

# SEINE RIVER TEMPERATURE PROJECT – 2011 TO 2015

## Executive Summary

In 1926, the Sturgeon Falls Generating Station was constructed along the Seine River to create hydroelectric power and this facility is currently operated by H2O Power. One of the major threats to lake sturgeon is the impact of peaking hydroelectric developments on the water levels during the spring spawning season. The purpose of the Seine River Temperature Project is to help define the spring spawn for Seine River sturgeon through surrogate environmental indicators and note any effects of peaking on spawning. In addition, a goal of the project was to determine if the increases in water levels at the Seine River First Nation community are due solely to the flow from the Seine River, or if the dam at the outlet of Rainy Lake affects the water levels resulting in the Seine River functioning as a reservoir.

Between 2011 and 2015, Seine River First Nation community technicians studied the spawning timing of lake sturgeon at two important spawning sites in Seine River below the Sturgeon Falls dam to help determine the environmental indicators (temperature, photoperiod, flows) for lake sturgeon spawning. In addition, work was done with Seine River First Nation Elders and knowledge holders in the fall of 2012 to identify Traditional Ecological Knowledge (TEK) indicators for lake sturgeon spawning in Seine River. This TEK study resulted in field observations of poplar leaf size and tiger swallowtail butterflies during the spring of 2013, 2014, and 2015 to determine the relationship between these environmental indicators and the lake sturgeon spawning timing. Adult and juvenile lake sturgeon netting and tagging was conducted in partnership with Ontario Ministry of Natural Resources and North-South Consultants.

The project results indicate that water temperature, photoperiod, and observations of tiger swallowtails are three environmental indicators of lake sturgeon spawning on the Seine River. The lake sturgeon spawning occurred as soon as the water temperature reached 13°C as long as this temperature was reached when the photoperiod was between 15 hours, 49 minutes and 15 hours, 52 minutes. Tiger swallowtails were first observed each season approximately at the time of the lake sturgeon spawn and no more than four days from the peak spawning activity on Seine River. The peaking water levels/flows from the Sturgeon Falls dam did have the potential to negatively impact upon the spawning success of lake sturgeon in the Seine River in 2011 and 2014, which was one-half of the spawning seasons where data was available (no data for 2013). The results of the juvenile and adult lake sturgeon netting/tagging data from 2011 to 2015 provides strong evidence that the Seine River provides important spawning and rearing habitat for lake sturgeon but appears is only used by adult lake sturgeon for spring spawning. Water level data collected during this project provides evidence that the dam at the outlet of Rainy Lake does affect the water levels in Seine River, and that the Seine River from its outlet to Rainy Lake at Kettle Point upstream to the Highway 11 bridge does function as part of the Rainy Lake reservoir, particularly during years of high levels on Rainy Lake.