

Rare or Endangered Canadian Fishes¹

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Abstract. This paper lists those Canadian species and subspecies which are potentially in danger of extinction in Canada, whose status would deserve further study, and which need public awareness so that no untoward actions will be taken. Included are: *Acipenser brevirostrum*, *Alosa aestivalis*, *Coregonus alpenae*, *Coregonus* sp., *Coregonus johannae*, *Salvelinus fontinalis timagamiensis*, *Hybognathus nuchalis nuchalis*, *Hybopsis x-punctata*, *Notropis anogenus*, *Rhinichthys cataractae* subsp., *Rhinichthys cataractae smithi*, *Rhinichthys osculus*, *Catostomus* sp., *Moxostoma hubbsi*, *Stizostedion vitreum glaucum*, *Cottus confusus*, and *Gasterosteus* sp.

Introduction

Each fish needs its own special world or habitat to live in. Its habitat may include cool, fast, pure water running over pebbles or it may be warm still water with lily pads. But without the special elements that make up its habitat it will not long survive.

The activities of modern man are changing the environment. Physical, chemical and biological changes are taking place with unprecedented magnitude and rapidity. For example, eutrophication of some of the largest lakes in North America, Lakes Erie, Ontario and Michigan, has taken place in the last 50 to 60 years. Due to introduction of the parasitic sea lamprey, the lake charr or trout has been decimated in the upper Great Lakes. It is the gradual rather than the most rapid changes which are most insidious, for they may pass unnoticed. Trautman (1957), Scott (1963) and Crossman (1968) review and document the effect of man's modification of the environment on the freshwater fish faunas of Ohio and Ontario. Kinds of man-made changes include:

1. Pollution, silting, or spraying of biocides, heating of water.
2. Dams, obstructions, river diversions, effects of farming, dredging, mining and logging operations including depletion of water supply, permanent and seasonal.

3. Introduction of exotic competitors, predators, or diseases.

4. Overfishing.

The following lists of species is provisional. More information is needed on many of the included species. This paper draws attention to this need for research. It also points out that care should be taken with these populations which may already be endangered.

Fishes included in the list are mainly those of restricted distribution. Widespread common species are little likely to become extinct, although they may disappear in part of their range (for example the deepwater sculpin (chabot de profondeur), *Myoxocephalus thompsonii* has not been seen in Lake Ontario for two or three years despite an active netting program, *in litt.* W. B. Scott, but is still apparently common elsewhere). Species restricted to a small local area, on the other hand, can easily be endangered.

This list considers solely those species occurring in Canada. Even if they occur elsewhere (in the United States), then they are included in the list. They are included for several reasons. Our fish fauna is part of our natural heritage which we wish to pass on to future generations to see and to enjoy. Often the Canadian fish populations are at the northern end of their range and are of scientific significance in studying limiting factors, zoogeography or genetics. Also we have no control over what happens to foreign populations. For example the shortnose sturgeon occurs in Canada only in the Saint John River, New Brunswick. In the U.S. it ranges all the way south to Florida, but is listed as endangered in the U.S. So the existence of U.S. populations is no necessary guarantee of the species survival.

¹Solicited by the Editor

This list is concerned with Canada as a whole. So as long as there are adequate breeding populations in one province or another the species is not included in this list. However this does not prevent provincial action to ensure survival of all its species and subspecies. Thus Arctic charr are known in only two lakes in New Brunswick, but are common in Yukon, Northwest Territories and Quebec and so are not included in the list. Fishes which on rare occasions stray into Canadian waters and which do not migrate there or regularly reproduce there, are outside the scope of this list as there is little that can be done about them (e.g. spotted sucker (meunier tacheté), *Minytrema melanops*, reported by Crossman and Ferguson (1963)).

Some forms are restricted in distribution but are apparently in no danger. A dwarf form of the lake whitefish (corégone bossu), *Coregonus clupeaformis* occurs in Lake Opeongo in Algonquin Park, Ontario (Kennedy, 1943) but is unexploited and apparently in no danger (N. V. Martin, *in litt.*).

Remedial action may take several forms. Removal of the cause of danger may in some cases be effective. One may set aside part of present range as a refuge and ensure protection by adequate supervision. Laws giving total or regional protection may be passed. In case of overfishing, reduction in catch or complete cessation of fishing may be needed. Introduction of exotic forms should only be permitted after exhaustive analysis by competent specialists. The only way of maintaining some species may be by planting elsewhere or maintaining in aquaria.

The paddlefish (spatulaire), *Polyodon spatula*, has not been recorded in Canada for over 50 years and is probably extinct there. The blue walleye (doré bleu), *Stizostedium vitreum glaucum* may already be extinct.

The list is given below in table 1. It should be emphasized that this is simply a provisional list. Such is our state of knowledge that it is not certain that all species included are in danger. But they all certainly warrant investigation. Note that only the Canadian distribution is indicated in the table.

The list includes only those believed to be rare or endangered. But many other species are on the decrease. The last blackfin cisco (cisco à nageoires noires), *Coregonus nigripinnis*, caught in the Great Lakes was in 1955 (S. H. Smith *in litt.*) but still occurs elsewhere in Ontario. The grass pickerel (brochet vermiculé), *Esox americanus vermiculatus*, despite intense seinings around Montreal, is now very seldom seen (V. Legendre, *in litt.*). The Atlantic salmon (saumon atlantique), *Salmo salar*, now rare in the United States is on the decline in Canada.

Immediate studies and action would be desirable. Minckley and Deacon's (1968) paper on the loss of the freshwater fish fauna of southwestern United States and Smith's (1968) on species changes in the Great Lakes are especially instructive and give warning that faunal changes are accelerating.

SHORTNOSE STURGEON; ESTURGEON À MUSEU COURT. *Acipenser brevirostrum*.

Anadromous. Known only in lower Saint John R., N.B. from mouth to Gagetown. Increasing pollution and a hydro-electric dam may be of significance in their survival. Scott and Crossman (1959), Vladykov and Greeley (1964), Gorham (1965), Leim and Scott (1967).

BLUEBACK HERRING; ALOSE D'ÉTÉ. *Alosa aestivalis*.

Anadromous. Known only in Bras d'or Lake, Shubenacadie and Stewiacke Rivers, N.S. and in lower Saint John R., N.B. (Specimens in National Museum of Natural Sciences). Leim and Scott (1967).

LONGJAW CISCO; CISCO À GRANDE BOUCHE. *Coregonus alpenae*.

Freshwater. Limited to depths at east end of Lake Erie (Dr. S. H. Smith, *in litt.*) or may be extinct (Crossman, 1968).

ATLANTIC WHITEFISH; CORÉGONE ATLANTIQUE. *Coregonus* sp.

Anadromous. Restricted to waters of Canada. Known only in Tuskent R. system and

Millipsigate L., and Yarmouth Harb., southern N.S. Populations in the Tusket R., system may be influenced by power developments there (Dr. J. L. Hart, *in litt.*). Leim and Scott (1967), Scott (1967), Scott and Klawe (MS).

DEEPWATER CISCO. CISCO DE PROFONDEUR. *Coregonus johannae*.

Anadromous. Known in Ontario waters from Lake Huron. Last specimen was caught in 1951 (Dr. S. H. Smith, *in litt.*). Scott and Smith (1962), Scott (1967).

BROOK CHARR OR TROUT ("aurora trout"); OMBLE DE FONTAINE. *Salvelinus fontinalis timagamiensis*.

Freshwater. Restricted to waters of Canada. Known only in Whirligig and Wilderness Lakes, 90 mi. northwest of North Bay, Ont. Planted in Temiskaming and in Cochrane District. Qadri (1968 and *in litt.*), Sale (1957).

SILVERY MINNOW; MÉNÉ ARGENTÉ. *Hybognathus nuchalis nuchalis*.

Freshwater. Known only in the Milk River system, southern Alta. Willock (1968).

GRAVEL CHUB; GRAVELIER. *Hybopsis x-punctata*.

Freshwater. Known only from Thames R., Ont., (Dr. R. M. Bailey, *in litt.*). Scott (1967).

PUGNOSE SHINER; MÉNÉ CAMUS. *Notropis anogenus*.

Freshwater. Known only from two areas on the Ontario shore of Lake Erie and from the outlet of Lake Ontario (Dr. R. M. Bailey, *in litt.*). Sensitive to increases in turbidity and reduction of aquatic vegetation. Bailey (1959).

LONGNOSE DACE; GOUJON À LONG NEZ. *Rhinichthys cataractae* subsp.

Freshwater. Known only in Nooksack River, southwestern B.C. (Dr. J. D. McPhail, *in litt.*).

LONGNOSE DACE; GOUJON À LONG NEZ. *Rhinichthys cataractae smithi*.

Freshwater. Known only in Cave and Basin Hotspring, Banff National Park, Alta. Taxonomic distinctness not verified. May already be extinct following introduction of tropical fishes. None in 2 collections made in 1968. McAllister (1969).

SPECKLED DACE; NASEUX MOUCHETÉ. *Rhinichthys osculus*.

Freshwater. Known only from 3 localities in the Kettle R., southern B.C. Carl, Clemens and Lindsey (1959).

SUCKER; SUCETTE. *Catostomus* sp.

Freshwater. Known only in the Salmon and Little Campbell Rivers, southeastern B.C. (*in litt.* Dr. J. D. McPhail).

COPPER REDHORSE; MOXOSTOME CUIVRE. *Moxostoma hubbsi*.

Freshwater. Restricted to waters of Canada. Known only in the St. Lawrence River, Quebec from Lac St. Pierre to the mouth of the Ottawa River. Legendre (1952), Scott (1967).

BLUE WALLEYE; DORÉ BLEU. *Stizostedion vitreum glaucum*.

Freshwater. Now rare or perhaps even extinct in Lakes Erie and Ontario, probably due to the effects of pollution (Dr. S. H. Smith, *in litt.*). Scott (1967).

SHORTHEAD SCULPIN; CHABOT À TÊTE COURTE. *Cottus confusus*.

Freshwater. Known only from the North Fork of the Flathead R., southeastern B.C. McAllister and Lindsey (1961), Bailey and Bond (1963).

GIANT THREESPINE STICKLEBACK; GRANDE ÉPINOCHÉ À TROIS ÉPINES. *Gasterosteus* sp.

Freshwater. Restricted to waters of Canada. Known only from freshwaters of Queen Charlotte Island, under study by E. E. Moody, University of Alberta (*in litt.*, Dr. C. C. Lindsey).

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Literature Cited

- Bailey, R. M.** 1959. Distribution of the American cyprinid fish *Notropis anogenus*. *Copeia* (2): 119-123, 1 figure.
- Bailey, R. M. and C. E. Bond.** 1963. Four new species of freshwater sculpins, genus *Cottus*, from Western North America. *Occasional Papers of the Museum of Zoology, University of Michigan* (634): 1-27, 4 figures.
- Beeton, A. M.** 1965. Eutrophication of the St. Lawrence Great Lakes. *Limnology and Oceanography* 10(2): 240-254, 4 figures.
- Carl, G. C., Clemens, W. A. and C. C. Lindsey.** 1967. The fresh-water fishes of British Columbia. *British Columbia Provincial Museum Handbook* (5): 1-192, illus.
- Crossman, E. J.** 1968. Changes in the Canadian freshwater fish fauna. *Proceedings of the Twenty-first Meeting of the Canadian Committee on Freshwater Fisheries Research*. Appendix I, 1 page.
- Crossman, E. J. and R. G. Ferguson** 1963. The first record from Canada of *Minytrema melanops*, the spotted sucker. *Copeia* (1): 186-187.
- Gorham, S. H.** 1965. Notes on fishes from the Brown Flat area, Kings County, New Brunswick. *The Canadian Field-Naturalist* 79(2): 137-142, 1 map.
- Kennedy, W. A.** 1943. The whitefish, *Coregonus clupeaformis* (Mitchill), of Lake Opeongo, Algonquin Park, Ontario. *Publications of the Ontario Fisheries Research Laboratory, University of Toronto Studies* (51): 21-66.
- Legendre, V.** 1952. Les poissons d'eau douce. Tome 1. Clef des poissons de pêche sportive et commerciale de la province de Québec. Société Canadienne d'Ecologie et Ministère de la Chasse et des Pêcheries, Province de Québec. 84 pages, 80 figures.
- Leim, A. H. and W. B. Scott.** 1967. Fishes of the Atlantic Coast of Canada. *Bulletin of the Fisheries Research Board of Canada* (155): 1-485, illustrated.
- McAllister, D. E.** 1969. Introduction of tropical fishes into a hot spring near Banff, Alberta. *Canadian Field-Naturalist* 83(1): 31-35, 2 figures.
- McAllister, D. E. and C. C. Lindsey.** 1961. Systematics of the freshwater sculpins (*Cottus*) of British Columbia. *National Museum of Canada Bulletin* (172): 66-89, 5 figures.
- Minckley, W. L. and J. E. Deacon.** 1968. Southwestern fishes and the enigma of "endangered species." *Science* 159: 1424-1432, 3 figures.
- Qadri, S. U.** 1968. Morphology and taxonomy of the aurora charr, *Salvelinus fontinalis timagamiensis*. *National Museum of Canada Bulletin* (237): 1-18, 5 figures.
- Sale, P. F.** 1967. A re-examination of the taxonomic position of the aurora trout. *Canadian Journal of Zoology* 45(2): 215-225, 1 figure.
- Scott, W. B.** 1963. A review of the changes in the fish fauna of Ontario. *Transactions of the Royal Canadian Institute* 34: 111-125.
- . 1967. Freshwater fishes of eastern Canada. University of Toronto Press, second edition, 137 pages, illustrated.
- Scott, W. B. and E. J. Crossman.** 1959. The freshwater fishes of New Brunswick: a checklist with distributional notes. *Contributions of the Royal Ontario Museum, Division of Zoology and Palaeontology* (51): 1-37 + appendix, 2 figures.
- Scott, W. B. and S. H. Smith.** 1962. The occurrence of the longjaw cisco, *Leucichthys alpenae*, in Lake Erie. *Journal of the Fisheries Research Board of Canada* 19(6): 1013-1023.
- Smith, S. H.** 1968. Species succession and fishery exploitation in the Great Lakes. *Journal of the Fisheries Research Board of Canada* 25(4): 667-693, 5 figures.
- Trautman, M. B.** 1957. The fishes of Ohio. Ohio State University Press, 683 pages, 7 plates, 172 figures, 172 maps.
- Vladykov, V. D. and J. R. Greeley.** 1964. Acipenseridae. Fishes of the Western North Atlantic. *Memoir Sears Foundation for Marine Research* 1(3): 24-60, 10 figures.
- Willock, T.** 1968. Alberta records of the silvery and brassy minnows, stonecat and sauger, with a preliminary list of fishes of the Milk River in Alberta. *Canadian Field-Naturalist* 82(1): 18-23, 3 figures.

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