

## *What is the Sturgeon River?*



The river starts with a bridge.

Dragonflies dance about the dilapidated remains of a wooden bridge half-sunk in Hoople Lake, an isolated pond a few kilometres from the town of Entwistle (west of Lake Isle). Experts think the lake is spring-fed, but no one has confirmed this.<sup>1</sup>

The Sturgeon River is a 259-kilometre stream that feeds into the North Saskatchewan River. It's not a rushing river by any means (although one senior resident says it had some nice rapids in the '70s).<sup>2</sup> Instead, it meanders its way through three counties, Parkland, Lac Ste. Anne, and Sturgeon; three lakes; a city, St. Albert; and several towns. Its drainage area covers some 330,000 hectares, stretching east to west from Fort Saskatchewan to Entwistle and north to south from Rivere Qui Barre to Stony Plain. This land includes two creeks, the Atim and the Kilini, both of which feed into the Sturgeon.<sup>3</sup>

The river ends with a bridge, too.

Northeast of Fort Saskatchewan, the Sturgeon winds through a deep valley until it runs into a massive wall of earth, the height and depth of a large three-storey home. A railroad track, a dirt road, and several high-tension power lines run along the top of this artificial land bridge. At

its base swims a lone beaver, paddling in silent laps. The river flows under this wall through three one-meter-wide pipes and travels a few blocks before merging with the North Saskatchewan River.

It was not always this way.

The Sturgeon River is an ancestor of the North Saskatchewan, explains Stuart Loomis, a local geomorphologist, or landscape historian. “About 100,000 years ago [just prior to the last Ice Age],” he says, speaking in the lobby of St. Albert Place, “we had a river going right by the front door here.”

That river was the North Saskatchewan, he explains, and St. Albert was in the middle of its valley. Pre-glacial rivers laid rich deposits of sand and gravel throughout the Sturgeon valley. Then came the ice age, when kilometre-thick glaciers buried those rivers beneath tonnes of loose rock. Those glaciers melted about 12,000 years ago, creating a massive lake that drowned all of Edmonton, St. Albert, Morinville and Stony Plain. Algae from that lake created the rich black soil of the Sturgeon valley. At some point, geologists say, an ice dam broke, causing a “catastrophic” release of water that drained the lake in a few days. “Picture a valley one kilometre wide and 50 meters deep,” writes geologist John Godfrey, “filled to the brim by a raging flood of muddy water choked with icebergs as big as three-storey houses.”<sup>4</sup> In the process, says Loomis, the North Saskatchewan carved out its current path by Edmonton and another stream took over its former home. Today, that stream is called the Sturgeon River.

The Cree knew the Sturgeon as *mi-koo-oo-pow*, or “Red Willow River.”<sup>5</sup> Europeans knew it as a key waterway to the West, establishing two forts where it met the North Saskatchewan and running furs up and down its twisted length.<sup>6</sup> Botanist David Douglas, who spent five hours in 1827 building a raft to cross the river, described it as an “uninteresting and

wretched country.” Father Albert Lacombe, in contrast, was struck by its natural beauty, rich soil and abundant wildlife, and in 1861 founded what would become the city of St. Albert on its banks.<sup>7</sup>

The river was vital to the lives of those early settlers. Its thick forests provided the wood for Lacombe’s chapel, homes, and a 200-foot bridge over the river, the first bridge built west of the Great Lakes.<sup>8</sup> The Sturgeon’s waters quenched the thirsts of settlers and their cattle and doused their burning buildings via the local fire department.<sup>9</sup> Its ice chilled their meats — one sawdust-covered block would keep all summer, say locals — and in winter acted as a skating rink. Its rapids powered a flour-mill, and propelled the craft of the Edmonton Canoe and Kayak Club. Some residents today still recall the Ste. Therésa paddleboat, which steamed across Big Lake (northwest of St. Albert) during the summer of 1912.<sup>10</sup>

As settlements spread and the weather changed, so did the river. St. Albert grew from a village of a few hundred to a city of 56,000 in just over a century. Suburbs, roads, mines, and factories sprawled until 71 per cent of all land in the watershed was converted to human use.<sup>11</sup> Runoff from farmer’s fields and sewage outfalls made the river’s water unfit for human consumption. Still, millions of litres were diverted every year for crops, cattle, and other purposes. Lake sturgeon, the dinosaur-like fish that was the river’s namesake, vanished from the river. And, at some point, someone built that earthen wall that marks the end of the river.

### **The State of the Sturgeon**

It’s easy to look at the Sturgeon today and write it off as a dead, mosquito-infested slough — it’s not good for fishing, it’s usually full of algae, and it’s often so shallow that you can walk across it without getting your feet wet.

Yet despite massive and often damaging modifications to its watershed, the Sturgeon still supports an abundance of life. A quick walk down its shores and, in addition to the occasional shopping cart, you can easily spot muskrats gliding through the water and hear red-tipped blackbirds chattering in the reeds. Big Lake alone is home to some 220 species of bird, 200 plants, 40 mammals, many types of insect and several types of fish — not for nothing was it made a provincial park in 2005.<sup>12</sup>

Even so, no one can give a definitive answer on the health of the Sturgeon River right now; the gaps in the research are too numerous. Scientists know little about its riparian zones, plants and shellfish, for example, or the precise state of its fish populations and water flows.

The closest anyone can get is the *State of the North Saskatchewan Watershed Report* by the North Saskatchewan Watershed Alliance, or NSWA, an umbrella group established as part of the Water for Life Strategy. It's also the watershed planning and advisory council for the North Saskatchewan basin, and should be a central figure in future water management decisions. The report, released in summer 2005, is the first comprehensive evaluation of the North Saskatchewan river basin (of which the Sturgeon is a part), and the first step towards creating a basin-level management plan for it.

The report finds that the Sturgeon is a lot like the North Saskatchewan itself: “good” in the west (where there is little development), “poor” in the east, and “fair” overall. In other words, Albertans haven't “destroyed” the river, but they certainly have not taken good care of it.

The report evaluates the 18 sub-watersheds of the North Saskatchewan based on land use, water quality and quantity, and biological health. It says the Sturgeon River watershed is in “fair” condition, not pristine like the Cline watershed by Jasper, but not in trouble like the Strawberry watershed, recipient of a train-load of oil from an accident in 2005. It has good, low

levels of *E. coli* bacteria (cause of the Walkerton water disaster), fair fish populations, in that it can actually support fish, and poor or high levels of linear development such as roads and pipelines.<sup>13</sup>

The Sturgeon is the most heavily developed part of the North Saskatchewan watershed. Roads, mines, oil wells, and cities cover 68 per cent of it (compared to 15 per cent in its closest competitor, the Strawberry). About 12 billion cubic meters of flow per year are licensed for diversion from waterways for human use in the Sturgeon, which, according to Alberta Environment, is pretty close to the maximum amount useable without serious harm to the environment or water shortages.<sup>14</sup> The region also has one of the lowest percentages of wetlands in the basin (at about seven per cent), although it does contain the provincially significant wetland of Big Lake.<sup>15</sup>

Contrary to what many residents believe, the Sturgeon does not appear to have significantly less flow in it today than it did in the past. According to Environment Canada, there has not been any statistically significant change in average summer flow in the Sturgeon since 1914 (see Fig. 1). Average flows from 1958–2001 were about one cubic meter per second lower than those from 1914–1957, but this change is so small that there’s no way to confirm that it isn’t the result of some quirk in the data. Overall, flow rates in the Sturgeon are “fair”: they’ve not getting worse, but they’re not getting better either, and they certainly aren’t very high.

### **Licensed for diversion?**

All water in Alberta is the property of the Crown as represented by the government.

Every Alberta household has a statutory right to 1,250 cubic meters of water a year. Anyone who wants to use more has to get a license to divert water from the province.



*Fig. 1:* Average summer flow in the Sturgeon River, 1914–2001. Data was obtained from the Water Survey of Canada HYDAT database records for meter 05EA001. Trend-line equation is  $y = -0.0309x + 6.4345$ . Statisticians use t-distribution calculations (expressed as a percentage) to see if a trend in a data set is actually meaningful. The t-distribution of this data found that there was a 32 per cent chance that there was no trend in it; if there was a trend, then that chance would have to be less than five per cent.

**“But I *know* the river is down!”**

Readers should take these results with a grain of salt.

First, the Sturgeon has an extremely variable flow pattern, which tends to mask any trends that might exist.

Second, there are no complete flow records for it; there’s about a 10-year gap in the data around the ‘20s and ‘30s.

Third, these records aren’t naturalized, meaning they include the effects of all human withdrawals and water returns on the Sturgeon. That makes them less accurate: if some force in the region was dumping loads of water into the Sturgeon, for example, it would conceal any natural flow reduction present in the river.

Fourth, 90 years is actually a very short time in river’s life, and might not provide enough data points to get a statistically significant result. Researchers don’t have any idea what the flow was like before human settlement, for example, and need that data to determine humanity’s impact on the river.

Last, it’s possible that people like Robert Lema may have seen real declines in flow in small parts of the Sturgeon, ones not reflected in the river as a whole.

Readers should also note that the Sturgeon has shown one very recent sign of decline: flow records show that 1998–2001 (the first half of the current drought in Alberta) was the driest period in the Sturgeon on record. Depending on how conditions change in the future, this could be a start of a downward trend.

So what does “fair” mean? “It means we have work to do,” explains Sharon Willianen, a spokesperson for the NSWA. The river, after all, will only stay “fair” if nothing else happens to it: no more withdrawals, cow farms, gravel mines, chemical spills, no reduction in precipitation, and no global warming. Based on the evidence featured in the next chapter, that’s not likely to happen. The Sturgeon is not currently in danger of extinction, but if it’s anything like other rivers in the province, that will change very soon.

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<sup>1</sup> Derek Richmond, former environmental consultant to the City of St. Albert and authority on the Sturgeon, says scientists have observed water bubbling up into the lake from an unknown source. It could be from underground, or it could be from the nearby Pembina River.

- <sup>2</sup> Murray Hawkins, 75, managed Boysdale Camp at the end of the Sturgeon River for several decades. In the '70s and '80s, he said, there was enough flow in the river for kids to strap on lifejackets and safely ride through the rapids. "There were nice rapids to the west" of the camp, he says. "It was a great canoe run from about a mile up the Sturgeon down into the camp."
- <sup>3</sup> Due to space limitations, this study will focus mostly on the Sturgeon River itself, with some references to issues in Kilini and Atim Creek.
- <sup>4</sup> John D. Godfrey, *Edmonton Beneath Our Feet*, Edmonton: Edmonton Geological Society 1993, 16–17, 22–25, 28.
- <sup>5</sup> Derek Richmond, "Is There Hope for the Sturgeon River?" *Saint City News* 11 June 2004, 38–39.
- <sup>6</sup> Elke Blodgett, "Submission to Endangered Rivers Program," [online document] (St. Albert, Alta: Elke Blodgett 2003, accessed 23 March 2006); available from <http://www.elkeblodgett.net/nomination.htm>.
- <sup>7</sup> Arlene Borgstede, *The Black Robe's Vision: A History of St. Albert and District*, vol. 1, St. Albert, Alta.: St. Albert Historical Society 1985, 5, 19–20.
- <sup>8</sup> *Ibid.*, 21–22.
- <sup>9</sup> Jean Leebody (former curator Musée Héritage Museum), "Water Under the Bridge: The History of the Sturgeon River and Big Lake," text of exhibit prepared for Musée Héritage Museum, St. Albert, 2004.
- <sup>10</sup> Richmond, "Hope," 38; Susan Jones, "Information Needed on Sturgeon Riverboat," *St. Albert: Our Story*, St. Albert, Alta.: Gazette Press Ltd. 1999, 72. Jones spells the name "La Therese," and Derek Richmond spells it "St. Theresa." David Ridley, curator of the archives at the Musée Héritage Museum, says his records record the name as "Ste. Thérésa."
- <sup>11</sup> Aquality Environmental Consulting, Ltd., *State of the North Saskatchewan Watershed Report 2005*, Edmonton, Alta.: North Saskatchewan Watershed Alliance 2005, 90.
- <sup>12</sup> Gibbs and Brown Landscape Architects Ltd., *Red Willow Park West Master Plan Update*, St. Albert, Alta.: City of St. Albert 2003, 14–17.
- <sup>13</sup> Aquality Environmental Consulting Ltd., 88–93.
- <sup>14</sup> The specific numbers are broken down in Appendix B. In order to remove any significant amount of water from a river or lake, you need to get a license to divert water from the province. Alberta Environment tracks these licenses and estimates how much water it can licence for human use while still meeting the ecological needs of the river and without exceeding the available supply. Based on data obtained from Lorne Edinga of Alberta Environment, as of March 2006, there were about 175 active licensed withdrawals in the Sturgeon river valley, representing a total potential diversion of eight million cubic meters of water per year. Note that most licensees do not use all the water they are legally allowed to take; according to the data, only about three million cubic meters a year are actually diverted. Many licenses in the Sturgeon (and other watersheds) also have restrictions that prevent people from taking water in times of very low flow. According to Alberta Environment, the Sturgeon is close to fully allocated, meaning that there is very little water left available for new diversions.
- <sup>15</sup> Aquality Environmental Consulting Ltd., 170, 178.