*. Les.

Fig. 1.



Fig. 2.

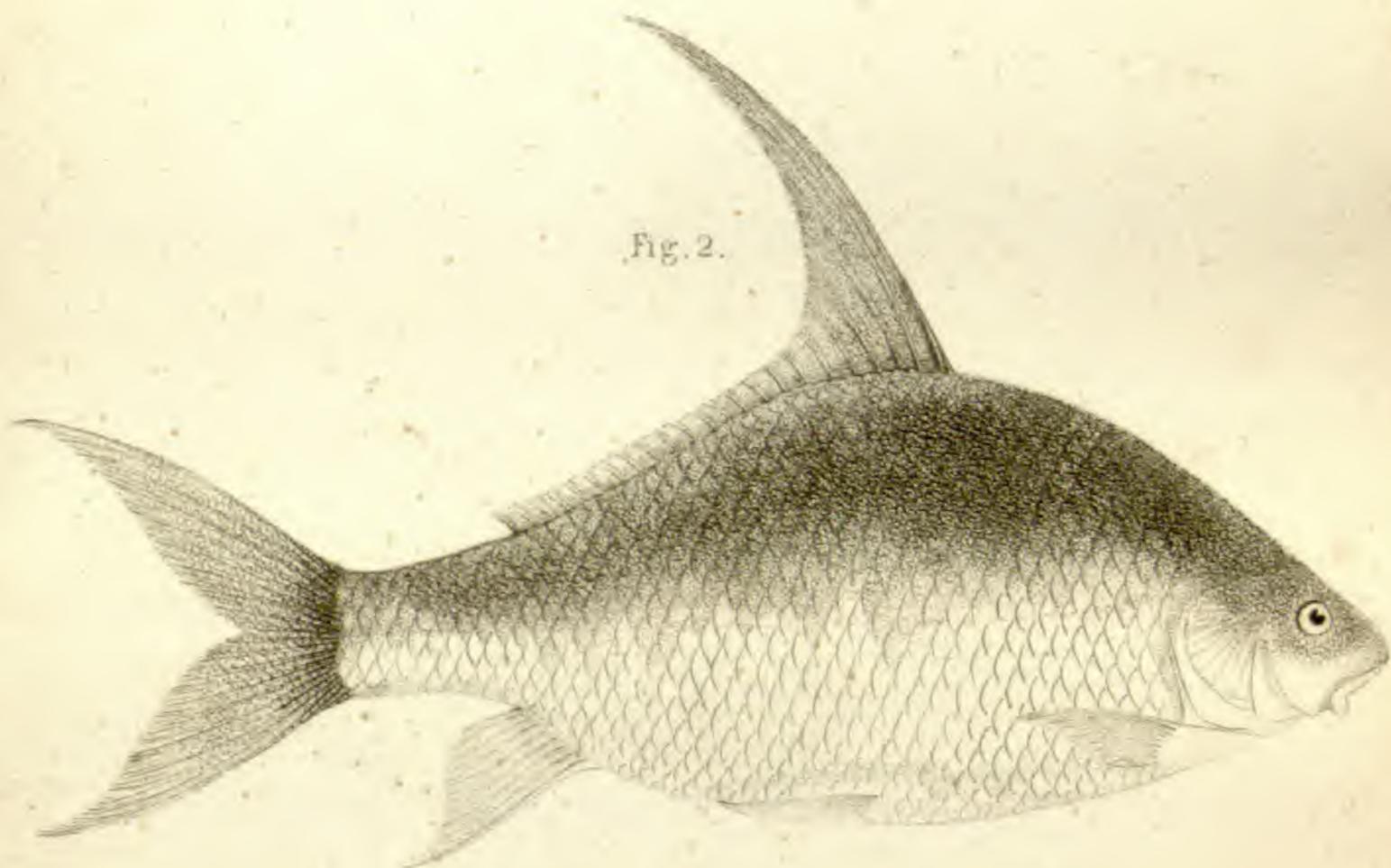
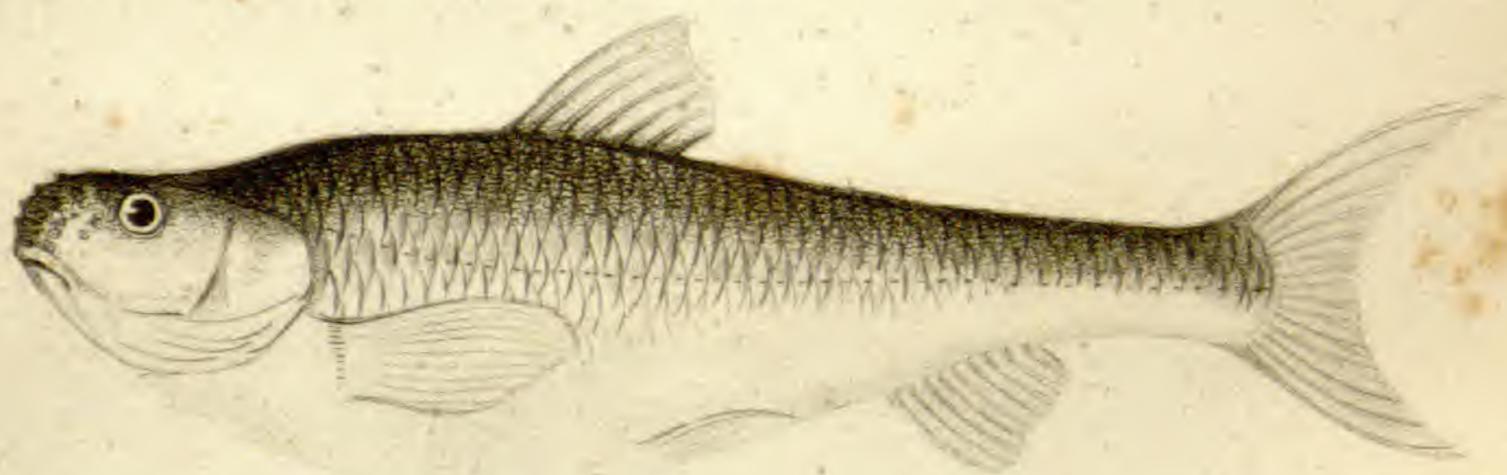


Fig. 3.



Kirland del.

W.H. Lappan Sc.

Fig. 1-*Leuciscus dorsalis* Raf - Fig 2-*Solerognathus cyprinus* Les.
Fig 3-*Leuciscus diploema* Raf

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