



EVOLUTION OF A WALLEYE FISHERY

By Paul Bailey

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The North Dakota Game and Fish Department initiated a tagging study in 2008 in an effort to learn more about Alkaline Lake's walleye population.

Changes to North Dakota's fisheries are a constant challenge. These changes, however, often include new opportunities, and those willing to adapt often reap the greatest rewards.

The winter of 1996-97 conceded precipitation in record amounts, leaving many of North Dakota's lakes better suited as walleye fisheries than perch fisheries. Anglers who traded in their glow bugs and wax worms for bottom bouncers and night crawlers have taken advantage of some phenomenal walleye fishing in recent years. Alkaline Lake in southern Kidder County serves as a prime example of a fishery evolving after a winter of historic proportions.

Perch Fishery Rise and Fall

No game fish in North Dakota may be more prone to boom and bust cycles than yellow perch. When environmental conditions are right, they thrive. Yet, when conditions change, they just as quickly fade away. Such is the history of perch in Alkaline Lake.

Prior to the winter of 1996-97, Alkaline Lake was a large cattail slough complex well known to

area waterfowl hunters. As a record-setting amount of snow began to melt in spring 1997, this shallow slough transformed into the fifth largest natural lake (by surface area) in North Dakota. In the first year after 1997, Alkaline offered everything yellow perch needed. Flooded vegetation provided ideal spawning habitat, a smorgasbord of aquatic invertebrate forage was available, the lake had enough depth to prevent winterkill and remain relatively cool during summer, and predators were scarce. Just three years after Alkaline Lake expanded, these factors combined to produce some of the best perch fishing many anglers had ever seen.

Unfortunately, for a number of reasons, a bust quickly followed this boom. By 2000, flooded vegetation that provided ideal perch spawning habitat had long since been digested by invertebrate grazers. The initial surge in lake productivity had passed and perch began competing among themselves, and against an increasingly abundant fathead minnow population, for a dwindling amount of invertebrate forage. Alkaline's perch were also under siege by predators from sea, land and air.

Northern pike came by sea. Pike made their way from adjoining Fresh Lake into Alkaline and were quite abundant by 2000. These efficient predators undoubtedly consumed a substantial portion of the lake's perch.

Anglers came by land (and ice). In a November 2005 *North Dakota OUTDOORS* article, Greg Power, North Dakota Game and Fish Department fisheries chief, documented the exceptional amount of perch fishing pressure that Alkaline Lake received after anglers discovered this fishery: "In February and March of 2000, before a daily perch limit was put in place, thousands of ice anglers caught tens, if not hundreds of thousands of perch. Not only did the harvested perch fill buckets, but in some cases people pulled home ice sleds full of perch."

Alkaline's perch population never fully recovered from this onslaught, even after North Dakota's first perch daily limit was established in April 2000.

And cormorants came by air. Double-crested cormorants are a water-loving, fish-eating bird whose numbers greatly increased as new lakes were formed across North Dakota. Alkaline Lake was soon playing host to hundreds of cormorants, each of which may have consumed 125 pounds or more of perch during summer 2000.

In the face of so many challenges, the fate of Alkaline Lake's perch fishery was sealed. But, opportunity awaited for our state's most sought after game fish, the walleye.

King Walleye

Game and Fish Department fisheries biologists annually monitored Alkaline Lake through standard netting surveys following the yellow perch decline. We continued to see decent northern pike numbers and a few yellow perch, but what really grabbed our attention was the tremendous fathead minnow population. Fathead minnows are often too large to serve as suitable forage for yellow perch, and too small to satisfy a large northern pike's appetite. However, fathead minnows may be the Goldilocks forage for walleye, as they are just right.

In 2003, we stocked 50,000 walleye in Alkaline Lake in an experimental effort to convert the abundant fathead minnows into something of more interest to anglers. Follow-up netting surveys showed that this experiment was definitely a success. Survival of newly-stocked fish was exceptional and, by spring 2004 many stocked walleye had grown to more than 10 inches in length. Based on this initial success, we

stocked 100,000 walleye in 2004 and nearly 300,000 fish in 2005. Approximately 300,000 walleye have been stocked annually since 2005.

By 2005 it was apparent that Alkaline Lake had a bright future as a walleye fishery, and obtaining and developing boating access became a pressing priority. Walleye can certainly be caught from shore, but boats often allow anglers to more efficiently search a body of water to locate concentrations of hungry fish. Like many lakes in North Dakota, Alkaline is largely surrounded by private land. Several section lines intersected the lake, but none were ideal for a boat ramp. Fortunately, a generous landowner agreed to sign a public fishing access easement allowing the Department to develop a public boat ramp on private property. In fall 2006, Alkaline Lake had a burgeoning walleye population and public boating access.

One question remained as ice left Alkaline Lake in spring 2007: Would the walleyes bite, or turn up their noses at hooks and lures in favor of the lake's all-you-can-eat fathead minnow buffet?

As spring 2007 progressed, it appeared that the latter scenario was going to be the case. Anglers were only having sporadic success during May and June, the months that typically produce some of the best walleye fishing on many lakes. But then something unusual began to happen. While angler success tends to decline on most walleye fisheries as water temperatures warm in July, this was not the case for Alkaline Lake. As water temperatures heated up in early July, so did the fishing.

In an age of supersonic flight, there still may be nothing that travels faster than word of a hot walleye bite. Alkaline Lake was soon playing host to hundreds of anglers who were treated to walleye fishing that was nothing short of spectacular. A tremendous amount of angling effort occurred, limits were the norm, and anglers undoubtedly harvested thousands of fish. These walleye were stocked for anglers to enjoy and they were certainly living up to their end of the bargain. However, many began to wonder if this level of harvest was excessive for the long-term good of the fishery.

The Game and Fish Department biologists initiated a walleye tagging study and creel survey in 2008, the latter of which will continue through 2009, to address three important questions:

- How many adult walleye are in Alkaline Lake?
- How much angler effort and walleye harvest is occurring?
- Is this amount of harvest excessive?



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The author and his son display a nice stringer of Alkaline Lake walleyes.

In April 2008, nearly 1,500 adult walleye (15 inches or longer) were captured, tagged and released. As these fish were recaptured during follow-up netting surveys, we were able to estimate that there were approximately 47,000 adult walleyes in Alkaline Lake – a very impressive number of fish.

Every fishery has its own unique quirks. Alkaline's most obvious may be the timing of its walleye bite. Alkaline seldom gives up its walleye through the ice or during the traditionally good walleye angling months of May and June. Instead, the fishing in 2008 was best when water temperatures were at their highest. During August, anglers made an estimated 2,870 trips to Alkaline Lake and harvested about 9,200 walleye. Anglers were catching fish at an exceptional rate, harvesting an average of one walleye per hour of fishing. Fishing remained

good through September, but soon cooled as water temperatures dropped.

The amount of harvest that can occur without jeopardizing the future quality of a fishery primarily depends on how many new fish are added to the population each year, as well as how quickly they grow. Adding new fish has yet to be an issue at Alkaline Lake. Every stocking has resulted in a strong year-class of walleye. These fish are also growing exceptionally well, typically reaching 15 inches in length at 3 years of age. Under these conditions, anglers should be able to harvest up to 40 percent of the lake's walleye every year while maintaining good fishing for years to come.

Between May 1, 2008 and January 31, 2009, anglers harvested an estimated 11,780 walleye, 394 of which were tagged, from Alkaline Lake. While this is a fair number by any standard, it amounts to less than 30 percent of Alkaline's total walleye population. The walleye harvest that occurred in 2008 was not considered excessive.

In the short term, Alkaline Lake should continue to support an exceptional walleye population. Forage is abundant, walleye are growing extremely well, and anglers are not harvesting an excessive number of fish. Past stockings have been enormously successful, and there may even be potential for these fish to naturally reproduce. We'll be evaluating the potential for natural reproduction over the next several years.

The long-term prospects are much more difficult to predict.

Extreme climactic events created Alkaline Lake from a collection of cattail sloughs, and future events may once again convert the lake into something more suitable to mallards and muskrats than walleye. Whether this occurs in 20 years, or 200, or ever is anyone's guess.

Most anglers are understandably bummed when their favorite fishery evaporates, and hunters are equally disappointed to find that their December pheasant hotspot is suddenly occupied by a lake. However, such changes are a fact of life on the prairie. As we've seen with Alkaline Lake, we can all take some solace in knowing that these changes often bring about the best that North Dakota's outdoors have to offer.

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ESTIMATED NUMBER OF ANGLER TRIPS, WALLEYE HARVEST, AND CATCH RATES
OF WALLEYE AT ALKALINE LAKE
FROM MAY, 2008 THROUGH JANUARY, 2009
(THE CREEL SURVEY WILL CONTINUE THROUGH APRIL OF 2009)

MONTH	ANGLER TRIPS	WALLEYE HARVEST	CATCH RATE (WALLEYE PER HOUR OF ANGLING)
May	240	10	0.12
June	320	110	0.18
July	180	350	0.82
August	2,870	9,200	1.00
September	950	2,000	0.60
October	230	100	0.20
November	40	0	0.00

Other Promising Walleye Waters

Lake Sakakawea, Devils Lake and the Missouri River/Lake Oahe will likely continue to receive the most attention from walleye anglers. However, many other notable walleye fisheries have developed over the last decade that may provide some quality fishing for years to come. Note: Some of these fisheries may have access to launch a boat, but not a developed boat ramp. For more information, see the 2008-10 North Dakota Fishing Guide or the 2009 North Dakota Fishing Waters list in this issue of *North Dakota OUTDOORS* on pages 20-27.

- Lake Addie, Griggs County, walleye introduced in 2003.
- Antelope Lake, Pierce County, walleye introduced in 2003.
- Dry Lake, Foster County, walleye introduced in 2004.
- Dry Lake, McIntosh County, walleye introduced in 1997.*
- Goose Lake, Wells County, walleye introduced in 1999.
- Lake Josephine, Kidder County, walleye introduced in 1999.
- Marvin Miller Lake, Logan County, walleye introduced in 2002.
- Mundt Lake, Logan County, walleye introduced in 2005.
- Rice Lake, Emmons County, walleye introduced in 1999.**
- Round Lake, Kidder County, walleye introduced in 1999.
- Stump Lake, Nelson County, walleye introduced in 2002.
- Twin Lakes, LaMoure County, walleye introduced in 2004.

*Walleye likely drifted from Lake Hoskins in 1997; first stocking in Dry occurred in 2001.

**Walleye were also stocked in the 1970s and 1980s.



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