

OCCASIONAL PAPERS OF THE MUSEUM OF  
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

PUBLISHED BY THE UNIVERSITY

DESCRIPTION OF A NEW CISCO FROM THE GREAT  
LAKES BASIN

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*Leucichthys nipigon*, new species<sup>1</sup>

During the summer of 1922, while investigating the Coregonine fauna of Lake Nipigon, a number of individuals of a heretofore undescribed species of *Leucichthys* were collected. Similar specimens had been obtained from Lake Winnipeg in early 1919, and John R. Dymond, of the University of Toronto, has permitted me to examine his specimens of the species which he has collected during the summers of 1922, 1923 and 1924 in Lake Nipigon. The fish resembles in external features the *tullibee* of Richardson,<sup>2</sup> taken in Pine Island Lake, Manitoba. Richardson, however, failed to give an adequate description of his species, so that it is not possible to state whether he had the deep compressed form of *artedi* which has been called *tullibee* by all writers since Richardson, or this

<sup>1</sup> This description is published with the permission of the U. S. Commissioner of Fisheries.

<sup>2</sup> *Salmo (Coregonus) tullibee* Richardson, *Fauna Boreali-Americana*, 1836, 201.

species. Since this point cannot be decided without a study of material from the type locality and since it is necessary to have an available name before this can be done, I propose the name *nipigon* for this species.

The type is a male specimen, Cat. No. 87092, National Museum, 282 mm. in length to the base of the caudal, collected in Lake Nipigon off MacDiarmid at a depth of 30 fathoms on July 28, 1922. Paratypes, numbering in all eighteen, deposited in the Museum of Zoology of the University of Michigan, were obtained with the type, also on July 26, 1922, off the source of the Nipigon River in 10-15 fathoms, and on October 30, 1922, and on Aug. 18, 1923, from unknown localities. Twenty-six other paratypes taken in Lake Nipigon on Aug. 10, 1921, and Aug. 15, 1922, off Murchison Island, in 15 and 25 fathoms, respectively; on Sept. 3, 1923, off Gros Cap in 10 fathoms; on Aug. 23, 1923, and on June 19, 1924, in Ombabika Bay, in 10 fathoms; and on June 21, 1924, off Caribou Island, in 25 fathoms; and from several unknown localities, are in the collection of the University of Toronto. Six other specimens not included in the description were obtained from Lake Winnipeg in early 1919. These specimens agree very closely with the paratypes in their systematic characters.

The fish grows to a larger size than any species of *Leucichthys* seen from the Great Lakes, though it is possible that when these waters were virgin, as Lake Nipigon now is, some individuals of the larger species in the Great Lakes equalled those of the new form in this respect. The largest specimen I have seen is from the Toronto Collection, and measures 447 mm. Examples longer than 300 mm. are common. The flesh appears to be dry like that of the lake herring (*artedi*) and the shape of the body is very close to that of the deep-bodied compressed tullibee type of this form, namely, it is elliptical in outline, as seen from the side. In the case of the largest examples, however, the anterior dorsal contour may rise rather sharply at the occiput over two-thirds its course and then continue to the dorsal insertion with little further elevation. The body is relatively very deep, especially in the larger individ-

uals, and is moderately compressed. The depth is contained in the total length 3.5[(3.0)3.3–3.8(4.1)]<sup>3</sup> times. The body-width has been so altered by artificial compression that in the preserved material at hand it does not appear worth while to record the proportional relations of this character. The head is moderately elongated and is contained 4.0[(3.8)3.9–4.1(4.5)] times in the total length. Its dorsal profile is usually nearly straight. The premaxillaries are directed forward, and make an angle of about 55° with the horizontal axis of the head. The snout is contained 3.8[(3.3)3.5–3.8(4.0)] times in the head-length; the eye, 4.4[(3.8)4.4–4.6(5.2)] times; and the maxillary, 2.7[2.5–2.7(3.1)] times. The mandible in the type is equal in length to the upper jaw, but in the paratypes it is often somewhat longer or shorter. The scales in the lateral line are 75[(68)72–77(82)] in number. The gill-rakers on the first branchial arch number 19 + 37[19–21(24) + 35–37(43)] = (54)56–59(66). The pectorals are very long, being contained in the distance from their insertion to that of the ventrals 1.8[(1.4)1.5–1.7(1.9)] times. The ventrals are also long. Their length divided into the distance from their origin to the insertion of the anal equals 1.6[(1.3)1.4–1.5(1.7)]. There are 10[10–11] dorsal rays; 12[11–12(13)] anal rays; 12[12(13)] ventral rays; 15[(15)16–17(18)] pectoral rays; 8[8–9(10)] branchiostegal rays.

The appearance of the species in life is silvery with the underlying tints of green and the superficial iridescence which characterizes all the Great Lakes forms of *Leucichthys*. Preserved specimens show moderate pigmentation on the back, but heavier pigment on the cranium. The prenarial region is often nearly black, as is the tip of the mandible. The pre-orbital area and the maxillary are also always pigmented. The dorsal and caudal fins are widely margined with smoky, the hue being deepest on the short rays of the caudal. The paired fins and the anal always show more or less of pigment.

<sup>3</sup> The figures given in brackets are based on measurements of 44 paratypes; the usual as well as the extreme range in variation is given, the latter in parentheses.

