

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

ON THE VALIDITY OF THE NORTH AMERICAN
CYPRINID GENUS *NOTEMIGONUS*.

BY T. D. A. COCKERELL.

The genus *Notemigonus* Rafinesque 1819 (type *auratus* = *chrysoleucas*) has in recent years been treated, not without doubt, as a subgenus of *Abramis*, from which it is said to differ by the much shorter anal fin with 9 to 18 rays instead of 20 to 40 (Jordan and Evermann, *Fishes of North and Middle America*, Part 1, p. 250).

A study of the scales shows, I think conclusively, that *Notemigonus* is really very distinct from *Abramis*. *Notemigonus chrysoleucas* (Mitchill) is a rather small fish with relatively, but not absolutely, large scales, which agree closely with those of *Opsopoeodus** (*O. osculus* Evermann). The genus also agrees with *Opsopoeodus* in its serrate or crenate pharyngeal teeth, and I consider the two to be closely allied, forming a little group. The scales of both are thin and broad, with the nuclear area subbasal, the radii all apical, few and far apart, and the apical circuli very far apart (for circuli), especially in *N. chrysoleucas*.

The type of *Abramis* Cuvier, 1817, is *A. brama*. This is a large fish with great subquadrate yellowish scales, in a specimen before me (Lough Erne, *Maj. H. Trevelyan*; Brit. Mus.) 18 mm. long and $21\frac{1}{2}$ broad. The circuli are innumerable and extremely dense in the manner of so many Old World cyprinids. The nuclear area is practically central; and the radii, which are all apical are extremely numerous and close together, in the middle actually 6 or 7 to a millimeter! It would be difficult to imagine a scale with any cyprinid features, more totally diverse from that of *Notemigonus*. The pharyngeal teeth of *Abramis brama* are also diverse from those of *Notemigonus*, and are not serrate or crenulate.

* See Proc. Biol. Soc. Wash., XXII (1909), Pl. III, for *O. osculus*.

Ballerus Heckel, 1843, is probably a distinct genus. The scales of *Ballerus ballerus* or *Abramis ballerus*, from the Danube, have the general form, and the extremely fine circuli, of *Abramis brama*, but the radii, which are all apical, are reduced to from four to six, and these are mostly broken and incomplete. This is an independent development, not at all approaching *Notemigonus*.

Abramis vimba (L.) (Olmütz, *Jeitteles*; Brit. Mus.) typifies another rather distinct group, the scales shaped nearly as in *A. brama* (L.), the nuclear area central and broadly granular, the circuli next to the nuclear area not dense, apical radii only about 12, some evident but feeble basal radii. This is entirely different from *Ballerus* in the nuclear region, which in the latter has very fine circuli practically to the middle with no granular area.

Abramis sapa Pall., from Astrachan, falls in the same group as *A. vimba* on scale-characters, but the circuli are much closer, and there are no basal radii.

Abramis blicca Bl. (genus *Blicca* Heckel) may also be referred to the same group, but the nuclear area is very broadly granular, the fine granulations extending even among the circuli at the sides. The apical radii, about 13, are more or less incomplete; there are two or three imperfect basal radii.

Abramis elongatus Ag. (Würm See, Bavaria, *Prof. v. Siebold*; Brit. Mus.) has scales which are quite distinctive; the nuclear area very distinctly basad of the middle (herein approaching *Notemigonus*), without a granular area; the circuli rather less dense than in most species; the apical radii five or six, with one or two others rudimentary; basal radii represented by feeble rudiments. There is a certain resemblance to *Ballerus*.

Abrama buggenhagi Bloch (canal at Slough, *Ling* and *Ladbrook*; Brit. Mus.) is referable to the subgenus *Abramidopsis* Sieb. The scales show a central nuclear area, without granulations; basal radii evident and rather numerous; apical radii apparently only three or four, but on close inspection numerous parallel rudimentary radii or furrows are visible, showing some resemblance to the structure found in *A. brama*. *Abramis buggenhagi* is considered to be a hybrid between *Abramis brama* and *Leuciscus rutilus*. Its scale may fairly be said to resemble a "composite portrait" of the scales of these two fishes, with, however, a considerably greater resemblance to that of *L. rutilus* than that of *A. brama*. The basal part of the scale is quite in the manner of *L. rutilus*. In Mendelian terms, one might say *L. rutilus* dominant, but the dominance not quite complete.

The classification of the fishes under discussion will then be as follows:

(A) European fishes with dense circuli, and nuclear area nearly always central or nearly so.

Abramis Cuvier.

(a) *Abramis* s. str. *A. brama* L.

(b) *Abramidopsis* Sieb. *A. buggenhagi* Bloch.

(c) *Blicca* Heckel. *A. blicca* L., *A. sopa* Pall., *A. vimba* L.

(d) Group? *A. elongatus* Ag.

Ballerus Heckel.

B. ballerus L.

(B) American fishes, not closely related; circuli not dense; nuclear area subbasal.

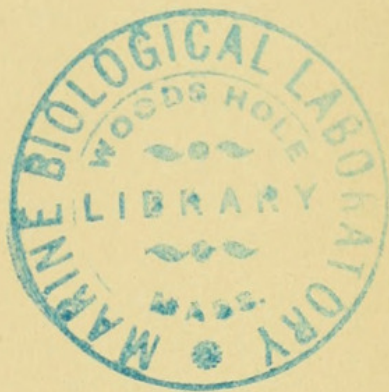
Notemigonus Rafinesque.

Notemigonus chrysoleucas (Mitchill).

Notemigonus chrysoleucas bosci (Cuv. and Val.).

Notemigonus gardoneus (Cuv. and Val.).

The scales described were in every case taken from the vicinity of the lateral line, at the level of the beginning of the dorsal fin.





Cockerell, Theodore D. A. 1909. "On the validity of the North American cyprinid genus *Notemigonus*." *Proceedings of the Biological Society of Washington* 22, 211–213.

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