

3.—NOTES ON FISHES FROM THE BASIN OF THE MACKENZIE RIVER IN BRITISH AMERICA.

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The following notes are based upon a small collection of fishes from the Mackenzie River, British America, recently presented by Miss Elizabeth Taylor to the Museum of the Leland Stanford Junior University.

Coregonus kennicotti Milner.

The single specimen is a skin in good condition, from the Delta of the Mackenzie River (No. 808, L. S. Jr. Univ. Museum). Length 62 cm. This species is in many respects midway between *Prosopium* and *Coregonus*. The gill-rakers are short and few in number, but are slender. The preorbital is very long and narrow, its width less than diameter of pupil. The maxillary is comparatively long and the supplemental bone broad and ovate. Thus the gill-rakers are about as in *quadrilateralis* and other species of the section *Prosopium*, while all the other characters given ally the species with *clupeiformis* and the rest of the *Coregonus* group.

The head is very blunt, the premaxillaries wide and vertically placed. The mouth is inferior, with the high blunt snout but little projecting. The maxillary reaches slightly beyond the vertical from front of eye; its length, measured from its anterior articulation, equals length of snout, and is contained $4\frac{2}{3}$ times in the head (=4 in head when measured from tip of snout). Maxillary broadly ovate, apparently slenderer than in *C. richardsoni* as figured by Günther, and with different outlines. Preorbital narrow, its greatest width contained 5 times in its length and $3\frac{1}{2}$ times in diameter of eye. Eye moderate, shorter than snout, $5\frac{1}{2}$ in head, $1\frac{1}{2}$ in interorbital space. Width of supraorbital bone two-fifths its length. Gill-rakers short and slender, tapering to a slender flexible point; the longest is three-fourths diameter of pupil; six are developed on vertical limb, and fourteen on horizontal limb, of outer arch. Hyoid bone with a round patch of weak bristle-like teeth. These are very similar to those found in *Stenodus*, and are disposed in longitudinal series. The vertical height of head at nape is less than length of head by one-half diameter of eye. Head small, $5\frac{2}{3}$ in length to base of caudal; depth about $4\frac{2}{3}$. Distance from tip of snout to nape one-third distance from nape to front of dorsal.

Front of dorsal nearer snout than base of median caudal rays by length of snout and eye. Adipose fin large, a wide strip at base covered with small regularly imbricated scales. It is inserted over last rays of anal, extending but slightly behind last

anal ray. The ventrals reach halfway to front of anal. The height of dorsal equals length of head without snout.

Scales small, adherent, very regularly imbricated. Lateral line 90 on one side, 87 on the other; 11 scales in an oblique series between front of dorsal and lateral line. D. II, 11-; the last ray split. Anal I, 14.

The color must have been very dark in life. Fins all blackish; in spirits with a bluish tinge. Traces of what may have been blackish spots and vermiculations are discernible on basal portion of dorsal and anal fins. Miss Taylor kindly writes me concerning the color of this species in life:

The Delta whitefish was far less silvery than other species of whitefish, with fawn color or brownish tints upon it. The scales, too, were sharply defined with a brownish line, almost as if a fine brown netting had been placed around the fish.

Concerning one of the types of *C. kennicotti* (No. 8971, U. S. Nat. Mus., Fort Good Hope, British America), Prof. B. W. Evermann sends me the following notes:

This specimen is a skin 21 inches long. Length of head, $3\frac{1}{2}$ inches; tip of snout to end of maxillary $\frac{1}{2}$ inch; diameter of eye (not orbit), $\frac{1}{8}$ inch; length of longest gill-raker, $\frac{1}{2}$ inch. Maxillary contained $4\frac{1}{2}$ times in head; longest gill-raker, $3\frac{1}{2}$ times; width of preorbital, $2\frac{1}{2}$ times in eye. Number of gill-rakers, 7+13. Scales, 10-90-10.

This species seems closely related to *C. richardsoni* Günther, with which it may prove identical. Günther's description (Catalogue of Fishes, VI, 185) includes no account of the gill-rakers, which may be long and numerous, as in *C. clupeiformis*, but indicates a fish with a longer snout and a broader supplemental maxillary bone.

Coregonus lucidus Richardson.

Two specimens from Great Bear Lake River (Nos. 805 and 806, L. S. Jr. Univ. Mus.). They are each 40 cm. long. This species is very close to *Coregonus artedi*, of which it may prove to be a subspecies. As pointed out by Dr. Günther, this northern form differs in its shorter head and smaller eye. It seems also to have the premaxillaries placed at a greater angle than in *C. artedi*. Following is a description of the two specimens:

The body is slender, elongate, the curve of back and belly about equal, the greatest depth exceeding length of head, $4\frac{1}{3}$ to $4\frac{2}{3}$ in length to base of caudal. Least depth of caudal peduncle 27 mm. Head small, 5 to $5\frac{1}{2}$ in length; the snout narrow, almost vertically truncate when mouth is closed, the lower jaw fitting within the upper, but the mouth not inferior. Distance from snout to nape $2\frac{3}{4}$ or 3 in distance between nape and front of dorsal. The head is thus much smaller in one specimen (No. 805) than in the other. Nape little elevated. Mouth oblique, with rather slender maxillary, which extends to a vertical midway between front and middle of pupil, its length from tip to articulation equaling distance from end of snout to front of pupil, and contained $3\frac{2}{3}$ to $3\frac{1}{2}$ in length of head. Supplemental maxillary bone probably broader than in *artedi*, from three-fifths to two-thirds greatest width of maxillary. Suborbitals very narrow, their least width less than diameter of pupil. Eye slightly less than length of snout, its diameter contained 5 times in length of head, $1\frac{1}{2}$ times in interorbital width. Supraorbital bone large, its width $2\frac{1}{2}$ to $2\frac{3}{4}$ in its length. Gill-rakers very long and slender, the longest slightly more than two-thirds length of eye; 16+28 in number in both specimens. Front of dorsal slightly nearer tip of snout than base of upper rudimentary caudal rays. The fins are mutilated, so that their length

can not be given. Axillary scale 22 mm. long. *Adipose fin large, inserted vertically above last anal rays, its height from tip to posterior end of base equaling vertical diameter of eye.

D. III, 12 or II, 11; A. III, 12 or II, 11. Lateral line, 85 to 87; 11 or 12 scales in an oblique series downwards and forwards from front of dorsal to lateral line. Nothing can be made out concerning the original color of these specimens.

Thymallus signifer Richardson.

Three specimens of this form (Nos. 809, 810, and 811, L. S. Jr. Univ. Museum) are at hand from the Mackenzie River near Fort Simpson. They have, unfortunately, suffered much in transportation, but the following points can be verified:

Scales in lateral line 88 or 89, not including the smaller ones on base of caudal. The dorsal fin is very high, and must have been at least two-sevenths length of body, judging from one specimen in which one of the posterior rays remains unutilated. Spots on membrane of dorsal fin numerous. Traces of 7 rows are visible in the broken fin, and at least 10 rows of spots must have been present. The gill-rakers are short, as usual, the longest equaling diameter of pupil; 12 or 13 are present on horizontal limb of lower arch. Dorsal fin with 22 or 23 rays, including the anterior rudimentary rays.

Stenodus mackenzii Richardson.

One specimen, 83 cm. long, from the Delta of the Mackenzie River (No. 807, L. S. Jr. Univ. Museum).

Head $4\frac{1}{2}$ in length to base of tail; maxillary reaching a vertical behind pupil, its length very slightly more than one-third head. Supplemental bone long and narrow, nearly as wide as the maxillary, the anterior end notched, the angle above the notch sharply pointed, the lower angle bluntly rounded.

The teeth are all weak and flexible, bristle-like. They are present in a narrow band in upper jaw, the band extending laterally onto proximal fifth of maxillary. A similar narrow band anteriorly in lower jaw. Very broad patches of similar but slightly stiffer teeth are present on tongue, vomer, and palatines. Eye less than snout, 6 in head, nearly equaling the narrow interorbital width. Gill-rakers very stiff and bony, the longest four-fifths diameter of eye; 7 + 17 in number, the one in the angle reckoned with the vertical limb. They bear on their inner margins two rows of very short weak teeth, which do not make them appreciably rough.

Fully developed rays, D. 12; A. 14; Lat. line, 100.

* The vertical from last ray of anal traverses the posterior third of base of adipose dorsal. This is the only respect in which our specimens fail to agree with Richardson's description. The latter states that the adipose fin is located "about its own breadth posterior to the anal," but this can probably be accounted for by the nature of the type, Richardson's description being taken from a stuffed skin.