

Article II.—SIX NEW FISHES FROM NORTHWESTERN CANADA

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PLATE XV

A collection of fishes made by Francis Harper, while on an expedition of the Geological Survey of Canada to Great Slave Lake in 1914, has been found to comprise fifteen species, represented by approximately 120 individuals.¹ Of these, five forms are here described as new. The description of a sixth species is based upon a photograph and notes made in the field. An account of all the fishes noted will be included in a report on the biological results of the expedition.

In view of the paucity and poor condition of the material upon which previous studies of the fish fauna of the Mackenzie Basin have been made, it was to be expected that this collection would throw needed light on the relationships of various northwestern forms, but it is surprising to find in it so large a proportion of previously unknown species. A more thorough ichthyological survey of the region will undoubtedly yield many further results of interest.

***Catostomus richardsoni*, new species**

RICHARDSON'S GRAY SUCKER; "GRAY SUCKER"

Plate XV, Figure 1

Catostomus Hudsonius RICHARDSON, 1823, Franklin's Narrative, p. 717.

Cyprinus (Catostomus) Hudsonius RICHARDSON, 1836, Fauna Boreali-Americana, III, p. 112.

Catostomus catostomus EVERMANN and GOLDSBOROUGH, 1907, Proc. Biol. Soc. Wash., XX, p. 93, part.

Moxostoma lesueurii PREBLE, 1908, N. A. Fauna No. 27, p. 504.

Type locality.—Taltson River,² at its junction with Tazin River, Mackenzie, Canada. (60° 26' 2" N., about 111° W.)

Type specimen.—Represented by photograph No. 29,996, Geological Survey of Canada, taken July 30, 1914, by Francis Harper; published herewith as Plate XV, fig. 1.

Geographic range.—Mackenzie and Winnipeg (?) Basins.

¹This collection was loaned to The American Museum of Natural History in January 1915, and there studied jointly by the authors. Publication of the present paper has been delayed on account of war conditions.

²The Taltson flows into Great Slave Lake from the south at a point about thirty miles east of the mouth of Slave River.

General characters.—Nearest to *C. commersonii*, but differing from it in the following respects: coloration more lustrous; lateral line not straight, but turned slightly dorsad over anal fin; insertion of ventrals not so far behind dorsal insertion; pectoral fins shorter; scales more crowded anteriorly; eye more posterior.

Description of type.—Total length, 510 mm.; length to base of caudal, 440 mm. Head (in latter measure) 4.07; depth 3.83. Eye (in head) 7.71; snout 1.9. Dorsal 12; anal 8. Scales 11-65-8. Papillæ on lips not prominent as in *C. catostomus*. Color silvery, dark above. Fins reddish.

Remarks.—The above description was taken in the field from the fresh specimen, which was not preserved, owing to lack of adequate facilities. The photograph makes the following additional characters clear: the lateral line takes a slight upward turn over the anal fin; the posterior margin of the opercle is straighter, less convex than in *C. commersonii*; the ventrals are inserted about opposite the third dorsal ray, whereas in *commersonii* they are inserted more posteriorly, about opposite the middle of the dorsal base. A specimen at Fort Chipewyan had about 65 scales in the lateral line; and one at the mouth of the Taltson River, 64 scales.

This widely distributed fish is well known in the North as the "Gray Sucker." I saw specimens that were taken in Lake Athabaska, Tazin River, and Taltson River, and I heard of its occurrence in Salt River. Under the name of *Cyprinus (Catostomus) Hudsonius*, Richardson made the general statement that "It is a common fish in all parts of the fur countries";¹ and he commented further upon its distribution in remarking of *Cyprinus (Catostomus) Forsterianus* [= *Catostomus catostomus* (Forster)] that "North of [Great Slave Lake] it exists in greater abundance than the preceding species [*Cyprinus (Catostomus) Hudsonius* = *Catostomus richardsoni* Harper and Nichols]."² Preble recorded it (as *Moxostoma lesueurii*) from as far north as Arctic Red River.³

To Richardson belongs the credit of having discovered this species. His description⁴ of specimens of a large-scaled "Gray Sucking-carp" from Cumberland House, Saskatchewan, applies either to this or to a very closely related form; and, at any rate, the statements quoted in the preceding paragraph show that he was unquestionably familiar with the present species in the Mackenzie Basin. Though he neglected to mention the number of scales in the lateral line of this fish, he remarked concerning the scales of the "Red Sucker" (*Catostomus cato-*

¹Fauna Boreali-Americana, III, 1836, p. 112.

²Idem, p. 116.

³N. A. Fauna, No. 27, 1908, p. 504.

⁴Fauna Boreali-Americana, III, 1836, p. 113.

stomus) that they are "very considerably smaller than those of the preceding species [*C. richardsoni*],¹ . . . the difference being most apparent in the scales which cover the forepart of the back."²

In describing *Cyprinus catostomus*, Forster had before him two specimens, "the greater" of which was "very near 15 inches from the nose to the extremity of the tail";³ and this one he selected as the type.⁴ Richardson considered his *Cyprinus* (*Catostomus*) *Hudsonius* identical with Forster's type, for *Catostomus Hudsonius* LeSueur is a mere synonym of *Cyprinus catostomus* Forster.⁵ He looked upon Forster's smaller specimen, however, as a different form,⁶ referring to it as "*Cyprinus catostomus* var." in the synonymy of his *Cyprinus* (*Catostomus*) *Forsterianus*.⁷ In the former case Richardson was probably influenced by Forster's figure,⁸ which shows only about 70 scales in the lateral line of the fish. It may be assumed, however, that this was a serious inaccuracy on Forster's part,⁹ and that his name is now properly applied to the "Red Sucker," which has over 90 scales in the lateral line. In the Catalogue of the Fishes in the British Museum, VII, p. 13, under *Catostomus hudsonius* [= *C. catostomus* (Forster)], Günther remarked of specimen "a" that it was "probably one of the typical specimens examined by Forster." On this matter we have been advised by Dr. C. Tate Regan, of the British Museum, as follows: "The specimen referred to by Günther as probably one of those examined by Forster is 13 inches long and has about 100 scales in the lateral line."¹⁰ More careful examination gives a little over 13.5 in. to end of broken caudal rays. Forster described his type specimen as nearly 15 inches in total length and this may be either the type or the smaller of his two original specimens, i. e., the paratype.

It is somewhat strange that for nearly a century Richardson's "Gray Sucker" has been either disregarded or considered identical with various other species, such as *C. catostomus*, *C. commersonii*,¹¹

¹Franklin's Narrative, 1823, p. 720.

²Fauna Boreali-Americana, III, 1836, p. 116.

³Philos. Trans., LXIII, 1773, p. 156.

⁴Idem, p. 160.

⁵See LeSueur, 1817, Journal Acad. Nat. Sci. Phila., I, p. 107.

⁶Cf. Forster (*loc. cit.*, p. 155), where he quotes Mr. Graham (the collector) as saying that "there are two varieties of this fish, both of a whitish color, but one distinguished by a mixture of beautiful red." He then adds: "In the smallest of two specimens brought over, a broad stripe of red could be observed all along the *linea lateralis*."

⁷Fauna Boreali-Americana, III, 1836, p. 116.

⁸Philos. Trans., XLIII, 1773, table vi.

⁹Aside from the too small number of scales, the figure agrees fairly well with the characters of the "Red Sucker." Forster does not indicate that his two specimens represented the two different varieties, and it is quite probable that they were identical.

¹⁰In *Litteris*, January 28, 1916.

¹¹See synonymy of *C. tereus*, in Günther, 1868, Cat. Fishes Brit. Mus., VII, p. 15.

and *Moxostoma lesueurii*. We are glad to give it the name *richardsoni* as a tribute to the memory of the able naturalist of the Franklin expeditions.

***Opsopæodus borealis*, new species**

ATHABASKA MINNOW

Type locality.—Lake Athabaska, at Fort Chipewyan, Alberta, Canada.

Type specimen.—No. 1048, Victoria Memorial Museum; specimen in alcohol; collected June 15, 1914, by Francis Harper.

Geographic range.—Known only from the type locality.

General characters.—Referred to the genus *Opsopæodus* because of general size, shape, markings, number of scales, and character of pharyngeal teeth. Apparently nearest to *O. bollmani*, but with different proportions and markings, ventrals inserted farther back, and maxillary longer.

Description of type.—Total length, 34 mm.; length to base of caudal, 27 mm. Head (in latter measure) 3.86; depth 4.91. Eye (in head) 3; snout 4; maxillary 4.67; interorbital 4.5. Dorsal 9; anal 9. Scales 5-37-4.

Body fusiform, moderately compressed; back not elevated; head rather large; eye large; snout shorter than eye, blunt, rounded; mouth terminal, moderately oblique; maxillary not quite reaching eye. Pharyngeal teeth (of right side), 4, crenate, hooked. Lateral line not developed. A few scales in front of ventrals the only ones evident on breast. Insertion of dorsal slightly in advance of ventrals, and slightly nearer base of caudal than snout; caudal deeply forked, 1 in head; longest dorsal ray 1.17; longest anal ray 1.56; pectorals extending .67 distance to ventrals; ventrals almost reaching anal.

Color in spirits: pale; fins with dark punctulations along rays; a dark, narrow lateral band, not as wide as pupil, from opercle to base of caudal, fainter anteriorly; body with scattered punctulations, mainly on back and sides, and especially numerous along bases of dorsal and anal; a sharply defined black blotch, about half diameter of eye, at base of caudal, partly on the fin.

Remarks.—The type and only specimen of this little minnow was taken in a hand-net as it swam along in the muddy water close to the shore at Fort Chipewyan.

***Coregonus preblei*, new species**

PREBLE'S WHITEFISH

Plate XV, Figure 2

Type locality.—Tazin River, about one mile above its confluence with the Taltson River, Mackenzie, Canada.

Type specimen.—No. 1038, Victoria Memorial Museum; head and skin, in alcohol; collected July 28, 1914, by Francis Harper.

Geographic range.—The species is known with certainty only from the type locality, but its range probably extends at least to Thluicho Lake, northern Saskatchewan, near the headwaters of the Tazin River.

General characters.—The elongate, little compressed form, the short, thick gill-rakers, and the broad preorbital place this species in the subgenus *Prosopium*.

Probably nearest to *C. quadrilateralis* (Richardson, 1823; type locality, Fort Enterprise, Mackenzie), but differing mainly in larger number of dorsal rays, more posterior insertion of dorsal, and longer snout.

Description of type.—Total length, 540 mm.;¹ length to base of caudal, 470 mm. Head (in latter measure) 5.34; depth 4.7. Eye (in head) 5.87; snout 3.38; maxillary 4; interorbital 3.14. Dorsal 14 (developed rays); anal 11 (developed rays). Scales 8-93-7; before dorsal, 33. Branchiostegals 8. Gill-rakers 6+11.

Body elongate, little compressed; back arched at nape; head pointed; profile low, nearly straight; snout projecting considerably over inferior mouth; preorbital very broad; maxillary short, broad, not reaching eye; supplemental maxillary small, .4 greatest width of maxillary; mandible reaching posterior edge of pupil; gill-rakers short and thick, their length .25 diameter of eye. Caudal peduncle long; dorsal insertion nearer snout than base of caudal, much nearer adipose than snout; longest dorsal ray barely longer than dorsal base, 1.35 in head; base of adipose a little longer than eye; caudal 1.25 in head; pectorals longer than dorsal, 1.22 in head, reaching nearly halfway to ventrals; ventrals shorter than dorsal, 1.44 in head, reaching halfway to anal; longest anal ray 1.47 in head; anal base 2 in head. Lateral line straight, scales in this row with exposed portion only half as large as in scales of adjoining rows.

Color in spirits: rather dark on sides and back, the scales with dark edges; under parts pale; dorsal with small spots, mostly on lower half; adipose spotted; caudal with a few spots, chiefly near base; other fins plain or nearly so.

Remarks.—The type specimen was picked up dead, but in good condition, as it floated in the river.

A young *Coregonus*, 95 mm. in total length, which was taken on July 2 in Thluicho Lake, northern Saskatchewan, is referable to the subgenus *Prosopium*, and probably also to the species *preblei*. A row of spots, each nearly as large as the pupil, was evident along the lateral line when the specimen was fresh, but these markings have all but disappeared in spirits.

The species is named for Mr. Edward A. Preble, of the United States Biological Survey, as a slight recognition of his very valuable contributions to our knowledge of the fauna of the Mackenzie Basin.

***Leucichthys entomophagus*,² new species**

TAZIN RIVER CISCO

Type locality.—Tazin River, at the foot of Kolethe Rapids, Mackenzie, Canada. (About 60° 38' N., about 110° 30' W.)

Type specimen.—No. 1021, Victoria Memorial Museum; specimen in alcohol; collected July 24, 1914, by Francis Harper.

¹Most of the measurements were taken in the flesh, but some of them (particularly the length) no longer apply in the shrunken skin.

²From *ἐντομῶν* (insect) + *φάγειν* (to eat).

Geographic range.—So far as known, the Tazin River, from Thainka Lake, northern Saskatchewan, to the confluence of the Tazin and Taltson Rivers, Mackenzie.

General characters.—Referred to the subgenus *Thrissomimus*,¹ which comprises species inhabiting shore waters and spawning in late autumn, and is characterized by a comparatively small mouth, short maxillary, well-developed skeleton, and firm flesh. Differs from allied northwestern forms (*lucius*,² *lauretta*, *alascanus*, and *pusillus*) in the smaller number of scales.

Description of type.—Total length, 165 mm.; length to base of caudal, 137 mm. Head (in latter measure) 4.15; depth 4.15; width 2.28 in depth. Eye (in head) 4.13; snout 3.67; maxillary 2.75; interorbital 3.67. Dorsal 11 (developed rays); anal 11 (developed rays). Scales 8—about 65-7; before dorsal, 28. Branchiostegals 9. Gill-rakers 11+22.

Body elongate, compressed, of fairly robust appearance; back not elevated; ventral outline somewhat rounded; depth greatest at dorsal insertion, equal to head; head rather broad; profile low, nearly straight; maxillary reaching front of eye; supplemental maxillary about .5 greatest width of maxillary; mandible reaching middle of pupil; mouth terminal, oblique; lower jaw not projecting when mouth is closed; no distinct vertical protuberance at tip of lower jaw, or notch at tip of upper jaw, as in *athabasca*² and *macrogathus*,³ gill-rakers long but not so slender as in *athabasca*, 1.6 in eye. Caudal peduncle depth 1.5 in length from last anal to first caudal rays, its length 2.36 in head; dorsal insertion midway between tip of snout and first ray of caudal; longest dorsal ray 1.5 in head; dorsal base 2.06 in head; adipose moderate in size, its length from tip to posterior end of base about .5 vertical diameter of eye; caudal 1.2 in head; pectorals nearly as long as dorsal, 1.57 in head, reaching halfway to ventrals; ventrals equal to pectorals, reaching nearly .67 distance to anal; longest anal ray 2.36 in head; anal base 2.06 in head. Lateral line straight, ascending a little at anterior end. Scales firm, regularly imbricated.

Color in spirits: upper half of body dark bluish; cheeks, opercles, and sides below lateral line with fine dark punctulations; dorsal and caudal somewhat dusky; pectorals nearly plain, ventrals and anal entirely so.

Remarks.—The specimens examined number twenty-seven, all of which were taken between July 11 and 30. The type is the largest specimen, and the next measures 87 mm. in total length. The remainder are much smaller, between 25 and 52 mm. in total length.

The type specimen was picked up dead, with a gash on its caudal peduncle, as if it had suffered an attack by some voracious pike (*Esox lucius*). It had in its stomach fragments of a good-sized caddis-fly. The name we have bestowed upon the species is a reference to its food habits, as thus indicated.

¹Cf. Jordan and Evermann, 1911, Bull. U. S. Bureau Fisheries, XXIX, p. 4.

²See *infra*, p. 269.

³See *infra*, p. 270.

Leucichthys athabascæ, new species

CISCO OF LAKE ATHABASKA

Type locality.—Lake Athabaska, at the mouth of Charlot River, northern Saskatchewan, Canada.

Type specimen.—No. 1029, Victoria Memorial Museum; specimen in alcohol; collected June 28, 1914, by Francis Harper.

Geographical range.—Known only from the type locality.

General characters.—Referable to the subgenus *Cisco*,¹ which, as compared with *Thrissomimus*, comprises species inhabiting deeper water and spawning in mid-summer, and is characterized by a relatively large mouth, feeble skeleton, and soft flesh. Differs from other members of subgenus except *supernas*, *johannæ*, and *prognathus* in its projecting lower jaw, and from these in smaller number of scales and narrower interorbital. Differs further from *supernas* and *prognathus* in smaller number of gill-rakers.

Description of type.—Total length, 165 mm.; length to base of caudal, 137 mm. Head (in latter measure) 4.15; depth 5.48; width 2.08 in depth. Eye (in head) 4.12; snout 3.67; maxillary 2.64; interorbital 4.71. Dorsal 11 (developed rays); anal 12 (developed rays). Scales 8-about 66-7; before dorsal, about 32. Gill-rakers long and slender, about 13+22.

Body elongate, compressed, slender; back not elevated; depth much less than head; head narrow, pointed; profile low, straight; maxillary reaching front of pupil; supplemental maxillary half greatest width of maxillary; mandible reaching posterior border of pupil; lower jaw slightly projecting when mouth is closed; a vertical protuberance at tip of lower jaw, and a slight notch at tip of upper jaw; apparently a few minute teeth on tongue. Caudal peduncle depth 1.63 in length from last anal to first caudal rays; its length 2.13 in head; dorsal insertion equidistant between tip of snout and first caudal ray; longest dorsal ray 1.61 in head; dorsal base 2.44 in head; adipose rather small, its length from tip to posterior end of base .5 vertical diameter of eye; caudal 1.2 in head; pectorals longer than dorsal, 1.5 in head, reaching a little more than halfway to ventrals; ventrals nearly equal to pectorals, 1.53 in head, reaching .6 distance to anal; longest anal ray 2.75 in head; anal base 2.36 in head. Lateral line straight, ascending a little at anterior end. Scales thin.

Color in spirits: pale; upper parts with fine dark punctulations, more numerous on back than on sides; dorsal and caudal slightly dusky; other fins plain.

Remarks.—The type and only specimen was taken from the stomach of a Lake Trout (*Cristivomer namaycush*).

Leucichthys macrognathus,² new species

CISCO OF GREAT SLAVE LAKE

Type locality.—Shore waters of Great Slave Lake, near Fort Resolution, Mackenzie, Canada.

Type specimen.—No. 1031, Victoria Memorial Museum; specimen in alcohol (female with well-developed eggs); collected August 26, 1914, by Francis Harper.

¹Cf. Jordan and Evermann, 1911, Bul. U. S. Bureau Fisheries, XXIX, p. 4.

²From μακρός (long) + γνάθος (jaw).

Geographic range.—Known only from the type locality.

General characters.—Referable to the subgenus *Cisco* and closely allied to *L. athabasca*; differing from that form chiefly in deeper body, longer fins, and more numerous gill-rakers.

Description of type.—Total length, 247 mm.; length to base of caudal, 200 mm. Head (in latter measure) 4.17; depth 4.35; width 2 in depth. Eye (in head) 4.57; snout 3.69; maxillary 2.67; interorbital 4.8. Dorsal 11 (developed rays); anal 11 (developed rays). Scales 7—about 68—7; before dorsal, about 36. Branchiostegals 8. Gill-rakers 14+27.

Body elongate, compressed; back slightly elevated; the curve of dorsum and venter about equal; depth greatest in front of dorsal, nearly equal to head; head narrow, pointed; profile low, straight; maxillary reaching front of pupil; supplemental maxillary .67 greatest width of maxillary; mandible reaching posterior border of pupil; lower jaw distinctly projecting beyond snout when mouth is closed; a vertical protuberance at tip of lower jaw, and a slight notch at tip of upper jaw; a few minute teeth on tongue; gill-rakers long and slender, 1.33 in eye. Caudal peduncle depth 1.5 in length from last anal to first caudal rays, its length 2.29 in head; dorsal insertion equidistant between tip of snout and base of caudal; longest dorsal ray 1.26 in head; dorsal base 2.18 in head; adipose rather large, its height from tip to posterior end of base .8 vertical diameter of eye; caudal nearly as long as head; pectorals longer than dorsal, 1.14 in head, reaching nearly .75 distance to ventrals; ventrals nearly as long as dorsal, 1.33 in head, reaching .67 distance to anal; longest anal ray 1.85 in head; anal base 2.4 in head. Scales thin.

Color in spirits: pale; back faintly marked with dark punctulations; dorsal with fine dark punctulations, and caudal dusky toward tip; other fins plain.

Remarks.—The type and only specimen was taken in a small-meshed gill-net a few hundred yards offshore at Fort Resolution.

None of the three ciscoes here described belong to the “tullibee” group (subgenus *Allosomus*), though one or more of them are perhaps known locally by that name. *Leucichthys macrognathus*, with its prominent lower jaw and pointed, flattened head, approaches the coney (*Stenodus mackenzii*) in form, and bears a noteworthy superficial resemblance to that fish.

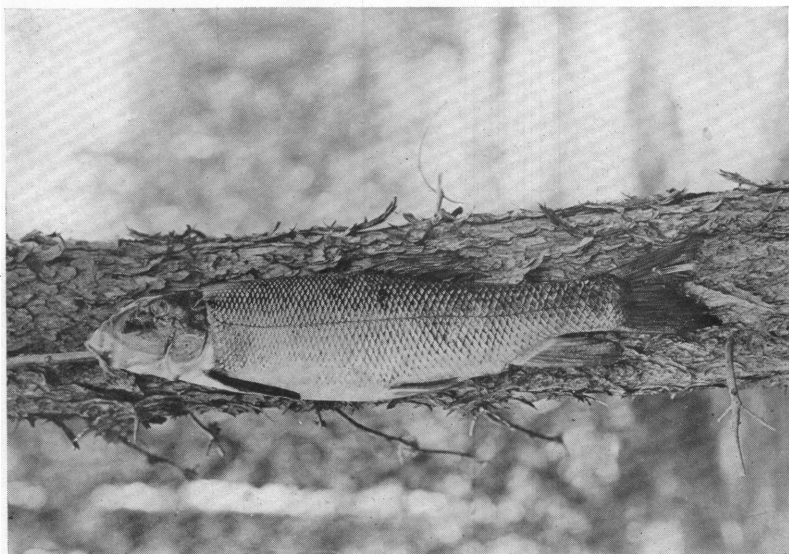


Fig. 1. *Catostomus richardsoni*, new species; type.

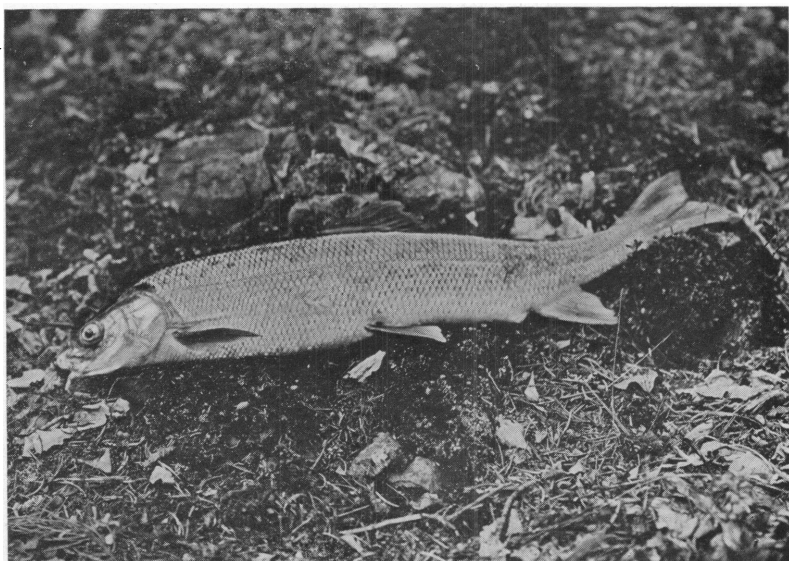


Fig. 2. *Coregonus preblei*, new species; type.

