Carp at the Gate

Rough Fish Threaten Devils Lake Fishery

By Craig Bihrle

It's early spring now, and the potential for the troublesome common carp to cross from the Red River of the North drainage into the Devils Lake basin is still locked in the ice near the beginning of a meandering waterway called Snowflake Creek.

When the ice melts, dead young carp will remain on the bottom to decay. In late May or early June, however, adult carp driven by their pioneering instinct will again push up Snowflake Creek as far as they can go, looking for a shallow, slack area in which to spawn.

This typical rural roadway in Cavalier County is a divide between the Red River and Devils Lake drainages. When the right circumstances all come together, water from the south (left) can flow to the north, joining the two drainages. The waterways leading away from culvert, both north and south, are clogged with cattails that currently are an impediment to fish – carp in particular – moving from one drainage to the other.

Last year, when weather variables created high water during early summer, young carp were discovered not far downstream from a section line road – officially 85th Street South, eight miles south and five miles west of Langdon – with a 36-inch culvert underneath, that is a subtle, unremarkable divide between the Devils Lake and Red River drainages.

When water levels in the area are high enough, as they have been at some point during most years since 1997, (and possibly on other occasions prior to that) water can slosh back and forth through the culvert, allowing potential natural transfer of whatever might live in Devils Lake into the Red River drainage, and vice versa.

This nondescript area in southern Cavalier County, more than 50 miles from Devils Lake itself, is one of two areas identified in the last couple of years where carp approached within striking distance of crossing the divide. According to North Dakota Game and Fish Department biologists, the only thing that prevented this potential catastrophic movement is thick stands of cattails that acted as a natural fence and clogged the waterways leading to the other side.

As the ice is going out this spring, the Game and Fish Department, State Water Commission, Devils Lake Basin Joint Water Resource Board, county water boards, county commissions and Devils Lake civic and angling groups are all working together to develop a solution so that keeping carp out of the Devils Lake drainage is no longer left to chance. Without preventive measures in place, it may only be a matter of time before circumstances develop that allow young or adult carp to swim from one side of the divide to the other. That would set in motion what could be a rather rapid decline of the state's second most popular fishery and would lead to millions of dollars in lost recreational value and lost economic activity in the region.

Lynn Schlueter, Game and Fish special projects biologist, looks at it this way: "When we sample the first carp (in Devils Lake) in our fisheries netting activities, my opinion is that within 10 years, it's past history, the lake will have deteriorated."

Common Carp

Common carp are common residents in North Dakota's major river systems – the Red and Missouri. These nonnative fish were purposely introduced in North Dakota at several locations from 1880-1890 by the U.S. Bureau of Sport Fisheries. Had that not happened, they probably would have gotten here anyway because carp were also stocked in Minnesota and other states during the same time as a potential new sport and food fish.

The experiment, however, got out of hand and carp eventually became firmly established in many of the country's major watersheds, including the Missouri and Red in North Dakota.

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While carp can grow to more than 30 pounds and they do put up a fine battle when attached to the end of a fishing line, they are not always easy to catch and did not become a highly sought sportfish. In addition, their flesh contains many small bones and the meat, while palatable to some, is not usually held in high regard.

Those characteristics by themselves, however, don't distinguish carp from many native species – like bigmouth and smallmouth buffalo, freshwater drum and white sucker – that anglers also do not generally seek for their sporting qualities or as favored table fare.

What makes carp so threatening is their destructive and competitive nature. They eat both plants and animals – mostly small invertebrates that would otherwise feed young-of-the-year game fish. Their bottom-feeding habits uproot plants and stir up bottom sediments that cloud the water, blocking sunlight needed for beneficial aquatic plants to grow, and making it difficult for game fish to see their prey.

Carp are also very productive and once they find their way into a new body of water, within just a few years they can multiply to a point where they take up significant space previously occupied by game fish. In small lakes, they can almost completely eliminate a sport fishery. In a large body of water like Devils Lake, Game and Fish biologists estimate walleye and northern pike populations would decline by 50 percent or more if carp got established.

"They're taking away resources that could be best utilized by desirable fish," Schlueter said. "There just isn't room then for the small game fish. You've just taken the whole bottom out of the food pyramid so there isn't much food left for small fish to survive."

The Current Situation

There is no historical evidence that Devils Lake ever had carp, but if it did, they would have died out with the rest of the fish when the lake nearly went dry starting in the 1940s. It wasn't until the 1970s that Devils Lake again had enough water to begin to support a long-term fishery.

Carp were introduced into many smaller North Dakota lakes and reservoirs likely via bait bucket dumping – small carp accidentally included with other baitfish that were dumped into a lake at the end of a day of fishing, rather than properly discarded.

That, rather fortuitously, has never happened at Devils Lake. Or if it did, a hungry pike or walleye ate the little carp before they grew old enough to reproduce. At any rate, Game and Fish biologists have never documented carp in the lake.

"Because of the work that we have done with the public on issues like not dumping bait buckets and not transferring fish," Schlueter emphasized, "I'm going to say our anglers have been very helpful in not making some boo-boos that would have had some dire consequences."

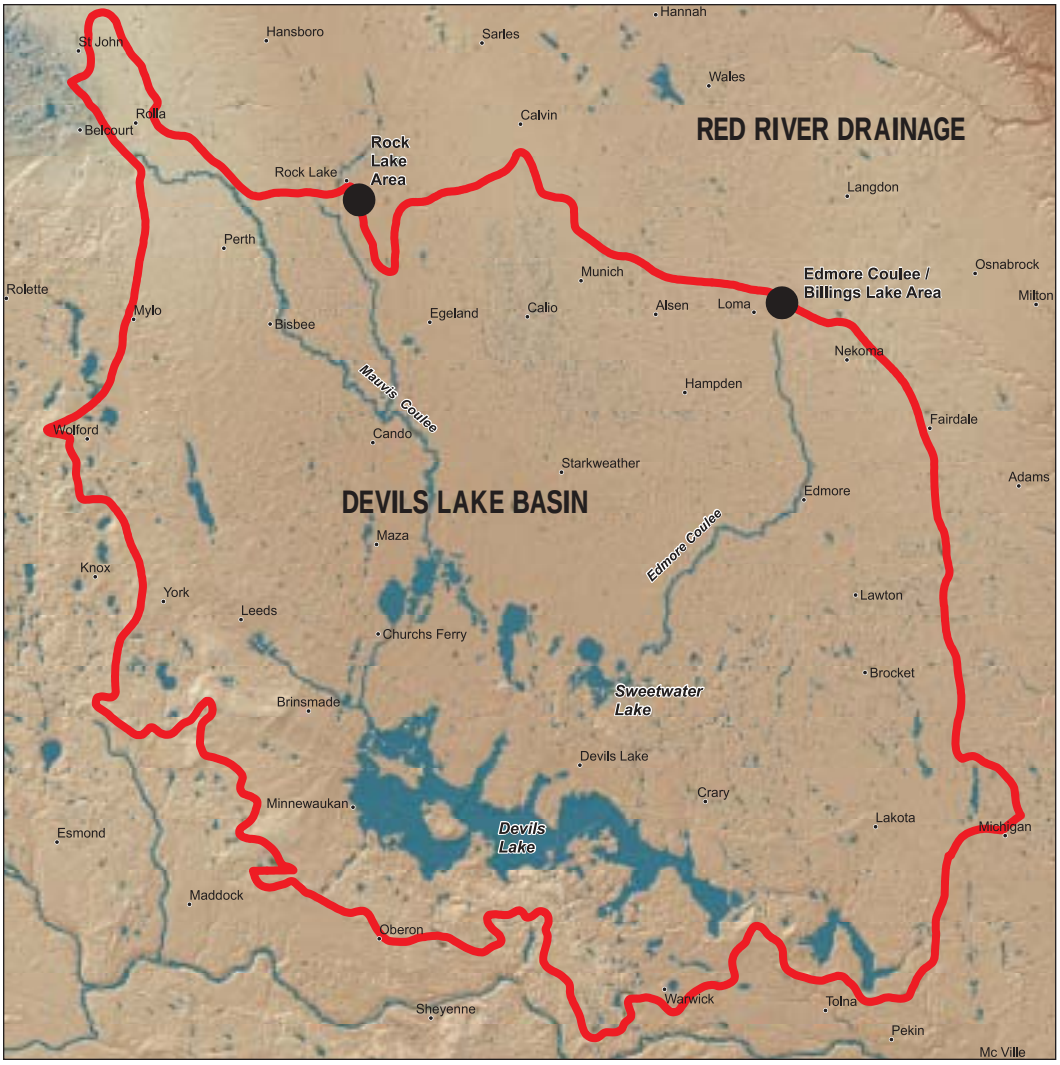
While anglers have done their part, Mother Nature is working from the other side. The rising water that has allowed Devils Lake's fishery to expand and prosper into a regional recreational and economic engine, is ironically the possible conduit to the potential demise of that fishery.

According to a State Water Commission report published in fall 2005, residents in the Cavalier County divide area, sometimes referred to as upper Edmore Coulee, have apparently known of a periodic connection of the drainages for many years, but it's only been within the last couple of years that the potential for a natural carp invasion was discovered there.

That was the second location where a threat of carp transfer to Devils Lake was documented.

In summer 2004, Game and Fish biologists investigated and confirmed reports of adult carp in a waterway near the town of Rock Lake in Towner County. Rock Lake is also a lake that is part of the Red

The sources of carp that currently threaten Devils Lake are miles apart from each other, and many miles from the lake itself, but carp are finned pioneers that aggressively seek new waters to colonize. All they need is water deep enough to swim in.



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River drainage via the Pembina River, and also contains carp periodically. Two known possible routes for inter-basin transfer exist in the Rock Lake area. One is a couple of miles straight south of Rock Lake, but in this area a ditch was plugged many years ago to prevent inter-basin water movement. There is no imminent threat of natural carp movement at this location.

The other area is a few miles east and south of Rock Lake. Adult carp were discovered in a channel a little more than two miles north of a slight high spot where water drains north on one side and south on the other, but where water from the two basins can mix under the right circumstances. Water that flows south eventually merges with Mauvais Coulee.

This waterway was also clogged with cattails and, according to the State Water Commission report, "Had the carp been able to go beyond the cattails they would have had free movement into Mauvais Coulee."

Mauvais Coulee, like Edmore Coulee, brings water to Devils Lake from the apex of the divide. Fortunately, in 2005 the same conditions did not exist and carp were not apparently a threat last summer in this location.

At the Edmore Coulee site, depending on precipitation, the potential for carp transfer could slowly recede away with dry conditions, or become greater with a downfall of early summer rain.

It's unknown whether last summer adult carp spawned within two miles of the divide, or if spawning occurred farther down Snowflake Creek and the aggressive young ones continued working their way upstream toward the divide.

What is known is that northeast district fisheries supervisor Randy Hiltner and his crew, in late June and again in late July, set nets at several locations north of the divide to verify if carp were present. Carp were netted near ND Highway 5 west of Langdon in what the locals call Moscow Slough, as well as one mile south.

The closest netting site to the divide where carp were present was at a road culvert on Snowflake Creek, 1.5 miles north of the divide. Numerous young-of-the-year carp were netted, along with stickleback and fathead minnows.

On the other side of the road from where the carp were trapped, the creek is wide, shallow and also clogged with cattails. Biologists believe the 1.5 miles of cattail barrier is the only reason young carp were not found during netting efforts on the Devils Lake side of the divide.

The Geologic View

Devils Lake is actually part of the Red River drainage, which funnels water into the Atlantic Ocean at Hudson Bay in Canada. But due to the way it was formed as the last glacier advanced and retreated, it is cut off from the Red River drainage once the water drops below a certain level.

Today, the water elevation at Devils Lake is about 1,448 feet mean sea level, which is about 26 feet higher than it was in fall 1992.

The last time the lake was close to its current level was likely in the 1820s, according to information published by former state geologist John Bluemle. Still, the lake would have to rise another 11 feet or so before it would naturally spill over an earthen divide and eventually wind up in the Sheyenne River, which flows into the Red River just north of Fargo.

Bluemle wrote in a paper in 1997 that since the last glacier retreated some 12,000 years ago, Devils Lake has probably risen high enough to overflow into the Sheyenne several times, with the most recent event occurring about 1,800 years ago.

CARP FACTS

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These carp, photographed in Lake Audubon, significantly reduce the potential of that fishery. Similar scenes could be visible along Devils Lake's shorelines, perhaps within a decade, if the current carp threat is not eliminated.

Carp quickly multiply once they get into a new body of water. They are able to reproduce starting at age 3 and they produce significantly more eggs than their game fish counterparts. For instance, a 10-pound walleye might produce 200,000 eggs, according to Randy Hiltner, northeast district fisheries supervisor for the Game and Fish Department.

A mature carp, on the other hand, might produce 2 million eggs.

Carp spawn in shallow water with vegetation present, usually in late May and into June in North Dakota, when water temperatures hit the high 50s and low 60s. Eggs typically hatch in 3-6 days, compared to about 14 days for walleye eggs. For a short time the young carp are prime-sized forage for predators, but after only a few months they are too big for most game fish to eat.

This natural outlet into the Red River drainage is about 60 miles south of the road grade that marks the subtle beginning of Snowflake Creek on the north and Edmore Coulee on the south.

Snowflake Creek works its way north and west for several miles before it widens out into a series of marshes and a shallow lake basin called Rush Lake, about six miles south of the Canadian border. It exits the Rush Lake complex and flows into Canada, where it joins the Pembina River, which flows back to the southeast, merging with the Red River and its year-round supply of carp some 40 miles to the east near Pembina, North Dakota.

It's likely the adult carp that produced last year's young, Hiltner said, pushed all the way up from the Pembina/Red rivers. And it's not a certainty the same situation that allowed this to happen will repeat itself this summer. Lack of runoff or late spring rains could prevent adult or young carp from swimming up to the high end of Snowflake Creek and presenting a danger of spilling over.

On the other hand, heavy late-spring, early-summer rains such as occurred last year could push water levels in the vegetation-choked slough high enough that young carp, instead of being blocked by a wall of cattails, could simply swim around the edges and cross the flat divide.

On the Downside

The south side of the divide – the top end of Edmore Coulee – begins as a flat marshy area. Without knowledge of the area, you wouldn't know that water was capable of draining in two different directions. As the State Water Commission report states, the divide between the Red, on the northern and eastern sides of the Devils Lake basin, is "barely discernible," and drainages are not always well defined.

In reality, the SWC report said, basins in this region have a "perforated barrier, which, under certain conditions, allows water, and thus aquatic organisms to easily move across."

If carp got into Edmore Coulee, they would only have to navigate a couple of miles downstream to a larger body of water called Billings Lake, where they could possibly over-winter and eventually reproduce or even wash downstream the same summer. While the upper end of Edmore Coulee is an intermittent stream, meaning parts of it can be dry much of the year, even during a normal spring enough runoff water is flowing that would allow carp to pass downstream some 30 miles into the northeastern end of Sweetwater Lake.

Prior to 1993 Sweetwater Lake was several miles distant from Devils Lake, but nowadays the two are well-connected. If carp established a reproducing population in Sweetwater, it would not be long until they moved on to Devils Lake.

If that were to happen, it would probably be a few years before carp started showing up in fisheries survey nets, and a few years after that before their numbers would be such that anglers would start noticing a reduction in game fish numbers. Devils Lake is, after all, about 100,000 acres of water, according to Game and Fish Department calculations, with many additional thousands of acres of fish-bearing water connected.

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Two miles north of the divide, Snowflake Creek was a shallow stream you could jump across in late September 2005. Inset above: On July 20, 2005 water flowed generously down Snowflake Creek in generally the same spot as fisheries workers set a net to see what sort of fish might be in the creek. Inset right: To everyone's dismay, young-of-the-year carp – the larger, golden fish in this photo – were discovered.

But eventually, biologists feel the Devils Lake basin would become dominated by carp.

Solutions

In the past, Game and Fish biologists have successfully eliminated carp from small bodies of water by using the chemical compound rotenone to kill all fish life. Such a project in the Devils Lake basin would be logistically impossible. It would take hundreds, perhaps thousands of people and boats to apply chemical to every drop of water connected to Devils Lake. The cost would easily run into the tens of millions of dollars for manpower, equipment and chemicals.

The bottom line is, there would be no fix. Anglers and local businesses that depend on fishing would have to be content with a fishery reduced to mediocre at best.

"We will never be able to eliminate carp from Devils Lake if they get in," Schlueter said, "we will not be able to kill them out, and I know that extra stocking won't do a darn thing."

The solution, then, is options that eliminate the threat of natural carp transfer.

While rotenone won't work for removing carp from Devils Lake if they get in, Game and Fish is confident that using it in Snowflake Creek this spring and summer will prevent young carp from approaching the divide.

In the meantime, the agencies and cooperators involved will be working on the final details for eventual construction of a permanent berm across the divide that would eliminate the culvert and the threat of inter-basin carp movement.

At a meeting of the Billings Lake subcommittee of the Devils Lake Basin Joint Water Resource Board on March 8, Game and Fish Director Terry Steinwand outlined the Department's plan for installing a rotenone drip station. Essentially, the drip station would add rotenone to water flowing north in Snowflake Creek in an amount sufficient to kill any fish within a significant distance downstream.

While rotenone kills fish and other aquatic life forms that use gills to breath, Steinwand explained, the water is not toxic to animals, the dead fish are not toxic to anything that might eat them, and the effect on fish dissipates rather quickly. That's why it's necessary to continuously mix rotenone into Snowflake Creek, to maintain the chemical barrier for a couple of months until the threat of carp movement is diminished. "I'm comfortable we can reduce the risk enough," Steinwand said.

It's likely Game and Fish will employ the rotenone drip from mid-May through mid-July, and then will cover the culvert at the divide with a mesh screen that would prevent fish movement the rest of the summer when water flows are typically reduced.

RANDY HILTNER

Mesh screens can also prevent fish movement at other times of the year, but they require frequent cleaning or they become clogged with debris.

The potential for a permanent berm had raised some concerns among area landowners that additional flooding would take place on the upper end of Edmore Coulee above Billings Lake, if water at the divide was no longer allowed to flow north. State Water Commission engineer Tim Frieje explained at the March 8 meeting, that based on preliminary analysis of information from recent surveys, little additional land would flood during high precipitation events if the culvert was closed.

By the time the subcommittee meeting ended, there was general agreement that a berm was the best permanent solution, but there was not enough time yet this spring to work out the details so the berm could be in place before the carp run this summer. Some of those details include which agencies would be involved in paying for berm construction, which landowners might be compensated (and how much) if additional temporary flooding occurs on their land, engineering design, and maintenance.

In the meantime, as the Billings Lake subcommittee, joint water board, area landowners, Game and Fish, State Water Commission and others work cooperatively to finalize the prevention plan, Hiltner and his crew will again monitor the area for carp presence to determine if other short-term actions are necessary.

The final plan, according to joint water board general manager Mike Connor, will be locally driven by the recommendations of the Billings Lake subcommittee, and any contractual agreements with local property owners will be through the Devils Lake Basin Joint Water Resource Board.

"The threat's real," says Greg Power, chief of fisheries for the Game and Fish Department. "However, I don't think it's absolutely inevitable that carp will get into the Devils Lake basin. We're hoping to come up with that permanent fix that works for everyone."

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