

ON THE RELATIONS AND NOMENCLATURE OF STIZOSTEDION OR LUCIOPERCA.

By THEODORE GILL, M.D., PH.D.

IN a valuable article on *Lucioperca marina*, C. & V.,\* Mr. Boulenger has raised two questions of interest, viz:

1. The point to which I now wish to draw special attention is the close affinity which the Black Sea and Caspian species bears to the North American, and especially to *L. canadensis*.

2. *Lucioperca* should date from the first edition of the 'Règne Animal', 1817, where Cuvier (p. 295) does use the Latin name ("ce qui leur a fait donner le nom de *lucio-perca*"), although indirectly and without a capital.

The former involves an important question of zoogeography. Is the form in question really related more nearly to the American than to the other European species?

The second involves a question of nomenclature affecting important economical species. Is the passage of Cuvier cited the expression of a historical fact or a nomenclatural proposition?

The great and deserved reputation of Mr. Boulenger calls for an extended consideration of the questions involved, and this I have ventured to attempt.

CLASSIFICATION.

In 1877 I was led to investigate, in company with Dr. Jordan, the interrelationships of the species of *Stizostedion*, and both of us were struck by the contrast between the European and American species, and jointly elaborated the characteristics which we observed, in an analytical synopsis published in the second number of Dr. Jordan's "Contributions to American Ichthyology."†

I have lately reviewed the specimens of the four species in the National Museum in connection with the description and figure of *Lucioperca marina* given by Mr. Boulenger, and the conclusions to which I have

\*Proc. Zool. Soc. London, 1892, pp. 411-413, pl. 25.

†Bull. U. S. Nat. Mus. 10.

come are embodied in the following analytical synopsis, slightly modified and extended from our early one.

- \*. Dorsal fins well separated, the interspace between them more than the diameter of eye; anal fin II, 11-11, longer than high; second dorsal I, 17, to I, 21; spines of the second dorsal and anal closely attached to the soft rays; last dorsal spine scarcely erectile, more or less firmly bound down by the membrane; ventrals separated by an interspace equal to width of their base; canine teeth strong (American species):
- †. Soft dorsal comparatively short (its base one-fourth shorter than that of spinous dorsal) and with about 17 soft rays; cheeks, opercles, and top of head more or less closely sealed; body scarcely compressed; size small; pyloric cœca forming two groups, the primary one of four, unequal, moderate, much shorter than the stomach; the secondary of few (1-3) rudimentary ones.....CANADENSE.
- ††. Soft dorsal rather long (one-sixth shorter than spinous dorsal, with about 20 soft rays; cheeks and upper surface of head sparsely sealed; body more compressed; size large; pyloric cœca three, subequal, all long (about as long as stomach).....VITREUM.
- \*\* . Dorsal fins approximated, almost connected by membrane, the interspace being much less than the diameter of the eye; spines of second dorsal and anal loosely connected with succeeding rays; last dorsal spine erectile; ventrals separated by an interspace about two-thirds the width of their base; second dorsal I (II, 16) 22 or 23; anal fin at least as high as long; body compressed; (European species with the body more or less distinctly transversely barred):
- ‡. Soft dorsal considerably (one-fifth) shorter than spinous dorsal; anal fin II, 11-12, as long as high; canine teeth strong; "pyloric cœca 4 to 6".....LUCIOPERCA.
- ††. Soft dorsal somewhat longer than spinous dorsal; anal fin short and high; its length two thirds its height; its rays II, 9-10; canine teeth weak, not much differentiated; body strongly compressed as in the genus *Perca*: "pyloric cœca three" (Günther).....WOLGENSE.
- †††. Second dorsal shorter than spinous dorsal (First D. XII-XIII; Second D. I-II 16-17); anal fin II, 11-12, about as short as high; canine teeth developed; body compressed and banded like a perch; pyloric cœca 5; the longest as long as stomach, the shortest only half as long (*Bouleuger*).....MARINUM.

The relations of *Stizostedion* to other genera appear to me to have been much misunderstood. Dr. Günther and Prof. Seeley have arranged the fresh-water European genera of perciform acanthopterygians in the following manner:

GÜNTHER, 1859 (1886 \*).

1. *Perca*.
4. *Labrax*.
9. *Acerina*.
10. *Percarina*.
11. *Lucioperca*.
14. *Aspro*.

SEELEY, 1886.

1. *Perca*.
2. *Labrax*.
3. *Percarina*.
4. *Acerina*.
5. *Lucioperca*.
6. *Aspro*.

Most of these genera are undoubtedly related, and belong to the family *Percidae*, but *Labrax* (including *Dicentrarchus*, *Roccus*, and

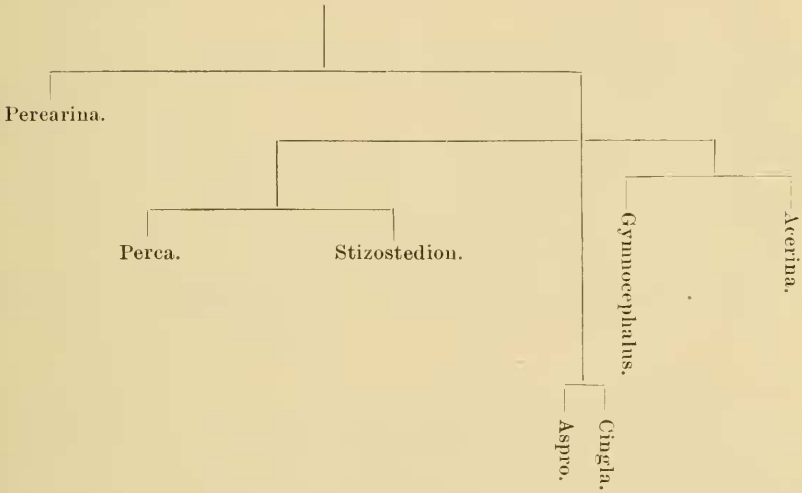
\*The same essential sequence was adopted in the *Handbuch der Ichthyologie*, but without numbers.

*Morone*) is probably a member of a different family. The European Percids seem naturally to fall into the following groups:

Percarina.	
Perca.	}
Stizostedion.	}
Acerina.	}
Gymnocephalus.	}
Cingla.	}
Aspro.	}

The relationship of *Perca* and *Stizostedion* is especially close.

The order of the differentiation of the genera from a primitive type may be expressed by the following genealogical tree.



*Aspro* appears to be the nearest European relation to the American Etheostomines; at least it resembles them most in appearance and the form of the ventrals.

It will be noticed that the character first appreciated by Mr. Boulenger (the relative width of the interspace between the ventral fins as compared with the width of the bases of these fins) is coordinate with the characters previously recognized by Dr. Jordan and myself and therefore corroborates the approximation of the European species and their segregation from the American forms. The evidence therefore appears to be strong in favor of the differentiation of the genus into two primary sections, one including the European fishes and the other the American. The *Lucioperca marina* or *Stizostedion marinum* conse-

\* *Gymnocephalus* (Bloch) Blkr. Arch. Néerland Sc., vi. 11, p. 266, = *Leptoperca* (Gill Proc. Acad. Nat. Sc. Phila., 1861, p. 502) is distinguished from *Acerina* by the slender body, prolonged snout, and longer, many-spined (17—19) dorsalis. Its species are *G. schretzer* (ex Linn) and *G. tanaicnsis* (ex Gldenstedt).

quently is associated with the representatives of the genus belonging to its own fauna rather than to those of the American fauna.

#### THE PROPER NAME OF THE PIKE-PERCHES.

The scientific name generally given to the pike-perches by the American naturalists is *Stizostedion*, or some orthographic modification thereof. Under any form, it is so objectionable to me that I would like to see it displaced, especially by so euphonious and appropriate a name as *Lucioperca*. I therefore long ago sought to find a date for the latter which would anticipate *Stizostedion*, and called attention to the publication of the French name (Les Sandres) in 1817.\* I was, however, unable to find any but the French name and between that and the formal bestowal of the latin *Lucioperca* two or three others intervened, *Stizostedion*, *Sandat*, and perhaps *Sandrus*. Although I had come to such a conclusion I was nevertheless disposed to welcome Mr. Boulenger's recent interpretation of Cuvier's words in proposing a subgeneric isolation of the pike-perches, in the hope that *Lucioperca* might be legitimately revived. But another review of the case compels me to adhere (most reluctantly) to my former conviction. That the strain of the interpretation proposed by Mr. Boulenger is too great is rendered evident by the consideration of Cuvier's language, and the action of two of his compatriots and others with regard to it.

In 1817, Cuvier distinguished from the "*Centropomes*" (including *Centropomus* and *Lates*) a new division in the following terms:

Je distingue des CENTROPOMES.

LES SANDRES. CUV.

Qui ont aussi des dentelures au préopercule, sans piquans à l'opercule, mais dont le tête entière est dépourvue d'écaillés, et la gueule armée de dents pointues et écartées, ce qui leur a fait donner le nom de *lucio perca*. (*Brochet perche*.)

I had always interpreted this statement to mean that the pointed distant teeth had procured (from others) for the species the name of pike-perch and that the name *Lucioperca* was not formally given to the genus, and in fact that the genus was not really scientifically named. Thus had most others also interpreted the paragraph. An analogous paragraph in the work of Cuvier and Valenciennes (vol. 2, p. 110) seems likewise to support such an interpretation.

Both passages taken together clearly show that Cuvier simply stated a historical fact and did not formulate a nomenclatural proposition.

In 1820, Rafinesque described a pike perch as *Perca salmonca* and proposed a subgenus for it in the following terms:

The *Perca Salmonca* may also form a peculiar subgenus, or section distinguished by the cylindrical shape of the body, long head and jaws, large teeth, and a second spine outside of the opercule over the base of the pectoral fins. It may be called *Stizostedion*, which means pungent throat.

\* See Proc. Acad. Nat. Sc. Phila., 1861, p. 47.

No good objection can be offered against this differentiation as it is pertinent and diagnostic, save as to the second spine, which is simply the extension of the proscapula and is no more evident in the pike-perches than in the typical perches. Rafinesque's diagnosis is, in fact, better than Cuvier's.

In 1819, Bosc\* defined the names *Sandat* and *Sandre* in the following words, neither name being used as a scientific or Latin designation of an accepted genus.

*Sandat*. Synonyme de *Sandre*. (B.)

*Sandre*. Poisson de nos rivières que Linnæus avoit placé parmi les PERCHES (*perca lucioperca*), et que Lacépède a porté dans son genre *Centropome*. Cuvier vient de le faire servir à l'établissement d'un sous-genre. Ses caractères sont: tête dépourvue d'écaillés; gueule armée de dents pointues et écartées; des dentelures au préopercule; des piquans à l'opercule.

La *Sciène coro* et de l'Île-de-France paroît devoir faire part de ce sous-genre. (B.)

In 1827, Cloquet† defined the genus under the head of "Sandre;" gave, as a pseudoscientific equivalent, the name "Sandat," and defined it as follows:

*Sandre, Sandat*. (*Ichthyol.*) M. Cuvier a distingué sous ce nom un genre de poissons qu'il a séparé de celui des *Centropomes* de Lacépède, et de celui des PERCHES de Linnæus.

This was defined in the following terms:

*Corps oblong, épais, comprimé, écailleux; opercules dentelées sans piquans; tête alépidote; deux nageoires, dents pointues et écartées.*

Two species were recognized:

(1) "Le Sandat, *Sandat lucioperca*, N. [i. e. Cloquet]; *Perca lucioperca* Linnæus," = *Stizostedion lucioperca*.

(2) Le "Sandre coro, *Sandat coro*" = *Conodon nobile*.

In 1828 and 1829, Bory de Saint Vincent, in the Dictionnaire Classique d'Histoire Naturelle, adopted as a subgeneric name *Sandat*. Under the head *Perche* (vol. 13, p. 204) he defined the subgenus:

† † † † † *Sandre, Sandat*. Les Poissons de ce sous-genre, formés aux dépens des *Centropomes* de Lacépède, ont des dentelures au préopercule, mais point de piquans à l'opercule; leur tête est entièrement dépourvue d'écaillés, et la gueule est armée de dents pointues et écartées.

Under the heads of *Sandat* and *Sandre*, simple cross-references were given, viz:

SANDAT. Pois. V. SANDRE et PERCHE, sous-genre CENTROPOME (vol. 15 p. 97.)

SANDRE. *Sandat*. POIS. Sous-genre de Perche. V. ce mot. (B.) (vol. 15, p. 98.)

In 1828, Stark‡ defined the genus as follows:

\* Nouveau Dictionnaire d'Histoire Naturelle, n. ed., vol. 30, pp. 126, 129.

† Dictionnaire des Sciences Naturelles, v. 47, p. 173.

‡ Elements of Natural History, vol. 1, p. 465.

Gen 75. *Sandrus*, Cuv.

Head entirely destitute of scales; jaws armed with pointed and distant teeth; preoperculi dentated, but operculi without spines.

*S. lucioperca* and *S. coro* were the admitted species.

In 1828 Cuvier and Valenciennes† for the first time formally devolved on the pike-perches, the name *Lucioperca*. This they did in the following manner:

*Des Sandres (Lucioperca, nob.).*

Ce sous-genre se distingue des autres par la réunion qu'il présente des nageoires et des préopercules de la perche, avec des dents pointues qui rappelant celles du brochet, et c'est qui a fait donner, par Conrad Gesner, à l'espèce d'Europe le nom composé de *lucioperca (brochet-perche)*.‡

The history thus detailed is summarized in the following synonymy:

### STIZOSTEDION.

#### *Synonymy.*

- =*Les Sandres*, CUVIER, Règne Animal, vol. 2, p. 294, 1817.
- =*Stizostedion*, RAFINESQUE, West. Mag. and Misc. Mag., vol. 1, p. 371, Jan. 1820; Ich. Oh., p. 23, 1820.
- =*Lucioperca*, FLEMING, Phil. of Zool., p. 394, 1822.
- =*Saudat*, CLOQUET, Diet. Sc. Nat., vol. 47, p. 173, 1827.
- =*Sandrus*, STARK, Elem. Nat. Hist., vol. 1, p. 465, 1828.
- =*Lucioperca*, CUVIER and VALENCIENNES, Hist. Nat. Poissons, vol. 2, p. 110, 1828.
- =*Schilus*, KRYNICKI, Nouv. Mém. Soc. Nat. Moscou, vol. 2, p. 441, 1832.
- =*Centropomus*, BLEEKER, Arch. Néerland. Sc., vol. 11, p. 265, 1876. (*Vix Centropomus* Lacépède, 1801.)
- =*Stizostethium*, JORDAN, Cont. to N. Am. Ich., II, p. 43, 1877.
- =*Stizostedium*, JORDAN and GILBERT, Syn. Fishes N. Am., p. 525, 1882.

#### *Subgenera.*

- <*Cyuoperca*, GILL and JORDAN, Jordan's Cont. to N. Am. Ich., II, p. 45, 1877.
- <*Stizostethium*, GILL and JORDAN, Jordan's Cont. to N. Am. Ich., II, p. 45, 1877.
- <*Lucioperca*, GILL and JORDAN, Jordan's Cont. to N. Am. Ich., II, p. 45, 1877.
- <*Mimoperca*, GILL and JORDAN, Jordan's Cont. to N. Am. Ich., II, p. 45, 1877.

\* Gen. 75 of Acanthopterygii.

† Histoire Naturelle des Poisson, vol. 2, p. 110.

‡ Gesn., *Paralip.*, p. 28 et 29.