DISPLACED FISHES

by Ted Christensen

The Canadian praries have a reputation (Iwonder why?) of being a rather chilly place. Stories are told (probably ficticious) of American tourists driving over the border on 90° July days with skis strapped on their cars. But, if you think it does get a trifle cool here on occasion, you should have seen it 10,000 years ago. The last Ice Age was just drawing to a close, and glacial ice, hundreds of feet thick, covered most of Canada and much of the northern United States.

This doesn't sound like much of a habitat for fish and, believe me, it wasn't. Populations survived the Missouri-Mississippi basin to the south, in the Columbia drainage, and in an unglaciated area (the Bering refuge) in Alaska; but no fishes could live in the glacial ice.

Ice was nothing new to northern fishes. Evolution is slow, and thier ancestors must have escaped to carry on their bloodlines during the other three Ice Ages that covered Saskatchewan in the last million years. To live here at all, even now, a fish must be able to survive under two to three feet of ice, in near freezing water, in order to reproduce in the spring. Strangely, the pattern of egg survival through seasons hostile to life, used by annual killies to carry the species past drought, hasn't been found among our northern native fishes.

The glaciers started to melt, 10,000 years ago, and kept on melting for the next 4,000 years. Drainage patterns shifted, with water from glacial Lake Agassiz first draining into the Mississippi, then east to the Great Lakes, and finally into Hudson's Bay.

Shifting drainage patterns gave fish routes to re-occupy the waters of the north. Most of our prairie "natives" survived the Ice Age in the Missouri refuge. Almost without exception, the ancestors of our native fishes came back from the south. Many of these species made their way to the Churchill and even the Mackinzie systems.

Keeping track of these migrations, never simple, is complicated by the fact that several species survived in more than one refuge. Grayling, for instance, are found in Montana today, and in Michigan in historic times, as well as in northern Canada and Alaska. Scale counts indicate that the Mackenzie population may be derived from the Missouri refuge, with the grayling in the Yukon and Alaska descended from stocks from the Bering refuge. Warm temperatures after the Ice Age could have eliminated them from the prairies, but just why this shift in climate did not wipe them out in Michigan is unknown.

The odd-looking little deepwater sculpin, Myoxocephalus quadricornis thompsoni, (the name is longer than the fish) also poses a problem. The marine subspecies of this fish inhabits the rim of the Arctic Ocean, with fresh water forms in rivers flowing into the Arctic. The mystery arises when we find it in deep lakes as far from the Arctic as the Great Lakes, including Lac La Ronge in Saskatchewan. One theory, based on a study of the distribution of two crustaceans (Ricker: 1959: Canadian J. Zool. 37:871-893), holds that these sculpins travelled south in waters pushed ahead of the advancing ice. No eyewitnesses to this theory, but somehow we have members of the arctic marine species in La Ronge, providing food for lake trout!

Just why our waters do not contain all of the species now found in the Missouri is another open question. Bullheads and madtoms, to anme a couple of species, haven't made their way into the Saskatchewan River system, though the route must have been open to them. Biologists believe that ecological factors, many of them still undefined, limit the range of a fish. Summer to winter extremes in variation of the photo-period may affect the spawning responses of some fishes, for example, and many of them may be at the northern limit of the temperatures they can tolerate. In the same way, many of those fishes who followed the glaciers north across the prairies are no longer found

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this far south. Experience with stocking game fishes has shown that species can thrive in waters where they cannot reproduce, but to be a "native", fish must be able to carry on their kind.

The glaciers melted, here, seven or eight millenia back, and they shouldn't be back again for a quarter of a million years. So, while I may complain a bit on a chilly day, I'm not going to worry about a real cool spell for some time to come. All of recent immigrants, fish and men alike, should be able to remain as natives here until those glaciers come again.

REFERENCES:

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