Keeyask Generation Project

Aquatic Effects Monitoring Plan

Juvenile Lake Sturgeon Population Report

AEMP-2020-06

KEEYASK

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KEEYASK GENERATION PROJECT

AQUATIC EFFECTS MONITORING PLAN

REPORT #AEMP-2020-06

JUVENILE LAKE STURGEON POPULATION MONITORING, FALL 2019: YEAR 6 CONSTRUCTION

Prepared for

Manitoba Hydro

By

D.C. Burnett and C.L. Hrenchuk

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North/South Consultants Inc.
Aquatic Environment Specialists

83 Scurfield Blvd.
Winnipeg, Manitoba, R3Y 1G4
Website: www.nscons.ca

Tel.: (204) 284-3366
Fax: (204) 477-4173
E-mail: nscons@nscons.ca

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SUMMARY

Background

The Keeyask Hydropower Limited Partnership (KHLP) was required to prepare a plan to monitor the effects of construction and operation of the Keeyask Generating Station (GS) on the environment. Besides measuring the accuracy of the predictions made and actual effects of the GS on the environment, monitoring results will provide information on how construction and operation of the GS will affect the environment and if more needs to be done to reduce harmful effects.

Construction of the Keeyask GS began in mid-July 2014 with the construction of cofferdams that blocked flow in the north and central channels of Gull Rapids (see instream structures map below). During the winter of 2015/2016, the Spillway Cofferdam, which partially blocks the south channel, was constructed. Beginning late in 2016 and continuing in 2017, the Tailrace Cofferdam was constructed. Work was completed in fall 2017 with the exception of an opening that was left to allow fish movement into and out of the cofferdam over the 2017/18 winter. This opening was closed in spring 2018, and the area was dewatered. The spillway was commissioned in August 2018. The South Dam Cofferdam was completed in fall 2018, blocking the channel and forcing the entire flow of the river through the spillway. In 2019, almost all work was done in the dry and included the excavation of the tailrace, construction of the tailrace spawning shoal, and completion of the dams and dykes.

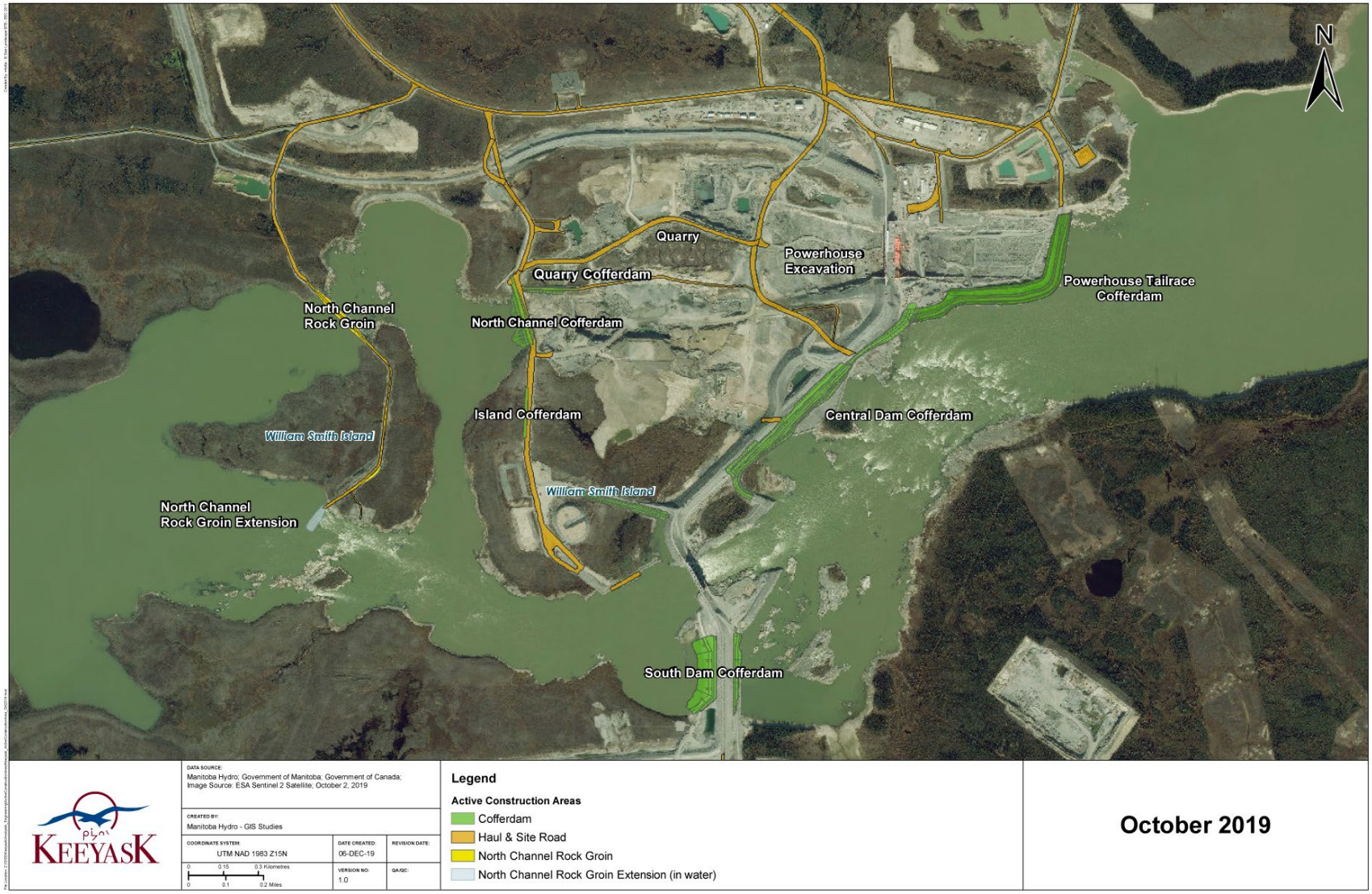
Lake Sturgeon were identified as one of the key species for monitoring. They were chosen because they are culturally important to partner First Nations, local sturgeon populations have been previously impacted, and construction and operation of the GS will change or negatively impact important habitat. The plan to monitor the impacts of GS construction and operation on sturgeon includes several types of studies:

- Estimating the number of adults;
- Estimating the number and growth of juveniles (less than 800 millimetres [mm] in length);
- Identifying spawning locations and numbers of spawning fish; and
- Movement studies to record seasonal habitat use, long distance movements, and movements past barriers (*i.e.*, over GSs or Gull Rapids).

The mitigation and offsetting plan for Lake Sturgeon included a commitment to a long-term stocking program. This plan addressed the loss of spawning habitat at Gull Rapids during the construction and initial years of operation (*i.e.*, before the constructed spawning habitat is fully effective) by releasing young sturgeon into Stephens Lake. Stocking will also support the recovery of the sturgeon populations in Gull Lake, Stephens Lake, and the Upper Split Lake Area. Stocking began in 2014, with locations alternated between years (future Keeyask

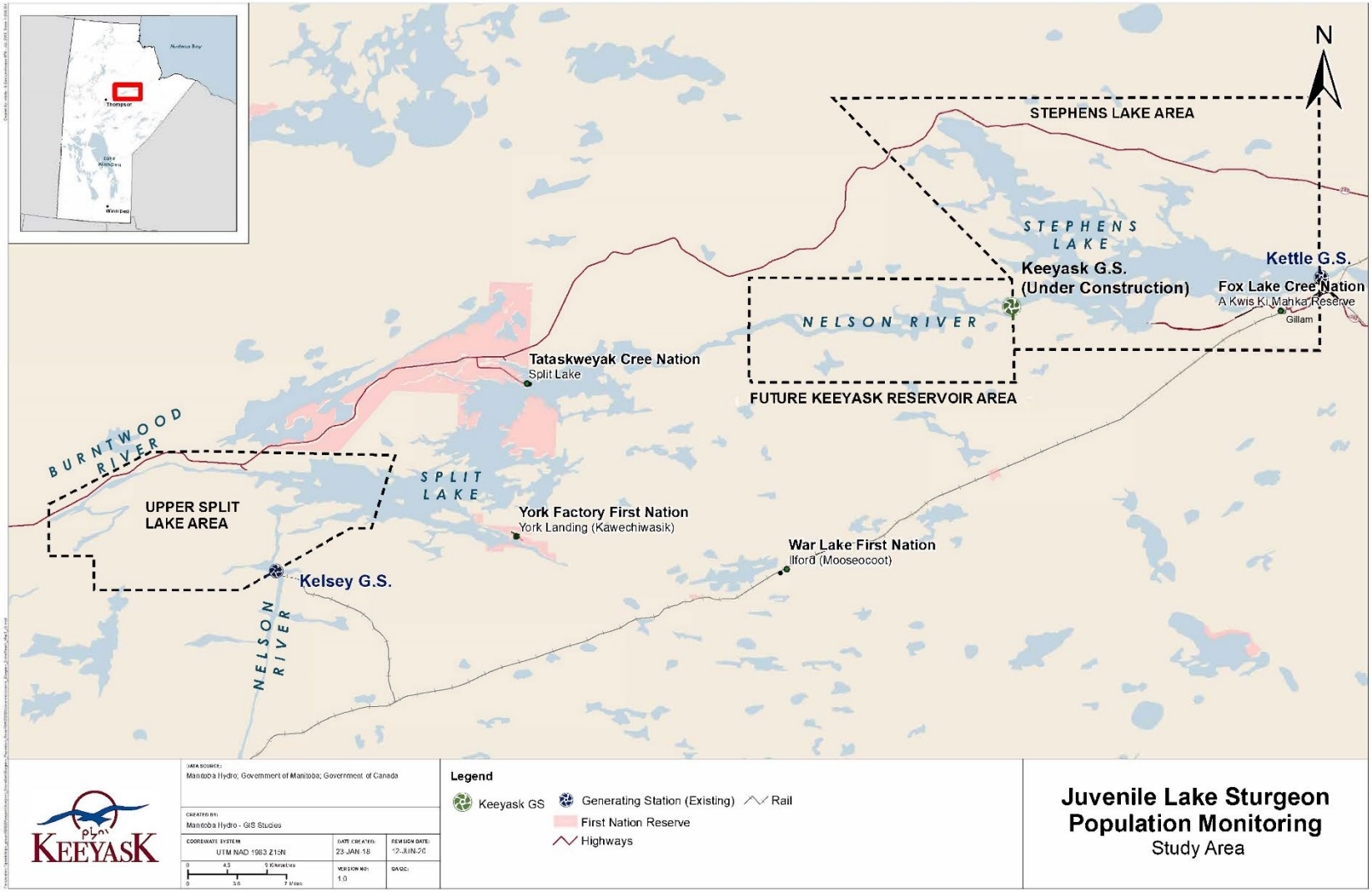
reservoir and Stephens Lake are stocked with fish born in even years, Burntwood River is stocked with fish born in odd years) and its effectiveness is assessed through juvenile population monitoring.

This report presents results of juvenile Lake Sturgeon population monitoring conducted during fall 2019. Data from juvenile populations in the study area have been collected intermittently since 2007 and the juvenile population monitoring study was conducted for the first time in 2014. The plan is to conduct juvenile population monitoring annually until 2044. Each year, sampling will be conducted using the same capture methods, so that results can be compared between different years and trends can be seen.



Satellite Imagery - October, 2019

Map illustrating instream structures at the Keeyask Generating Station site, October 2019.



Map of the study area for the juvenile Lake Sturgeon population monitoring program. Sampling is done in the Upper Split Lake, the future Keeyask reservoir and the Stephens Lake areas every year.

Why is the study being done?

Juvenile Lake Sturgeon population monitoring is being done to answer several questions:

Does recruitment of wild sturgeon occur upstream and/or downstream of the GS during construction?

This question is important because if no young sturgeon are born during the seven year construction period, then in the future fewer adult sturgeon will be reproducing.

Is there a change in condition factor and growth of juvenile sturgeon during construction?

This question is important because if sturgeon become fatter or skinnier than they used to be, then something is changing in their environment. If the condition of juveniles decreases, it can also mean that stocking is adding too many fish to the environment and they cannot find enough food. In that case, the stocking plan will be adjusted.

What is the survival rate of stocked sturgeon?

This question is important because if the survival rate is high then the number of fish stocked may be reduced. If the survival rate is low, then the stocking plan would be adjusted (*e.g.*, may change time or location of release).

What is the proportion of hatchery-reared to wild recruits within a birth year (i.e., how successful is the stocking program)?

The answer to this question will also tell us about the effectiveness of the stocking program.

Juvenile (left) and young-of-the-year (right) Lake Sturgeon.

What was done?

Sampling was conducted in the Upper Split Lake Area (including the Burntwood River and Split Lake), the future Keeyask reservoir (the Nelson River between Clark Lake and Gull Rapids), and Stephens Lake in the fall of 2019. Gill nets were used to catch juvenile sturgeon, defined as those that are less than 800 mm in length. The gill nets were set in deep water habitats preferred by juveniles. When a fish was caught, it was measured and weighed. If the fish was

not already tagged, then two different tags were applied: an external (Floy®) tag and a small PIT tag to make sure the fish is identifiable if one tag is lost. If the captured fish had already been tagged, then the tag numbers were recorded before the fish was released. Tagging and recapturing fish makes it possible to determine how much a fish grew or the distance they moved. It also makes it possible to estimate how many sturgeon are in a population. An ageing structure (a small piece of fin) was also collected to determine the year that the fish was born.

Captured juvenile Lake Sturgeon in a fish tub (left); measuring (middle); and weighing (right) a Lake Sturgeon after capture.

What was found?

A total of 182 Lake Sturgeon were captured in the Upper Split Lake Area: 19 in the Burntwood River (all juveniles) and 163 in Split Lake proper (141 juveniles and 22 adults). Since sampling began in the Burntwood River, sturgeon born in every year from 2000 to 2018 have been caught. No Lake Sturgeon born in 2019 (called young-of-the-year [YOY]) were captured in the Upper Split Lake Area. Of the 182 sturgeon caught, eleven were wild fish tagged in a previous year and recaptured in 2019. Ten fish captured in Split Lake were raised at the Grand Rapids hatchery and released in the Burntwood River as one-year-olds: two in 2014 and eight in 2018. This is the largest number of hatchery fish released in the Burntwood River that have been caught in a single year.

A total of 244 Lake Sturgeon (234 juveniles and 10 adults) were captured in the future Keeyask reservoir. Four YOY sturgeon were captured, showing that sturgeon successfully reproduced in 2019 (no stocking of YOY took place in this area in 2019 prior to sampling). Of the 244 sturgeon, 21 had been tagged in a previous year (between 2008 and 2018), and an additional 57 were tagged hatchery-reared sturgeon released as one-year-olds in the Burntwood River (2014 and 2018) and the future Keeyask reservoir (2015, 2017 and 2019). Two of the recaptured hatchery fish were released 112 km and 129 km upstream in the Burntwood River in 2014 and 2018, respectively. Including the two fish caught in 2019, a total of six hatchery-reared fish released in the Burntwood River have been caught in the future Keeyask reservoir since stocking began in 2014. Analysis of growth between hatchery and wild caught fish showed that young hatchery fish are longer than wild fish of the same cohort. However, growth of hatchery fish appears to slow around age-5.

In Stephens Lake, 229 Lake Sturgeon (216 juvenile and 13 adult) were captured. No YOY (fish born in 2019) were captured in Stephens Lake. A total of 24 sturgeon tagged in a previous year

were recaptured, as well as 118 hatchery-reared sturgeon (released as one-year olds). Hatchery-reared sturgeon accounted for 52% of the total catch in Stephens Lake. Eleven of the hatchery-reared sturgeon were stocked in the future Keeyask reservoir, 105 were stocked in Stephens Lake, and one was stocked 138 km upstream in the Burntwood River. As in the future Keeyask reservoir, stocked hatchery fish were longer than wild fish of the same cohort, but showed slowed growth around age-5.

A computer model was used to generate estimates of population size and survival for wild juvenile Lake Sturgeon (*i.e.*, those measuring less than 800 mm in length) in the Upper Split Lake Area, future Keeyask reservoir, and Stephens Lake. Previously, not enough fish had been recaptured in the Upper Split Lake Area for the model to work, so 2019 was the first year estimates were calculated. For the future Keeyask reservoir and Stephens Lake this is the second year where estimates were made for each population. In 2019, the Upper Split Lake Area (Burntwood River and Split Lake) juvenile population was estimated at 4,503 wild fish. Survival in this area was 82%. The future Keeyask reservoir population in 2019 was estimated at 2,819 wild fish with a survival rate of 74%. The Stephens Lake population in 2019 was estimated at 857 wild fish, and survival was estimated at 79%.

A different model was also used to generate survival estimates for hatchery-reared fish stocked in the future Keeyask reservoir and Stephens Lake (not the Burntwood River because not enough hatchery-reared fish have been captured). Survival of fish stocked in the future Keeyask reservoir and Stephens Lake was estimated at 83% and 93%, respectively. The population of hatchery fish in the future Keeyask reservoir was estimated to be 912, making up 24% of the total juvenile population. An estimated 1,318 hatchery fish were present in Stephens Lake, making up 61% of the total juvenile population.

As more data are collected and added to the models, the population and survival estimates are expected to become more precise and accurate. This is especially true for the Upper Split Lake Area as 2019 was the first time estimates could be calculated.

What does it mean?

The capture of YOY sturgeon in 2019 shows that, like in 2015–2018, reproduction in the wild is occurring upstream of the Keeyask GS during construction. No YOY were captured in the Upper Split Lake Area or Stephens Lake but that does not mean reproduction was unsuccessful in 2019. Wild sturgeon have been born in each year since construction started (2015–2018) in the Upper Split Lake Area and the future Keeyask reservoir. In Stephens Lake, no wild fish from the 2018 cohort have been captured and no YOY fish were caught in 2019; however, the 2015–2017 cohorts are present in the catch.

The capture of many hatchery-reared sturgeon released as one-year-olds in the future Keeyask reservoir and Stephens Lake over the last three study years suggests the stocking program is having a positive effect on juvenile abundance in these areas. It demonstrates that stocked sturgeon are surviving in the wild and that they are growing after release. Few hatchery-raised fish released as one-year-olds in the Burntwood River have been recaptured; however,

recaptures have occurred as far downstream as the future Keeyask reservoir and Stephens Lake. The recapture of fish in Split Lake suggests that both stocked and wild fish are moving downstream out of the Burntwood River. Future sampling will likely focus more in Split Lake where fish have been recaptured.

What will be done next?

Monitoring will continue each fall until 2044. Further monitoring will show whether impoundment and subsequent operation of the Keeyask GS is affecting the growth of juveniles in the future Keeyask reservoir and Stephens Lake, and whether sturgeon continue to reproduce. Survival, growth, and population size of stocked and wild juveniles will continue to be assessed.

ACKNOWLEDGEMENTS

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The collection of biological samples described in this report was authorized by Manitoba Agriculture and Resource Development (previously Manitoba Sustainable Development), Fisheries Branch, under terms of the Scientific Collection Permit #18-19.

STUDY TEAM

Data Collection

Jason Beardy

Graydon Brightnose

Duncan Burnett

Leslie Flett

Brett Funk

Claire Hrenchuk

Duane Hudd

Kelvin Kitchekeesik

Tyler Kitchekeesik

Joe Mota

Eric Mullen

Jon Peake

Data Analysis, Report Preparation, and Report Review

Cam Barth

Claire Hrenchuk

Duncan Burnett

Friederike Schneider-Vieira

Jon Peake

Ken Ambrose

Patrick Nelson

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1.0 INTRODUCTION

The Keeyask Generation Project (the Project) is a 695-megawatt (MW) hydroelectric generating station at Gull Rapids on the lower Nelson River in northern Manitoba. The Project is approximately 725 kilometres (km) northeast of Winnipeg, 35 km upstream of the existing Kettle Generating Station, where Gull Lake flows into Stephens Lake, 60 km east of the community of Split Lake, 180 km east-northeast of Thompson, and 30 km west of Gillam (Map 1). Construction of the Project began in July 2014.

The *Keeyask Generation Project: Response to EIS Guidelines*, completed in June 2012, provides a summary of predicted effects and planned mitigation for the Project. Technical supporting information for the aquatic environment, including a description of the environmental setting, effects and mitigation, and a summary of proposed monitoring and follow-up programs, is provided in the *Keeyask Generation Project Environmental Impact Statement: Aquatic Environment Supporting Volume* (AE SV). As part of the licensing process for the Project, an *Aquatic Effects Monitoring Plan* (AEMP) was developed detailing the monitoring activities of various components of the aquatic environment, including the focus of this report, juvenile Lake Sturgeon populations, for the construction and operation phases of the Project.

For the purposes of this monitoring program, Lake Sturgeon that are 800 mm in fork length or longer are classified as adults and smaller sturgeon are considered juveniles. Although fish greater than 800 mm length may not yet be sexually mature and may not reach sexual maturity for some years, this length was used as the threshold to distinguish between juveniles and adults because the smallest mature fish captured to date has been 809 mm (captured in 2016 in Stephens Lake; Legge *et al.* 2017).

Juvenile population monitoring is a key component of the overall Lake Sturgeon monitoring program. The Project is predicted to affect sturgeon recruitment by altering spawning habitat at Gull and Birthday rapids. Stocking aims to assist the recovery of sturgeon populations in the Upper Split Lake Area (*i.e.*, the Burntwood River and the Nelson River between the Kelsey GS and Split Lake) and in the future Keeyask reservoir and Stephens Lake. Stocking is a key component of the offsetting plan, with stocking locations alternating between years (future Keeyask reservoir and Stephens Lake are stocked with even-cohort years, Burntwood River is stocked with odd-cohort years). Results of juvenile population monitoring will determine the impact of the loss of spawning habitat earlier than would be possible using adult population monitoring data, allowing timely adaptive management and mitigation, if required. Results of juvenile population monitoring will also assist in assessing the effectiveness of stocking and identify whether changes to the stocking plan are required. Data collected during juvenile population monitoring will be used to measure population size and cohort strength, identify changes in condition factor, determine whether natural reproduction is occurring, assess the need for young-of-the-year (YOY) habitat creation, and determine whether stocked fish are surviving and growing.

Juvenile Lake Sturgeon studies have been conducted in Gull Lake (the future Keeyask reservoir) and Stephens Lake since 2007. Surveys were initiated in the Burntwood River in 2012 and in both the Nelson River downstream of the Kelsey GS and Split Lake in 2015. These studies have increased the understanding of YOY and juvenile abundance, distribution, habitat use, condition, size, and year-class strength (MacDonald 2009; Michaluk and MacDonald 2010; Henderson and Pisiak 2012; Henderson *et al.* 2011, 2013, 2015; Burnett *et al.* 2016, 2017, 2018; Burnett and Hrenchuk 2019). Results from the Burntwood River and Upper Split Lake show that recruitment has occurred each year over the previous 10 years (Henderson and Pisiak 2012; Henderson *et al.* 2013, 2015; Burnett *et al.* 2017, 2018; Burnett and Hrenchuk 2019). In both Gull and Stephens lakes, recruitment has also occurred fairly consistently over the past ten years, but until recently the cohort-frequency distribution has been dominated by a single cohort produced in 2008 (Henderson *et al.* 2011, 2013, 2015; Henderson and Pisiak 2012; Burnett *et al.* 2017, 2018; Burnett and Hrenchuk 2019). Fish from the 2008 cohort are becoming too large for the sample gear and are therefore contributing a smaller proportion of the catch in each waterbody.

Lake Sturgeon stocking is being conducted using wild caught broodstock from the Burntwood River and the future Keeyask reservoir. To maintain the genetic structure of each population, progeny from each broodstock location are released back into their respective rivers (*i.e.*, Burntwood River progeny released back into the Burntwood River and future Keeyask reservoir progeny released back to the Nelson River in Gull and Stephens lakes). Stocking occurred for the first time in 2014 and has occurred annually since, with a variety of life stages (larvae, fingerlings, yearlings) being released (Table 1; Klassen *et al.* 2017, 2018, 2019, *in prep.*). Since 2017, no larvae or fingerlings have been released.

This report presents results from juvenile population monitoring conducted in the Upper Split Lake Area, future Keeyask reservoir, and Stephens Lake in 2019. The area downstream of the Kelsey GS was not sampled as part of the Upper Split Lake Area in order to focus on areas where hatchery fish stocked into the Burntwood River may be captured (*i.e.*, the Burntwood River and Split Lake).

Juvenile monitoring is being conducted to address the following key questions relevant during the construction period, as described in the AEMP:

- Does recruitment of wild sturgeon occur upstream and/or downstream of the GS during construction?
- Is there a biologically meaningful (and statistically significant) change in condition factor and growth of juvenile sturgeon during construction?
- What is the survival rate of stocked sturgeon?
- What is the proportion of hatchery-reared to wild recruits within a cohort (*i.e.*, how successful is the stocking program)?

Juvenile population monitoring data will be collected annually until 2044.

2.0 STUDY SETTING

Juvenile population monitoring in 2019 was conducted at three locations: 1) the Upper Split Lake Area (Burntwood River and Split Lake); 2) the future Keeyask reservoir (*i.e.*, the reach of the Nelson River between the outlet of Clark Lake and Gull Rapids), and 3) Stephens Lake.

The Burntwood River flows in a north-easterly direction from First Rapids for approximately 35 km prior to emptying into the western arm of Split Lake (Maps 1 and 3). It is unknown if First Rapids represents a natural barrier to upstream fish passage; however, it is assumed to be under high flow conditions. Hard substrates predominate in the main channel, while loose, fine sediments and associated macrophyte growth occur in many off-current areas.

Split Lake is located at the confluence of the Burntwood and Nelson rivers (Map 1). Due to the large inflows from the Nelson and Burntwood rivers, the lake has detectable current in several locations. Split Lake has maximum and mean depths of 28.0 m and 3.9 m, respectively, at a water surface elevation of 167.0 m above sea level (ASL; Lawrence *et al.* 1999). The surface area of Split Lake was determined to be 26,100 ha (excluding islands), with a total shoreline length, including islands, of 940.0 km (Lawrence *et al.* 1999). The numerous islands in Split Lake represent 411.6 km of the total shoreline.

Birthday Rapids is located approximately 10 km downstream of Clark Lake and 30 km upstream of Gull Rapids (Map 1). The drop in elevation from the upstream to downstream side of Birthday Rapids is approximately 2 m. The 14 km reach of the Nelson River between Birthday Rapids and Gull Lake is characterized as a large, somewhat uniform channel with medium to high water velocities. There are a few large bays with reduced water velocity and a number of small tributaries that drain into the Nelson River.

Gull Lake is a section of the Nelson River where the river widens, with moderate to low water velocity. Gull Lake is herein defined as the reach of the Nelson River beginning approximately 17 km upstream of Gull Rapids and 14 km downstream of Birthday Rapids, where the river widens to the north into a bay around a large point of land (Maps 1 and 5), and extending to the downstream end of Caribou Island, approximately 3 km upstream of Gull Rapids. Gull Lake has three distinct basins, the first extending from the upstream end of the lake downstream approximately 6 km to a large island; the second extending from the large island to Morris Point (a constriction in the river immediately upstream of Caribou Island); and the third extending from Morris Point to the downstream end of Caribou Island.

Gull Rapids, now the site of the Keeyask GS, was located approximately 3 km downstream of Caribou Island on the Nelson River (Map 1). Prior to construction, the rapids were approximately 2 km in length, and the river elevation dropped approximately 11 m along the 2 km length. Two large islands and several small islands occurred within the rapids, prior to the river narrowing; these features are within the Project footprint and have now been either dewatered, incorporated into the GS or will be flooded after impoundment (Map 2). A summary of construction activities is provided in Section 2.1.

Just below the Keeyask GS, the Nelson River enters Stephens Lake (Maps 1 and 7). Stephens Lake was formed in 1971 by construction of the Kettle GS. Between Gull Rapids and Stephens Lake, there is an approximately 6 km long reach of the Nelson River that, although affected by water regulation at the Kettle GS, remains riverine habitat with moderate velocity. After August 2018, all flow has been passed through the Keeyask GS spillway (see Section 2.1).

Construction of the Kettle GS flooded Moose Nose Lake (north arm) and several other small lakes that previously drained into the Nelson River, as well as the old channels of the Nelson River that now lie within the southern portion of the lake. Major tributaries of Stephens Lake include the North and South Moswakot rivers that enter the north arm of the lake. Looking Back Creek is a second order stream that drains into the north arm of Stephens Lake (Map 1). Kettle GS is located approximately 40 km downstream of Gull Rapids.

2.1 CONSTRUCTION SUMMARY

Construction of the Keeyask GS began in mid-July 2014 with the construction of cofferdams in the north and central channels of Gull Rapids (Map 2). These cofferdams resulted in the dewatering of the north and central channels and the diversion of all flow to the south channel. Construction of the Spillway Cofferdam (SWCD), which extends into the south channel of Gull Rapids, was completed in 2015. The rock placement for the inner and outer groins of the Tailrace Cofferdam (TRCD) started in late 2016 and the impervious fill placement was completed in fall 2017. An opening was created to allow fish to move freely over the winter of 2017–2018. The opening was closed in spring 2018 and dewatering of the TRCD occurred in July, at which time a fish salvage was completed. In preparation for commissioning of the spillway, the SWCD was watered-up on both sides of the structure in June 2018. Removal of the SWCD started in early July and continued into August. The spillway was commissioned between August 3 and 7, 2018. Closing the south channel with the upstream South Dam Cofferdam (SDCD) commenced at the beginning of August and river closure was achieved on August 16. This closure and the work that continued to seal the cofferdam forced the entire river flow through the spillway. The downstream SDCD was completed in September and the area between the two cofferdams was dewatered, allowing for fish salvage to be completed by late September 2018. Work continued on the upstream SDCD until it was complete in late fall 2018. Almost all work in 2019 was in the dry. The construction activities included the excavation of the tailrace, construction of the tailrace spawning shoal, and completion of the dams and dykes.

2.2 FLOWS AND WATER LEVELS

From October 2018 to October 2019, calculated Split Lake outflows ranged from about 2,600 to 3,700 m^3/s. However, over most of the period, outflows ranged from approximately 3,000 to 3,500 m^3/s and were near the historical annual median flow of approximately 3,300 m^3/s. Outflow increased from about 2,600 to 3,600 m^3/s from October to December 2018, and then

was variable through the remainder of the winter period. Between June and September 2019, the flow generally ranged from 3,300 to 3,500 m³/s. Flows dropped to about 2,900 m³/s in early October 2019 before rising again to almost 3,700 m³/s by the end of the month. Water levels varied in conjunction with flows, ranging from about 153.2–155.0 m ASL on Gull Lake.

3.0 METHODS

3.1 GILLNETTING

A standardized sampling methodology has been developed for sampling juvenile sturgeon in Boreal Shield rivers using data sets collected from several populations in the Hudson Bay drainage basin (McDougall *et al.* 2014). This standardized methodology (described below) is being used to enable comparisons of cohort strength, abundance, growth, and condition among years. The gillnetting methods described below have been used to capture juvenile Lake Sturgeon during environmental studies related to the Keeyask Generation Project since 2008.

Gillnetting was conducted in the Upper Split Lake Area, the future Keeyask reservoir, and the upper 10 km of Stephens Lake. Two locations were sampled in the Upper Split Lake Area: the Burntwood River between First Rapids and Split Lake, and Split Lake proper. Prior to 2018, the Nelson River between the Kelsey GS and Split Lake was also sampled. This area was not sampled in 2019, and effort was focused on the Burntwood River and Split Lake as a means to locate stocked fish. Sites in Split Lake were chosen based on depth (greater than 5 m) to try and target juvenile Lake Sturgeon. Gill nets were composed of five panels of 1, 2, 3, 5, and 6" twisted nylon stretched mesh (25, 51, 76, 127, and 152 mm). Each panel was 25 yards (yd) (22.9 m) long and 2.7 yd (2.5 m) deep. Mesh sizes were staggered in the order of 1, 5, 2, 6, and 3" to capture small and large juveniles across the length of each gang.

Gill nets were set in deep-water habitats (average depth = 11.6 m) since YOY and juvenile Lake Sturgeon have been found to prefer these areas in the Winnipeg, Burntwood, and Nelson rivers (Barth *et al.* 2009; Michaluk and MacDonald 2010; McDougall *et al.* 2013; Henderson *et al.* 2014). Each gillnet set was given a unique identification number, and net locations were recorded using a Garmin Etrex GPS receiver (Garmin International Inc., Olathe, KS). Water depth at each end of the net was measured using a PiranhaMax Series 150 Portable Sonar (Humminbird, Eufaula, AL). Water temperature was measured daily in each area using a hand-held thermometer (±0.5°C). HOBO Water Temperature Pro data loggers (±0.2°C), set approximately 1 m off the substrate, were also used to log water temperature at 6-hour intervals in Gull and Stephens lakes. Gill nets were checked approximately every 24 hours, weather permitting. For comparability among years, similar gillnetting locations were used during juvenile monitoring programs conducted from 2014 to 2018. However, some sites have changed between years depending on water levels and flows. Locations and site-specific physical measurements collected at gillnetting sites in 2019 are found in Appendix 1.

3.2 BIOLOGICAL SAMPLING

All fish captured were counted by species and location. Lake Sturgeon were measured for fork length (FL; ±1 mm), total length (±1 mm), and weight (±5 g using a digital scale, or nearest 25 g for fish greater than 4,000 g).

For age analysis, the first fin ray of the left pectoral fin was removed immediately adjacent its articulation from each juvenile Lake Sturgeon captured for the first time. In cases where Lake Sturgeon had been previously aged, the first fin ray of the right pectoral fin was collected. If fish appeared to have been aged twice before or had deformed pectoral fins, ageing structures were not collected. All collected fin rays were placed in individually numbered envelopes, air dried, and brought back to the North/South Consultants Inc. laboratory for ageing (Section 3.4).

Small samples (1–2 cm^2) were removed from the left pelvic fin of each Lake Sturgeon and preserved in 95% Biological Grade Ethanol for potential future genetic analysis.

Ageing structures and genetics samples were not taken from YOY fish due to concerns of harming the small fish. Ages were inferred based on size (*i.e.*, fish smaller than 150 mm FL).

3.3 TAGGING

Lake Sturgeon greater than 250 mm FL were marked with individually numbered external Floy-GD-94 T-bar (FT) anchor tags (Floy-tag Inc., Seattle, WA). Floy-tags were inserted into the base of the dorsal fin using a Dennison Mark II tagging gun (Avery Dennison Corporation, Pasadena, CA).

Uniquely numbered Passive Integrated Transponder (PIT) tags from Oregon RFID (Oregon RFID Ltd., Portland, OR) were also used to mark Lake Sturgeon. Those measuring greater than 250 mm FL received 12 mm HDX tags (12.0 mm x 2.12 mm; 0.1 g) and those measuring less than 250 mm FL (smallest fish tagged was 99 mm) received 8 mm FDX-B tags (8.0 mm x 1.4 mm; 0.027 g). YOY Lake Sturgeon were not tagged (with either a Floy or PIT tag) due to concerns of harming the small fish. Each Lake Sturgeon was scanned for an existing PIT tag using an Agrident APR 350 Reader (Agrident Ltd. Steinkippenstrasse, Germany). For each untagged fish, a PIT tag was injected under the third dorsal scute using an Oregon RFID tag injector needle, dipped in Polysporin® to minimize the risk of infection. Tags were injected parallel to the horizontal axis of the fish, into muscle tissue (not the body cavity). Following implantation or upon recapture, the tags were logged, and the last six digits manually recorded. Injector needles were sterilized in boiling water prior to the start of sampling and again upon sampling completion.

3.4 AGEING ANALYSIS

Lake Sturgeon fin rays were hardened in an epoxy resin (Cold Cure™) and two 0.7 mm fin sections were cut distally within 5 mm of the articulation using a Struers Minitom (Struers Inc. Cleveland, OH) low-speed sectioning saw. Fin sections were mounted on glass slides using Cytoseal-60 (Thermo Scientific, Waltham, MA) and viewed at five times magnification under a compound microscope. Annuli (growth rings) were counted by three experienced readers (independently), without prior knowledge of fish length or weight, or ages assigned by other readers. If readers assigned different ages to a fish, either the modal age or the median age was chosen. The rate of three-reader agreement was calculated in percent (percentage). Examples of Lake Sturgeon ageing structures are provided in Appendix 3.

Lake Sturgeon ageing structures exhibit well-defined banding patterns characteristic of repeated summer (fast-growth) and winter (slow/non-growth) periods (McDougall and Pisiak 2014; Appendix A3-1). Ageing structures from hatchery-reared Lake Sturgeon have different banding patterns that complicate the ageing process (described in Burnett and Hrenchuk 2019).

In fish stocked at age-1, the weak annulus is often followed by the presence of a false annulus, not corresponding to slowed winter growth, but instead to stocking and the subsequent establishment period. The false annuli decrease ageing accuracy because they are difficult to distinguish from true annuli. Ageing structures were not collected from known hatchery fish in 2019, instead known ages were used.

Based on the ageing structures analyzed it appears PIT tag loss in hatchery released Lake Sturgeon is occurring, as several ageing structures from the Upper Split Lake Area, the future Keeyask reservoir and Stephens Lake exhibited annuli characteristic of hatchery fish (*i.e.*, weak or missing first annuli). However, it could not be determined whether these fish are hatchery-reared or wild fish as weak/missing first annuli have been observed in the ageing structures of known wild fish. As such, these fish were included with wild fish for analyses.

3.5 DATA ANALYSIS

As was done in previous years, data were analysed for all sizes of Lake Sturgeon captured (as opposed to only those measuring less than 800 mm FL). Mesh sizes used select for small Lake Sturgeon but larger fish are also captured; therefore, including all fish in the summary statistics ensures comparability among years.

To better describe sampling locations, relative abundance (CPUE) and fish movements, each sampling area was divided into distinct geographical zones (Maps 3, 5, and 7).

Mean FL (mm), weight (g), and condition factor (K) were calculated for all Lake Sturgeon by location. In Stephens Lake and the future Keeyask reservoir, known hatchery and wild fish were

presented separately. Condition factor was calculated based on the following equation (after Fulton 1911, in Ricker 1975):

$$K = W / (L^3 / 10^5)$$

Where:

W = round weight (g); and

L = fork length (mm).

Ageing structures were only collected for fish measuring < 800 mm FL. Because fish approach this length by age nine, all age analyses were restricted to fish aged 0–9 years as the full range of sizes for older fish would not be included in the sample.

Mann-Whitney U-Tests and t-tests were used to compare mean fork length-at age, mean weight-at-age, and mean condition factor-at-age for known hatchery-reared and wild Lake Sturgeon. Statistical comparisons were only conducted where sample sizes were greater than eight individuals. Significance level was set at 0.05 (5%).

A von Bertalanffy growth curve was generated from all age and length data collected during the study to compare the growth of wild vs. hatchery-reared fish, as well as wild fish captured during baseline vs. construction for fish aged as nine years or less. Fish older than age-9 were not included in the analysis as they are not fully represented in the catch (ageing structures are not collected from fish >800 mm fork length, which corresponds to fish older than age-9). Growth comparisons between hatchery and wild fish were truncated at age-5 (the age of the oldest hatchery fish captured) to make the curves comparable. Hatchery fish stocked in the Burntwood River but captured in the future Keeyask reservoir and Stephens Lake were excluded from the analyses in order to keep the data comparable. These fish are genetically distinct, which may impact their size. Further, these fish travelled a long distance downstream prior to capture which might impact their normal growth. The curve was calculated using the following equation:

$$L = L_\infty (1 - e^{-k(t - t_0)})$$

Where:

t = age (years)

t_0 = is the theoretical age at which FL is 0;

L = is the fork length (mm) of the fish at age t;

L_∞ = is the theoretical maximum TL that an individual in the population can attain; and

k = growth rate.

Length-frequency distributions were plotted in 50 mm length class intervals (*e.g.*, 300–349 mm) and length-weight regression equations were derived using least squares analysis on logarithmic transformations of fork lengths and weights according to the following relationship:

$$\ln(W) = \ln(a) + \ln(L)*b$$

Where:

W = weight (g);

L = fork length (mm);

a = Y-intercept; and

b = slope of the regression line.

Cohort frequency distributions were plotted for each location.

Gillnetting hours (*i.e.*, effort) was calculated as the number of sampling hours per 100 m of net set using the following equation:

Effort (hours) = set duration × (net length/100 m)

Catch-per-unit-effort (CPUE) was calculated and expressed as the number of fish captured in 100 m of net per 24-h period using the following formula:

CPUE = ∑ # Lake Sturgeon / ∑ Effort × 24 h

Where: Σ = sum of the number of fish or gillnetting hours at all sites.

CPUE was calculated by geographical zone for each study location and study year.

Prior to 2018, hatchery-reared Lake Sturgeon were released as larvae, fingerlings, and yearlings. However, without additional analysis (genetics or isotopic signature in fin rays) fish can only be conclusively identified as hatchery-reared based on the presence of a PIT tag, which are exclusive to fish stocked at age-one. All fish not definitively identified as hatchery–reared (based on the presence of a PIT tag) were classified as "wild" in order to facilitate data analysis. As the additional analysis (genetics or isotopic signature in fin rays) has not been undertaken, it cannot be determined if fish belonging to cohorts corresponding to stocking events of larvae or fingerlings (*e.g.*, a YOY captured in the Burntwood River in 2017) originated from the hatchery or a natural spawning event. Since 2018, only age-1 PIT tagged fish have been released.

3.6 POPULATION ESTIMATE

Mark-recapture population estimates have been calculated for the Upper Split Lake Area (years: 2012–2019), future Keeyask reservoir (years: 2010 and 2012–2019) and Stephens Lake (years: 2010 and 2012–2019). Only wild Lake Sturgeon classified as juveniles (*i.e.*, FL < 800 mm) were included in the population estimate.

The Jolly-Seber model (POPAN formulation; Arnason and Schwarz 2002), as implemented within MARK, was used to estimate the annual abundance of wild juvenile Lake Sturgeon in the upper Split Lake Area, future Keeyask reservoir, and in Stephens Lake. Detailed methods can be found in Appendix 5. Estimates are reported as a mean with 95% confidence intervals (CI).

A Cormack-Jolly-Seber model was used to calculate a survival estimate for hatchery-reared juvenile Lake Sturgeon cohorts with a minimum number of recaptures (n = 25) stocked in both

the future Keeyask reservoir and Stephens Lake, using the probability of recapture in each year. The population of hatchery-reared Lake Sturgeon was estimated based on the total number of fish released multiplied by the survival estimate (*e.g.*, 1,000 fish released and an 80% survival estimate would generate a population estimate of 800 individuals). The estimate is recalculated every year between stocking and the study year, to get the final estimate (*e.g.*, 1,000 fish released in 2017 would generate a population estimate of 800 individuals in 2018, and 640 in 2019). The survival rate remains constant between years. A survival estimate for hatchery-reared juvenile Lake Sturgeon stocked in the Burntwood River as too few of these fish have been captured.

4.0 RESULTS

Gill net site data is presented in Appendix 1 and biological and tagging information for Lake Sturgeon captured in 2019 are provided in Appendix 2.

4.1 UPPER SPLIT LAKE AREA

Water temperature in the Upper Split Lake Area ranged from 14.0°C to 12.0°C over the course of the study (September 6 to 16, 2019; Appendix A1-1).

4.1.1 BURNTWOOD RIVER

In total, 96 fish, comprised of five species, were captured at 22 sites in the Burntwood River between September 6 and 11, 2019 (Tables 2 and 3; Map 3). Lake Sturgeon (n = 19; 19.8%) were the second most abundant species captured after Longnose Sucker (n = 66; 68.8%) (Table 3). Gillnet site data as well as biological and tagging information for all Lake Sturgeon captured in the Burntwood River are provided in Appendices A1-1 and A2-1. Nineteen juvenile Lake Sturgeon were captured in 641.4 gillnet hours, producing an overall CPUE of 0.71 LKST/100 m net/24 h (Table 4). One Lake Sturgeon mortality occurred during sampling on 11 September (FL = 415 mm; Wt = 460 g; Appendix A2-1). Gill nets were set in all three zones of the Burntwood River below First Rapids (Map 3). Total CPUE by zone was as follows:

- 0.31 LKST/100 m net/24 h in Zone BWR-A (n = 5 sites);
- 0.00 LKST/100 m net/24 h in Zone BWR-B (n = 2 sites); and
- 0.93 LKST/100 m net/24 h in Zone BWR-C (n = 15 sites; Table 4).

Total CPUE values for the Burntwood River catch since 2012 are presented in Table 5. Total CPUE in 2019 was comparable to 2018, but lower than sampling conducted between 2012 and 2017 (range: 0.78–1.37 LKST).

4.1.1.1 YEAR-CLASS STRENGTH

Ageing structures were collected from all 19 Lake Sturgeon. Aged Lake Sturgeon ranged from 1 to 19 years old, with the 2013 (n = 5; age-6) and 2016 (n = 3; age-3) cohorts accounting for 26.3% and 15.8% of the catch, respectively (Figure 1). No YOY (2019 cohort) Lake Sturgeon were captured. Three Lake Sturgeon with a FL of <800 mm where aged considerably older than the 9–year mark typically assigned to this size, measuring 518 mm, 649 mm, and 694 mm, ages 12, 19, and 19, respectively). All cohorts fully recruited to the sampling gear (*i.e.*, 2010–2018) were captured other than the 2015 cohort. A cohort frequency histogram that includes all wild juvenile Lake Sturgeon captured during juvenile monitoring in the Burntwood River between

2011 and 2019 are presented in Table 6. Every cohort between 2000 and 2018 has been represented in the catch since studies began.

4.1.1.2 GROWTH AND CONDITION

All Lake Sturgeon were classified as juveniles based on their length (<800 mm FL). Captured juvenile Lake Sturgeon had a:

- Mean FL of 430 mm (n = 19; standard deviation [StDev] = 114 mm; range 275–694 mm);
- Mean weight of 609 g (n = 19; StDev = 531 g; range 100–2,120 g); and
- Mean condition factor of 0.62 (n = 19; StDev = 0.06; range 0.48–0.71) (Table 7).

Lake Sturgeon in the 400–449 FL interval were captured most frequently, representing 31.6% of the total catch (Figure 2). The length-weight relationship derived for Lake Sturgeon captured in the Burntwood River is presented in Figure 3.

4.1.1.3 RECAPTURES

No previously tagged or hatchery-reared juvenile Lake Sturgeon were captured in the Burntwood River in 2019.

4.1.2 SPLIT LAKE

In total, 323 fish, comprised of 12 species, were captured at 18 sites in Split Lake between September 11 and 16, 2019 (Table 2; Map 3). Lake Sturgeon (141 juveniles and 22 adults) were the most abundant, accounting for 50.5% of the total catch (Table 3). A total of 722.7 gillnet hours were fished producing an overall Lake Sturgeon CPUE of 5.41 LKST/100 m net/24 h (Table 4). Three juvenile mortalities (1.8%) occurred during sampling (see Appendix A2-1 for biological information). Gillnet site data as well as biological and tagging information are provided in Appendices A1-1 and A2-1. Annual CPUE values for the Split Lake catch since 2015 are presented in Table 5. Total CPUE in 2019 was more than double the value recorded in any previous sampling year (range: 0.75–2.60 LKST), however, sampling locations differed from previous years so the increase in CPUE cannot be interpreted as an increase in the Lake Sturgeon population.

Of the 163 Lake Sturgeon captured, 10 were known hatchery-reared fish (*i.e.*, stocked as age-1 and marked with PIT tags; discussed further in Section 4.1.2.4). Total CPUE for wild and hatchery-reared Lake Sturgeon was as follows:

- 5.08 LKST/100 m/24 h (n = 153) for wild Lake Sturgeon; and
- 0.33 LKST/100 m/24 h (n = 10) for hatchery-reared Lake Sturgeon (Table 8).

4.1.2.1 YEAR-CLASS STRENGTH

Ageing structures were collected from 124 of the 141 juvenile fish captured. Ageing structures were not collected from two fish that were released quickly after being wrapped badly in the net to prevent mortality. Structures were not collected from an additional ten fish that were known-age hatchery fish and five that had been aged in a previous year. One ageing structure had a crystalline center and could not be accurately aged. Thus, ages were assigned to 138 of 141 juvenile Lake Sturgeon captured in Split Lake.

Lake Sturgeon ranged from 1 to 15 years old and represented the 2004 and 2007–2018 cohorts (Table 6; Figure 4). No YOY (*i.e.*, 2019 cohort) fish were captured. The 2013 cohort (age-6) was the most abundant, accounting for 34.1 (n = 47) of the catch. Lake Sturgeon from the 2011 (n = 14; 10.1%), 2014 (n = 14; 10.1%), and 2017 (n = 13; 9.4%) cohorts were also caught relatively frequently (Figure 4). Cohort frequencies for all wild juvenile Lake Sturgeon captured in Split Lake from 2015 to 2019 are presented in Table 6. Every cohort between 2003 and 2018 has been represented in the catch.

4.1.2.2 GROWTH AND CONDITION

In 2019, 153 wild (including adult size fish) and 10 known hatchery-reared Lake Sturgeon were captured. Length-weight relationships for hatchery-reared and wild Lake Sturgeon are presented in Figure 3.

Wild Lake Sturgeon had a:

- Mean FL of 606 mm (n = 153; StDev = 168 mm; range 161–1,000 mm);
- Mean weight of 1,553 g (n = 130; StDev = 994 g; range 40–3,860 g); and
- Mean condition factor of 0.72 (n = 130; StDev = 0.08; range 0.35–0.91) (Table 9).

Wild Lake Sturgeon from the 500–549 mm, 550–599 mm and 700–749 mm FL intervals were captured most frequently, each accounting for 13.7% (n = 21) of the catch (Figure 2).

Hatchery Lake Sturgeon had a:

- Mean FL of 364 mm (n = 10; StDev = 66 mm; range 304-481 mm);
- Mean weight of 335 g (n = 10; StDev = 212 g; range 160-740 g); and
- Mean condition factor of 0.63 (n = 10; StDev = 0.06; range 0.54-0.74) (Table 10).

Hatchery reared Lake Sturgeon from the 300–349 mm FL interval were the most frequently captured size-class accounting for 60.0% (n = 6) of the catch (Figure 2). The 350–399 mm (n = 2) and 450–499 mm (n = 2) FL intervals were also present, each accounting for 20.0% of the catch.

4.1.2.3 RECAPTURES

Eleven wild Lake Sturgeon (three adults and eight juveniles) tagged in previous years were captured (Table 11; Appendix A4-1). Two juvenile fish were originally tagged in the future Keeyask reservoir and were recaptured 74.7 km and 80.1 km upstream of their original capture locations. These two fish measured 655 and 631 mm when originally captured in 2014 and 2016, and measured 796 mm and 718 mm, respectively, when recaptured in 2019. Three (two adults and one juvenile) were originally tagged in the Burntwood River and were recaptured between 22.7 and 48.3 km downstream of their original capture location. The remaining six fish (one adult and five juveniles) were originally tagged in Split Lake and were recaptured between <0.1 km and 4.5 km of their original capture location.

4.1.2.4 HATCHERY CAPTURES

Ten hatchery fish (*i.e.*, those PIT tagged and stocked as age-1) were caught in 2019, accounting for 6.1% of the total catch (Table 12; Appendix A4-2). This represents the largest capture of Lake Sturgeon stocked in the Burntwood River since stocking began in 2014. None of the hatchery-reared fish had been captured during previous sampling. An age breakdown of all the hatchery-reared fish captured between 2014 and 2018 is presented in Table 12.

Of the ten hatchery fish:

- Two were stocked on October 2, 2014.
  - One was stocked at Site 2 (Zone BWR-B) and was caught 33.1 km downstream.
  - One was stocked on the same day but its stocking site was not recorded. Considering all fish were stocked in the Burntwood River, this fish was captured at least 20 km downstream of its original stocking site.
- Five were stocked on May 31, 2018, at the Odei River boat launch (Site 1; Zone BWR-B; Map 4) and were captured between 27.0 and 30.6 km downstream of their stocking location.
- Three were stocked on June 7, 2018, just below First Rapids (Site 2; Zone BWR-A; Map 4) and were captured between 40.0 and 44.8 km downstream of their stocking location.

4.1.3 UPPER SPLIT LAKE AREA POPULATION ESTIMATE

The 2019 estimate for the juvenile segment of the population in the Upper Split Lake Area (including the Kelsey GS Area, the Burntwood River, and Split Lake) was 4,503 wild juvenile Lake Sturgeon (95% CI: 1,348-15,044) (Figure 5; Appendix A5-1). This was above the 95% CI of the 2014 estimate, but within the 95% CI's for 2012, 2013, and 2015–2018. The estimated annual survival rate was 82%. Too few stocked fish were captured to create an estimate of the hatchery-reared Lake Sturgeon population.

4.2 FUTURE KEEYASK RESERVOIR

Ten species (n = 545) were captured at 39 sites between September 10 and 20, 2019 (Tables 2 and 3; Map 5). Water temperature during sampling ranged from 12.9°C to 14.5°C (Appendix A1-2). Lake Sturgeon (n = 244; 44.8%) were the most abundant species (Table 3). Gillnet site data as well as biological and tagging information for all Lake Sturgeon captured are provided in Appendices A1-2 and A2-2.

In total, 234 juvenile and ten adult Lake Sturgeon were captured in 1,560.6 gillnet hours, producing an overall CPUE of 3.75 LKST/100 m net/24 h (Table 4). One juvenile mortality (0.4%) occurred during sampling on September 18 (see Appendix A2-2 for biological information). Gill nets were set throughout Gull Lake (*i.e.*, in zones GL-A, GL-B, and GL-C), as well as the first zone upstream of Gull Lake (*i.e.*, BR-D) (Map 5). Total CPUE by zone, from upstream to downstream, was as follows:

- 2.92 LKST/100 m/24 h in Zone BR-D (n = 6 sites);
- 1.53 LKST/100 m/24 h in Zone GL-A (n = 8 sites);
- 5.22 LKST/100 m/24 h in Zone GL-B (n = 13 sites); and
- 3.72 LKST/100 m/24 h in Zone GL-C (n = 12 sites; Table 4).

Total annual CPUE recorded in the future Keeyask reservoir since 2007 are presented in Table 5. Total CPUE in 2019 was the highest recorded since 2011.

Of the 244 Lake Sturgeon captured, 57 were known hatchery-reared fish (*i.e.*, stocked as age-1 and marked with PIT tags; discussed in further detail in Section 4.2.5). Total CPUE for wild and hatchery-reared Lake Sturgeon was as follows:

- 2.88 LKST/100 m/24 h (n = 187) for wild Lake Sturgeon; and
- 0.88 LKST/100 m/24 h (n = 57) for hatchery-reared Lake Sturgeon (Table 8).

4.2.1 YEAR-CLASS STRENGTH

Ageing structures were collected from 163 of the 234 juvenile fish captured. Of the fish not aged, 57 were known-age hatchery fish, four were not aged in 2019 but had been aged in a previous year, and four were considered YOY (age-0) based on size. Thus, ages were assigned to 228 juvenile Lake Sturgeon, including 171 wild and 57 hatchery fish. Ageing structures were not collected from six fish that had deformed fins that would prevent accurate ageing.

Lake Sturgeon (both wild and hatchery) ranged in age from 0 to 13 years (2006–2019 cohorts; Figure 6), with the 2016 cohort captured most frequently (n = 60; 26.3%). The 2008, 2014, and 2018 cohorts were also relatively abundant in the catch, accounting for 13.2% (n = 30), 14.0% (n = 32), and 12.3% (n = 28), respectively. The 2008 cohort is likely underestimated as individuals from the cohort are now 11 years old, and some are likely > 800 mm FL. Four YOY

fish (*i.e.*, 2019 cohort) were captured in Zone GL-C. Known hatchery-reared fish accounted for 37.5%, 26.7%, and 96.4% of the 2014, 2016, and 2018 cohorts, respectively (Figure 6).

Wild fish from all cohorts since 2000, with the exception of 2002, have been represented in the catch since studies began (Table 6).

4.2.2 POPULATION ESTIMATE

The 2019 estimate for the future Keeyask reservoir population was 2,819 wild juvenile Lake Sturgeon (95% CI: 1,529–5,199) (Figure 7; Appendix A5-2). This was within the 95% CI of the 2010–2018 estimates. The estimated annual survival rate was 74%.

Survival of hatchery-reared Lake Sturgeon stocked into the future Keeyask reservoir was estimated at 83% (Appendix A5-3). Based on this survival estimate, 198, 316, and 398 hatchery-reared individuals from the 2014, 2016, and 2018 cohorts are predicted to still be present in the future Keeyask reservoir, contributing to a population estimate of 912 hatchery fish. Based on these numbers, it is estimated that hatchery fish currently make up 24% of the total juvenile Lake Sturgeon population in the future Keeyask reservoir.

4.2.3 GROWTH AND CONDITION

Length-weight relationships for hatchery-reared and wild Lake Sturgeon captured in the future Keeyask reservoir are presented in Figure 3.

Wild Lake Sturgeon had a:

- Mean FL of 502 mm (n = 187; StDev = 178 mm; range 95–1,060 mm);
- Mean weight of 1,294 g (n = 183; StDev = 1,430 g; range 100–8,550 g); and
- Mean condition factor of 0.68 (n = 183; StDev = 0.11; range 0.25–1.24) (Table 9).

Wild Lake Sturgeon in the 350–399 mm FL interval were captured most frequently, representing 19.8% (n = 37) of the wild catch (Figure 8). Fish measuring 450–499 mm and 300–349 mm were also frequently captured representing 12.3% (n = 23) and 10.7% (n = 20) of the wild catch, respectively (Figure 8).

Hatchery-reared Lake Sturgeon had a:

- Mean FL of 364 mm (n = 57; StDev = 72 mm; range 265–530 mm);
- Mean weight of 307 g (n = 56; StDev = 214 g; range 75–950 g); and
- Mean condition factor of 0.54 (n = 56; StDev = 0.12; range 0.28–0.95) (Table 10).

Hatchery-reared Lake Sturgeon in the 300–349 mm FL interval were captured most frequently, representing 29.8% of the hatchery catch (n = 17) (Figure 8). Fish measuring 350–399 mm and

250–299 mm were also frequently captured representing 24.6% (n = 14) and 19.3% (n = 11) of the hatchery catch, respectively (Figure 8).

A comparison of von Bertalanffy growth curves between baseline (2008–2012) and construction (2014–2019) monitoring years showed no difference between the two groups (Figure 9). Growth curve analysis of hatchery and wild fish showed that young hatchery fish (0–4 years-old) are longer than wild fish of the same cohort. However, the lengths of wild and hatchery fish appear similar around age-5 (Figure 10).

4.2.4 RECAPTURES

A total of 21 wild Lake Sturgeon tagged in a previous year were recaptured in 2019 (Table 11; Appendix A4-1). All fish were originally tagged in the future Keeyask reservoir: one in each of 2008, 2012, 2014, 2015, and 2016, seven in 2017, and nine in 2018.

Recaptured fish moved varying distances from their original capture locations:

- Ten moved less than 1.0 km.
- Seven were recaptured within 1.0–5.6 km.
- Four were recaptured within 6.3–10.8 km.

4.2.5 HATCHERY CAPTURES

Fifty-seven known hatchery-reared Lake Sturgeon (*i.e.,* those PIT tagged and stocked as age-1) were caught in 2019, representing 23.4% of the total catch (Table 12). An age breakdown of all hatchery-reared fish captured between 2014 and 2018 is presented in Table 13.

Of the 57 hatchery fish caught in the future Keeyask reservoir (Appendix A4-3):

- Twelve were stocked in Gull Lake in 2015 (Map 6):
  - Five were stocked at Site 1 on June 22 (Zone GL-C). Four were caught between 0.3 and 2.7 km downstream of their release location and one was caught 3.0 km upstream.
  - Three were stocked at Site 2 on June 22 (Zone GLC) and were caught between 0.3 and 0.8 km of their release location.
  - Two were stocked at Site 6 on September 16 (Zone GL-B). One was caught 4.5 km downstream and the other 0.1 downstream of their release location; and
  - Two were stocked at Site 7 on September 16 (Zone GL-C) and were caught 0.8 and 5.8 km upstream of their release location, respectively.
- Sixteen were stocked on June 8, 2017 in Zone GL-A (Site 1; Map 6):
  - One was caught in Zone GL-A, 2.2 km downstream of its release location.

  - Twelve were caught in Zone GL-B between 6.7 and 11.6 km downstream of their release location; and
  - Three were caught in Zone GL-C, between 11.8 and 13.6 km downstream of their original release location.
- Twenty-seven were stocked in Gull Lake on June 6, 2019 (Map 6):
  - Fifteen were stocked in Zone GL-C and were caught between 0.2 and 1.5 km from their release location; and
  - Twelve were stocked in Zone GL-B and were caught between 0.1 and 4.4 km from their release location.
- Two were stocked in the Burntwood River:
  - One was stocked on May 30, 2014 in Zone BWR-B (Site 2; Map 4) and was captured on September 13, 2019, in Zone GL-B, 111.9 km downstream of its release location. In the five years since release, the fish grew 267 mm in length and increased 568 g in weight; and
  - One was stocked on June 7, 2018 in Zone BWR-A (Site 2; Map 4) and was captured on September 13, 2019, in Zone GL-B, 128.9 km downstream of its release location. Since release, the fish grew 97 mm in length and increased 140 g in weight.

4.3 STEPHENS LAKE

Forty gillnet sites were fished in upper Stephens Lake between September 11 and 21, 2019 (Table 2; Map 7). A total of ten fish species (n = 513) were captured, of which Lake Sturgeon were the most abundant (n = 229; 44.6%) (Table 3). Gillnet site data is presented in Appendix A1-3 and biological and tagging information are presented in Appendix A2-3.

In total, 216 juvenile and 13 adult Lake Sturgeon were captured in 1,560.9 gillnet hours for a total CPUE of 3.52 LKST/100 m net/24 h (Table 4). Total CPUE was the highest since monitoring began in 2007 (Table 5). Four juvenile (1.7%) and one adult (0.4%) mortality occurred during sampling (see Appendix A2-3 for biological information). Gill nets were set in both zones located within the upper 10 km of Stephens Lake (Map 7). Total CPUE by zone was as follows:

- 2.02 LKST/100 m/24 h in Zone STL-A (n = 8 sites); and
- 3.91 LKST/100 m/24 h in Zone STL-B (n = 32 sites; Table 4).

Of the 229 Lake Sturgeon, 118 (51.5%) were known hatchery-reared fish (*i.e.*, stocked at age-1 and marked with PIT tags; discussed in further detail in Section 4.3.5). Total CPUE for wild Lake Sturgeon and hatchery-reared Lake Sturgeon were as follows:

- 1.71 LKST/100 m/24 h (n = 111) for wild Lake Sturgeon; and

- 1.81 LKST/100 m/24 h (n = 118) for hatchery-reared Lake Sturgeon (Table 8).

4.3.1 YEAR-CLASS STRENGTH

Ageing structures were collected from 84 of the 216 juvenile fish captured, while 118 were known-age hatchery fish, and 10 were not aged in 2019 but had been aged in a previous year. The ages of four adult fish were also known and were included in the analysis. Thus, ages were assigned to 212 juvenile and four adult Lake Sturgeon, including 98 wild and 118 hatchery-reared fish.

Aged Lake Sturgeon (including both wild and hatchery) ranged from 1–11 years old (*i.e.*, 2008–2018 cohorts). The 2018 cohort (age-1) was the most frequent in the catch accounting for 38.9% (n = 84) of the aged fish (Figure 11). The 2014, 2015, and 2016 cohorts (ages 5, 4, and 3) were the next most abundant age-classes, representing 13.0% (n = 28), 15.3% (n = 33), and 13.0% (n = 28) of the catch, respectively (Figure 11). Hatchery-reared Lake Sturgeon accounted for the majority of the 2014 cohort (n = 20; 71.4%) and the entire 2018 cohort (n = 84; Figure 11). Wild fish from the 2009, 2018, and 2019 (YOY) cohorts were not captured in 2019; however, wild fish from all cohorts between 2000 and 2017 have been present in the catch since studies began (Table 6).

4.3.2 POPULATION ESTIMATE

The 2019 population estimate for Stephens Lake was 857 wild juvenile Lake Sturgeon (95% CI: 517–1,420) (Figure 12; Appendix A5-4). This was above the 95% CI of the 2010 and 2012 estimates, but within those of 2013–2018. The estimated annual survival rate was 79%.

Survival of hatchery-reared Lake Sturgeon stocked into Stephens Lake was estimated at 93% (Appendix A5-5). Based on this survival estimate, 309, 619, and 390 hatchery-reared individuals from the 2014, 2016, and 2018 cohorts are present in Stephens Lake, contributing to a population estimate of 1,318 hatchery fish. Based on these numbers, it is estimated that hatchery fish currently make up 61% of the total juvenile Lake Sturgeon population in Stephens Lake.

4.3.3 GROWTH AND CONDITION

Length-weight relationships for hatchery-reared and wild Lake Sturgeon are presented in Figure 3.

Wild Lake Sturgeon had a:

- Mean FL of 542 mm (n = 111; StDev = 175 mm; range 287–1,060 mm);

- Mean weight of 1,608 g (n = 110; StDev = 1,821 g; range 100–11,500 g); and
- Mean condition factor of 0.71 (n = 110; StDev = 0.11; range 0.32–1.01) (Table 9).

Wild Lake Sturgeon in the 450–499 mm FL interval were captured most frequently accounting for 25.2% (n = 28) of the wild catch. The 350–399 mm FL intervals was also caught frequently and accounted for 15.3% (n = 17; Figure 8).

Hatchery-reared Lake Sturgeon had a:

- Mean FL of 354 mm (n = 118; StDev = 92 mm; range 261–506 mm);
- Mean weight of 318 g (n = 118; StDev = 330 g; range 75–1,300 g); and
- Mean condition factor of 0.54 (n = 118; StDev = 0.12; range 0.29–1.03) (Table 10).

Hatchery-reared Lake Sturgeon in the 300–349 mm (n = 43; 36.4%) and 250–299 mm (n = 40; 33.9%) FL intervals were captured most frequently (Figure 8).

Growth curves of juvenile Lake Sturgeon captured during baseline (2008–2012) and construction (2014–2019) could not be compared due to low catches during baseline sampling. Growth curve analysis of hatchery and wild fish showed that young hatchery fish (0–2 years-old) are longer than wild fish of the same cohort. However, the lengths of wild and hatchery fish appear similar around age-5 (Figure 13).

4.3.4 RECAPTURES

A total of 24 wild Lake Sturgeon tagged in a previous year were recaptured in Stephens Lake in 2019 (Table 11; Appendix A4-1). Of these: four were tagged in 2011, one in 2012, three in 2014, one in 2015, three in 2016, seven in 2017, and five in 2018.

Recaptured fish moved varying distances from their original capture locations:

- Twenty-two fish were originally captured in Stephens Lake. Eleven within 1.0 km of their initial capture location and eleven between 1.1 and 3.2 km of their initial capture location.
- Two fish were originally tagged in the future Keeyask reservoir (Zone GL-C):
    - Floy #93874 was tagged on September 21, 2011, 14.2 km upstream of its recapture location. It increased in size by 394 mm and 1,700 g in eight years since its initial capture.
    - Floy #116848 was tagged on September 15, 2014, 14.4 km upstream of its recapture location. It increased in size by 347 mm and 1,075 g in five years since its initial capture.

4.3.5 HATCHERY CAPTURES

A total of 118 hatchery-reared Lake Sturgeon released as one-year-olds were captured in Stephens Lake in 2019, representing 51.5% of the total catch (Table 12). None of the hatchery-reared fish had been captured during previous sampling. An age breakdown of all the hatchery-reared fish captured between 2014 and 2018 is presented in Table 13.

Of the 118 hatchery captures (Appendix A4-3):

- A total of 105 were stocked in Stephens Lake (Map 8):
  - Eighteen were stocked in 2015.
    - Eleven were stocked at Site 3 in Zone STL-B on June 22 all but one of which were caught upstream of their stocking location.
    - Four were stocked at Site 4 in Zone STL-B on September 14 and were recaptured within 1.0 km of their stocking location; and
    - Three were stocked at Site 5 in Zone STL-A on September 14 and were recaptured between 1.7 and 2.0 km of their stocking location.
  - Nine were stocked in 2017.
    - Six were stocked on June 15 in Zone STL-A (Site 1) of which all were caught between 3.9 and 4.9 km downstream of their stocking location; and
    - Three were stocked on October 5 in Zone STL-B (Site 4) of which one was caught 0.8 km upstream and two were caught downstream (1.7 km and 1.9 km).
  - Seventy-eight were stocked in 2019.
    - Forty-three were stocked in Zone STL-A on June 13 (Site 1). Forty were caught between 0.1 and 2.8 km downstream of their stocking location and three were caught upstream (between 0.9 and 3.0 km); and
    - Thirty-five were stocked in Zone STL-B on June 13 (Site 2). All 35 fish were caught within 1.3 km of their release location.
- Eleven were stocked in Gull Lake (Map 6):
  - Two were stocked on September 16, 2015 in Zone GL-B (Site 6). They were recaptured 14.8 and 15.2 km downstream of their stocking location.
  - Four were stocked in 2017.
    - Three were stocked on June 8 in Zone GL-A (Site 1) and were recaptured 24.8 km downstream of their stocking location; and
    - One was stocked on June 15 in Zone GL-A (Site 1) and was recaptured 24.8 km downstream of its stocking location.
  - Five were stocked on June 6, 2019.

  - Three in Zone GL-C (Site 1) were recaptured between 13.1 and 14.5 km downstream of their stocking location; and
  - Two in Zone GL-B (Site 2) were recaptured 15.6 and 15.8 km downstream of their stocking location.
- One fish was stocked in the Burntwood River on October 2, 2014 (Site 3; Map 4). The fish was recaptured 138.0 km downstream of its stocking location and grew 172 mm in FL and 396 g in weight. This fish represents the first hatchery-reared fish stocked in the Burntwood River to be caught in Stephens Lake.
- One fish (PIT # 900 067000109606) was stocked in June 2019, however, its stocking location was not recorded. This fish may have been stocked in either the future Keeyask reservoir or Stephens Lake.

5.0 DISCUSSION

5.1 JUVENILE ABUNDANCE

Juvenile abundance in the upper Split Lake Area has been highly variable since sampling began. Although 1,357 age-1 fish have been stocked in this area since 2014, only five were captured prior to 2018. As a result, gillnetting effort was increased in deep water channels of Split Lake in 2018 and 2019 to determine whether stocked fish were moving downstream out of the Burntwood River into Split Lake. Sampling conducted in 2018 in deep habitat along the north shore yielded few Lake Sturgeon. Gillnetting effort in 2019 was focussed along the southern portion of Split Lake in a deep channel that was thought to receive flow from both the Burntwood and Nelson rivers, and where both hatchery and wild fish were captured in 2018. The 2019 Split Lake catch was the highest since studies began in 2015, with CPUE more than double that recorded in 2018. It is unclear whether the majority of fish captured were spawned in the Burntwood, Nelson, or Grass rivers; however, recaptured fish were originally tagged in the Burntwood River, Split Lake, and the future Keeyask Reservoir. Further, the presence of fish stocked in the Burntwood River indicates that at least some fish from this area move downstream into Split Lake.

While the new sites sampled in Split Lake yielded more fish than in previous years, catches in the Burntwood River have decreased over the last two study years. High flows and increased debris levels have likely affected the ability to sample the Burntwood River effectively, thus it is possible Lake Sturgeon are present but are not being captured.

In 2019, a population estimate was produced for the first time for the Upper Split Lake Area. Unlike the adult population estimates, a single value was produced for all of Upper Split Lake as the large majority of juveniles are captured in Split Lake proper and may originate in either the Nelson River below Kelsey or the Burntwood River. The 2019 estimate for the Upper Split Lake Area was 4,503 wild juveniles (95% CI: 1,348–15,044) with a survival estimate of 82%. Because this was the first year this estimate was generated, the confidence intervals are very large. Estimates will change and confidence intervals will narrow as data are added to the model and estimates become more refined. A continued effort will be maintained in the area to determine population trends.

The population in the future Keeyask reservoir was estimated at 2,819 wild juveniles (95% CI: 1,529–5,199) in 2019, which was lower (but within the 95% CI) than the estimate in 2018. Survival in the future Keeyask reservoir was measured at 74%. Annual population estimates have fluctuated each study year but have remained relatively consistent since 2014. Total Lake Sturgeon CPUE has also remained relatively stable since 2014, ranging from 2.3 Lake Sturgeon/100 m net/24 h in 2016 to 3.8 Lake Sturgeon in 2019. Total CPUE in 2019 was higher than in any study year since 2011. Although hatchery fish made up a large proportion of the

catch (23%), CPUE of wild fish was higher in 2019 (2.9 Lake Sturgeon) than in either 2018 (2.2 Lake Sturgeon) or 2017 (2.3 Lake Sturgeon).

The population in Stephens Lake was estimated at 857 wild individuals (95% CI: 517–1,420), which was lower (but within the 95% CI) than the estimate in 2018. Annual population estimates have fluctuated each study year but have remained relatively consistent since 2014. Survival in Stephens Lake was measured at 79%. Hatchery-reared fish made up a large proportion of the total catch (51%), however, the CPUE of wild fish (1.7 Lake Sturgeon) in 2019 remained high when compared to 2018 (0.8 Lake Sturgeon) and 2017 (1.2 Lake Sturgeon).

5.2 RECRUITMENT

Recruitment has occurred in all three sampling areas since construction of the Keeyask GS began in 2014. Capture of fish between 0 and 3 years old provides a short-term indication of spawning and recruitment success of early life stages. However, given that these ages are not fully vulnerable to the sampling gear, the absence of fish does not conclusively indicate that none are present. In 2019, 105 wild Lake Sturgeon aged between 0 and 3 were caught: 17 in the Upper Split Lake Area, 64 in the future Keeyask reservoir, and 24 in Stephens Lake.

In 2019, no YOY or age-1 Lake Sturgeon were caught in Stephens Lake. Based on similarities in cohort frequency data as well as genetic evidence (Gosselin et al. 2016), Henderson et al. (2015) hypothesized recruitment to the Stephens Lake population was mainly due to spawning upstream of Gull Rapids (*i.e.*, in the future Keeyask reservoir). However, more recent results indicate the cohort frequency distribution in Stephens Lake differs from that in the future Keeyask reservoir. For example, the 2015 cohort is strong in Stephens Lake but not in the future Keeyask reservoir. Burnett et al. (2018) hypothesized that if these fish had been spawned upstream of Gull Rapids and drifted downstream, a larger proportion would have remained upstream. Further, adult spawning studies have shown a recent increase in the number of mature males captured during spring adult surveys below Gull Rapids (Legge et al. 2017; Holm and Hrenchuk 2019). Despite the absence of captures from the 2018 and 2019 year classes to date, they may still be captured in future sampling years.

5.3 HATCHERY FISH

Stocking began in the Burntwood River in 2014. Catches of hatchery-reared fish (*i.e.*, fish released at age-1 marked with PIT tags) originally stocked in the Burntwood River ('Burntwood stocked fish') increased in 2019, however, none were caught within the Burntwood River itself. Prior to 2019, six Burntwood stocked fish (0.4% of stocked fish) were captured in the Upper Split Lake Area: one in 2014, one in 2016, three in 2017, and one in 2018. An additional four Burntwood stocked fish (0.3% of stocked fish) were caught in the future Keeyask reservoir. In 2019, a total of 10 Burntwood stocked fish were caught in Split Lake and an additional three

were caught further downstream (two in the future Keeyask reservoir and one in Stephens Lake). The fish caught in Stephens Lake represents the furthest downstream movement recorded to date. An additional two Burntwood stocked fish were captured in the Burntwood River during the spring 2019 adult Lake Sturgeon studies (Ambrose et al. 2020). Similar to previous years, the low catch of hatchery fish in the Burntwood River suggests the majority of stocked yearlings are dispersing downstream.

Stocking in the Keeyask area began in 2015 with 1,284 age-1 fish released to date in the future Keeyask reservoir ('Keeyask stocked fish'). The number of hatchery fish caught in 2019 was more than triple (n = 57; 23%) the number captured in 2018 (n = 17; 11%) accounting for 47% (n = 27) of the total catch.

As of 2019, 1,528 age-1 hatchery-reared Lake Sturgeon have been released in Stephens Lake ('Stephens stocked fish'). Hatchery-reared Lake Sturgeon caught in Stephens Lake in 2019 (n = 118) accounted for more fish than in any previous year. Hatchery-reared fish accounted for 52% of the total catch and made up the entire age-1 year-class (n = 85). To date, hatchery fish have been more prevalent in the catch in both the future Keeyask reservoir and Stephens Lake in stocking years (*i.e.*, prior to their first winter outside of the hatchery).

As in previous study years, some fish stocked in the future Keeyask reservoir were caught in Stephens Lake. Of the captured hatchery-reared fish originally stocked in the future Keeyask reservoir, 16% (n = 3) were captured in Stephens Lake in 2018, while 17% (n = 11) were captured in Stephens Lake in 2019. This pattern of downstream movement has not been documented for recaptured wild fish. Only five wild juvenile Lake Sturgeon originally tagged in the future Keeyask reservoir have been captured in Stephens Lake since studies began, two of which were captured in 2019.

5.4 KEY QUESTIONS

The AEMP identified key questions for juvenile Lake Sturgeon monitoring, four of which are relevant to the construction period and are addressed in the discussion below.

Does recruitment of wild sturgeon occur upstream and/or downstream of the GS during construction?

In 2019, four wild YOY sturgeon were caught in the future Keeyask reservoir and none were caught in Stephens Lake. While the presence of four YOY sturgeon in the future Keeyask reservoir indicates successful spawning occurred upstream of the Keeyask GS, the absence of YOY in Stephens Lake does not necessarily mean recruitment was unsuccessful downstream. YOY are often underrepresented in the catch due to their size and the gear used does not adequately target YOY fish. No wild fish from the 2018 cohort (age-1) were caught in Stephens Lake in 2019 and only one was caught in the future Keeyask reservoir. All other cohorts spawned since construction started (*i.e.*, 2015–2017) have been present in the catch in both waterbodies.

Is there a biologically meaningful (and statistically significant) change in condition factor and growth of juvenile sturgeon during construction?

Condition factor of juvenile Lake Sturgeon sampled in all three study areas in 2019 were within the ranges observed in previous years. Comparison of growth curves of wild fish captured in the future Keeyask reservoir during baseline and construction indicated growth during both time periods was similar. Too few juveniles were collected in Stephens Lake prior to construction to support a pre/post analysis.

Two questions related to the stocking program are addressed below:

- *What is the survival rate of stocked sturgeon?*
- *What is the proportion of hatchery-reared to wild recruits within a cohort (i.e., how successful is the stocking program)?*

Only sturgeon stocked as yearlings can be distinguished from wild fish and the following discussion considers only these fish. In 2019, the annual survival rate of stocked sturgeon was estimated at 83% in the future Keeyask reservoir and 93% in Stephens Lake. The population of hatchery-reared Lake Sturgeon in the future Keeyask reservoir was estimated at 912 individuals (24% of the total juvenile population). The estimate of hatchery-reared fish in Stephens Lake was higher (1,318 individuals) and the proportion of the juvenile Lake Sturgeon population made up of hatchery-reared fish was 61%.

The proportion of hatchery-reared to wild Lake Sturgeon captured in both the future Keeyask reservoir and Stephens Lake in 2019 appears to be increasing. In the future Keeyask reservoir, the proportion of hatchery-reared Lake Sturgeon in the catch has increased from 2% in 2015 to 23% in 2019. Similarly, in Stephens Lake, hatchery captures have increased from 7% in 2015 to 52% in 2019. Further, in 2019, the CPUE of hatchery-reared Lake Sturgeon in Stephens Lake was higher than that of wild fish. Hatchery-reared fish dominated the 2018 cohort in the future Keeyask reservoir (96%) and the 2014 and 2018 cohorts in Stephens Lake (71% and 100%, respectively).

Too few hatchery-reared fish stocked in the Burntwood River were captured to calculate a survival and population estimate. However, ten of these fish were captured in Split Lake in 2019, which marks the largest number captured in a single year since stocking began in 2014. Hatchery-reared fish made up 6% of the Lake Sturgeon catch in Split Lake and 0% of the catch in the Burntwood River in 2019.

The recapture of stocked fish indicates hatchery-reared sturgeon are growing and surviving in the wild. Hatchery fish released as one-year olds are longer at release than wild fish of the same age, and this “head start” appears to persist until approximately age-5 when hatchery and wild fish are approximately the same size.

5.5 NEXT STEPS

The juvenile Lake Sturgeon monitoring program will be repeated in 2020.

Sampling locations and effort in the Burntwood River will remain similar to previous years. Due to the success of locating more wild and hatchery fish in Split Lake in 2019, increased gillnetting effort in Split Lake (downstream of the Nelson and Burntwood rivers) will continue. Sites in Split Lake will include those that captured fish in 2019 as well as new locations within the channel along the southern shore of the lake (*i.e.*, east of sites sampled in 2019). Sampling in the future Keeyask reservoir and Stephens Lake will remain similar to previous years unless impoundment occurs immediately prior to the fall program, in which case sampling locations will be adjusted based on site conditions and catches.

Growth of hatchery fish will continue to be monitored using von Bertalanffy growth curves with growth estimates likely to become more refined as the length of time hatchery fish have spent in the wild increases. Population estimates will continue to be updated as more mark recapture data becomes available.

6.0 SUMMARY AND CONCLUSIONS

- Sampling locations in the Burntwood River, the future Keeyask reservoir, and Stephens Lake remained similar to previous years. As in 2018, sampling was not conducted in the Kelsey GS area, as effort was shifted to Split Lake in an attempt to capture stocked fish. Gillnetting effort in 2019 was focussed along the southern portion of Split Lake in a deep channel that was thought to receive flow from both the Burntwood and Nelson rivers and where both hatchery and wild fish were captured in 2018.
- A total of 182 Lake Sturgeon were captured in the Upper Split Lake Area: 19 (all juveniles) in the Burntwood River (641.4 gillnet hours, CPUE of 0.7 Lake Sturgeon/100 m net/24 h) and 163 (141 juvenile and 22 adult) in Split Lake (722.7 gillnet hours, CPUE of 5.4 Lake Sturgeon/100 m net/24 h). The 2013 cohort was the most common captured. Twenty-one previously tagged Lake Sturgeon were captured in Split Lake while none were captured in the Burntwood River. Of the 21 recaptured fish, ten were Burntwood stocked fish: two were released in 2014 (2013 cohort) and eight in 2018 (2017 cohort). No YOY (2019 cohort) were caught in the Upper Split Lake Area in 2019.
- In the future Keeyask reservoir, 244 (234 juvenile and ten adult) Lake Sturgeon were captured in 1,560.6 gillnet hours for a total CPUE of 3.8 Lake Sturgeon/100 m net/24 h. Aged Lake Sturgeon (n = 228) ranged from 0 to 13 years old with three-year-old fish (2016 cohort) the most prevalent in the catch (n = 60; 26.3%). A total of 21 Lake Sturgeon tagged in previous years and 57 stocked yearlings were captured. Twelve of the re-captured Keeyask stocked fish were released in 2015 (2014 cohort), 17 were released in 2017 (2016 cohort), and 27 were released in 2019 (2018 cohort). An additional two Burntwood stocked fish (one in 2014 and one in 2018) were captured in the future Keeyak reservoir, 111 km and 129 km downstream of their release locations.
- In Stephens Lake, 229 (216 juvenile and 13 adult) Lake Sturgeon were captured in 1,560.9 gillnet hours for a total CPUE of 3.5 Lake Sturgeon/100 m net/24 h. Lake Sturgeon ages ranged from 1 to 11 with the 2018 cohort (age-1) captured most frequently (n = 84; 38.9%). A total of 24 Lake Sturgeon tagged in a previous year and 118 stocked yearlings were captured. Most of the recaptures were Stephens stocked fish released in 2019 (n = 78; 2018 cohort) but an additional 18 were released in 2015 (2014 cohort) and nine were released in 2017 (2016 cohort). The stocking location for one hatchery fish, known to be from the 2018 cohort, is unknown. Ten recaptures were Keeyask stocked fish: two released in 2015, four in 2017 and five in 2019. One hatchery-reared fish was stocked 138 km upstream in the Burntwood River in 2014 and is the first Burntwood stocked fish captured in Stephens Lake.
- Abundance estimates were calculated for wild juvenile Lake Sturgeon in all three sampling areas. The population estimate in 2019 was 4,503 wild juvenile Lake Sturgeon (95% CI: 1,348–15,044) for the Upper Split Lake Area, 2,819 (95% CI: 1,529–5,199) for

the future Keeyask reservoir, and 857 (95% CI: 517–1,420) for Stephens Lake. Survival was estimated as 82%, 74%, and 79% in the Upper Split Lake Area, future Keeyask reservoir, and Stephens Lake, respectively.

- The key questions, as described in the AEMP, for juvenile Lake Sturgeon population monitoring during construction of the Keeyask GS are as follows:
  - *Does recruitment of wild sturgeon occur upstream and/or downstream of the GS during construction?*

    In 2019, four wild YOY sturgeon were caught in the future Keeyask reservoir. Wild sturgeon spawned during each year of construction (2015–2019) have been captured during the study. In Stephens Lake, wild representatives from the 2018 cohort have been absent from the catch in the last two study years and no YOY fish were caught in 2019; however, the 2015–2017 cohorts are present.

  - *Is there a biologically meaningful (and statistically significant) change in condition factor and growth of juvenile sturgeon during construction?*

    Condition factor of juvenile Lake Sturgeon sampled in all three study areas in 2019 were within the ranges observed in previous years. Comparison of growth curves of wild fish captured in the future Keeyask reservoir during baseline and construction indicated growth during both time periods was similar. Too few juveniles were collected in Stephens Lake and the Upper Split Lake Area prior to construction to support a pre/post analysis.

  - *What is the survival rate of stocked sturgeon? What is the proportion of hatchery-reared to wild recruits within a cohort (i.e., how successful is the stocking program)?*

    The survival rates of stocked sturgeon in the future Keeyask reservoir and Stephens Lake were 83% and 93%, respectively. In the future Keeyask reservoir, the proportion of hatchery-reared Lake Sturgeon in the catch increased from 2% in 2015 to 23% in 2019, more than double the value in 2018 (11%). Hatchery captures in Stephens Lake have risen from 7% in 2015 to more than half of the catch in 2019 (52%). Further, in 2019, the CPUE of hatchery-reared Lake Sturgeon in Stephens Lake was higher than that of wild fish. Hatchery-reared fish dominated the 2018 cohort in the future Keeyask reservoir (96%) and the 2014 and 2018 cohorts in Stephens Lake (71% and 100%, respectively).

    In contrast to the Keeyask and Stephens Lake areas, catches of hatchery-raised fish in the Upper Split Lake have been low. Beginning in 2018, sampling was extended into Split Lake in an attempt to determine whether stocked fish had moved downstream. In 2019, ten stocked fish (the largest number collected in one year) were captured at sites in a deep channel along the southern margin of Split Lake, downstream of the Burntwood River and Nelson River. Sampling in 2020 will target these locations as well as additional sites in Split Lake to determine whether sturgeon stocked into the Burntwood River are surviving.

7.0 LITERATURE CITED

Ambrose, K.M., Hrenchuk, C.L. and Nelson, P.A. 2020. Adult Lake Sturgeon population monitoring in the Upper Split Lake Area, 2019. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2020-00. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2020. xv + 99 pp.

Arnason, A.N. and Schwarz, C.J. 2002. POPAN-6: Exploring convergence and estimate properties with SIMULATE. Journal of Applied Statistics 29: 649–668.

Barth, C.C., Peake, S.J., Allen, P.J. and Anderson, W.G. 2009. Habitat utilization of juvenile Lake Sturgeon, *Acipenser fulvescens*, in a large Canadian river. Journal of Applied Ichthyology 25: 18–26.

Burnett, D.C., Henderson, L.M., Barth, C.C. and Hrenchuk, C.L. 2016. Juvenile Lake Sturgeon population monitoring, fall 2015: Year 2 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2016-02. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2016. xiii + 84 pp.

Burnett, D.C., Lacho, C.D. and Hrenchuk, C.L. 2017. Juvenile Lake Sturgeon population monitoring, fall 2016: Year 3 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2017-06. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2017. xv + 86 pp.

Burnett, D.C, Hrenchuk, C.L. and Barth, C.C. 2018. Juvenile Lake Sturgeon population monitoring, fall 2017: Year 4 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2018-02. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2019. xv + 120 pp.

Gosselin, T., Nelson, P.A., McDougall, C.A. and Bernatchez, L. 2016. Population genomics of Lake Sturgeon (Acipenser fulvescens) from northern Manitoba, final report. A report prepared for Manitoba Hydro by Université Laval and North/South Consultants Inc. 67 pp.

Henderson, L.M. and Pisiak, D.J. 2012. Results of young-of-the-year and sub-adult Lake Sturgeon investigations in the Keeyask Study Area, spring and fall, 2011. A report prepared for Manitoba Hydro by North/South Consultants Inc. xii + 48 pp.

Henderson, L.M., Barth, C.C., MacDonald, J.E. and Blanchard, M. 2011. Young-of-the-year and sub-adult Lake Sturgeon investigations in the Keeyask Study Area, spring and fall 2010. A report prepared for Manitoba Hydro by North/South Consultants Inc. ix + 49 pp.

Henderson, L.M., McDougall, C.A. and Barth, C.C. 2013. Results of Lake Sturgeon year-class strength assessments conducted in the Keeyask Study Area, fall 2012. A report prepared for Manitoba Hydro by North/South Consultants Inc. xiii + 59 pp.

Henderson, L.M., McDougall, C.A. and MacDonell, D.S. 2014. Results of juvenile Lake Sturgeon monitoring in the Slave Falls reservoir, 2013. A report prepared for Manitoba Hydro by North/South Consultants Inc. vii + 94 pp.

Henderson, L.M., Barth, C.C. and Hrenchuk, C.L. 2015. Juvenile Lake Sturgeon population monitoring, fall 2014: Year 1 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2015-03. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2015. xi + 61 pp.

Holm, J. and Hrenchuk, C.L. 2019. Adult Lake Sturgeon population monitoring in the future Keeyask reservoir and Stephens Lake, 2018. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2019-05. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2019. xv + 100 pp.

Klassen, C., Michaluk, Y., Alexander, M. and Groening, L. 2017. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, October 2015 to September 2016: Year 3 Construction. A report prepared by Manitoba Hydro.

Klassen, C., Michaluk, Y., Kirchmann, S. and Clark, N. 2018. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, October 2016 to October 2017: Year 4 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2018-01. A report prepared by Manitoba Hydro, June 2018.

Klassen, C, Y. Michaluk, S. Kirchmann and L. Groening, 2019. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, November 2017 to October 2018: Year 5 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2019-01. A report prepared by Manitoba Hydro, June 2019. xi + 65 pp.

Klassen, C., et al. *in prep*. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, November 2018 to October 2019: Year 6 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report. In Prep.

Lawrence, M.J., Fazakas, C.R., Zrum, L., Bezte, C.L. and Bernhardt, W.J. 1999. The Split Lake aquatic ecosystem: A synthesis of Split Lake biological and environmental data, January 1997 – October 1998. A report prepared for the Tataskweyak Environmental Monitoring Agency by North/South Consultants Inc. xii + 87 pp.

Legge, M., Hrenchuk, C.L., Barth, C.C. and Burnett, D.C. 2017. Adult Lake Sturgeon population monitoring in the Keeyask Area (Clark Lake to Gull Rapids) and Stephens Lake, 2016. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2017-05. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2017. xii +67 pp.

MacDonald, J.E. 2009. Lake Sturgeon investigations in the Keeyask Study Area, 2007–2008. A report prepared for Manitoba Hydro by North/South Consultants Inc. xii + 64 pp.

McDougall, C.A. and Pisiak, D.J. 2014. Upper Nelson River juvenile Lake Sturgeon inventories, 2013: Sea Falls – Sugar Falls and the Pipestone Lake area. A Lake Sturgeon Stewardship and Enhancement Program report prepared for Manitoba Hydro by North/South Consultants Inc. 91 pp.

McDougall, C.A., Blanchfield, P.J., Peake, S.J. and Anderson, W.G. 2013. Movement patterns and size-class influence entrainment susceptibility of Lake Sturgeon in a small hydroelectric reservoir. Transactions of the American Fisheries Society 142: 1508–1521.

McDougall, C.A., Barth, C.C., Aiken, J.K., Henderson, L.M., Blanchard, M.A., Ambrose, K.M., Hrenchuk, C.L., Gillespie, M.A. and Nelson, P.A. 2014. How to sample juvenile Lake Sturgeon, (*Acipenser fulvescens* Rafinesque, 1817), in Boreal Shield rivers using gillnets, with an emphasis on assessing recruitment patterns. Journal of Applied Ichthyology 30: 1402–1415.

Michaluk, Y. and MacDonald, J.E. 2010. Lake Sturgeon investigations in the Keeyask Study Area, 2009. A report prepared for Manitoba Hydro by North/South Consultants Inc. xiii + 83 pp.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada Bulletin 191. xvii + 382 pp.

TABLES

Table 1: Summary of Lake Sturgeon stocking since 2014. Numbers of stocked fish are from Klassen *et al.* 2020.

Year[a]	Burntwood River			future Keeyask reservoir[b]			Stephens Lake		
	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1
2014	-	-	595	152,926	4,656	-	-	-	-
2015	-	-	-	-	-	423	-	-	418
2016	-	-	23	192,167	780	-	184,134	799	-
2017	71,740	3,765	-	-	-	463	-	-	720
2018	-	-	739	-	933	-	-	1,009	-
2019	-	(3,681)	-	-	-	398	-	-	390
Total	**71,740**	**7,446**	**1,357**	**345,093**	**6,369**	**1,284**	**184,134**	**1,808**	**1,528**

a – Stocking year

b – From Birthday Rapids to Gull Rapids

c – Numbers in parentheses were stocked after the 2019 juvenile survey

Table 2: Summary of start and completion dates for juvenile Lake Sturgeon monitoring during fall, 2019, by location.

Location	Start Date	Completion Date	# Sites
Upper Split Lake Area			
Burntwood River	06-Sep-19	11-Sep-19	22
Split Lake	11-Sep-19	16-Sep-19	18
future Keeyask reservoir	10-Sep-19	20-Sep-19	39
Stephens Lake	11-Sep-19	21-Sep-19	40

Table 3: Number (n) and frequency of occurrence (%), by species and sampling location, of fish captured during juvenile Lake Sturgeon monitoring, fall 2019.

Species	Scientific Name	Upper Split Lake Area				future Keeyask reservoir		Stephens Lake		Total n	Total %
		Burntwood River		Split Lake							
		n	%	n	%	n	%	n	%		
Burbot	*Lota lota*	7	7.3	5	1.5	16	2.9	26	5.1	54	3.7
Lake Sturgeon	***Acipenser fulvescens***	***19***	***19.8***	***163***	***50.5***	***244***	***44.8***	***229***	***44.6***	***655***	***44.3***
Lake Whitefish	*Coregonus clupeaformis*	0	-	1	0.3	0	-	2	0.4	3	0.2
Longnose Sucker	*Catostomus catostomus*	66	68.8	36	11.1	165	30.3	116	22.6	383	25.9
Mooneye	*Hiodon tergisus*	0	-	0	-	1	0.2	0	-	1	0.1
Northern Pike	*Esox lucius*	0	-	6	1.9	18	3.3	1	0.2	25	1.7
Sauger	*Sander canadensis*	0	-	31	9.6	10	1.8	40	7.8	81	5.5
Shorthead Redhorse	*Moxostoma macrolepidotum*	0	-	18	5.6	8	1.5	5	1.0	31	2.1
Silver Redhorse	*Moxostoma anisurum*	0	-	1	0.3	0	-	0	-	1	0.1
Trout-perch	*Percopsis omiscomaycus*	0	-	1	0.3	4	0.7	15	2.9	20	1.4
Walleye	*Sander vitreus*	2	2.1	26	8.0	26	4.8	17	3.3	71	4.8
White Sucker	*Catostomus commersoni*	2	2.1	30	9.3	53	9.7	62	12.1	147	10.0
Yellow Perch	*Perca flavescens*	0	-	5	1.5	0	-	0	-	5	0.3
Total		**96**	**-**	**323**	**-**	**545**	**-**	**513**	**-**	**1,477**	**-**

Table 4: Lake Sturgeon catch-per-unit effort (CPUE; # fish/100 m net/24 h) by location and zone, for gill nets set during juvenile Lake Sturgeon monitoring, fall, 2019.

Location	Zone	# of Sites	Effort (gillnet hours)	# of Lake Sturgeon	CPUE (#LKST/100m/24h)
Burntwood River	BWR-A	5	154.0	2	0.31
	BWR-B	2	49.1	0	0.00
	BWR-C	15	438.3	17	0.93
Total		**22**	**641.4**	**19**	**0.71**
Split Lake	SPL-A	18	722.7	163	5.41
Total		**18**	**722.7**	**163**	**5.41**
future Keeyask reservoir	BR-D	6	155.9	19	2.92
	GL-A	8	297.2	19	1.53
	GL-B	13	546.8	119	5.22
	GL-C	12	560.7	87	3.72
Total		**39**	**1560.6**	**244**	**3.75**
Stephens Lake	STL-A	8	321.4	27	2.02
	STL-B	32	1239.5	202	3.91
Total		**40**	**1560.9**	**229**	**3.52**

Table 5: Lake Sturgeon catch-per-unit-effort (CPUE; #fish/100 m net/24 h) for gill nets set to target juvenile Lake Sturgeon between 2007 and 2019. Grey highlighted rows indicate construction monitoring.

Location	Year	Start Date	Completion date	Mesh Size	# Sites	Effort (gillnet hrs[a])	# Lake Sturgeon[b]	CPUE
Upper Split Lake Area								
Burntwood River	2012	29-Aug	08-Sep	1" - 6"	37	767	33	1.03
	2014	08-Sep	16-Sep	1" - 6"	28	734	42	1.37
	2015	29-Aug	04-Oct	1" - 6"	28	858	35	0.78
	2016	07-Sep	18-Sep	1" - 6"	24	594	26	1.05
	2017	06-Sep	12-Sep	1" - 6"	24	660	34	1.24
	2018	09-Sep	20-Sep	1" - 6"	19	426	11	0.62
	2019	06-Sep	11-Sep	1" - 6"	22	641	19	0.71
Kelsey GS Area[c]	2015	29-Aug	04-Oct	1" - 6"	7	248	7	0.68
	2016	07-Sep	18-Sep	1" - 6"	9	203	8	0.95
	2017	14-Sep	15-Sep	1" - 6"	10	232	6	0.62
Split Lake	2015	29-Aug	04-Oct	1" - 6"	9	192	9	1.13
	2016	07-Sep	18-Sep	1" - 6"	7	193	6	0.75
	2017	05-Sep	13-Sep	1" - 6"	8	175	19	2.60
	2018	09-Sep	20-Sep	1" - 6"	21	607	57	2.25
	2019	11-Sep	16-Sep	1" - 6"	18	723	163	5.41
future Keeyask reservoir[d]	2007	28-Sep	03-Oct	8mm - 5"	26	165	0	0.00
	2008	12-Sep	27-Sep	1.5"- 8"	15	3072	126	0.98
	2010	21-Sep	29-Sep	1" - 5"	27	851	69	1.95
	2011	18-Sep	24-Sep	1" - 5"	25	662	121	4.39
	2012	29-Aug	09-Sep	1" - 6"	30	745	101	3.25
	2014	08-Sep	16-Sep	1" - 6"	30	765	112	3.51
	2015	11-Sep	20-Sep	1" - 6"	34	912	139	3.66
	2016	12-Sep	23-Sep	1" - 6"	37	997	96	2.31
	2017	09-Sep	19-Sep	1" - 6"	51	1551	177	2.74
	2018	09-Sep	19-Sep	1" - 6"	50	1377	150	2.61
	2019	10-Sep	20-Sep	1" - 6"	39	1561	244	3.75
Stephens Lake	2007	19-Sep	23-Sep	2" - 5"	15	48	0	0.00
	2008	11-Sep	18-Sep	3.75"-8"	12	295	8	0.65
	2009	14-Sep	20-Sep	1.5" - 5"	18	634	23	0.87
	2010	22-Sep	29-Sep	1" - 5"	18	611	32	1.26
	2011	21-Sep	01-Oct	1" - 5"	30	974	37	0.91
	2012	11-Sep	23-Sep	1" - 6"	19	1193	87	1.75
	2014	18-Sep	28-Sep	1" - 6"	94	921	47	1.23
	2015	22-Sep	02-Oct	1" - 6"	44	1154	54	1.12
	2016	12-Sep	23-Sep	1" - 6"	37	1384	66	1.14
	2017	09-Sep	19-Sep	1" - 6"	40	1796	148	1.98
	2018	09-Sep	21-Sep	1" - 6"	49	1599	74	1.11
	2019	11-Sep	21-Sep	1" - 6"	40	1561	229	3.52

a - Gillnet set durations were standardized to 100 m of net and then summed to calculate the total gillnet hours for each study.

b - Does not include Lake Sturgeon recaptured more than once in the same study.

c – Removed from sampling in 2018.

d - Birthday Rapids to Gull Rapids.

Table 6: **Number of wild Lake Sturgeon captured from 2008 to 2019, from which ages and cohorts were determined. Grey highlighted columns indicate cohorts spawned during Keeyask GS construction and red values indicate cohorts not present in the corresponding study year. The Kelsey GS area was not sampled and more sampling sites were added to Split Lake in 2019 in an attempt to locate hatchery-reared fish stocked in the Burntwood River. Ageing Structures from the Burntwood River in 2014 were not ageable.**

Location	Cohort Year																			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Upper Split Lake Area																				
Burntwood River																				
2012 Study Year	1	4	0	4	0	1	5	3	1	0	3	7	1	-	-	-	-	-	-	-
2015 Study Year	0	1	0	1	1	1	3	1	2	0	0	5	4	4	0	0	-	-	-	-
2016 Study Year	0	0	0	1	1	0	0	0	1	0	4	5	0	7	2	0	1	-	-	-
2017 Study Year	0	0	1	2	1	0	0	0	2	1	5	2	0	2	3	1	7	3	-	-
2018 Study Year	0	0	1	0	0	0	0	0	0	0	2	0	0	1	0	2	2	1	0	-
2019 Study Year	2	0	0	0	0	0	0	1	0	0	1	1	2	5	2	0	3	1	1	0
Total	**3**	**5**	**2**	**8**	**3**	**2**	**8**	**5**	**6**	**1**	**15**	**20**	**7**	**19**	**7**	**3**	**13**	**5**	**1**	**0**
Present in the Catch	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
Split Lake																				
2015 Study Year	0	0	0	0	0	0	0	0	1	0	0	1	0	4	1	0	-	-	-	-
2016 Study Year	0	0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	0	-	-	-
2017 Study Year	0	0	0	1	0	0	1	1	3	1	3	1	0	2	0	0	3	0	-	-
2018 Study Year	0	0	0	1	0	2	2	1	1	0	3	9	1	26	2	1	2	1	0	-
2019 Study Year	0	0	0	0	5	0	0	5	5	3	9	14	5	45	14	6	10	5	2	0
Total	**0**	**0**	**0**	**2**	**5**	**2**	**3**	**8**	**11**	**4**	**16**	**25**	**6**	**77**	**18**	**8**	**15**	**6**	**2**	**0**
Present in the Catch	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
future Keeyask reservoir																				
2008 Study Year	0	0	0	0	0	0	12	2	14	-	-	-	-	-	-	-	-	-	-	-
2010 Study Year	1	0	0	6	3	1	3	5	18	0	0	-	-	-	-	-	-	-	-	-
2011 Study Year	0	0	0	5	2	2	7	5	94	1	2	0	-	-	-	-	-	-	-	-
2012 Study Year	0	0	0	2	2	2	12	6	60	3	1	4	0	-	-	-	-	-	-	-
2014 Study Year	0	1	0	1	0	1	6	2	58	3	4	7	3	9	0	-	-	-	-	-
2015 Study Year	0	0	0	0	1	3	10	7	71	1	1	3	6	11	3	4	-	-	-	-
2016 Study Year	0	0	0	0	0	1	15	0	29	2	1	5	6	13	6	4	4	-	-	-
2017 Study Year	0	0	0	1	1	0	6	3	56	2	2	11	7	20	10	10	10	1	-	-
2018 Study Year	0	0	0	0	0	0	3	4	33	5	3	6	4	9	5	9	34	5	1	-
2019 Study Year	0	0	0	0	0	0	2	1	30	2	3	6	6	20	20	17	44	15	1	4
Total	**1**	**1**	**0**	**15**	**9**	**10**	**76**	**35**	**463**	**19**	**17**	**42**	**32**	**82**	**44**	**44**	**92**	**21**	**2**	**4**
Present in the Catch	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Stephens Lake																				
2009 Study Year	1	1	0	0	1	3	1	0	2	0	-	-	-	-	-	-	-	-	-	-
2010 Study Year	0	0	1	3	0	1	5	7	14	0	0	-	-	-	-	-	-	-	-	-
2011 Study Year	0	0	0	1	0	0	0	2	28	2	0	1	-	-	-	-	-	-	-	-
2012 Study Year	0	0	0	0	0	0	7	4	49	1	2	2	0	-	-	-	-	-	-	-
2014 Study Year	0	0	0	1	1	0	5	4	25	1	4	5	0	0	0	-	-	-	-	-
2015 Study Year	0	0	0	0	0	0	4	3	19	1	1	3	0	4	2	11	-	-	-	-
2016 Study Year	0	0	0	0	1	0	4	4	31	0	0	2	1	3	4	8	0	-	-	-
2017 Study Year	0	0	0	0	0	0	0	0	19	2	0	3	0	11	4	20	9	5	-	-
2018 Study Year	0	0	0	0	0	0	0	0	4	0	0	4	1	9	3	20	4	3	0	-
2019 Study Year	0	0	0	0	0	0	0	0	11	0	2	6	3	11	8	33	15	9	0	0
Total	**1**	**1**	**1**	**5**	**3**	**4**	**26**	**24**	**202**	**7**	**9**	**26**	**5**	**38**	**21**	**92**	**28**	**17**	**0**	**0**
Present in the Catch	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**

Table 7: Mean length, weight, and condition factor of Lake Sturgeon captured during juvenile Lake Sturgeon monitoring, fall 2019.

Waterbody	Fork Length (mm)				Weight (g)				Condition Factor			
	n[a]	Mean	Std[b]	Range	n	Mean	Std	Range	n	Mean	Std	Range
Burntwood River	19	430	114	275–694	19	609	531	100–2,120	19	0.62	0.06	0.48–0.71
Split Lake												
Wild	153	606	168	161–1,000	130	1,553	994	40–3,860	130	0.72	0.08	0.35–0.91
Hatchery	10	364	66	304–481	10	335	212	160–740	10	0.63	0.06	0.54–0.74
	163	**592**	**173**	**161–1,000**	**140**	**1,466**	**1,009**	**40–3,860**	**140**	**0.71**	**0.08**	**0.35–0.91**
future Keeyask reservoir												
Wild	187	502	178	95–1,060	183	1,294	1,430	100–8,550	183	0.68	0.11	0.25–1.24
Hatchery	57	364	72	265–530	56	307	214	75–950	56	0.54	0.12	0.28–0.95
	244	**470**	**170**	**95–1,060**	**239**	**1,063**	**1,323**	**75–8,550**	**239**	**0.65**	**0.12**	**0.25–1.24**
Stephens Lake												
Wild	111	542	175	287–1,060	110	1,608	1,821	100–11,500	110	0.71	0.11	0.32–1.01
Hatchery	118	354	92	261–586	118	318	330	75–1,300	118	0.54	0.12	0.29–1.03
	229	**445**	**168**	**261–1,060**	**228**	**934**	**1,432**	**75–11,500**	**228**	**0.62**	**0.15**	**0.29–1.03**

a – Number of fish measured

b – Standard deviation

Table 8: Catch-per-unit-effort (CPUE; # fish/100 m net/24 h) for hatchery and wild caught Lake Sturgeon in Split Lake, Stephens Lake and the future Keeyask reservoir, Fall 2019.

Location	Effort (gillnet hours)	# of Lake Sturgeon	CPUE (#LKST/100m/24h)
Split Lake			
Wild	722.7	153	5.08
Hatchery	722.7	10	0.33
	722.7	**163**	**5.41**
future Keeyask reservoir			
Wild	1,560.6	187	2.88
Hatchery	1,560.6	57	0.88
	Total	**244**	**3.75**
Stephens Lake			
Wild	1,560.9	111	1.71
Hatchery	1,560.9	118	1.81
	Total	**229**	**3.52**

Table 9: Mean length, weight, and condition factor of wild Lake Sturgeon captured during juvenile Lake Sturgeon monitoring, since 2008.

Waterbody	Fork Length (mm)				Weight (g)				Condition Factor			
	n[a]	Mean	Std[b]	Range	n	Mean	Std	Range	n	Mean	Std	Range
Burntwood River												
2011 Study Year	33	437	156	107–715	30	819	610	25–2,125	30	0.63	0.15	0.16–0.80
2012 Study Year	41	431	153	215–807	40	852	914	50–4,100	40	0.75	0.23	0.36–1.65
2015 Study Year	44	465	159	210–860	44	1,002	1,205	100–6,577	44	0.71	0.20	0.47–1.61
2016 Study Year	25	424	161	98–836	23	756	834	110–3,760	23	0.62	0.06	0.50–0.74
2017 Study Year	17	462	196	99–786	17	887	832	4–2,994	17	0.57	0.08	0.40–0.66
2018 Study Year	11	455	191	205–764	11	950	1,043	25–3,000	11	0.64	0.16	0.29–0.87
2019 Study Year	19	430	114	275–694	19	609	531	100–2,120	19	0.62	0.06	0.48–0.71
Split Lake												
2014 Study Year	0	-	-	-	-	-	-	-	-	-	-	-
2015 Study Year	9	368	155	210–710	9	539	773	773–2,450	9	0.73	0.15	0.61–0.91
2016 Study Year	6	536	257	165–805	5	1,509	1,621	23–3,942	5	0.69	0.12	0.51–0.79
2017 Study Year	18	628	206	235–884	18	2,482	1,807	77–6,713	18	0.75	0.09	0.59–0.97
2018 Study Year	56	584	152	230–996	56	1,829	1,437	25–7,350	56	0.75	0.15	0.21–1.46
2019 Study Year	153	606	168	161–1,000	130	1,553	994	40–3,860	130	0.72	0.08	0.35–0.91
future Keeyask reservoir												
2008 Study Year	112	607	169	132–1,200	53	1,663	1,138	110–6,804	53	0.74	0.08	0.62–1.03
2010 Study Year	69	389	119	292–780	68	514	620	150–3,250	68	0.69	0.10	0.48–1.03
2011 Study Year	121	433	90	263–835	121	657	648	100–4,950	121	0.68	0.09	0.42–0.99
2012 Study Year	101	488	99	250–842	99	825	541	75–3,150	99	0.66	0.09	0.45–1.16
2014 Study Year	112	533	140	225–946	111	1,279	995	50–5,750	111	0.72	0.13	0.11–1.20
2015 Study Year	136	537	177	101–908	131	1,583	1,189	11–7,257	131	0.75	0.13	0.55–1.68
2016 Study Year	89	534	181	98–836	86	1,601	1,177	8–4,560	86	0.75	0.11	0.42–1.10
2017 Study Year	152	560	171	129–919	147	1,706	1,255	100–6,100	147	0.72	0.09	0.47–0.96
2018 Study Year	133	518	205	87–1,031	132	1,519	1,620	50–8,500	132	0.72	0.13	0.32–1.30
2019 Study Year	187	502	178	95–1,060	183	1,294	1,430	100–8,550	183	0.68	0.11	0.25–1.24

a – Number of fish measured

b – Standard deviation

Table 9: Mean length, weight, and condition factor of wild Lake Sturgeon captured during juvenile Lake Sturgeon monitoring, since 2008 (continued).

Waterbody	Fork Length (mm)				Weight (g)				Condition Factor			
	n[a]	Mean	Std[b]	Range	n	Mean	Std	Range	n	Mean	Std	Range
Stephens Lake												
2009 Study Year	23	344	166	110-770	7	346	167	150-525	7	0.95	0.31	0.59-1.32
2010 Study Year	32	423	136	304-772	32	862	978	210-3,570	31	0.74	0.10	0.58-1.10
2011 Study Year	37	450	109	168-756	36	921	894	375-4,125	36	0.81	0.11	0.58-1.03
2012 Study Year	87	539	124	250-970	83	1,373	1,175	75-5,525	83	0.74	0.13	0.40-0.99
2014 Study Year	51	612	121	373-971	51	2,049	1,525	350-8,700	51	0.78	0.12	0.62-1.36
2015 Study Year	50	496	233	120-795	49	1,473	1,143	15-3,650	49	0.88	0.28	0.60-2.05
2016 Study Year	61	607	182	233-1,000	61	2,234	1,520	80-8,400	61	0.77	0.12	0.49-1.12
2017 Study Year	97	487	208	135-851	92	1,497	1,560	75-5,425	92	0.72	0.12	0.44-1.03
2018 Study Year	57	481	154	222-837	57	1,113	1,215	50-4,925	57	0.72	0.10	0.46-0.90
2019 Study Year	111	542	175	287-1,060	110	1,594	1,818	100-11,500	110	0.72	0.11	0.32-1.01

a – Number of fish measured

b – Standard deviation

Table 10: Mean length, weight, and condition factor of hatchery-reared Lake Sturgeon captured during juvenile Lake Sturgeon monitoring, since 2014.

Waterbody	Fork Length (mm)				Weight (g)				Condition Factor			
	n[a]	Mean	Std[b]	Range	n	Mean	Std	Range	n	Mean	Std	Range
Upper Split Lake Area												
2014 Study Year	1	309	-	-	1	100	-	-	1	0.33	-	-
2015 Study Year	0	-	-	-	0	-	-	-	0	-	-	-
2016 Study Year	1	339	-	-	1	300	-	-	1	0.77	-	-
2017 Study Year	3	393	14	381-408	3	356	53	303-408	3	0.59	0.03	0.54-0.61
2018 Study Year	1	520	-	-	1	1100	-	-	1	0.78	-	-
2019 Study Year	10	364	66	304-481	10	335	212	160-740	10	0.63	0.06	0.54-0.74
future Keeyask reservoir												
2014 Study Year	1	272	-	-	1	150	-	-	1	0.75		
2015 Study Year	3	310	26	280-330	2	200	35	175-225	2	0.58	0.06	0.54-0.63
2016 Study Year	7	366	25	320-396	7	335	44	280-400	7	0.69	0.10	0.52-0.85
2017 Study Year	21	380	69	285-465	21	355	176	100-600	21	0.59	0.07	0.43-0.74
2018 Study Year	17	396	57	255-479	17	394	148	100-700	17	0.60	0.05	0.53-0.72
2019 Study Year	57	364	72	265-530	56	307	214	75-950	56	0.54	0.12	0.28-0.95
Stephens Lake												
2014 Study Year	0	-	-	-	0	-	-	-	0	-	-	-
2015 Study Year	4	320	18	297-340	4	375	122	200-480	4	1.11	0.23	0.76-1.27
2016 Study Year	5	394	24	363-418	5	348	87	260-440	5	0.56	0.06	0.47-0.61
2017 Study Year	51	362	66	262-487	51	322	191	75-750	51	0.61	0.08	0.42-0.78
2018 Study Year	17	432	64	346-503	17	596	239	275-900	17	0.70	0.06	0.55-0.85
2019 Study Year	118	354	92	261-586	118	318	330	75-1,300	118	0.54	0.12	0.29-1.03

a – Number of fish measured.

b – Standard deviation.

Table 11: Recapture summary for wild Lake Sturgeon caught in the Keeyask Study Area between 2008 and 2019.

Recapture Location	Sampling Year	Tagging Location		
		Upper Split Lake Area	future Keeyask reservoir	Stephens Lake
		n[a]	n	n
Upper Split Lake Area	2011	0	0	0
	2012	2	0	0
	2014	2	0	0
	2015	2	0	0
	2016	2	0	0
	2017	3	0	0
	2018	4	0	0
	2019	9	2	0
future Keeyask reservoir	2008	0	9	0
	2010	0	2	0
	2011	0	4	0
	2012	0	8	0
	2014	0	17	0
	2015	0	20	0
	2016	0	11	0
	2017	0	17	0
	2018	0	18	0
	2019	0	21	0
Stephens Lake	2009	0	0	0
	2010	0	0	0
	2011	0	0	0
	2012	0	0	11
	2014	0	0	8
	2015	0	0	7
	2016	0	0	14
	2017	0	3	17
	2018	0	1	10
	2019	0	2	22

a – Number of Lake Sturgeon.

Table 12: Number (n) and percentage (%) of catch of hatchery-reared Lake Sturgeon caught in the Keeyask Study Area between 2014 and 2019.

Capture Location	Sample Year	Release Location						Total	% of Total Catch
		Burntwood River		future Keeyask reservoir		Stephens Lake			
		n[a]	% of Catch	n	% of Catch	n	% of Catch		
Upper Split Lake Area	2014	1	2.4	0	-	0	-	1	2.4
	2015	0	-	0	-	0	-	0	-
	2016	1	2.5	0	-	0	-	1	2.5
	2017	3	5.1	0	-	0	-	3	5.1
	2018	1	1.8	0	-	0	-	1	1.8
	2019	10	6.1	0	-	0	-	10	6.1
future Keeyask reservoir	2014	1	0.9	0	-	0	-	1	0.9
	2015	1	0.7	2	1.4	0	-	3	2.2
	2016	0	-	7	7.3	0	-	7	7.3
	2017	1	0.6	20	11.6	0	-	21	11.9
	2018	1	0.7	16	10.7	0	-	17	11.3
	2019	2	0.8	55	22.5	0	-	57	23.4
Stephens Lake	2014	0	-	0	-	-	-	0	-
	2015	0	-	0	-	4	7.4	4	8.5
	2016	0	-	1	1.5	4	6.1	5	7.6
	2017	0	-	11	7.4	40	27.0	51	34.5
	2018	0	-	3	4.1	14	18.9	17	23.0
	2019	1	0.4	11	4.8	106	46.3	118	51.5

a – Number of Lake Sturgeon.

Table 13: Number and ages of hatchery-reared Lake Sturgeon released as age-1 fish and captured during juvenile Lake Sturgeon studies since 2014.

Monitoring Year	Capture Location		
	Upper Split Lake Area	**future Keeyask reservoir**	**Stephens Lake**
2014	1[a] (1 year old)	1 (1 year old)	-
2015	-	3 (2 were 1 year old) (1 was 2 years old)[c]	4 (All were 1 year old)
2016	1[a] (3 years old)	7 (All were 2 years old)	5 (All were 2 years old)
2017	3[a] (All were 4 years old)	21 (9 were 1 year old) (11 were 3 years old) (1 was 4 years old)[c]	51 (33 were 1 year old) (18 were 3 years old)
2018	1[b] (5 years old)	18 (1 was 1 years old)c (8 were 2 years old) (8 were 4 years old) (1 was 5 years old)[c]	17 (7 were 2 years old) (10 were 4 years old)
2019	10[b] (8 were 2 years old) (2 were 6 years old)	57 (27 were 1 years old) (1 was 2 years old)[c] (16 were 3 years old) (12 were 5 years old) (1 was 6 years old)[c]	118 (84 were 1 years old) (13 were 3 years old) (20 were 5 years old) (1 was 6 years old)[c]

a – Fish released in the Burntwood River and caught in the same area

b – Fish released in the Burntwood River but caught in Split Lake

c – Fish released in the Burntwood River.

FIGURES

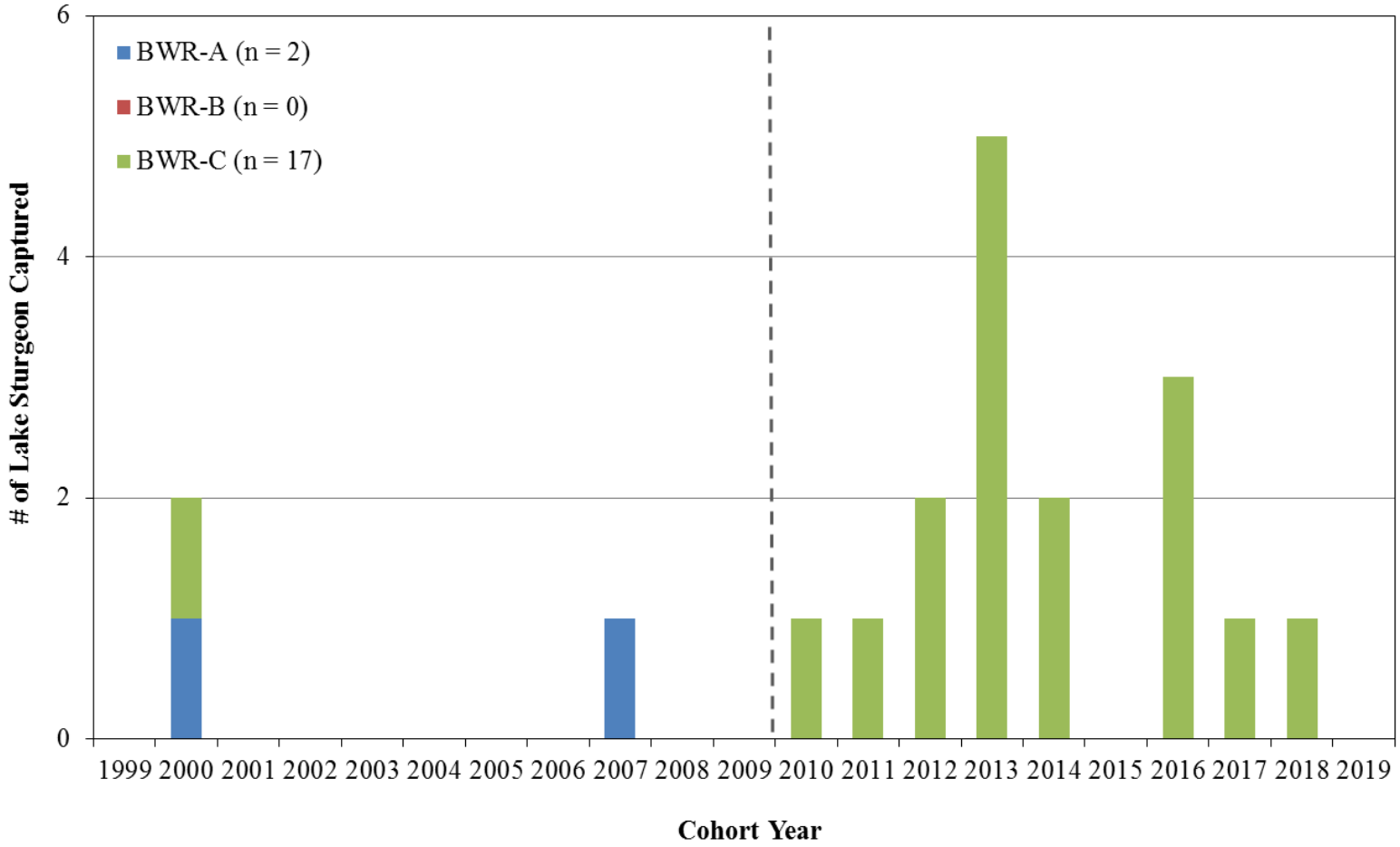


Figure 1: **Cohort frequency distribution by zone, for all aged Lake Sturgeon captured in the Burntwood River, fall 2019. Cohorts prior to 2010 (*i.e.*, age-9 fish) are not fully represented as ageing structures are not collected from fish > 800 mm fork length (indicated by vertical dashed line). See Map 3 for location of zones.**

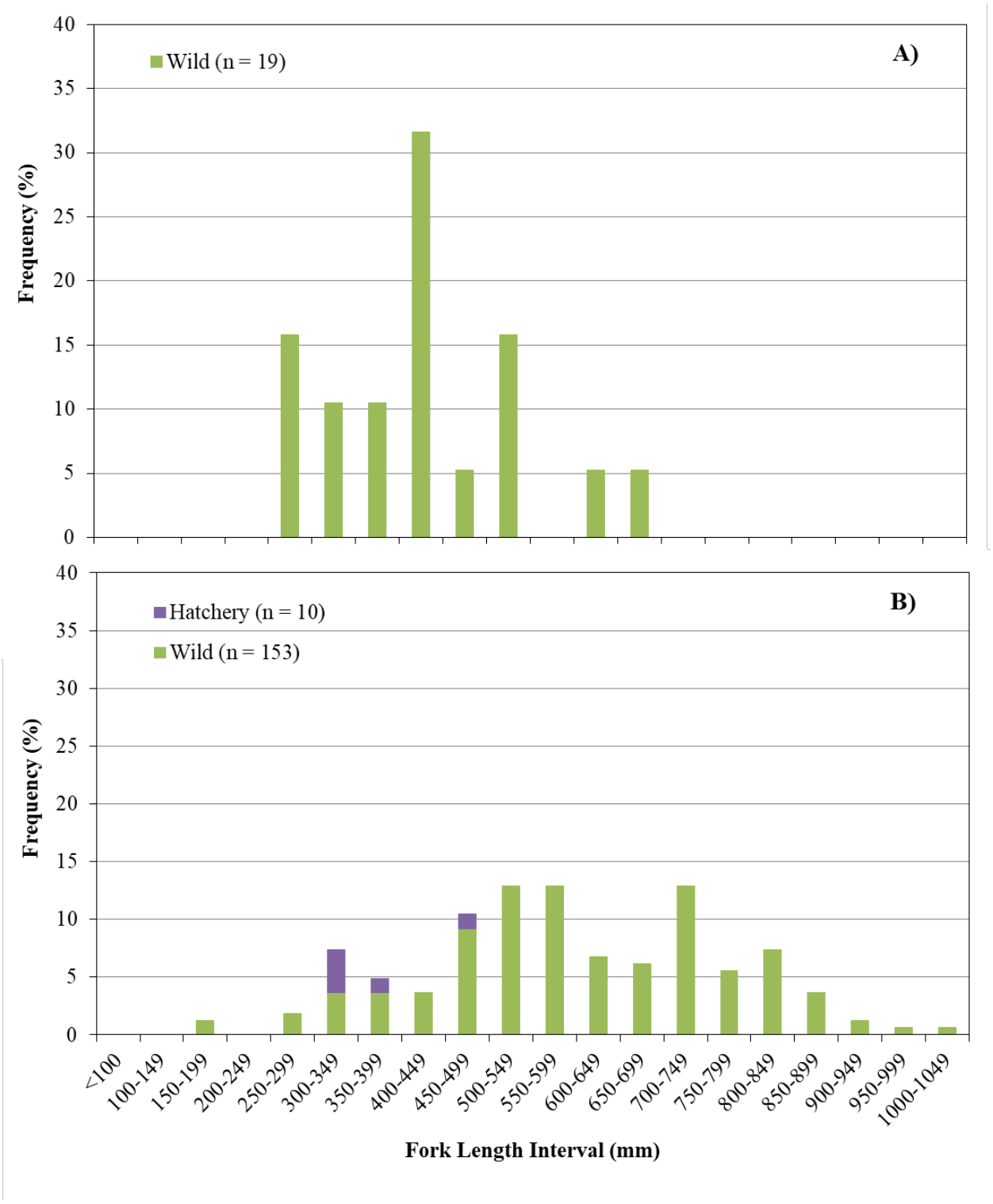


Figure 2: Length-frequency distributions for Lake Sturgeon captured in gill nets set in the Upper Split Lake Area: A) the Burntwood River and B) Split Lake, fall 2019.

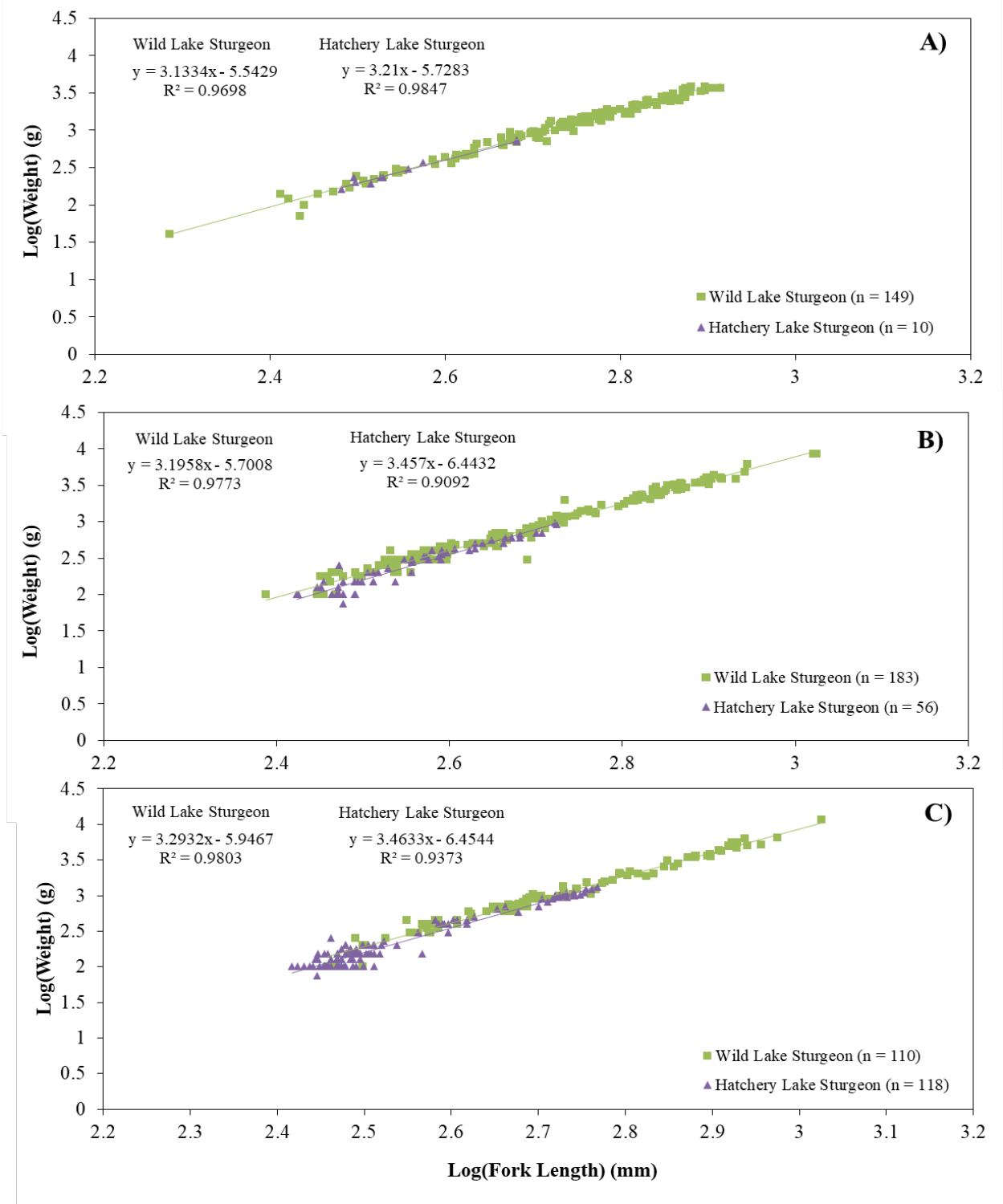


Figure 3: Comparison of weight (g) at-fork length (mm) (log transformed) for Lake Sturgeon captured in: A) the Upper Split Lake Area B) the future Keeyask reservoir and C) Stephens Lake, fall 2019.

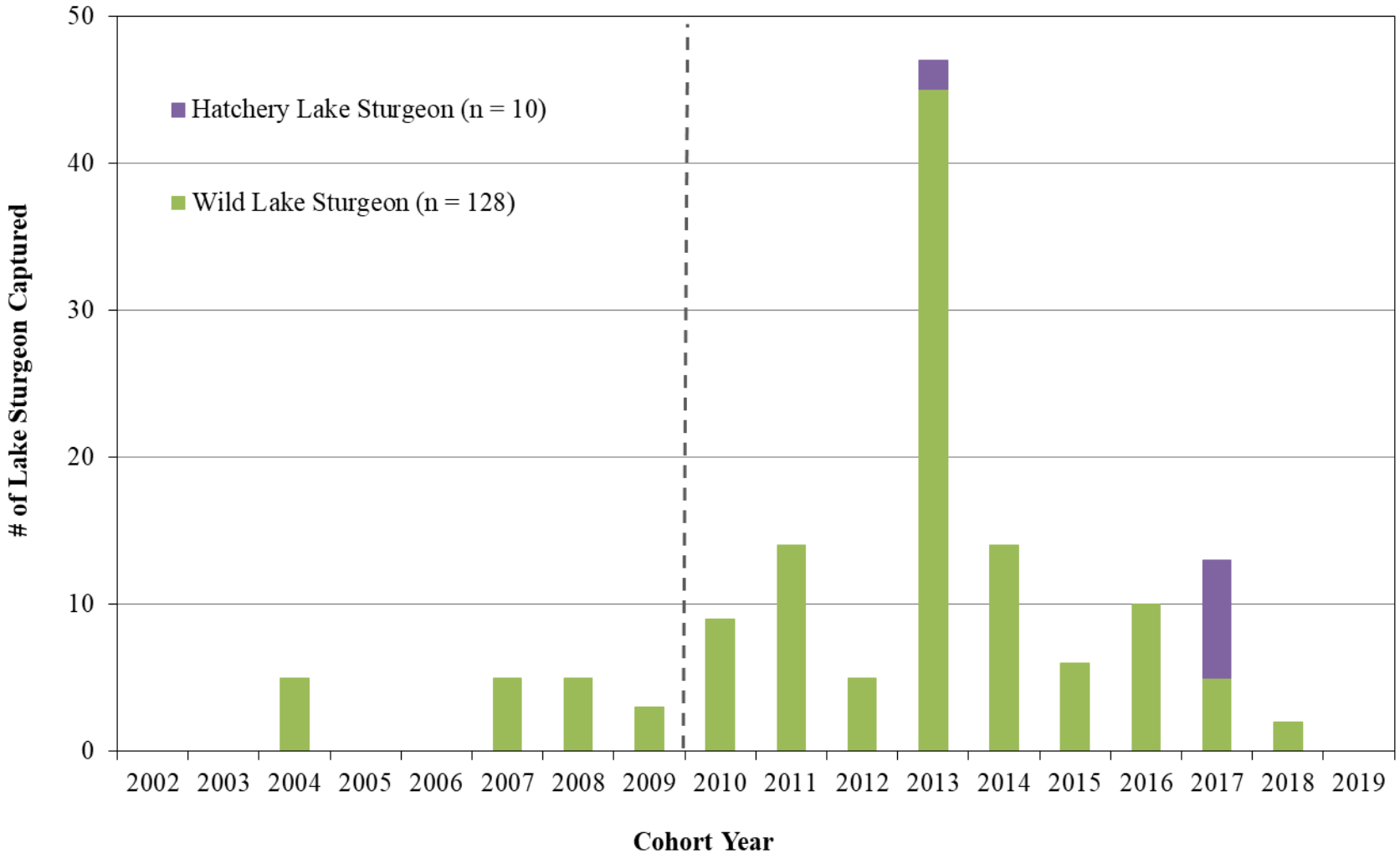


Figure 4: **Cohort frequency distributions for all aged Lake Sturgeon captured in Zone SPL-A of Split Lake, fall 2019. Cohorts prior to 2010 (i.e., age-9 fish) are not fully represented as ageing structures are not collected from fish > 800 mm fork length (indicated by vertical dashed line).**

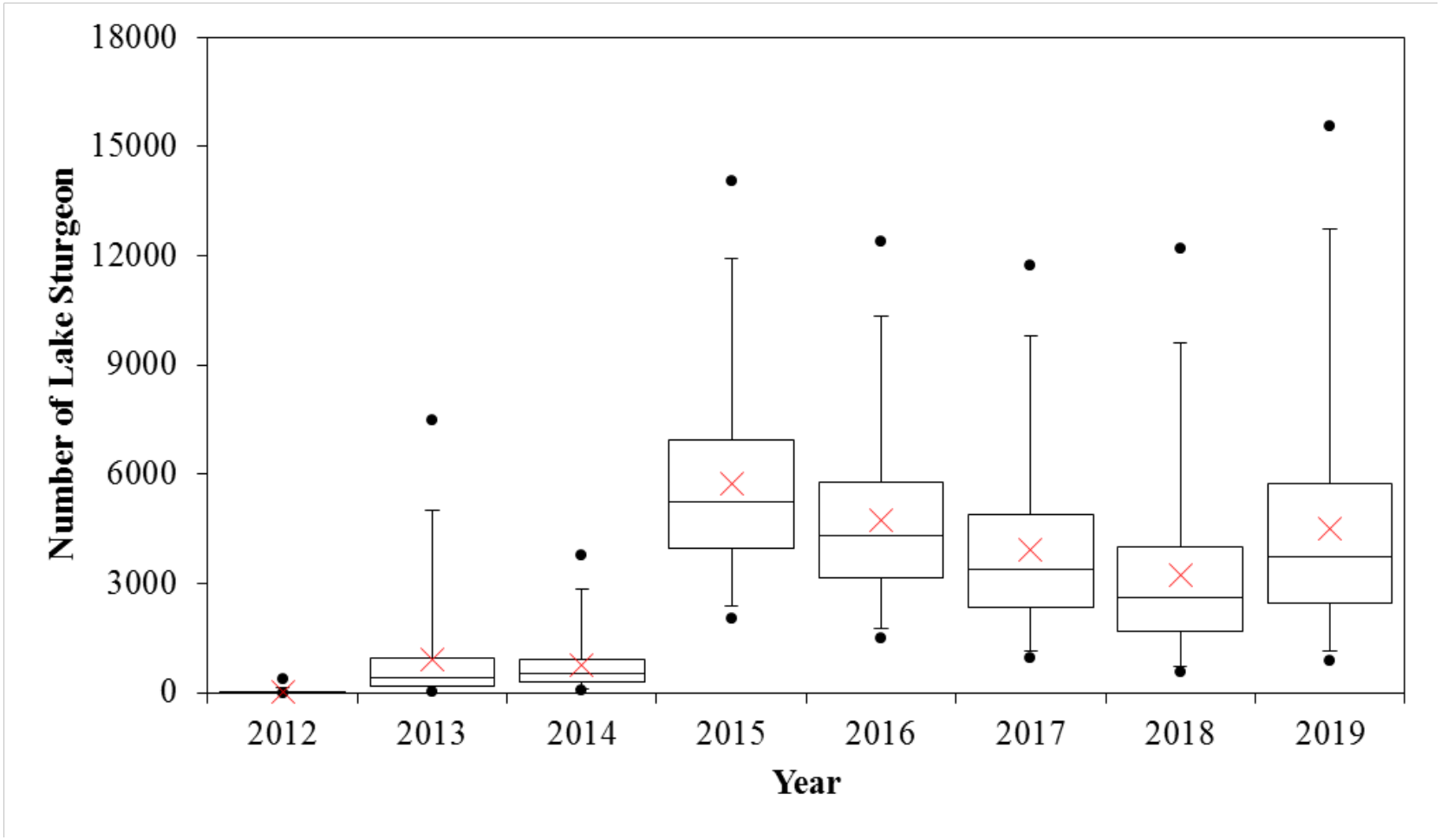


Figure 5: **Juvenile Lake Sturgeon abundance (*i.e.*, fish < 800 mm fork length) estimates based on POPAN best model for the Upper Split Lake Area (2012–2019). Each red x marks the estimated abundance for each year (*i.e.*, the number of juvenile Lake Sturgeon), the black dots represent the min and max estimates, and the vertical bar lines represent the upper and lower 95% confidence range.**

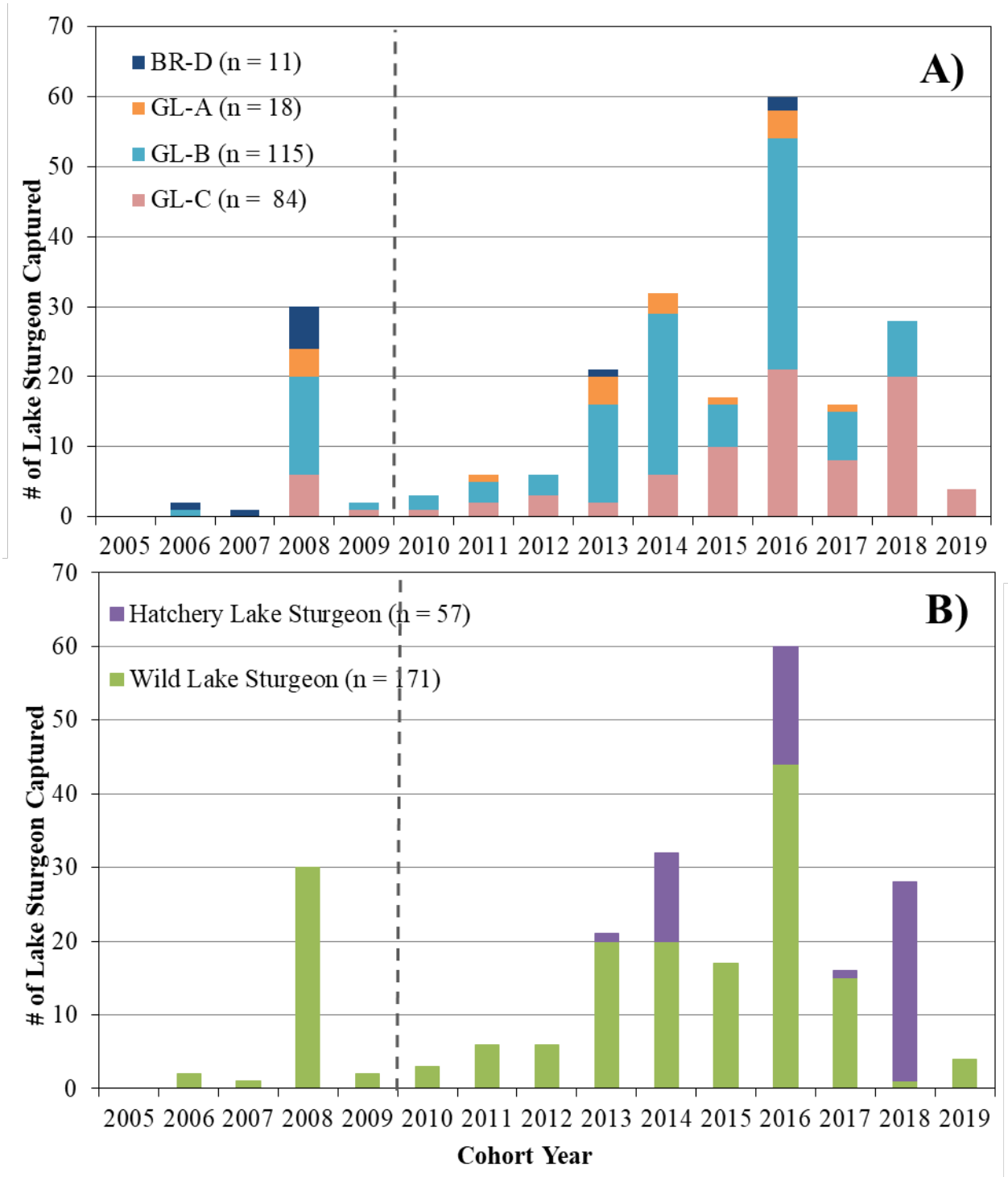


Figure 6: **Cohort frequency distributions for all aged Lake Sturgeon captured by zone in the future Keeyask reservoir (A) and by hatchery and wild Lake Sturgeon (B), fall 2019. Cohorts prior to 2010 (*i.e.*, age-9 fish) are not fully represented as ageing structures are not collected from fish > 800 mm fork length (indicated by vertical dashed line). See Map 5 for zones.**

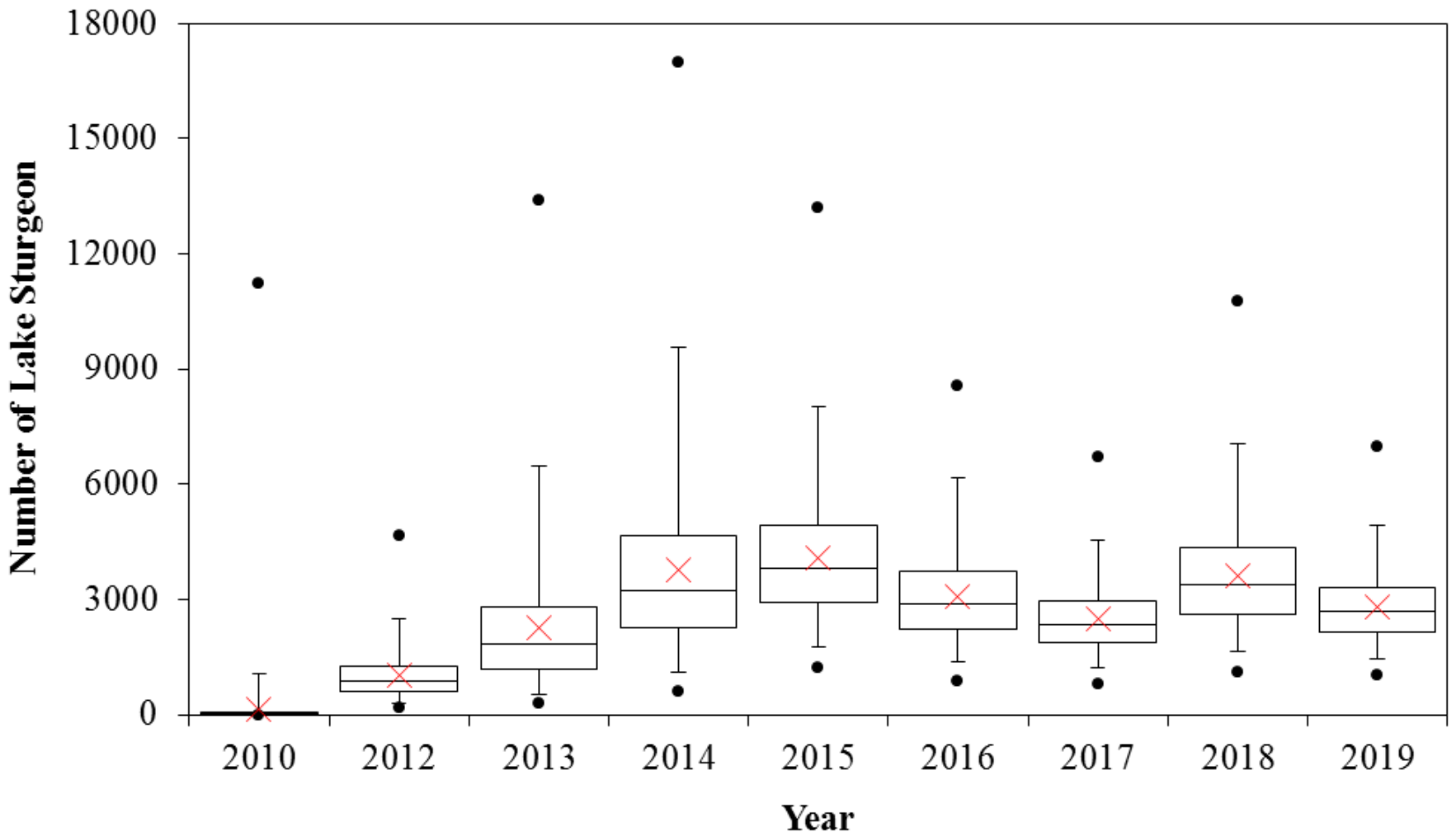


Figure 7: **Juvenile Lake Sturgeon abundance (*i.e.*, fish < 800 mm fork length) estimates based on POPAN best model for the future Keeyask reservoir (2010–2019). Each red x marks the estimated abundance for each year (*i.e.*, the number of juvenile Lake Sturgeon), the black dots represent the min and max estimates, and the vertical bar lines represent the upper and lower 95% confidence range.**

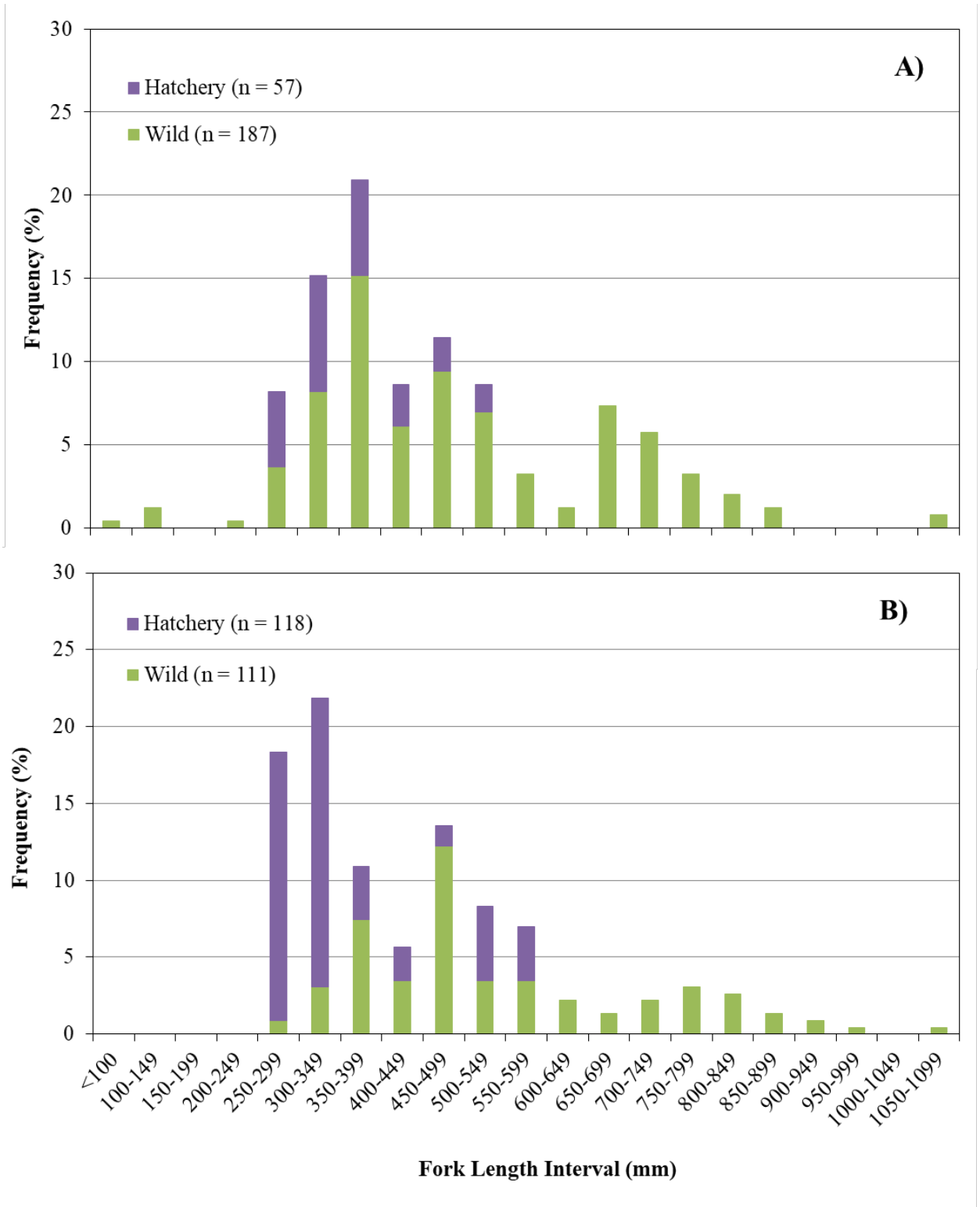


Figure 8: Fork length frequency distributions for Lake Sturgeon captured in gill nets set in: A) the future Keeyask reservoir and B) Stephens Lake, fall 2019.

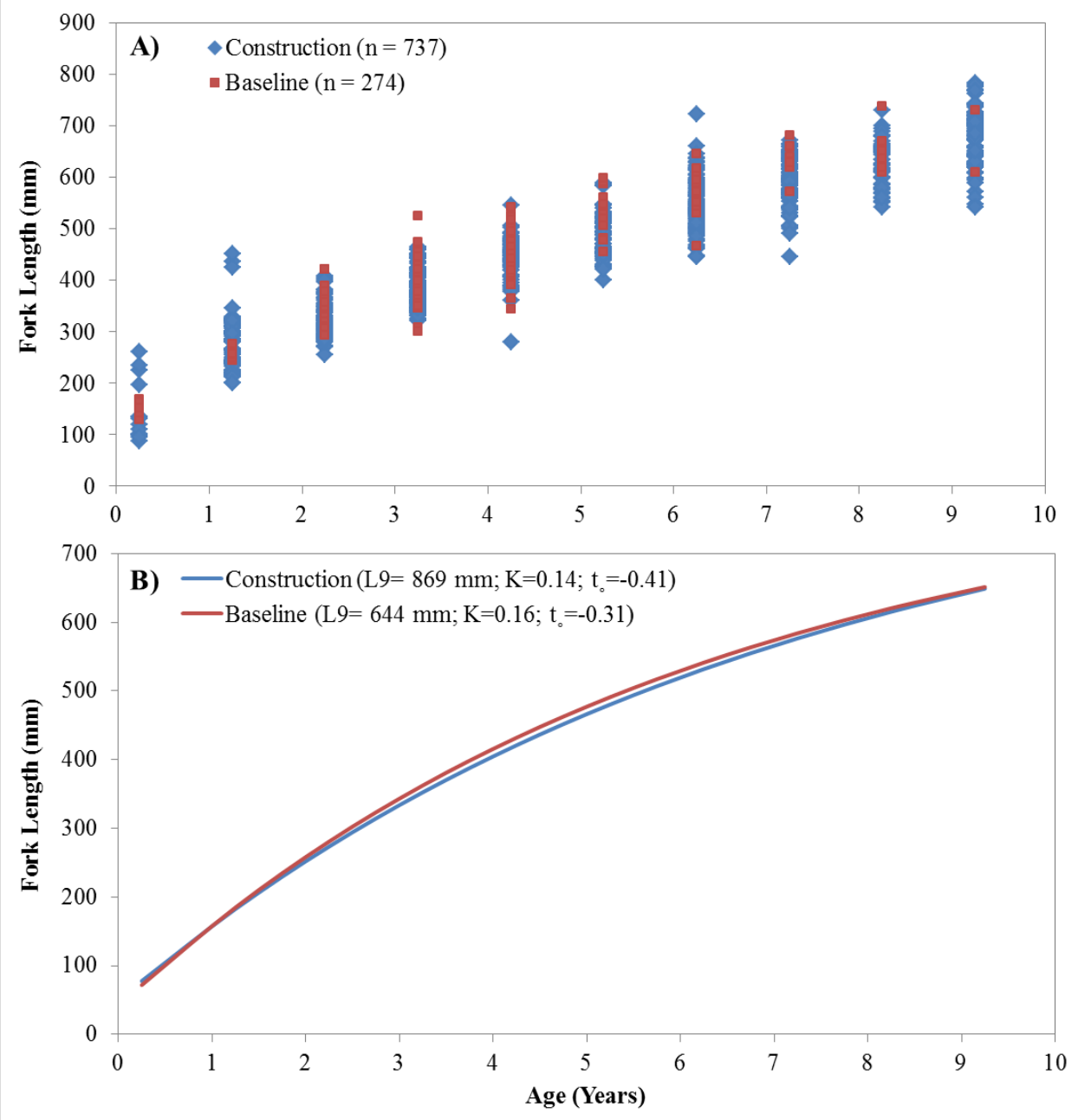


Figure 9: **Fork length-at-age (A) and von Bertalanffy growth curve analysis (B) for all Lake Sturgeon caught during baseline (red; 2008–2012) and construction (blue; 2014–2019) monitoring years in the future Keeyask reservoir. Fish older than age-9 were not included in the analysis as they are not fully represented in the catch (ageing structures are not collected from fish > 800 mm fork length, which corresponds to fish older than age-9).**

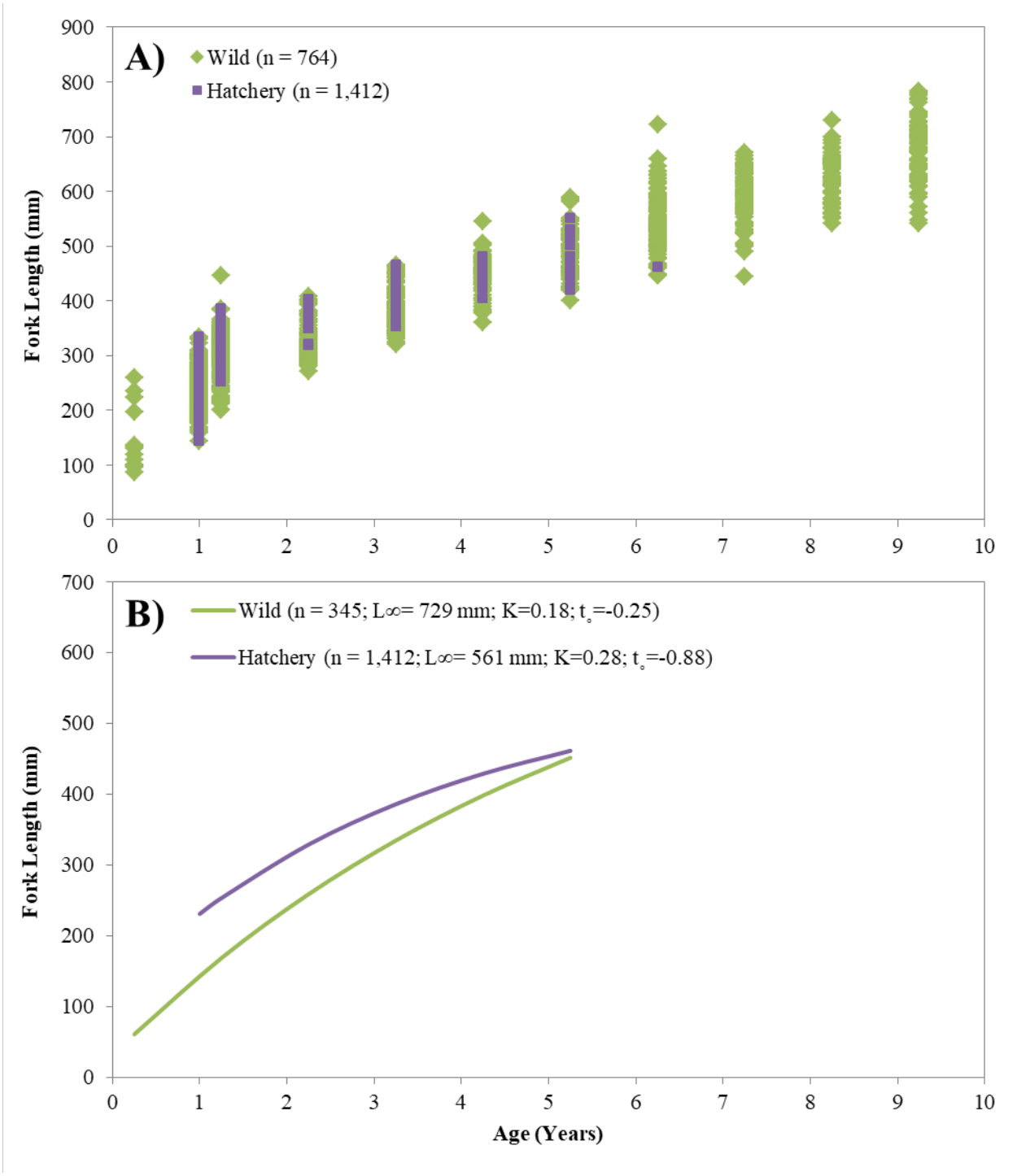


Figure 10: **Fork length-at-age (A) and von Bertalanffy growth curve analysis (B) for all wild (blue) and hatchery-reared (red) Lake Sturgeon released and/or recaptured in the future Keeyask reservoir since stocking began in 2014. The growth curve is truncated at age-5 as this is the maximum age of hatchery-reared fish.**

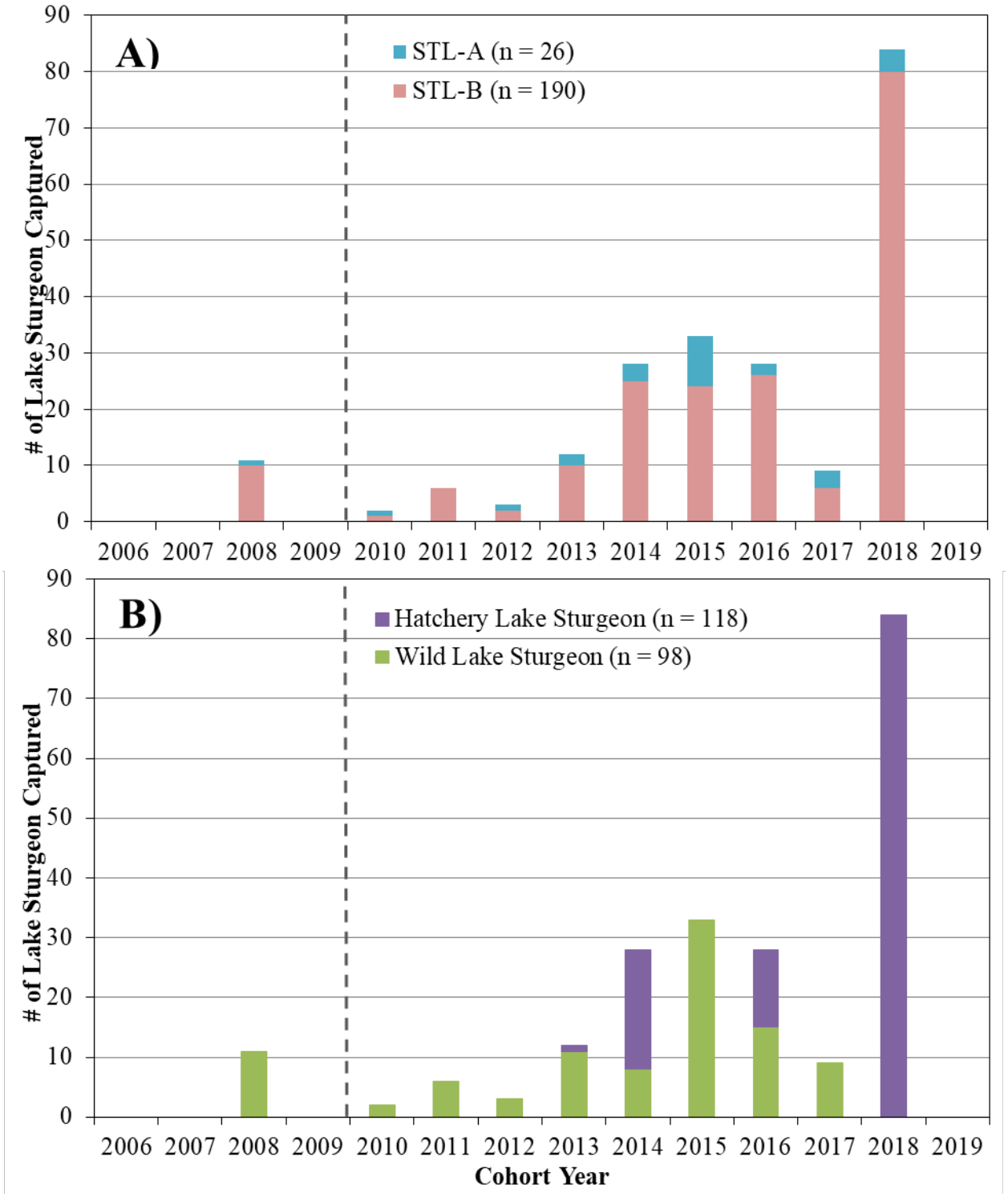


Figure 11: Cohort frequency distributions for all aged Lake Sturgeon captured in Stephens Lake by zone (A) and by hatchery and wild Lake Sturgeon (B), fall 2019. Cohorts prior to 2010 (*i.e.*, age-9 fish) are not fully represented as ageing structures are not collected from fish > 800 mm fork length (indicated by vertical dashed line). See Map 7 for zones.

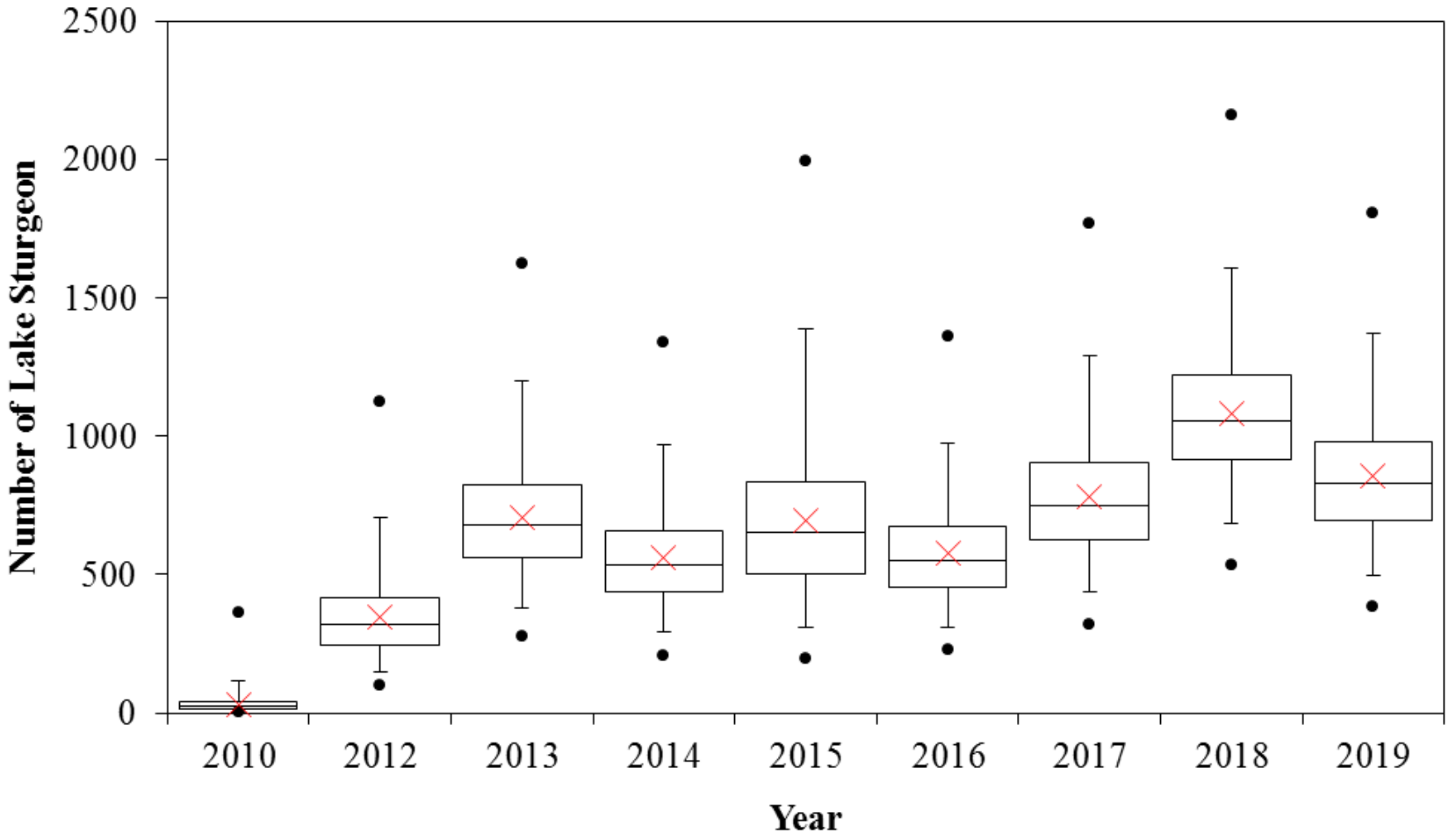


Figure 12: **Juvenile Lake Sturgeon abundance estimates based on POPAN best model for Stephens Lake (2010–2019). Results of the POPAN abundance estimate are presented in black. Each red x marks the estimated abundance for each year (*i.e.*, the number of juvenile Lake Sturgeon), the black dots represent the min and max estimates, and the vertical bar lines represent the upper and lower 95% confidence range.**

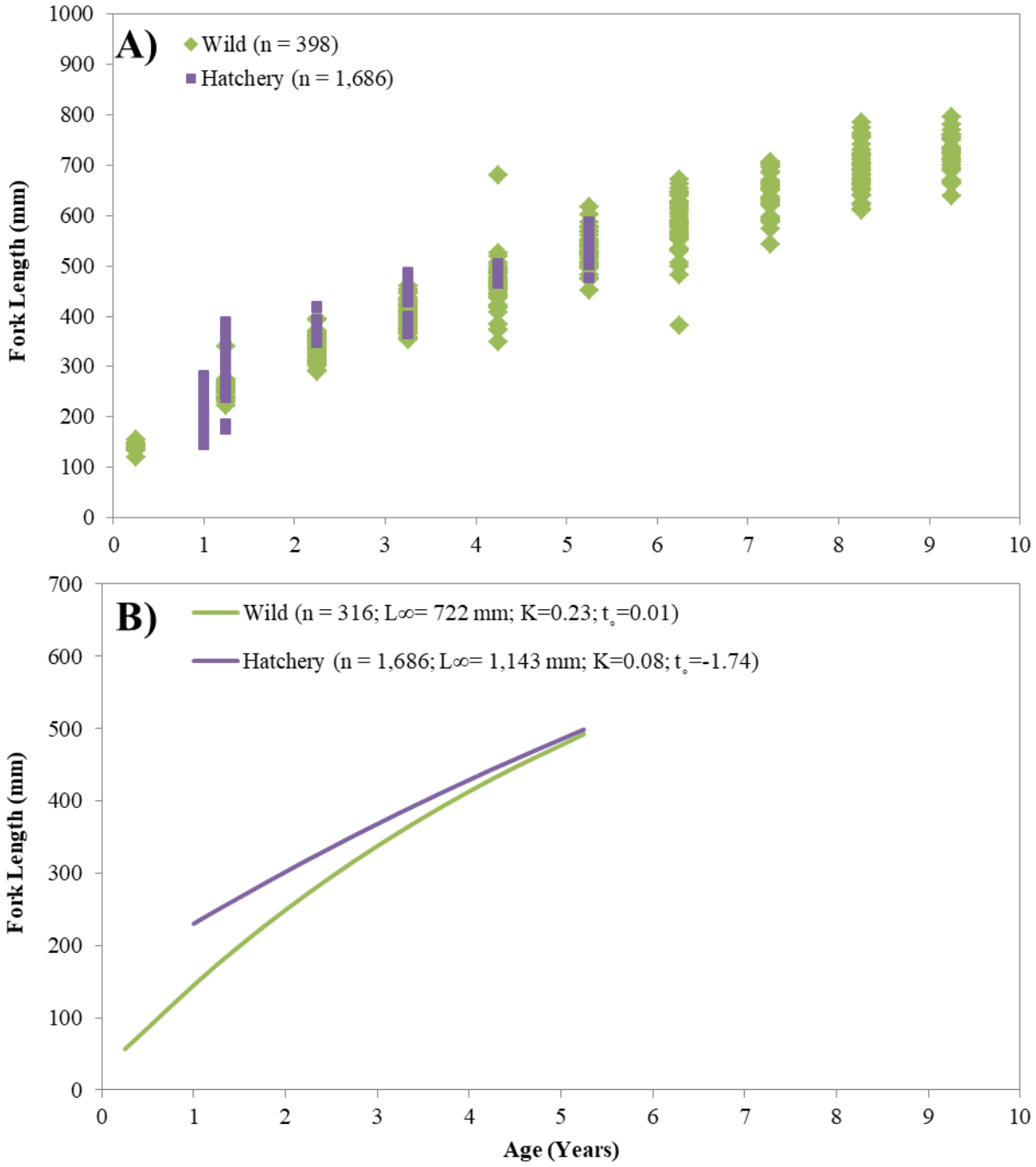
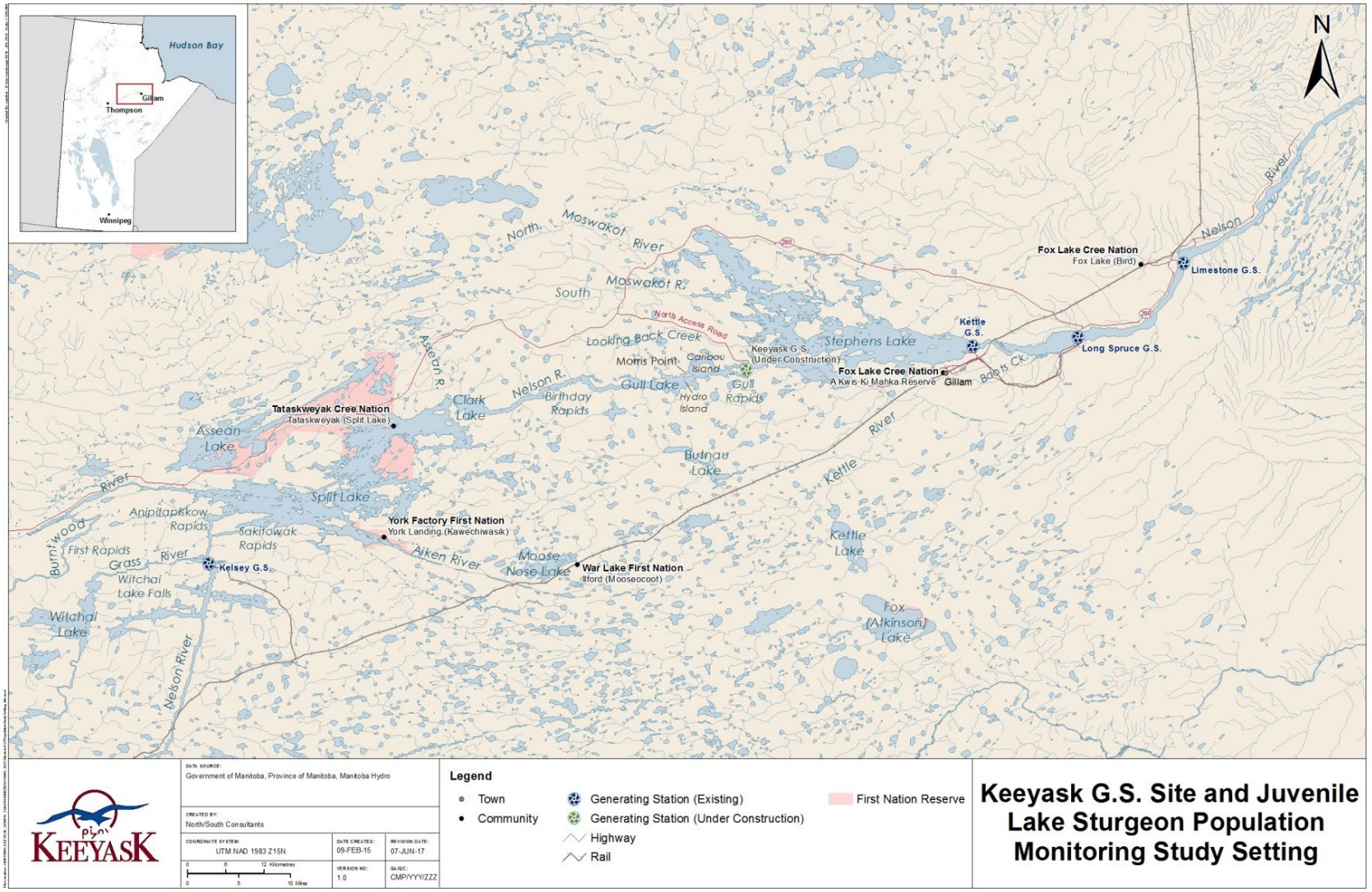
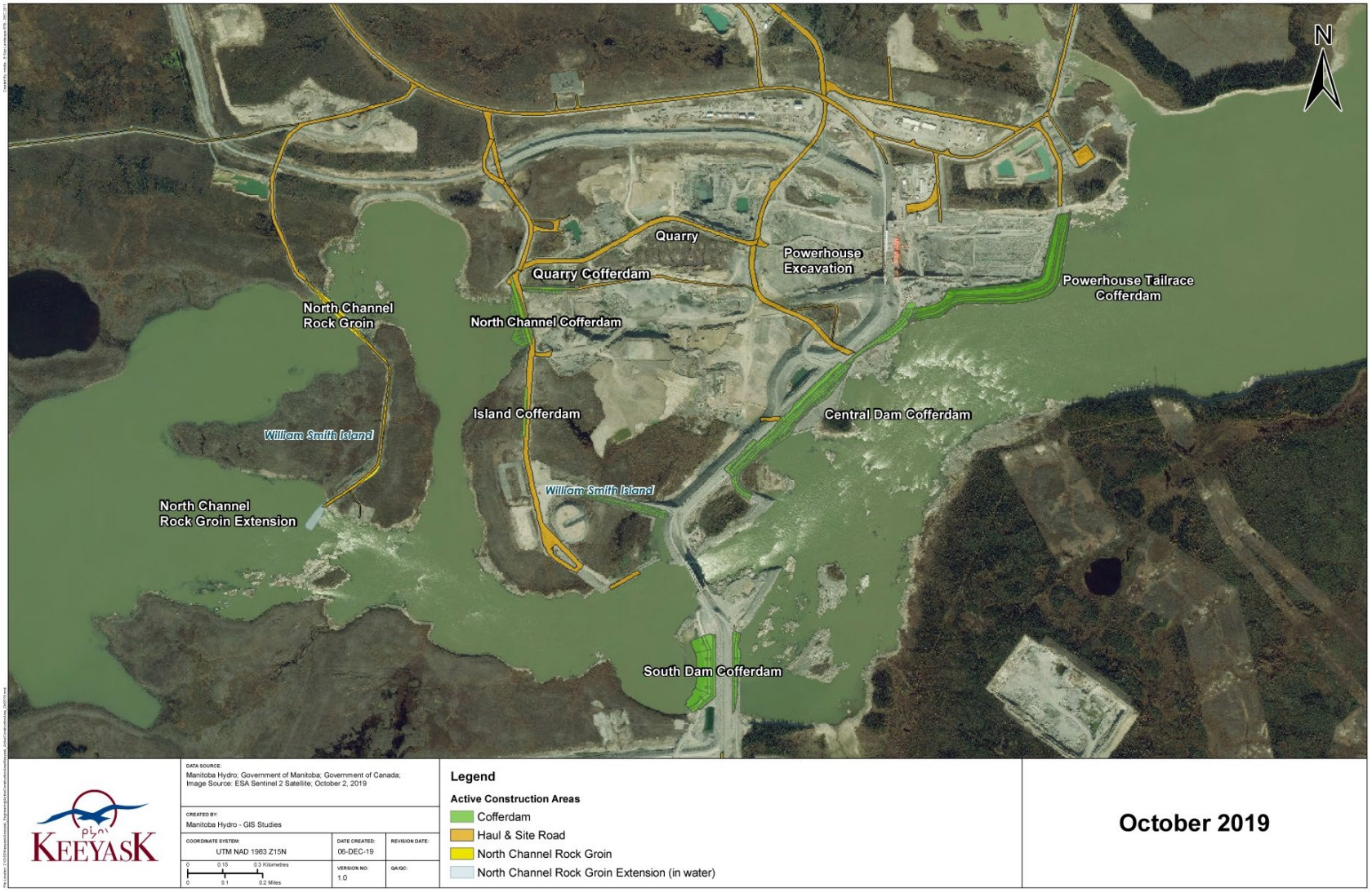


Figure 13: **Fork length-at-age (A) and von Bertalanffy growth curve analysis (B) for all wild (blue) and hatchery-reared (red) Lake Sturgeon released and/or recaptured in the Stephens Lake since stocking began in 2014. The growth curve is truncated at age-5 as this is the maximum age of hatchery-reared fish.**

MAPS

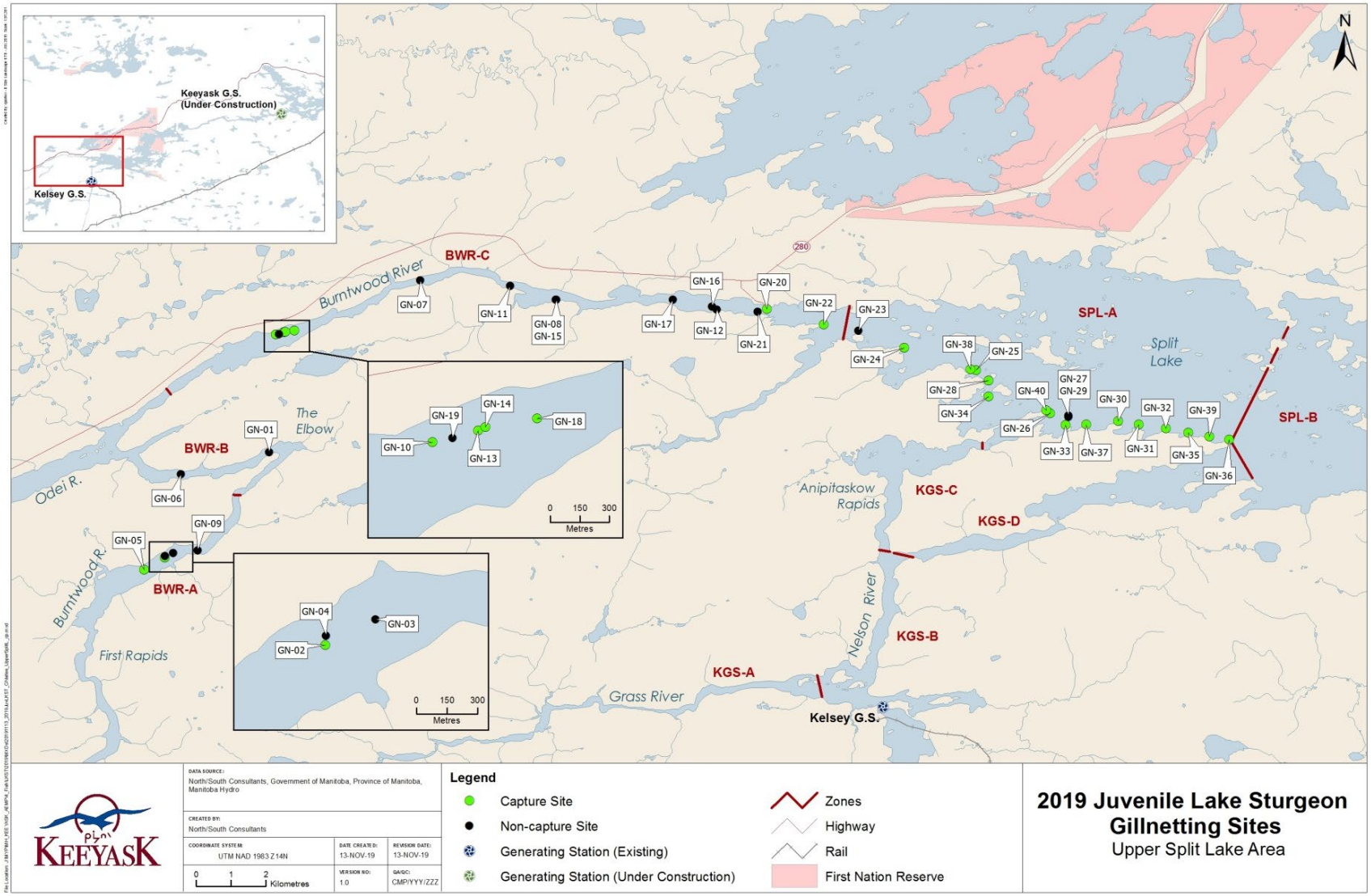


Map 1: Map of Nelson River showing the site of Keeyask Generating Station and the juvenile Lake Sturgeon population monitoring study setting.

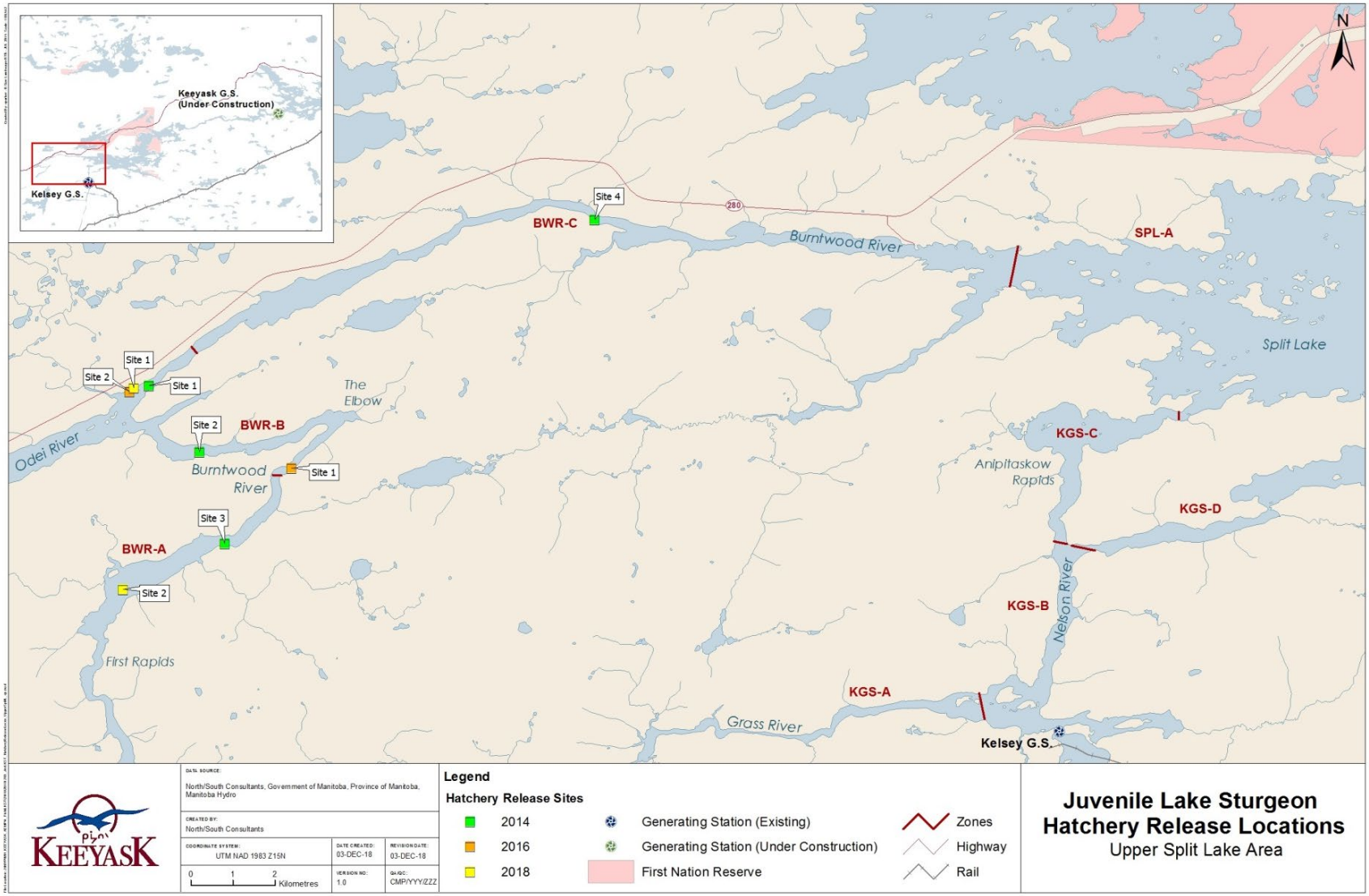


Satellite Imagery - October, 2019

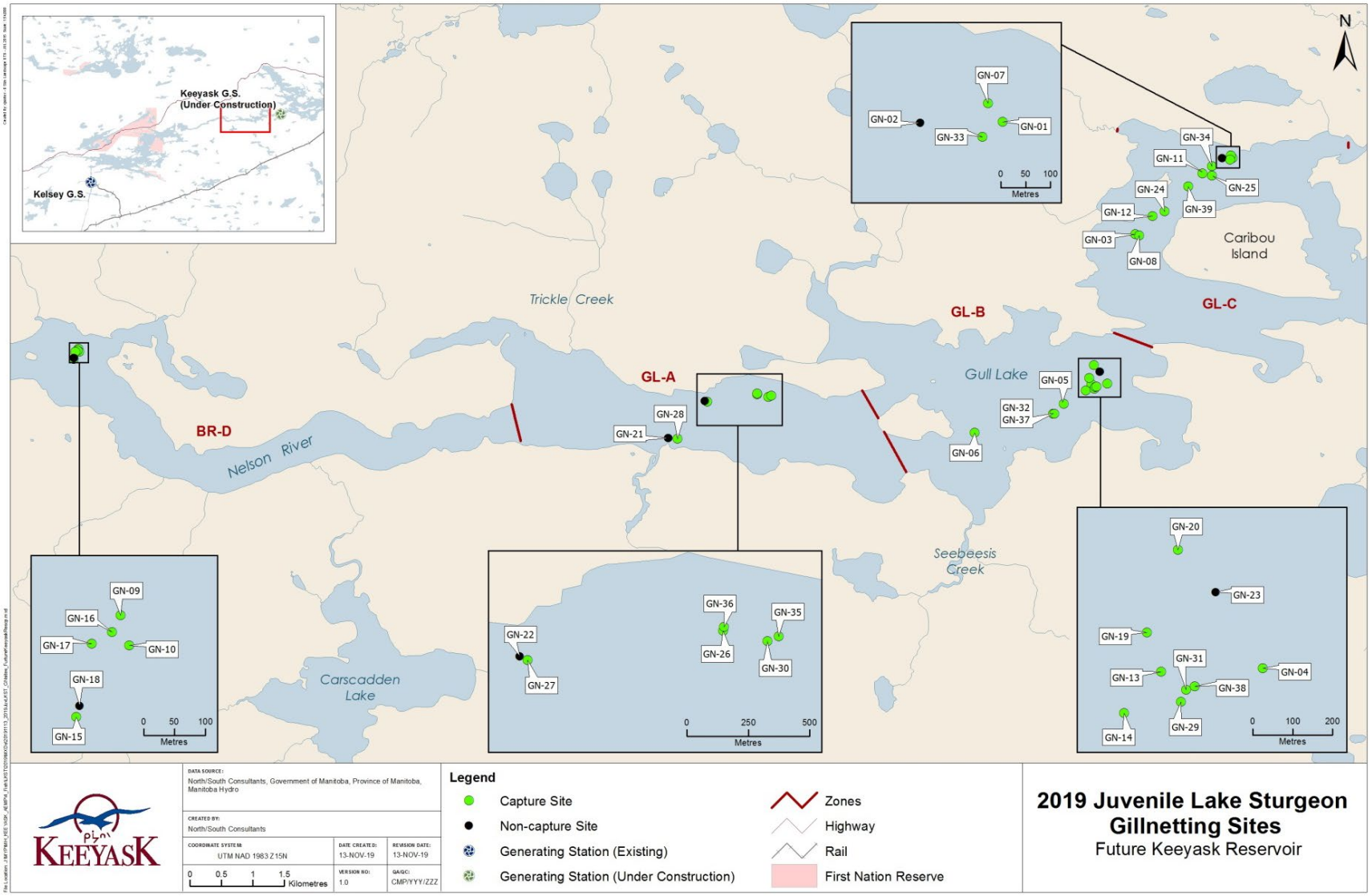
Map 2: Map of instream structures at the Keeyask Generating Station site, October 2019.



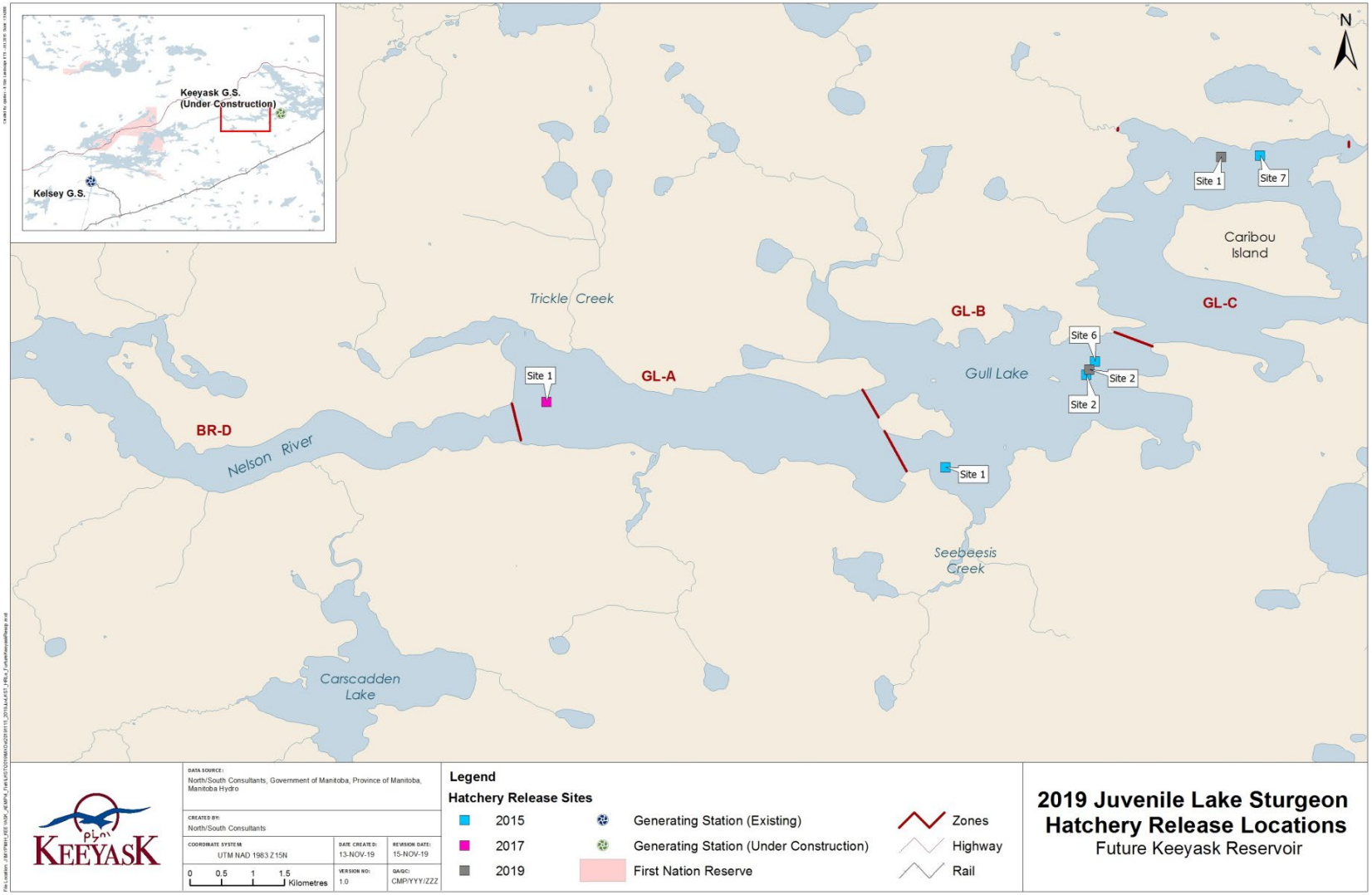
Map 3: Map of sites fished with gill nets in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019.



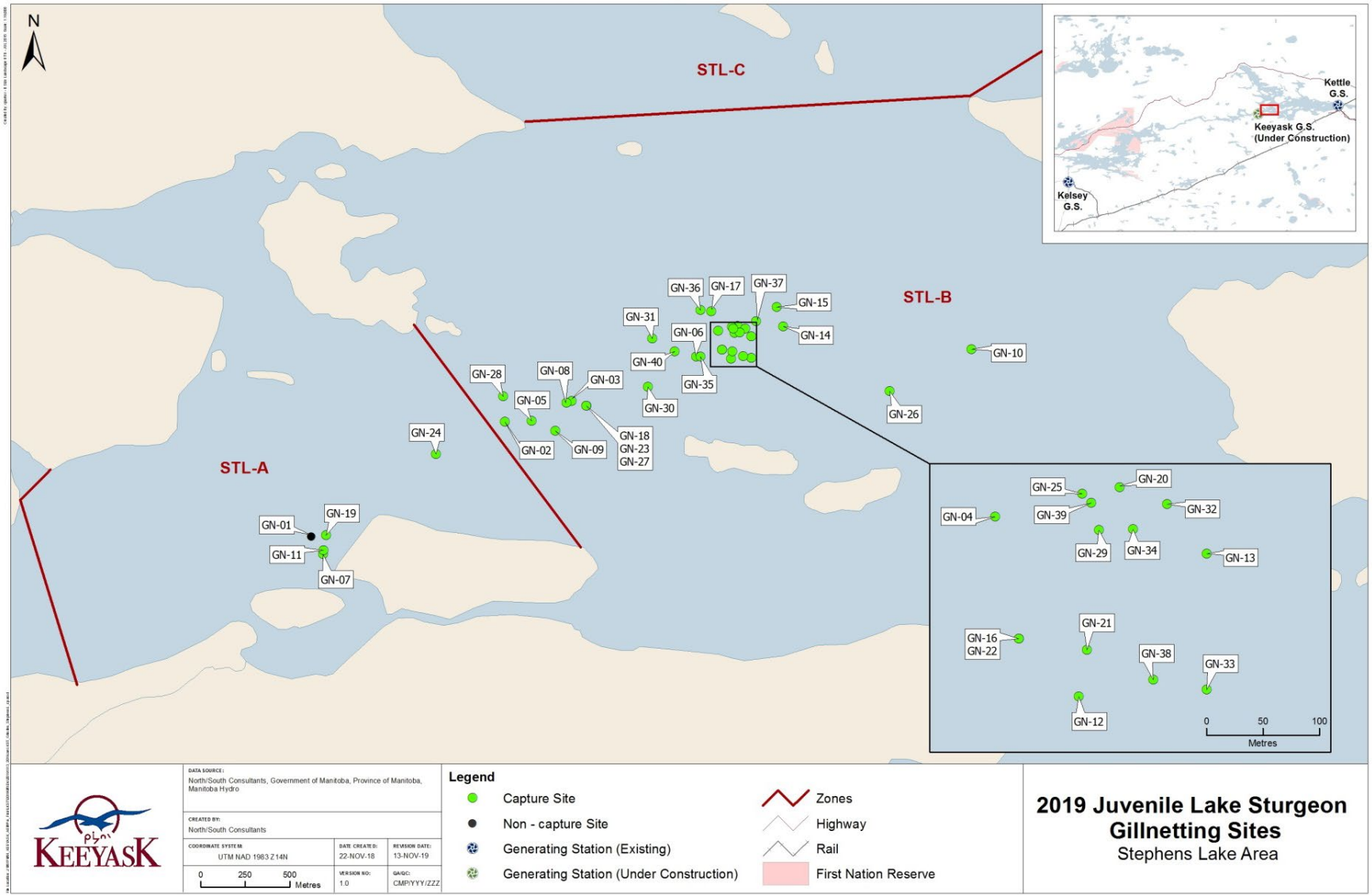
Map 4: Map of Lake Sturgeon yearling stocking sites in the Burntwood River since 2014.



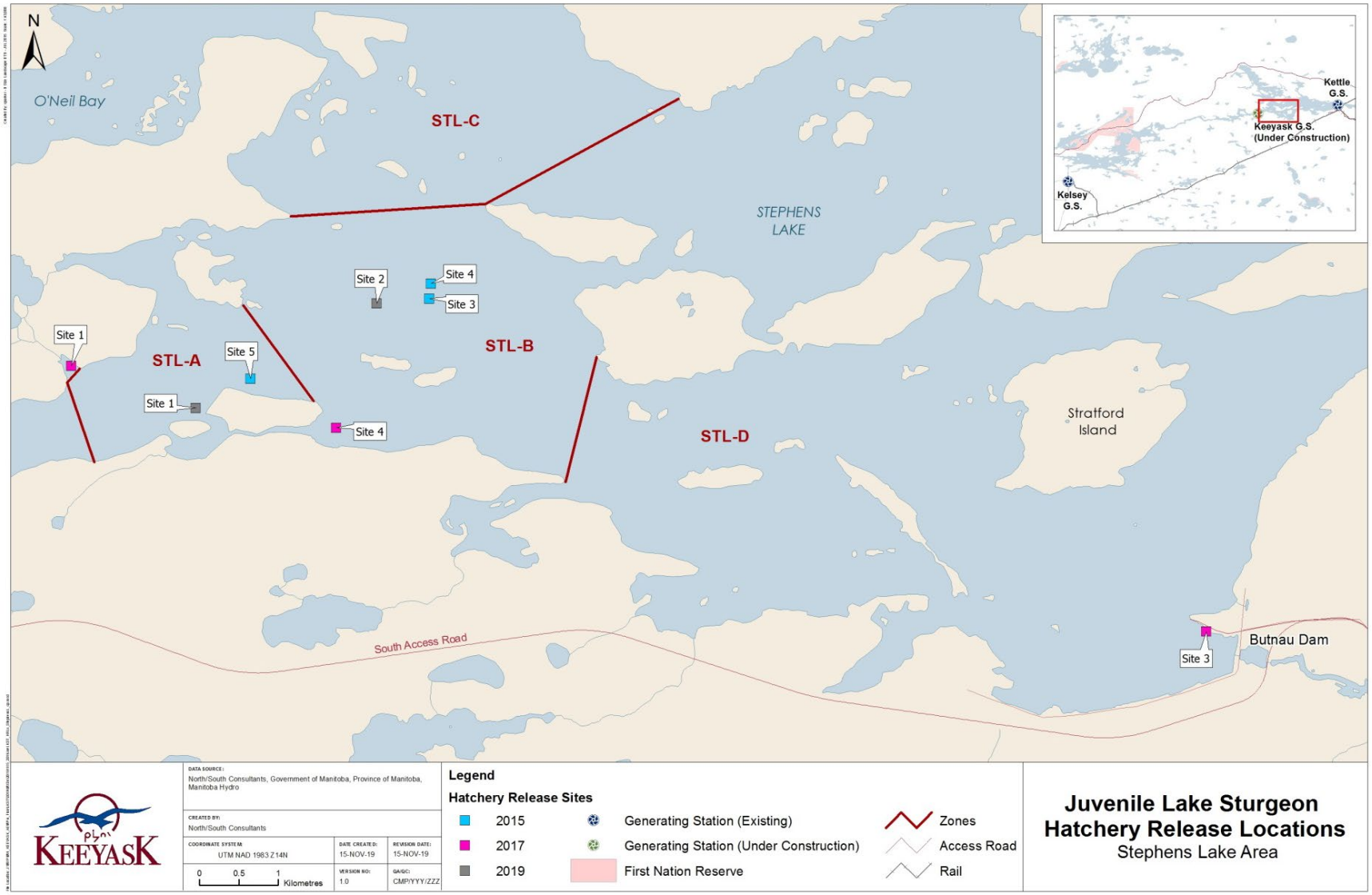
Map 5: Map of sites fished with gill nets in the future Keeyask reservoir, fall 2019.



Map 6: Map of Lake Sturgeon yearling stocking sites in the future Keeyask reservoir since 2014.



Map 7: Map of sites fished with gill nets in Stephens Lake, fall 2019.



Map 8: Map of Lake Sturgeon yearling stocking sites in Stephens Lake since 2014.

APPENDICES

APPENDIX 1:
LOCATIONS AND SITE-SPECIFIC PHYSICAL MEASUREMENTS COLLECTED AT GILLNETTING SITES, FALL 2019.

Table A1-1: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the Upper Split Lake Area, fall 2019. Sites set in each region are indicated as follows Burntwood River (BWR) and Split Lake (SPL).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-01	BWR-B	635209	6219056	6-Sep-19	14.0	7-Sep-19	13.0	20.92	9.3	7.3
GN-02	BWR-A	632481	6215785	6-Sep-19	14.0	7-Sep-19	13.0	20.92	11.3	10.3
GN-03	BWR-A	632716	6215932	6-Sep-19	14.0	7-Sep-19	13.0	21.42	13.1	14.0
GN-04	BWR-A	632482	6215830	7-Sep-19	13.0	8-Sep-19	13.0	22.83	10.8	11.3
GN-05	BWR-A	631918	6215385	7-Sep-19	13.0	8-Sep-19	13.0	21.72	10.0	10.3
GN-05	BWR-A	631918	6215385	8-Sep-19	13.0	9-Sep-19	12.0	23.55	10.0	10.3
GN-06	BWR-B	632734	6218206	7-Sep-19	13.0	8-Sep-19	13.0	22.08	12.0	11.0
GN-07	BWR-C	639106	6224345	7-Sep-19	12.0	8-Sep-19	13.0	22.32	13.0	13.0
GN-08	BWR-C	643046	6224133	7-Sep-19	12.0	8-Sep-19	13.0	22.60	11.0	9.0
GN-09	BWR-A	633405	6216068	8-Sep-19	13.0	9-Sep-19	12.0	24.25	12.4	12.7
GN-10	BWR-C	635097	6222432	8-Sep-19	13.0	9-Sep-19	12.0	24.23	13.7	11.9
GN-11	BWR-C	641683	6224418	8-Sep-19	13.0	9-Sep-19	12.0	24.03	11.6	12.0
GN-12	BWR-C	647666	6224251	8-Sep-19	13.0	9-Sep-19	12.0	24.00	10.7	11.6
GN-13	BWR-C	635324	6222511	9-Sep-19	12.0	10-Sep-19	12.0	21.45	13.8	13.0
GN-14	BWR-C	635359	6222530	9-Sep-19	12.0	10-Sep-19	12.0	20.50	11.0	10.1
GN-14	BWR-C	635283	6222463	10-Sep-19	12.0	11-Sep-19	12.0	24.72	11.0	11.0
GN-15	BWR-C	643026	6224130	9-Sep-19	12.0	10-Sep-19	12.0	21.55	11.0	9.7
GN-16	BWR-C	647520	6224321	9-Sep-19	12.0	10-Sep-19	12.0	19.85	11.0	11.0
GN-17	BWR-C	646378	6224421	9-Sep-19	12.0	10-Sep-19	12.0	20.07	12.0	12.0

Table A1-1: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the Upper Split Lake Area, fall 2019. Sites set in each region are indicated as follows Burntwood River (BWR) and Split Lake (SPL) (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-18	BWR-C	635619	6222597	10-Sep-19	12.0	11-Sep-19	12.0	23.48	13	13
GN-19	BWR-C	635199	6222461	10-Sep-19	12.0	11-Sep-19	12.0	23.08	13	12
GN-20	BWR-C	649083	6224381	10-Sep-19	12.0	11-Sep-19	12.0	21.20	11	11
GN-21	BWR-C	648836	6224285	10-Sep-19	12.0	11-Sep-19	12.0	21.33	11	11
GN-22	BWR-C	650748	6224084	11-Sep-19	13.0	12-Sep-19	13.0	20.40	8.5	9.3
GN-22	BWR-C	650748	6224084	12-Sep-19	13.0	13-Sep-19	13.0	28.67	8.5	9.3
GN-23	SPL-A	651768	6223996	11-Sep-19	13.0	12-Sep-19	13.0	20.67	8	8
GN-24	SPL-A	653114	6223621	11-Sep-19	13.0	12-Sep-19	13.0	20.78	4.8	3.8
GN-25	SPL-A	655231	6223167	11-Sep-19	13.0	12-Sep-19	13.0	20.93	4.8	3.7
GN-26	SPL-A	657457	6222116	11-Sep-19	13.0	12-Sep-19	13.0	21.38	11	10
GN-27	SPL-A	657988	6222062	11-Sep-19	13.0	12-Sep-19	13.0	21.82	7.1	11
GN-28	SPL-A	655605	6222898	12-Sep-19	13.0	13-Sep-19	13.0	26.45	7.4	6.5
GN-28	SPL-A	655605	6222898	13-Sep-19	13.0	14-Sep-19	13.0	22.50	7.4	6.5
GN-28	SPL-A	655605	6222898	14-Sep-19	12.0	15-Sep-19	12.0	24.50	7.4	6.5
GN-28	SPL-A	655605	6222898	15-Sep-19	12.0	16-Sep-19	12.0	22.98	7.4	6.5
GN-29	SPL-A	657988	6222103	12-Sep-19	13.0	13-Sep-19	13.0	25.00	7	15
GN-30	SPL-A	659418	6222066	12-Sep-19	13.0	13-Sep-19	13.0	22.05	13	7.1
GN-30	SPL-A	659418	6222066	13-Sep-19	13.0	14-Sep-19	12.0	22.85	13	7.1
GN-30	SPL-A	659418	6222066	14-Sep-19	12.0	15-Sep-19	12.0	24.97	13	7.1
GN-30	SPL-A	659418	6222066	15-Sep-19	12.0	16-Sep-19	12.0	23.35	13	7.1
GN-31	SPL-A	660020	6222020	12-Sep-19	13.0	13-Sep-19	12.0	18.67	10	6.9

Table A1-1: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the Upper Split Lake Area, fall 2019. Sites set in each region are indicated as follows Burntwood River (BWR) and Split Lake (SPL) (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-31	SPL-A	660020	6222020	13-Sep-19	12.0	14-Sep-19	12.0	23.98	10.0	6.9
GN-32	SPL-A	660806	6221975	12-Sep-19	13.0	13-Sep-19	13.0	17.92	9.9	10.0
GN-32	SPL-A	660806	6221975	13-Sep-19	12.0	14-Sep-19	12.0	23.78	9.9	10.0
GN-33	SPL-A	657918	6221825	13-Sep-19	13.0	14-Sep-19	12.0	21.03	10.9	9.8
GN-34	SPL-A	655648	6222441	13-Sep-19	13.0	14-Sep-19	12.0	19.33	4.6	5.2
GN-35	SPL-A	661455	6221902	14-Sep-19	12.0	15-Sep-19	12.0	24.58	9.8	7.3
GN-36	SPL-A	662645	6221813	14-Sep-19	12.0	15-Sep-19	12.0	22.60	11.6	7.6
GN-36	SPL-A	662645	6221813	15-Sep-19	12.0	16-Sep-19	12.0	24.15	11.6	7.6
GN-37	SPL-A	658519	6221880	14-Sep-19	12.0	15-Sep-19	12.0	24.60	11.2	9.7
GN-38	SPL-A	655058	6223172	14-Sep-19	12.0	15-Sep-19	12.0	23.53	5.2	4.8
GN-38	SPL-A	655058	6223172	15-Sep-19	12.0	16-Sep-19	12.0	22.68	5.2	4.8
GN-39	SPL-A	662062	6221848	15-Sep-19	12.0	16-Sep-19	12.0	23.05	7.3	7.9
GN-40	SPL-A	657328	6222186	15-Sep-19	12.0	16-Sep-19	12.0	22.18	6.3	12.1

Table A1-2: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the future Keeyask reservoir, fall 2019.

Site	Zone	UTM Location		Set Date	Set Water Temp (oC)	Pull Date	Pull Water Temp (0C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-01	GL-C	356699	6248196	10-Sep-19	13.0	11-Sep-19	12.9	18.92	14.0	12.6
GN-01	GL-C	356699	6248196	11-Sep-19	12.9	12-Sep-19	13.0	21.88	14.0	12.6
GN-01	GL-C	356699	6248196	12-Sep-19	13.0	13-Sep-19	12.9	25.95	14.0	12.6
GN-02	GL-C	356532	6248194	10-Sep-19	13.0	11-Sep-19	12.9	21.33	12.5	14.0
GN-03	GL-C	355148	6246983	10-Sep-19	13.0	11-Sep-19	12.9	21.25	9.0	8.9
GN-04	GL-B	354705	6244601	10-Sep-19	13.0	11-Sep-19	12.9	19.55	10.5	8.3
GN-04	GL-B	354705	6244601	11-Sep-19	12.9	12-Sep-19	13.0	18.28	10.5	8.3
GN-04	GL-B	354705	6244601	12-Sep-19	13.0	13-Sep-19	12.9	26.60	10.5	8.3
GN-05	GL-B	354009	6244280	10-Sep-19	13.0	11-Sep-19	12.9	19.88	11.9	13.0
GN-05	GL-B	354009	6244280	11-Sep-19	12.9	12-Sep-19	13.0	22.97	11.9	13.0
GN-06	GL-B	352592	6243819	10-Sep-19	13.0	11-Sep-19	12.9	20.23	10.2	12.2
GN-06	GL-B	352592	6243819	11-Sep-19	12.9	12-Sep-19	13.0	23.37	10.2	12.2
GN-07	GL-C	356669	6248234	11-Sep-19	12.9	12-Sep-19	13.0	21.45	-	-
GN-07	GL-C	356669	6248234	12-Sep-19	13.0	13-Sep-19	12.9	26.63	-	-
GN-08	GL-C	355209	6246960	11-Sep-19	12.9	12-Sep-19	13.0	20.95	-	-
GN-08	GL-C	355209	6246960	12-Sep-19	13.0	13-Sep-19	12.9	26.47	-	-
GN-09	BR-D	338316	6245157	12-Sep-19	13.0	13-Sep-19	12.9	24.88	9.7	10.3
GN-10	BR-D	338330	6245108	12-Sep-19	13.0	13-Sep-19	12.9	25.30	9.0	9.2
GN-11	GL-C	356215	6247945	13-Sep-19	12.9	14-Sep-19	13.1	24.75	8.4	8.0
GN-11	GL-C	356215	6247945	14-Sep-19	13.1	15-Sep-19	13.4	24.58	8.4	8.0

Table A1-2: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the future Keeyask reservoir, fall 2019 (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (oC)	Pull Date	Pull Water Temp (0C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-11	GL-C	356215	6247945	15-Sep-19	13.4	16-Sep-19	14.0	21.13	8.4	8.0
GN-12	GL-C	355423	6247266	13-Sep-19	12.9	14-Sep-19	13.1	22.73	9.4	7.0
GN-13	GL-B	354450	6244592	13-Sep-19	12.9	14-Sep-19	13.1	22.32	12.1	12.2
GN-14	GL-B	354357	6244488	13-Sep-19	12.9	14-Sep-19	13.1	21.40	11.3	10.4
GN-15	BR-D	338244	6244992	13-Sep-19	12.9	14-Sep-19	13.1	19.63	5.2	6.7
GN-16	BR-D	338302	6245130	13-Sep-19	12.9	14-Sep-19	13.1	18.65	7.5	10.6
GN-17	BR-D	338269	6245111	14-Sep-19	13.1	15-Sep-19	13.4	23.88	5.1	8.0
GN-18	BR-D	338250	6245010	14-Sep-19	13.1	15-Sep-19	13.4	24.08	4.7	9.4
GN-19	GL-B	354414	6244690	14-Sep-19	13.1	15-Sep-19	13.4	24.30	12.0	12.2
GN-20	GL-B	354492	6244897	14-Sep-19	13.1	15-Sep-19	13.4	22.47	7.4	12.3
GN-20	GL-B	354492	6244897	15-Sep-19	13.4	16-Sep-19	13.5	25.80	7.4	12.3
GN-20	GL-B	354492	6244897	16-Sep-19	14.0	17-Sep-19	13.9	21.78	7.4	12.3
GN-21	GL-A	347716	6243737	15-Sep-19	13.4	16-Sep-19	13.5	25.02	11.2	12.0
GN-22	GL-A	348295	6244327	15-Sep-19	13.4	16-Sep-19	13.5	24.35	7.5	11.5
GN-23	GL-B	354587	6244792	15-Sep-19	13.4	16-Sep-19	13.5	24.67	13.0	11.3
GN-24	GL-C	355616	6247344	15-Sep-19	13.4	16-Sep-19	13.5	21.92	6.7	7.3
GN-25	GL-C	356368	6247913	16-Sep-19	13.5	17-Sep-19	13.9	26.17	4.6	6.3
GN-26	GL-A	349124	6244430	16-Sep-19	13.5	17-Sep-19	13.9	22.32	10.2	12.6
GN-27	GL-A	348328	6244311	16-Sep-19	13.5	17-Sep-19	13.9	22.30	8.8	15.9
GN-28	GL-A	347860	6243725	16-Sep-19	13.5	17-Sep-19	13.9	20.98	12.2	11.7

Table A1-2: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in the future Keeyask reservoir, fall 2019 (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-28	GL-A	347860	6243725	17-Sep-19	13.9	18-Sep-19	14.5	24.33	12.2	11.7
GN-28	GL-A	347860	6243725	18-Sep-19	14.0	19-Sep-19	14.3	24.58	12.2	11.7
GN-29	GL-B	354499	6244516	16-Sep-19	13.5	17-Sep-19	13.9	21.42	10.3	11.8
GN-30	GL-A	349305	6244389	17-Sep-19	13.9	18-Sep-19	14.5	22.75	12.6	13.0
GN-30	GL-A	349305	6244389	18-Sep-19	14.5	19-Sep-19	14.3	24.42	12.6	13.0
GN-31	GL-B	354512	6244547	17-Sep-19	13.9	18-Sep-19	14.5	23.17	9.8	12.8
GN-31	GL-B	354512	6244547	18-Sep-19	14.5	19-Sep-19	14.3	24.63	9.8	12.8
GN-32	GL-B	353840	6244121	17-Sep-19	13.9	18-Sep-19	14.5	22.90	10.4	9.1
GN-32	GL-B	353840	6244121	18-Sep-19	14.5	19-Sep-19	14.3	24.53	10.4	9.1
GN-33	GL-C	356658	6248166	17-Sep-19	13.9	18-Sep-19	14.5	25.08	10.7	9.8
GN-33	GL-C	356658	6248166	18-Sep-19	14.5	19-Sep-19	14.3	23.25	10.7	9.8
GN-34	GL-C	356370	6248064	17-Sep-19	13.9	18-Sep-19	14.5	23.00	8.6	8.6
GN-34	GL-C	356370	6248064	18-Sep-19	14.5	19-Sep-19	14.3	24.45	8.6	8.6
GN-34	GL-C	356370	6248064	19-Sep-19	14.3	20-Sep-19	14.3	25.28	8.6	8.6
GN-35	GL-A	349351	6244407	19-Sep-19	14.3	20-Sep-19	14.3	25.03	12.3	11.0
GN-36	GL-A	349129	6244446	19-Sep-19	14.3	20-Sep-19	14.3	23.92	9.3	12.7
GN-37	GL-B	353860	6244123	19-Sep-19	14.3	20-Sep-19	14.3	23.98	10.1	18.6
GN-38	GL-B	354534	6244555	19-Sep-19	14.3	20-Sep-19	14.3	24.13	11.9	11.3
GN-39	GL-C	355993	6247744	19-Sep-19	14.3	20-Sep-19	14.3	23.42	8.4	7.5

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2019.

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-01	STL-A	366581	6247390	11-Sep-19	12.9	12-Sep-19	13.0	18.95	16.0	15.7
GN-02	STL-A	367664	6248032	11-Sep-19	12.9	12-Sep-19	13.0	19.25	14.8	15.1
GN-02	STL-A	367664	6248032	12-Sep-19	13.0	13-Sep-19	12.9	25.25	14.8	15.1
GN-03	STL-B	368038	6248148	11-Sep-19	12.9	12-Sep-19	13.0	19.33	14.7	14.8
GN-04	STL-B	368859	6248542	11-Sep-19	12.9	12-Sep-19	13.0	19.92	17.4	17.1
GN-04	STL-B	368859	6248542	12-Sep-19	13.0	13-Sep-19	12.9	27.00	17.4	17.1
GN-04	STL-B	368859	6248542	13-Sep-19	12.9	14-Sep-19	13.1	22.67	17.4	17.1
GN-04	STL-B	368859	6248542	14-Sep-19	13.1	15-Sep-19	13.4	20.17	17.4	17.1
GN-05	STL-A	367815	6248036	12-Sep-19	13.0	13-Sep-19	12.9	26.50	12.0	15.0
GN-05	STL-A	367815	6248036	13-Sep-19	12.9	14-Sep-19	13.1	22.87	12.0	15.0
GN-05	STL-A	367815	6248036	14-Sep-19	13.1	15-Sep-19	13.4	24.25	12.0	15.0
GN-06	STL-B	368737	6248396	12-Sep-19	13.0	13-Sep-19	12.9	28.05	9.0	16.0
GN-06	STL-B	368737	6248396	13-Sep-19	12.9	14-Sep-19	13.1	22.67	9.0	16.0
GN-06	STL-B	368737	6248396	14-Sep-19	13.1	15-Sep-19	13.4	21.33	9.0	16.0
GN-07	STL-A	366645	6247291	12-Sep-19	13.0	13-Sep-19	12.9	24.53	17.0	18.0
GN-07	STL-A	366645	6247291	13-Sep-19	12.9	14-Sep-19	13.1	23.25	17.0	18.0
GN-08	STL-B	368009	6248138	12-Sep-19	13.0	13-Sep-19	12.9	26.42	14.0	15.0
GN-09	STL-B	367947	6247980	13-Sep-19	12.9	14-Sep-19	13.1	22.50	14.2	14.5
GN-10	STL-B	370279	6248436	13-Sep-19	12.9	14-Sep-19	13.1	24.30	15.7	16.2
GN-11	STL-A	366649	6247312	14-Sep-19	13.1	15-Sep-19	13.4	25.88	18.0	14.7

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2019 (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-12	STL-B	368933	6248383	14-Sep-19	13.1	15-Sep-19	13.4	24.17	12.8	13.0
GN-13	STL-B	369046	6248509	14-Sep-19	13.1	15-Sep-19	13.4	18.17	15.7	16.2
GN-14	STL-B	369224	6248565	15-Sep-19	13.4	16-Sep-19	13.5	26.50	16.6	16.6
GN-14	STL-B	369224	6248565	16-Sep-19	13.5	17-Sep-19	12	22.78	16.6	16.6
GN-15	STL-B	369187	6248674	15-Sep-19	13.4	16-Sep-19	13.5	24.95	16.6	14.8
GN-16	STL-B	368880	6248434	15-Sep-19	13.4	16-Sep-19	13.5	25.15	15.8	12.5
GN-17	STL-B	368822	6248650	15-Sep-19	13.4	16-Sep-19	13.5	23.00	15.4	15.6
GN-18	STL-B	368120	6248120	15-Sep-19	13.4	16-Sep-19	13.5	24.05	14.5	13.9
GN-19	STL-A	366663	6247397	15-Sep-19	13.4	16-Sep-19	13.5	23.63	17.8	14.5
GN-20	STL-B	368969	6248568	16-Sep-19	13.5	17-Sep-19	13.9	22.25	17.2	18.0
GN-21	STL-B	368940	6248424	16-Sep-19	13.5	17-Sep-19	13.9	22.38	15.8	17.5
GN-21	STL-B	368940	6248424	17-Sep-19	13.9	18-Sep-19	14.5	24.48	15.8	17.5
GN-21	STL-B	368940	6248424	18-Sep-19	14.5	19-Sep-19	14.3	24.80	15.8	17.5
GN-22	STL-B	368880	6248434	16-Sep-19	13.5	17-Sep-19	13.9	22.75	15.8	14.0
GN-22	STL-B	368880	6248434	17-Sep-19	13.9	18-Sep-19	14.5	24.17	15.8	14.0
GN-23	STL-B	368120	6248120	16-Sep-19	13.5	17-Sep-19	13.9	23.40	14.5	15.8
GN-24	STL-A	367279	6247850	16-Sep-19	13.5	17-Sep-19	13.9	23.25	15.4	12.0
GN-25	STL-B	368936	6248562	17-Sep-19	13.9	18-Sep-19	14.5	23.80	16.4	17.1
GN-25	STL-B	368936	6248562	18-Sep-19	14.5	19-Sep-19	14.3	25.25	16.4	17.1
GN-26	STL-B	369820	6248203	17-Sep-19	13.9	18-Sep-19	14.5	24.00	16.8	14.5
GN-26	STL-B	369820	6248203	18-Sep-19	14.5	19-Sep-19	14.3	25.33	16.8	14.5

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2019 (continued).

Site	Zone	UTM Location		Set Date	Set Water Temp (°C)	Pull Date	Pull Water Temp (°C)	Duration (dec.hrs)	Water Depth (m)	
		Easting	Northing						Start	End
GN-27	STL-B	368120	6248120	17-Sep-19	13.9	18-Sep-19	14.5	23.92	14.5	13.7
GN-28	STL-A	367655	6248173	17-Sep-19	13.9	18-Sep-19	14.5	23.58	14.5	13.8
GN-29	STL-B	368951	6248530	18-Sep-19	14.5	19-Sep-19	14.3	25.25	17.0	15.5
GN-30	STL-B	368467	6248228	18-Sep-19	14.5	19-Sep-19	14.3	25.07	14.2	13.2
GN-31	STL-B	368489	6248497	18-Sep-19	14.5	19-Sep-19	14.3	24.45	12.2	12.7
GN-31	STL-B	368489	6248497	19-Sep-19	14.3	20-Sep-19	14.3	22.90	12.2	12.7
GN-31	STL-B	368489	6248497	20-Sep-19	14.3	21-Sep-19	14.3	23.85	12.2	12.7
GN-32	STL-B	369011	6248553	19-Sep-19	14.3	20-Sep-19	14.3	23.58	17.5	16.5
GN-33	STL-B	369046	6248389	19-Sep-19	14.3	20-Sep-19	14.3	23.50	13.1	13.5
GN-34	STL-B	368981	6248531	19-Sep-19	14.3	20-Sep-19	14.3	22.33	16.5	16.4
GN-35	STL-B	368761	6248395	19-Sep-19	14.3	20-Sep-19	14.3	22.18	10.5	15.5
GN-35	STL-B	368761	6248395	20-Sep-19	14.3	21-Sep-19	14.3	24.08	10.5	15.5
GN-36	STL-B	368761	6248656	19-Sep-19	14.3	20-Sep-19	14.3	21.85	15.1	15.3
GN-37	STL-B	369073	6248594	20-Sep-19	14.3	21-Sep-19	14.3	24.03	17.5	16.9
GN-38	STL-B	368999	6248398	20-Sep-19	14.3	21-Sep-19	14.3	24.08	12.5	13.9
GN-39	STL-B	368944	6248554	20-Sep-19	14.3	21-Sep-19	14.3	24.05	16.8	16.8
GN-40	STL-B	368615	6248426	20-Sep-19	14.3	21-Sep-19	14.3	23.55	12.3	12.2

APPENDIX 2:
BIOLOGICAL AND TAG INFORMATION FOR LAKE STURGEON CAPTURED IN FALL 2019.

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Burntwood River	GN-02	BWR-A	7-Sep-19	116576	900 226000327742	649	737	1660	19
Burntwood River	GN-05	BWR-A	8-Sep-19	116577	900 226000152804	518	585	990	12
Burntwood River	GN-10	BWR-C	9-Sep-19	116578	900 226000327780	405	449	360	5
Burntwood River	GN-14	BWR-C	10-Sep-19	116580	900 226000327077	410	462	470	6
Burntwood River	GN-14	BWR-C	10-Sep-19	116600	900 226000327094	385	442	400	6
Burntwood River	GN-13	BWR-C	10-Sep-19	116599	900 226000327041	694	785	2120	19
Burntwood River	GN-13	BWR-C	10-Sep-19	116598	900 226000327731	409	459	410	6
Burntwood River	GN-13	BWR-C	10-Sep-19	116597	900 226000327087	509	564	770	8
Burntwood River	GN-13	BWR-C	10-Sep-19	116596	900 226000327090	480	545	680	7
Burntwood River	GN-13	BWR-C	10-Sep-19	116595	900 226000327066	338	390	240	2
Burntwood River	GN-18	BWR-C	11-Sep-19	116594	900 226000327726	398	460	430	6
Burntwood River	GN-18	BWR-C	11-Sep-19	116593	900 226000327063	413	473	450	6
Burntwood River	GN-18	BWR-C	11-Sep-19	116592	900 226000327797	323	362	190	3
Burntwood River	GN-18	BWR-C	11-Sep-19	-	-	415	469	460	7
Burntwood River	GN-20	BWR-C	11-Sep-19	116591	900 226000327703	275	304	100	1
Burntwood River	GN-22	BWR-C	12-Sep-19	116590	900 226000327024	541	607	1100	9
Burntwood River	GN-22	BWR-C	12-Sep-19	116589	900 226000327055	297	331	150	3
Burntwood River	GN-22	BWR-C	12-Sep-19	116588	900 226000327740	285	324	140	3
Split Lake	GN-24	SPL-A	12-Sep-19	116587	900 226000327001	424	471	470	6
Split Lake	GN-25	SPL-A	12-Sep-19	116586	900 226000327764	475	540	720	6
Split Lake	GN-25	SPL-A	12-Sep-19	116585	900 226000327058	515	582	940	5
Split Lake	GN-26	SPL-A	12-Sep-19	116584	900 226000327779	788	890	3820	10
Split Lake	GN-32	SPL-A	13-Sep-19	116583	900 226000327028	985	1080	-	-
Split Lake	GN-32	SPL-A	13-Sep-19	116582	900 226000327067	744	833	3490	9
Split Lake	GN-32	SPL-A	13-Sep-19	116581	900 226000327723	518	586	1070	4
Split Lake	GN-31	SPL-A	13-Sep-19	116700	900 226000327700	744	825	2810	15
Split Lake	GN-31	SPL-A	13-Sep-19	116699	900 226000327734	756	860	3420	9
Split Lake	GN-31	SPL-A	13-Sep-19	116698	900 226000327765	759	863	3850	11
Split Lake	GN-31	SPL-A	13-Sep-19	116697	900 226000327095	820	909	3620	-
Split Lake	GN-31	SPL-A	13-Sep-19	116696	900 226000327784	805	893	3690	-
Split Lake	GN-31	SPL-A	13-Sep-19	116695	900 226000327044	721	804	2680	8
Split Lake	GN-31	SPL-A	13-Sep-19	116694	900 226000327804	758	869	3250	10

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Split Lake	GN-31	SPL-A	13-Sep-19	116693	900 226000327002	545	623	1250	4
Split Lake	GN-31	SPL-A	13-Sep-19	116692	900 226000327073	609	677	1900	6
Split Lake	GN-31	SPL-A	13-Sep-19	116691	900 226000327738	573	634	1260	6
Split Lake	GN-31	SPL-A	13-Sep-19	116690	900 067000109938	314	359	230	2
Split Lake	GN-31	SPL-A	13-Sep-19	116689	900 226000327039	546	628	1100	5
Split Lake	GN-31	SPL-A	13-Sep-19	116688	900 226000327046	498	557	890	6
Split Lake	GN-31	SPL-A	13-Sep-19	116687	900 226000327016	506	565	800	5
Split Lake	GN-31	SPL-A	13-Sep-19	116686	900 226000327018	599	683	1580	6
Split Lake	GN-31	SPL-A	13-Sep-19	116685	900 226000327730	731	822	2670	8
Split Lake	GN-31	SPL-A	13-Sep-19	116684	900 226000327064	554	637	1350	7
Split Lake	GN-31	SPL-A	13-Sep-19	116683	900 226000327720	639	722	1640	6
Split Lake	GN-31	SPL-A	13-Sep-19	116682	900 226000327712	531	602	980	5
Split Lake	GN-31	SPL-A	13-Sep-19	116681	900 226000327045	548	610	1160	6
Split Lake	GN-31	SPL-A	13-Sep-19	116680	900 226000327029	462	526	640	5
Split Lake	GN-31	SPL-A	13-Sep-19	116679	900 043000102970	481	554	740	6
Split Lake	GN-30	SPL-A	13-Sep-19	116678	900 226000327702	749	845	3620	12
Split Lake	GN-30	SPL-A	13-Sep-19	116677	900 226000327766	884	990	-	-
Split Lake	GN-30	SPL-A	13-Sep-19	116676	900 226000327787	713	806	2860	8
Split Lake	GN-30	SPL-A	13-Sep-19	113800	900 226000327701	720	795	2420	11
Split Lake	GN-30	SPL-A	13-Sep-19	113799	900 226000327043	597	669	1380	6
Split Lake	GN-30	SPL-A	13-Sep-19	113798	900 043000102908	481	538	700	6
Split Lake	GN-30	SPL-A	13-Sep-19	113797	900 226000327789	555	630	1370	6
Split Lake	GN-30	SPL-A	13-Sep-19	113796	900 226000327088	569	644	1360	6
Split Lake	GN-30	SPL-A	13-Sep-19	113539	900 226000153706	705	781	2650	9[a]
Split Lake	GN-30	SPL-A	13-Sep-19	113795	900 226000327050	611	684	1540	6
Split Lake	GN-30	SPL-A	13-Sep-19	113794	900 226000327026	580	658	1530	6
Split Lake	GN-30	SPL-A	13-Sep-19	113793	900 226000327035	660	729	1880	10
Split Lake	GN-30	SPL-A	13-Sep-19	113792	900 226000327092	619	696	1800	6
Split Lake	GN-30	SPL-A	13-Sep-19	113791	900 226000327037	480	544	740	4
Split Lake	GN-30	SPL-A	13-Sep-19	113790	900 226000327085	591	667	1550	6
Split Lake	GN-30	SPL-A	13-Sep-19	113789	900 226000327407	538	621	1140	5
Split Lake	GN-30	SPL-A	13-Sep-19	113788	900 226000327048	545	622	1140	-

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Split Lake	GN-30	SPL-A	13-Sep-19	113787	900 226000327015	430	485	580	3
Split Lake	GN-30	SPL-A	13-Sep-19	113786	900 226000327758	357	400	290	3
Split Lake	GN-30	SPL-A	13-Sep-19	113785	900 067000110706	362	407	300	2
Split Lake	GN-30	SPL-A	13-Sep-19	113784	900 226000327705	609	688	1690	6
Split Lake	GN-30	SPL-A	13-Sep-19	113783	900 226000327074	539	602	1170	6
Split Lake	GN-30	SPL-A	13-Sep-19	113782	900 226000327762	615	694	1500	6
Split Lake	GN-30	SPL-A	13-Sep-19	113781	900 226000327059	563	637	1360	6
Split Lake	GN-30	SPL-A	13-Sep-19	113780	900 226000327032	510	574	870	5
Split Lake	GN-30	SPL-A	13-Sep-19	113779	900 226000327065	520	574	710	6
Split Lake	GN-30	SPL-A	13-Sep-19	113778	900 226000327021	272	308	70	2
Split Lake	GN-28	SPL-A	13-Sep-19	113777	900 226000327036	484	543	870	8
Split Lake	GN-28	SPL-A	13-Sep-19	113776	900 226000327478	352	392	270	3
Split Lake	GN-28	SPL-A	13-Sep-19	116525	900 226000327099	339	381	250	3
Split Lake	GN-28	SPL-A	13-Sep-19	116524	900 226000327429	499	571	950	6
Split Lake	GN-28	SPL-A	13-Sep-19	116523	900 226000327469	315	352	240	3
Split Lake	GN-28	SPL-A	13-Sep-19	116522	900 067000111843	304	345	160	2
Split Lake	GN-28	SPL-A	13-Sep-19	116521	900 226000327401	310	346	170	3
Split Lake	GN-28	SPL-A	13-Sep-19	116520	900 226000327454	388	443	350	4
Burntwood River	GN-22	BWR-C	13-Sep-19	116519	900 226000327402	420	474	450	5
Split Lake	GN-32	SPL-A	14-Sep-19	116518	900 226000327091	703	797	2800	8
Split Lake	GN-31	SPL-A	14-Sep-19	116517	900 226000327062	604	664	1590	6
Split Lake	GN-31	SPL-A	14-Sep-19	116516	900 226000327430	841	932	-	-
Split Lake	GN-31	SPL-A	14-Sep-19	116515	900 226000327418	526	618	1330	9
Split Lake	GN-31	SPL-A	14-Sep-19	116513	900 226000327480	523	601	1210	6
Split Lake	GN-31	SPL-A	14-Sep-19	116512	900 226000327483	472	554	830	6
Split Lake	GN-31	SPL-A	14-Sep-19	-	-	161	183	-	1
Split Lake	GN-30	SPL-A	14-Sep-19	116511	900 226000327439	866	975	-	-
Split Lake	GN-30	SPL-A	14-Sep-19	116510	900 226000327442	484	562	810	5
Split Lake	GN-30	SPL-A	14-Sep-19	116509	900 226000327464	677	765	2220	7
Split Lake	GN-30	SPL-A	14-Sep-19	116508	900 226000327470	472	527	940	6
Split Lake	GN-30	SPL-A	14-Sep-19	116507	900 226000327049	573	651	1280	7
Split Lake	GN-30	SPL-A	14-Sep-19	116506	900 226000327079	433	502	650	5

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Split Lake	GN-30	SPL-A	14-Sep-19	116505	900 226000327481	547	624	1130	5
Split Lake	GN-30	SPL-A	14-Sep-19	116504	900 226000327497	503	571	960	6
Split Lake	GN-30	SPL-A	14-Sep-19	113711	900 226000153791	582	656	1250	8[a]
Split Lake	GN-30	SPL-A	14-Sep-19	116503	900 226000327748	321	363	210	2
Split Lake	GN-30	SPL-A	14-Sep-19	116502	900 226000327466	549	635	1270	6
Split Lake	GN-30	SPL-A	14-Sep-19	116501	900 067000110160	376	426	370	2
Split Lake	GN-30	SPL-A	14-Sep-19	116575	900 226000327093	307	345	190	2
Split Lake	GN-33	SPL-A	14-Sep-19	116574	900 226000327467	845	934	-	-
Split Lake	GN-33	SPL-A	14-Sep-19	116573	900 226000327476	898	1010	-	-
Split Lake	GN-33	SPL-A	14-Sep-19	93680	900 226000768064	704	790	2500	12
Split Lake	GN-33	SPL-A	14-Sep-19	116572	900 226000327494	675	743	2460	12
Split Lake	GN-34	SPL-A	14-Sep-19	116571	900 226000327448	264	300	120	2
Split Lake	GN-28	SPL-A	14-Sep-19	116570	900 226000327424	473	536	740	6
Split Lake	GN-28	SPL-A	14-Sep-19	116569	900 226000327463	487	562	830	6
Split Lake	GN-28	SPL-A	14-Sep-19	116568	900 226000327436	464	537	650	6
Split Lake	GN-28	SPL-A	14-Sep-19	116567	900 226000327400	558	630	970	4
Split Lake	GN-28	SPL-A	14-Sep-19	116566	900 067000111293	339	385	230	2
Split Lake	GN-28	SPL-A	14-Sep-19	116565	900 226000327487	483	511	790	6
Split Lake	GN-28	SPL-A	14-Sep-19	116564	900 226000327775	421	485	480	6
Split Lake	GN-28	SPL-A	14-Sep-19	-	-	652	742	1930	8
Split Lake	GN-36	SPL-A	15-Sep-19	116563	900 226000327452	726	821	2630	8
Split Lake	GN-36	SPL-A	15-Sep-19	55299	900 226000327422	852	951	-	-
Split Lake	GN-36	SPL-A	15-Sep-19	116562	900 226000327489	838	924	-	-
Split Lake	GN-36	SPL-A	15-Sep-19	116561	900 226000327410	808	902	-	-
Split Lake	GN-36	SPL-A	15-Sep-19	116560	900 226000327474	760	862	3860	-
Split Lake	GN-36	SPL-A	15-Sep-19	113531	900 226000153777	461	528	790	6[a]
Split Lake	GN-36	SPL-A	15-Sep-19	116559	900 226000327496	630	696	1920	9
Split Lake	GN-36	SPL-A	15-Sep-19	116558	900 226000327413	671	755	2120	11
Split Lake	GN-36	SPL-A	15-Sep-19	116557	900 226000327428	644	728	1760	11
Split Lake	GN-36	SPL-A	15-Sep-19	116556	900 226000327471	548	629	1190	5
Split Lake	GN-36	SPL-A	15-Sep-19	116555	900 226000327408	658	731	2010	8
Split Lake	GN-36	SPL-A	15-Sep-19	116554	900 226000327495	591	676	1670	6

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Split Lake	GN-36	SPL-A	15-Sep-19	116553	900 226000327425	569	645	1460	6
Split Lake	GN-36	SPL-A	15-Sep-19	116552	900 226000327491	756	839	3510	12
Split Lake	GN-35	SPL-A	15-Sep-19	116626	900 226000327447	844	942	-	-
Split Lake	GN-35	SPL-A	15-Sep-19	116627	900 226000327492	801	908	-	-
Split Lake	GN-35	SPL-A	15-Sep-19	116628	900 226000327426	737	827	2500	7
Split Lake	GN-35	SPL-A	15-Sep-19	116629	900 226000327459	570	645	1490	9
Split Lake	GN-35	SPL-A	15-Sep-19	116630	900 226000327455	780	874	3330	9
Split Lake	GN-35	SPL-A	15-Sep-19	-	-	602	678	1710	6
Split Lake	GN-30	SPL-A	15-Sep-19	116631	900 226000327405	878	986	-	-
Split Lake	GN-30	SPL-A	15-Sep-19	116632	900 226000327444	600	675	1320	5
Split Lake	GN-30	SPL-A	15-Sep-19	116633	900 226000327493	841	937	-	-
Split Lake	GN-30	SPL-A	15-Sep-19	116634	900 226000327451	657	744	2170	7
Split Lake	GN-30	SPL-A	15-Sep-19	116635	900 226000327414	445	493	680	5
Split Lake	GN-30	SPL-A	15-Sep-19	116636	900 226000327458	511	583	950	4
Split Lake	GN-30	SPL-A	15-Sep-19	116637	900 226000327409	725	815	3110	15
Split Lake	GN-30	SPL-A	15-Sep-19	116638	900 226000327475	720	797	2760	9
Split Lake	GN-30	SPL-A	15-Sep-19	110447	900 226000153301	651	736	2130	9[a]
Split Lake	GN-37	SPL-A	15-Sep-19	109548	900 226000153321	908	1041	-	-
Split Lake	GN-37	SPL-A	15-Sep-19	116639	900 226000327440	540	622	1220	6
Split Lake	GN-37	SPL-A	15-Sep-19	116640	900 226000327438	678	766	2560	15
Split Lake	GN-37	SPL-A	15-Sep-19	116641	900 226000327465	565	634	1280	6
Split Lake	GN-37	SPL-A	15-Sep-19	116642	900 226000327490	852	943	-	-
Split Lake	GN-28	SPL-A	15-Sep-19	116643	900 067000110293	337	385	230	2
Split Lake	GN-28	SPL-A	15-Sep-19	116644	900 226000327441	350	397	290	3
Split Lake	GN-28	SPL-A	15-Sep-19	116645	900 067000110350	328	372	190	2
Split Lake	GN-38	SPL-A	15-Sep-19	116625	900 226000327885	330	375	220	3
Split Lake	GN-38	SPL-A	15-Sep-19	116624	900 067000109957	315	367	200	2
Split Lake	GN-38	SPL-A	15-Sep-19	-	900 067000121211	193	222	40	1
Split Lake	GN-36	SPL-A	16-Sep-19	116623	900 067000121185	843	955	-	-
Split Lake	GN-36	SPL-A	16-Sep-19	116622	900 067000121199	726	819	2510	8
Split Lake	GN-36	SPL-A	16-Sep-19	101470	900 226000327415	749	831	2800	-
Split Lake	GN-39	SPL-A	16-Sep-19	116621	900 067000121183	788	881	3410	15

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River and Split Lake), fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Split Lake	GN-39	SPL-A	16-Sep-19	105693	900 226000629029	796	907	-	-
Split Lake	GN-39	SPL-A	16-Sep-19	116620	900 226000327461	560	639	1270	6
Split Lake	GN-39	SPL-A	16-Sep-19	116619	900 067000121256	691	783	2380	8
Split Lake	GN-39	SPL-A	16-Sep-19	116618	900 226000327462	464	524	630	6
Split Lake	GN-39	SPL-A	16-Sep-19	-	-	586	654	1530	6
Split Lake	GN-30	SPL-A	16-Sep-19	103186	900 226000768053	933	1020	-	-
Split Lake	GN-30	SPL-A	16-Sep-19	116617	900 067000121253	835	954	-	-
Split Lake	GN-30	SPL-A	16-Sep-19	116616	900 067000121210	1000	1142	-	-
Split Lake	GN-30	SPL-A	16-Sep-19	116615	900 067000121261	707	793	2490	8
Split Lake	GN-30	SPL-A	16-Sep-19	116614	900 067000121186	258	309	140	2
Split Lake	GN-30	SPL-A	16-Sep-19	116613	900 226000327498	555	624	1130	6
Split Lake	GN-30	SPL-A	16-Sep-19	-	900 067000121237	543	609	1290	6
Split Lake	GN-30	SPL-A	16-Sep-19	116112	900 067000121273	748	848	2720	8
Split Lake	GN-30	SPL-A	16-Sep-19	116611	900 067000121234	590	669	1530	6
Split Lake	GN-30	SPL-A	16-Sep-19	116610	900 067000121259	575	649	1520	5
Split Lake	GN-30	SPL-A	16-Sep-19	116609	900 067000121206	350	394	270	3
Split Lake	GN-40	SPL-A	16-Sep-19	116608	900 067000121209	815	901	-	-
Split Lake	GN-40	SPL-A	16-Sep-19	116607	900 067000121279	735	833	-	15
Split Lake	GN-40	SPL-A	16-Sep-19	116606	900 067000121270	718	799	2490	8
Split Lake	GN-40	SPL-A	16-Sep-19	75878	900 226000153895	718	814	2750	-
Split Lake	GN-40	SPL-A	16-Sep-19	116605	900 067000121213	350	399	300	3
Split Lake	GN-28	SPL-A	16-Sep-19	116604	900 067000121202	430	500	480	6

a – Ages assigned based on structures aged in a previous study year.

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	107564	900 226001031244	455	517	650	4
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	116752	900 226001031208	418	471	475	4
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	116753	900 226001031219	388	440	450	3
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	116754	900 226001031260	366	415	300	3
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	116755	900 226001031214	355	410	300	3
future Keeyask reservoir	GN-01	GL-C	11-Sep-19	116756	900 226001031257	367	416	350	3
future Keeyask reservoir	GN-03	GL-C	11-Sep-19	116001	900 067000112083	404	470	425	3
future Keeyask reservoir	GN-03	GL-C	11-Sep-19	116002	900 226000327788	545	610	1150	5
future Keeyask reservoir	GN-03	GL-C	11-Sep-19	116003	900 226001030343	685	780	2750	9
future Keeyask reservoir	GN-03	GL-C	11-Sep-19	116004	900 226001030396	745	837	2925	11
future Keeyask reservoir	GN-04	GL-B	11-Sep-19	109732	900 226001031286	395	451	375	3
future Keeyask reservoir	GN-04	GL-B	11-Sep-19	116757	900 226001031252	400	471	505	5
future Keeyask reservoir	GN-04	GL-B	11-Sep-19	116758	900 226001031234	522	608	1000	7
future Keeyask reservoir	GN-01	GL-C	12-Sep-19	116759	900 226001031251	454	519	600	5
future Keeyask reservoir	GN-01	GL-C	12-Sep-19	116760	900 226001031284	285	330	175	2
future Keeyask reservoir	GN-01	GL-C	12-Sep-19	116761	900 226001031248	297	340	200	2
future Keeyask reservoir	GN-01	GL-C	12-Sep-19	116762	900 226001031329	490	560	300	7
future Keeyask reservoir	GN-07	GL-C	12-Sep-19	116763	900 226001031297	391	445	450	3
future Keeyask reservoir	GN-07	GL-C	12-Sep-19	116764	900 226001031241	310	357	200	2
future Keeyask reservoir	GN-08	GL-C	12-Sep-19	116765	900 226001031212	732	818	3250	11
future Keeyask reservoir	GN-08	GL-C	12-Sep-19	116766	900 226001031213	311	370	175	2
future Keeyask reservoir	GN-08	GL-C	12-Sep-19	113032	900 226001031263	530	607	1200	6[a]
future Keeyask reservoir	GN-04	GL-B	12-Sep-19	116767	900 226001031272	315	365	175	2
future Keeyask reservoir	GN-04	GL-B	12-Sep-19	116768	900 226001031267	502	578	800	6
future Keeyask reservoir	GN-04	GL-B	12-Sep-19	-	900 226001031231	388	450	400	4
future Keeyask reservoir	GN-04	GL-B	12-Sep-19	116769	900 067000112162	360	418	300	3
future Keeyask reservoir	GN-04	GL-B	12-Sep-19	105046	900 226000548737	687	778	2300	11[a]
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116770	900 226001031179	340	394	300	3

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116771	900 226001031132	460	530	550	5
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116772	900 226001031150	405	470	475	4
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116773	900 226001031172	480	545	700	-
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116774	900 226001031194	709	895	2700	11
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116775	900 226001031148	360	411	350	3
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116776	900 226001031143	341	385	250	3
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116777	900 226001031156	288	330	175	2
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116778	900 226001031153	430	492	500	5
future Keeyask reservoir	GN-05	GL-B	12-Sep-19	116779	900 226001031254	375	475	350	3
future Keeyask reservoir	GN-06	GL-B	12-Sep-19	116780	900 226001031152	490	550	800	6
future Keeyask reservoir	GN-06	GL-B	12-Sep-19	116781	900 067000112106	390	452	350	3
future Keeyask reservoir	GN-06	GL-B	12-Sep-19	116782	900 226001031174	725	820	3200	11
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116783	900 067000109883	338	387	227	2
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	109629	900 067000055475	426	789	500	5
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116784	900 226001031165	361	401	325	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116785	900 226001031122	542	613	1975	8
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116786	900 226001031163	396	451	350	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	113039	900 226000327575	458	523	600	4
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	113204	900 226000327519	345	386	225	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116787	900 226001031116	460	527	700	6
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116788	900 226001031191	373	426	325	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116789	900 226001031137	345	392	200	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116790	900 226001031192	365	418	300	3
future Keeyask reservoir	GN-01	GL-C	13-Sep-19	116791	900 226001031198	336	386	250	3
future Keeyask reservoir	GN-07	GL-C	13-Sep-19	116792	900 226001031175	368	420	325	3
future Keeyask reservoir	GN-07	GL-C	13-Sep-19	116793	900 226001031155	389	451	450	4
future Keeyask reservoir	GN-07	GL-C	13-Sep-19	116794	900 226001031138	357	371	300	3
future Keeyask reservoir	GN-07	GL-C	13-Sep-19	113833	900 067000112140	387	440	325	3

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-07	GL-C	13-Sep-19	113016	900 226000327568	384	422	400	4
future Keeyask reservoir	GN-08	GL-C	13-Sep-19	116795	900 067000059562	435	509	500	3
future Keeyask reservoir	GN-08	GL-C	13-Sep-19	116796	900 226001031121	448	505	525	4
future Keeyask reservoir	GN-08	GL-C	13-Sep-19	116797	900 067000109672	283	325	125	1
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	116798	900 067000113225	265	310	100	1
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	116800	900 226001031141	452	515	600	5
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	116799	900 226001031162	355	398	300	3
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117051	900 067000112084	353	404	300	3
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117052	900 043000119910	462	521	600	6
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117053	900 226001031169	505	574	875	6
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117054	900 226001031177	467	532	625	6
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117055	900 226001031180	446	512	650	6
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117056	900 067000112400	374	434	325	3
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117057	900 226001031113	346	397	250	3
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117058	900 067000059390	360	413	275	3
future Keeyask reservoir	GN-04	GL-B	13-Sep-19	117059	900 067000112510	361	412	300	3
future Keeyask reservoir	GN-09	BR-D	13-Sep-19	80366	900 226000153822	1060	1160	8550	-
future Keeyask reservoir	GN-09	BR-D	13-Sep-19	117060	900 226001031120	790	803	4050	-
future Keeyask reservoir	GN-09	BR-D	13-Sep-19	117061	900 226001031184	820	926	4050	-
future Keeyask reservoir	GN-09	BR-D	13-Sep-19	117062	900 226001031127	801	923	3825	-
future Keeyask reservoir	GN-10	BR-D	13-Sep-19	117063	900 226001031114	357	401	300	3
future Keeyask reservoir	GN-10	BR-D	13-Sep-19	117064	900 226001031160	785	882	3400	-
future Keeyask reservoir	GN-10	BR-D	13-Sep-19	117065	900 226001031170	557	631	1200	6
future Keeyask reservoir	GN-10	BR-D	13-Sep-19	117066	900 226001031125	690	794	2575	11
future Keeyask reservoir	GN-16	BR-D	14-Sep-19	117167	900 226001031299	625	700	1600	11
future Keeyask reservoir	GN-16	BR-D	14-Sep-19	117068	900 226001031183	397	460	450	3
future Keeyask reservoir	GN-16	BR-D	14-Sep-19	100135	900 226001031203	738	837	2800	11
future Keeyask reservoir	GN-16	BR-D	14-Sep-19	117069	900 226001031195	666	770	2300	11

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-16	BR-D	14-Sep-19	117070	900 226001031101	749	838	2900	11
future Keeyask reservoir	GN-15	BR-D	14-Sep-19	117071	900 226001031280	730	821	2700	11
future Keeyask reservoir	GN-15	BR-D	14-Sep-19	117072	900 226001031133	1050	1200	8400	-
future Keeyask reservoir	GN-14	GL-B	14-Sep-19	117073	900 067000055083	426	485	425	5
future Keeyask reservoir	GN-14	GL-B	14-Sep-19	111004	900 226000893684	695	777	2300	11
future Keeyask reservoir	GN-14	GL-B	14-Sep-19	117074	900 226001031258	880	981	6200	-
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	109728	900 226000152954	510	575	1000	6
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117075	900 226001031259	444	502	575	4
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117076	900 226001031201	387	445	400	3
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117077	900 226001031159	320	365	225	3
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117078	900 226001031118	390	448	375	3
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117079	900 226001031136	291	334	200	2
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117080	900 226001031243	300	345	175	2
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117081	900 226001031274	282	328	175	2
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117082	900 226001031288	441	503	500	5
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117083	900 067000055538	530	602	900	5
future Keeyask reservoir	GN-13	GL-B	14-Sep-19	117084	900 226001031205	326	366	200	2
future Keeyask reservoir	GN-12	GL-C	14-Sep-19	117085	900 226001031278	664	750	2350	7
future Keeyask reservoir	GN-12	GL-C	14-Sep-19	117086	900 226001031262	805	869	4300	-
future Keeyask reservoir	GN-12	GL-C	14-Sep-19	-	-	100	118	-	0[b]
future Keeyask reservoir	GN-12	GL-C	14-Sep-19	-	-	100	116	-	0[b]
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117087	900 226000629738	565	630	1400	7
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117088	900 226001031250	597	691	1700	8
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117089	900 226001031228	456	520	600	4
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117090	900 067000112938	296	340	100	1
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117091	900 226001031295	737	830	3350	11
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	-	-	110	122	-	0[b]
future Keeyask reservoir	GN-11	GL-C	14-Sep-19	117092	900 226001031204	244	275	100	1

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-17	BR-D	15-Sep-19	117093	900 226001031275	790	875	3650	13
future Keeyask reservoir	GN-17	BR-D	15-Sep-19	117094	900 226001031168	795	850	3200	12
future Keeyask reservoir	GN-17	BR-D	15-Sep-19	117095	900 226001031238	855	913	3800	-
future Keeyask reservoir	GN-17	BR-D	15-Sep-19	117096	900 226001031277	875	970	4800	-
future Keeyask reservoir	GN-20	GL-B	15-Sep-19	117097	900 226001031265	450	515	700	5
future Keeyask reservoir	GN-20	GL-B	15-Sep-19	117098	900 067000055374	445	520	550	5
future Keeyask reservoir	GN-20	GL-B	15-Sep-19	117099	900 226001031285	380	432	400	3
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	117100	900 226001031226	335	385	300	3
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	88738	900 226000152999	497	565	850	6
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	106457	900 226000153129	400	474	400	4
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	113155	900 226000327540	424	477	500	5
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	116801	900 067000059417	377	430	300	3
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	116802	900 226001031232	368	425	300	3
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	116803	900 226001031289	389	440	400	4
future Keeyask reservoir	GN-19	GL-B	15-Sep-19	116804	900 226001031225	577	660	1450	8
future Keeyask reservoir	GN-12	GL-C	15-Sep-19	116805	900 067000113723	300	349	100	1
future Keeyask reservoir	GN-12	GL-C	15-Sep-19	116807	900 226001031270	355	412	300	3
future Keeyask reservoir	GN-11	GL-C	15-Sep-19	116808	900 067000113651	329	386	200	1
future Keeyask reservoir	GN-11	GL-C	15-Sep-19	116809	900 067000113776	291	338	100	1
future Keeyask reservoir	GN-11	GL-C	15-Sep-19	116811	900 226001031211	395	449	350	3
future Keeyask reservoir	GN-11	GL-C	16-Sep-19	116812	900 067000108586	325	378	200	1
future Keeyask reservoir	GN-11	GL-C	16-Sep-19	116813	900 067000109379	320	368	200	1
future Keeyask reservoir	GN-11	GL-C	16-Sep-19	116814	900 226001031276	690	792	2950	11
future Keeyask reservoir	GN-11	GL-C	16-Sep-19	116816	900 067000113750	285	331	150	1
future Keeyask reservoir	GN-24	GL-C	16-Sep-19	-	-	95	110	-	0[b]
future Keeyask reservoir	GN-20	GL-B	16-Sep-19	116817	900 226001031256	359	405	200	3
future Keeyask reservoir	GN-20	GL-B	16-Sep-19	116818	900 226001031253	489	557	800	6
future Keeyask reservoir	GN-20	GL-B	16-Sep-19	116819	900 067000112892	300	345	150	1

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-20	GL-B	16-Sep-19	116820	900 226001031236	740	840	3300	11
future Keeyask reservoir	GN-28	GL-A	17-Sep-19	113023	900 067000059421	372	428	325	3
future Keeyask reservoir	GN-28	GL-A	17-Sep-19	116821	900 226001031264	530	609	1000	6
future Keeyask reservoir	GN-28	GL-A	17-Sep-19	89988	900 226000629293	657	748	2000	11[a]
future Keeyask reservoir	GN-28	GL-A	17-Sep-19	116822	900 226001031283	586	661	1350	8
future Keeyask reservoir	GN-26	GL-A	17-Sep-19	116823	900 226001031247	725	820	3100	-
future Keeyask reservoir	GN-27	GL-A	17-Sep-19	116824	900 226001031218	778	882	3500	11
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	113156	900 226000327561	340	390	400	3
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116825	900 226001031220	438	499	500	5
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116810	900 226001031281	482	596	650	5
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116806	900 226001031221	492	551	800	6
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116826	900 067000058715	470	540	600	5
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	79413	900 226000154217	635	722	1750	11
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116827	900 226001031209	696	790	2300	-
future Keeyask reservoir	GN-29	GL-B	17-Sep-19	116828	900 226001031245	651	752	1900	11
future Keeyask reservoir	GN-20	GL-B	17-Sep-19	116829	900 226001031294	350	400	300	3
future Keeyask reservoir	GN-20	GL-B	17-Sep-19	109571	900 226000893785	446	518	550	6
future Keeyask reservoir	GN-25	GL-C	17-Sep-19	116830	900 067000109619	325	377	150	1
future Keeyask reservoir	GN-25	GL-C	17-Sep-19	116831	900 067000113743	325	372	150	1
future Keeyask reservoir	GN-25	GL-C	17-Sep-19	116832	900 067000107947	309	358	150	1
future Keeyask reservoir	GN-25	GL-C	17-Sep-19	116833	900 226001031268	325	362	200	2
future Keeyask reservoir	GN-30	GL-A	18-Sep-19	116834	900 226001031200	510	585	900	6
future Keeyask reservoir	GN-28	GL-A	18-Sep-19	116835	900 226001031210	540	630	950	6
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116836	900 226001031202	655	740	2000	11
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116837	900 226001031230	822	920	3900	-
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116838	900 226001031242	711	810	3100	13
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	111026	900 226000893923	579	658	1350	8
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	109643	900 226000893983	700	790	2350	11

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116839	900 067000055012	510	581	700	5
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116840	900 067000109321	309	355	100	1
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116841	900 067000112486	360	420	200	3
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116842	900 226001031255	524	602	1000	7
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116843	900 226001031296	560	640	1300	8
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116844	900 226001031291	539	604	1150	7
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116845	900 226001031147	650	740	2050	9
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	79425	900 226000154259	667	758	2100	11
future Keeyask reservoir	GN-31	GL-B	18-Sep-19	116846	900 226001031131	295	333	100	2
future Keeyask reservoir	GN-32	GL-B	18-Sep-19	116847	900 067000109329	295	340	100	1
future Keeyask reservoir	GN-32	GL-B	18-Sep-19	116848	900 226001031142	344	390	200	3
future Keeyask reservoir	GN-32	GL-B	18-Sep-19	116849	900 226001031273	437	495	450	4
future Keeyask reservoir	GN-32	GL-B	18-Sep-19	116850	900 226001031287	490	558	700	6
future Keeyask reservoir	GN-32	GL-B	18-Sep-19	117101	900 226001031176	588	674	1300	9
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	117102	900 067000113235	312	370	150	1
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	117103	900 226001031223	522	601	1050	5
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	109628	900 067000055300	528	610	950	5
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	117104	900 226001031104	767	855	3400	11
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	117105	900 226001031178	684	783	2300	10
future Keeyask reservoir	GN-34	GL-C	18-Sep-19	108551	900 226000893994	395	450	300	4
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117106	900 226001031164	377	440	300	4
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117107	900 067000109364	300	338	75	1
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117108	900 067000113768	315	363	150	1
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117109	900 067000113195	300	350	100	1
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117110	900 226001031237	361	408	275	4
future Keeyask reservoir	GN-33	GL-C	18-Sep-19	117111	900 226001031217	280	315	100	2
future Keeyask reservoir	GN-30	GL-A	19-Sep-19	117113	900 226001031134	325	370	200	3
future Keeyask reservoir	GN-30	GL-A	19-Sep-19	117114	900 226001031206	385	428	300	3

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-30	GL-A	19-Sep-19	117115	900 226001031154	440	497	500	4
future Keeyask reservoir	GN-28	GL-A	19-Sep-19	117116	900 226001031129	511	589	900	6
future Keeyask reservoir	GN-28	GL-A	19-Sep-19	117117	900 226001031139	290	325	150	2
future Keeyask reservoir	GN-28	GL-A	19-Sep-19	117118	900 226001031293	376	430	300	3
future Keeyask reservoir	GN-28	GL-A	19-Sep-19	117119	900 226001031171	706	804	2600	11
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117120	900 226001031189	464	535	550	5
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117121	900 226001031110	495	575	700	5
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117122	900 226001031249	514	579	800	5
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117123	900 226001031215	680	780	2000	11
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117124	900 226001031157	640	728	1900	10
future Keeyask reservoir	GN-31	GL-B	19-Sep-19	117125	900 226001031167	728	830	2900	11
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117126	900 067000113011	266	314	100	1
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117127	900 067000112887	296	343	125	1
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117128	900 067000113012	297	343	100	1
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117129	900 067000112099	389	440	300	3
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117130	900 226001031109	453	520	450	5
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117131	900 226001031105	448	518	500	5
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117132	900 067000055156	480	555	650	5
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117133	900 067000058546	480	555	600	5
future Keeyask reservoir	GN-32	GL-B	19-Sep-19	117134	900 226001031128	658	-	1950	11
future Keeyask reservoir	GN-34	GL-C	19-Sep-19	117135	900 067000107911	310	351	100	1
future Keeyask reservoir	GN-34	GL-C	19-Sep-19	117136	900 226001031166	372	424	400	3
future Keeyask reservoir	GN-34	GL-C	19-Sep-19	117137	900 226001031123	785	890	3700	-
future Keeyask reservoir	GN-33	GL-C	19-Sep-19	117138	900 067000113685	345	394	150	1
future Keeyask reservoir	GN-33	GL-C	19-Sep-19	117139	900 226001031279	495	555	600	5
future Keeyask reservoir	GN-36	GL-A	20-Sep-19	117140	900 226001031271	451	518	450	5
future Keeyask reservoir	GN-36	GL-A	20-Sep-19	117141	900 226001031186	540	618	950	5
future Keeyask reservoir	GN-35	GL-A	20-Sep-19	117142	900 067000058522	460	531	500	5

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
future Keeyask reservoir	GN-35	GL-A	20-Sep-19	117143	900 226001031187	780	878	3400	11
future Keeyask reservoir	GN-37	GL-B	20-Sep-19	117144	900 226001031193	347	402	200	3
future Keeyask reservoir	GN-37	GL-B	20-Sep-19	117145	900 067000055691	502	585	700	5
future Keeyask reservoir	GN-37	GL-B	20-Sep-19	117146	900 067000055755	420	478	400	5
future Keeyask reservoir	GN-37	GL-B	20-Sep-19	117147	900 226001031100	655	743	2250	11
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117148	900 067000113049	280	330	125	1
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117149	900 067000059461	380	438	400	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117150	900 067000111902	390	453	400	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117001	900 226001031182	330	375	250	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117002	900 226001031135	345	399	300	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117003	900 226001031119	370	420	300	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117004	900 226001031185	360	424	325	3
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117005	900 226001031144	484	548	700	6
future Keeyask reservoir	GN-38	GL-B	20-Sep-19	117006	900 226001031149	540	631	1025	6
future Keeyask reservoir	GN-39	GL-C	20-Sep-19	117007	900 067000113724	320	368	-	1
future Keeyask reservoir	GN-39	GL-C	20-Sep-19	117008	900 226001031111	285	313	100	2
future Keeyask reservoir	GN-39	GL-C	20-Sep-19	117009	900 226001031240	688	770	2300	11
future Keeyask reservoir	GN-39	GL-C	20-Sep-19	79415	900 226000893260	823	910	3800	-
future Keeyask reservoir	GN-34	GL-C	20-Sep-19	113021	900 226000327576	369	419	300	3
future Keeyask reservoir	GN-34	GL-C	20-Sep-19	117011	900 067000113693	297	347	250	1

a – Ages assigned based on structures aged in a previous study year.

b – Determined to be YOY based on size, no ageing structures taken.

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-02	STL-A	12-Sep-19	116005	900 226001030321	370	425	375	3
Stephens Lake	GN-03	STL-B	12-Sep-19	116006	900 226001030354	570	649	1525	6
Stephens Lake	GN-03	STL-B	12-Sep-19	116007	900 067000055209	540	623	1075	5
Stephens Lake	GN-04	STL-B	12-Sep-19	-	900 067000112987	280	319	150	1
Stephens Lake	GN-04	STL-B	12-Sep-19	-	900 067000113414	310	360	175	1
Stephens Lake	GN-04	STL-B	12-Sep-19	-	900 067000113273	305	354	175	1
Stephens Lake	GN-04	STL-B	12-Sep-19	-	900 067000113232	305	345	150	1
Stephens Lake	GN-04	STL-B	12-Sep-19	-	900 067000108582	295	337	125	1
Stephens Lake	GN-04	STL-B	12-Sep-19	116008	900 067000055565	560	643	1025	5
Stephens Lake	GN-04	STL-B	12-Sep-19	116009	900 226001030385	725	814	2800	11
Stephens Lake	GN-04	STL-B	12-Sep-19	116051	900 067000109372	305	352	175	1
Stephens Lake	GN-04	STL-B	12-Sep-19	116010	900 226001030371	830	921	4850	-
Stephens Lake	GN-07	STL-A	13-Sep-19	91528	900 067000055109	531	592	1025	5
Stephens Lake	GN-07	STL-A	13-Sep-19	79256	900 226000629431	760	862	3650	11[a]
Stephens Lake	GN-07	STL-A	13-Sep-19	116024	900 067000121286	315	360	200	2
Stephens Lake	GN-07	STL-A	13-Sep-19	116023	900 226001030373	382	450	450	3
Stephens Lake	GN-07	STL-A	13-Sep-19	116022	900 067000121331	385	440	450	4
Stephens Lake	GN-02	STL-A	13-Sep-19	110788	900 226000628487	535	635	1350	6[a]
Stephens Lake	GN-05	STL-A	13-Sep-19	116021	900 226001030342	362	410	300	2
Stephens Lake	GN-05	STL-A	13-Sep-19	116020	900 226001030344	487	541	700	4
Stephens Lake	GN-08	STL-B	13-Sep-19	116018	900 226001030399	474	536	725	5
Stephens Lake	GN-06	STL-B	13-Sep-19	116017	900 226001030311	477	552	775	4
Stephens Lake	GN-06	STL-B	13-Sep-19	116016	900 067000109308	309	358	150	1
Stephens Lake	GN-06	STL-B	13-Sep-19	116015	900 067000058419	524	608	1000	5
Stephens Lake	GN-06	STL-B	13-Sep-19	113298	900 226000327925	437	500	600	4[a]
Stephens Lake	GN-06	STL-B	13-Sep-19	116014	900 067000109583	313	356	150	1
Stephens Lake	GN-06	STL-B	13-Sep-19	116013	900 067000113447	325	370	200	1
Stephens Lake	GN-06	STL-B	13-Sep-19	116012	900 067000108610	298	337	125	1

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-06	STL-B	13-Sep-19	116011	900 067000112895	310	355	150	1
Stephens Lake	GN-06	STL-B	13-Sep-19	116026	900 067000113054	284	329	100	1
Stephens Lake	GN-06	STL-B	13-Sep-19	116027	900 226001030332	790	890	3800	11
Stephens Lake	GN-04	STL-B	13-Sep-19	116028	900 067000108655	290	334	100	1
Stephens Lake	GN-04	STL-B	13-Sep-19	116029	900 067000109610	310	353	100	1
Stephens Lake	GN-04	STL-B	13-Sep-19	116030	900 067000055561	502	580	700	5
Stephens Lake	GN-04	STL-B	13-Sep-19	116031	900 067000059065	365	411	300	3
Stephens Lake	GN-04	STL-B	13-Sep-19	111073	900 226000154254	466	539	650	4[a]
Stephens Lake	GN-04	STL-B	13-Sep-19	116032	900 067000108625	301	346	100	1
Stephens Lake	GN-04	STL-B	13-Sep-19	116033	900 067000113445	316	365	100	1
Stephens Lake	GN-04	STL-B	13-Sep-19	116034	900 226001030366	761	850	3600	11
Stephens Lake	GN-04	STL-B	13-Sep-19	-	900 067000109359	279	312	75	1
Stephens Lake	GN-07	STL-A	14-Sep-19	116035	900 226001030347	472	542	700	4
Stephens Lake	GN-09	STL-B	14-Sep-19	91714	900 226001030356	950	1100	-9999	-
Stephens Lake	GN-05	STL-A	14-Sep-19	116037	900 226001030317	467	534	700	4
Stephens Lake	GN-05	STL-A	14-Sep-19	116038	900 226001030392	706	805	3100	9
Stephens Lake	GN-05	STL-A	14-Sep-19	110794	900 226000893916	471	531	700	4[a]
Stephens Lake	GN-05	STL-A	14-Sep-19	116039	900 226001030394	556	623	1250	6
Stephens Lake	GN-06	STL-B	14-Sep-19	116041	900 067000113436	318	363	150	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116042	900 067000113029	294	338	125	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116043	900 067000113051	298	335	125	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116047	900 067000113756	310	350	150	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116048	900 067000113397	310	357	150	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116049	900 067000113737	305	343	175	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116050	900 067000113045	295	341	150	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116040	900 067000109606	315	363	200	1
Stephens Lake	GN-06	STL-B	14-Sep-19	116044	900 226001030304	369	423	400	3
Stephens Lake	GN-06	STL-B	14-Sep-19	116046	900 067000113247	369	360	150	1

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-06	STL-B	14-Sep-19	112915	900 067000055505	536	614	1000	5
Stephens Lake	GN-06	STL-B	14-Sep-19	116054	900 067000113013	295	330	100	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116056	900 067000109332	313	365	150	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116057	900 067000108663	330	372	150	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116059	900 067000112954	300	340	100	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116061	900 067000113259	298	346	100	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116063	900 226001030310	459	517	600	4
Stephens Lake	GN-04	STL-B	14-Sep-19	116064	900 226001030351	305	345	150	2
Stephens Lake	GN-04	STL-B	14-Sep-19	116065	900 067000109361	296	340	100	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116066	900 067000113464	285	330	100	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116068	900 226001030314	315	353	100	2
Stephens Lake	GN-04	STL-B	14-Sep-19	116069	900 067000113446	322	377	150	1
Stephens Lake	GN-04	STL-B	14-Sep-19	116070	900 226001030350	700	785	2550	8
Stephens Lake	GN-10	STL-B	14-Sep-19	116072	900 226001030330	471	530	700	4
Stephens Lake	GN-10	STL-B	14-Sep-19	116073	900 226001030364	520	591	900	5
Stephens Lake	GN-13	STL-B	15-Sep-19	116074	900 067000113438	301	341	200	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116055	900 067000113406	285	328	150	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116058	900 067000113451	287	328	150	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116052	900 067000113708	301	348	200	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116071	900 067000108623	331	382	200	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116062	900 067000113005	298	344	175	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116067	900 067000109587	270	305	100	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116053	900 067000108666	261	295	100	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116076	900 067000109633	287	332	100	1
Stephens Lake	GN-13	STL-B	15-Sep-19	116077	900 067000111970	400	464	450	3
Stephens Lake	GN-13	STL-B	15-Sep-19	116078	900 226001030346	420	491	550	4
Stephens Lake	GN-04	STL-B	15-Sep-19	116079	900 226001030382	445	506	700	4
Stephens Lake	GN-04	STL-B	15-Sep-19	116080	900 067000058502	569	644	1200	5

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-04	STL-B	15-Sep-19	116081	900 226001030388	611	697	1650	6
Stephens Lake	GN-06	STL-B	15-Sep-19	116083	900 067000113505	391	447	400	3
Stephens Lake	GN-06	STL-B	15-Sep-19	116084	900 067000113727	307	348	150	1
Stephens Lake	GN-06	STL-B	15-Sep-19	116085	900 226001030377	476	551	750	4
Stephens Lake	GN-06	STL-B	15-Sep-19	116086	900 067000113440	302	346	150	1
Stephens Lake	GN-06	STL-B	15-Sep-19	116087	900 043000102947	382	431	450	6
Stephens Lake	GN-06	STL-B	15-Sep-19	116088	900 067000113239	290	334	125	1
Stephens Lake	GN-06	STL-B	15-Sep-19	116089	900 226001030307	718	807	2550	11
Stephens Lake	GN-06	STL-B	15-Sep-19	116090	900 067000113000	276	320	100	1
Stephens Lake	GN-06	STL-B	15-Sep-19	116091	900 226001030389	1060	1182	11500	-
Stephens Lake	GN-12	STL-B	15-Sep-19	116092	900 067000055366	551	623	1100	5
Stephens Lake	GN-12	STL-B	15-Sep-19	116093	900 226001030358	498	552	900	4
Stephens Lake	GN-05	STL-A	15-Sep-19	116094	900 226001030360	473	537	725	4
Stephens Lake	GN-05	STL-A	15-Sep-19	116095	900 226000327752	484	556	800	4
Stephens Lake	GN-05	STL-A	15-Sep-19	116096	900 067000113031	324	372	200	1
Stephens Lake	GN-05	STL-A	15-Sep-19	116097	900 226001030362	464	526	750	4
Stephens Lake	GN-05	STL-A	15-Sep-19	116099	900 067000055361	586	683	1300	5
Stephens Lake	GN-05	STL-A	15-Sep-19	116098	900 226001030328	905	1010	5100	-
Stephens Lake	GN-11	STL-A	15-Sep-19	116099	900 067000055231	526	596	950	5
Stephens Lake	GN-17	STL-B	16-Sep-19	116100	900 226000767200	317	351	200	2
Stephens Lake	GN-15	STL-B	16-Sep-19	100142	1380348307	808	904	4350	11[a]
Stephens Lake	GN-14	STL-B	16-Sep-19	117576	900 067000055643	476	550	575	5
Stephens Lake	GN-14	STL-B	16-Sep-19	117577	900 067000113060	311	364	150	1
Stephens Lake	GN-14	STL-B	16-Sep-19	117578	900 067000059109	389	448	400	3
Stephens Lake	GN-14	STL-B	16-Sep-19	117579	900 067000055440	577	655	1200	5
Stephens Lake	GN-14	STL-B	16-Sep-19	117580	900 226000327501	490	553	950	4
Stephens Lake	GN-16	STL-B	16-Sep-19	-	-	866	982	6300	11
Stephens Lake	GN-16	STL-B	16-Sep-19	117581	900 226000327725	639	723	2150	8

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-16	STL-B	16-Sep-19	117582	900 067000055352	541	612	950	5
Stephens Lake	GN-16	STL-B	16-Sep-19	117583	900 067000113429	281	322	100	1
Stephens Lake	GN-18	STL-B	16-Sep-19	113272	900 226000767664	446	500	650	4
Stephens Lake	GN-18	STL-B	16-Sep-19	112946	900 226000628311	476	546	750	4[a]
Stephens Lake	GN-18	STL-B	16-Sep-19	117584	900 067000055658	530	611	950	5
Stephens Lake	GN-18	STL-B	16-Sep-19	117585	900 226000767266	508	578	900	5
Stephens Lake	GN-18	STL-B	16-Sep-19	117586	900 226000767206	357	405	300	3
Stephens Lake	GN-18	STL-B	16-Sep-19	117588	900 067000113212	333	380	225	1
Stephens Lake	GN-18	STL-B	16-Sep-19	117589	900 067000058404	506	575	900	5
Stephens Lake	GN-18	STL-B	16-Sep-19	69863	900 226000768504	848	956	4700	11[a]
Stephens Lake	GN-19	STL-A	16-Sep-19	101047	900 226000629288	635	721	1900	7
Stephens Lake	GN-20	STL-B	17-Sep-19	117593	900 067000113490	395	456	400	3
Stephens Lake	GN-20	STL-B	17-Sep-19	117594	900 067000109667	301	350	150	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117595	900 067000113269	313	352	125	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117596	900 067000108660	295	338	100	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117597	900 067000113730	284	324	100	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117598	900 067000113710	278	322	125	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117599	900 067000113408	285	326	100	1
Stephens Lake	GN-21	STL-B	17-Sep-19	117600	900 226000327770	377	424	300	3
Stephens Lake	GN-21	STL-B	17-Sep-19	117551	900 226000767204	385	434	400	3
Stephens Lake	GN-21	STL-B	17-Sep-19	117552	900 226000327524	487	555	800	4
Stephens Lake	GN-21	STL-B	17-Sep-19	117553	900 067000055079	552	622	1000	5
Stephens Lake	GN-14	STL-B	17-Sep-19	117554	900 067000113716	286	335	100	1
Stephens Lake	GN-14	STL-B	17-Sep-19	117555	900 067000113226	307	352	125	1
Stephens Lake	GN-22	STL-B	17-Sep-19	117556	900 067000108670	320	362	150	1
Stephens Lake	GN-22	STL-B	17-Sep-19	117557	900 226000767232	461	528	700	-
Stephens Lake	GN-22	STL-B	17-Sep-19	117558	900 226000767210	622	710	2050	8
Stephens Lake	GN-23	STL-B	17-Sep-19	117559	900 226000327786	293	310	100	2

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-23	STL-B	17-Sep-19	117560	900 226000327747	382	431	400	3
Stephens Lake	GN-23	STL-B	17-Sep-19	117561	900 226000767205	486	545	750	4
Stephens Lake	GN-23	STL-B	17-Sep-19	117562	900 226000767274	531	612	950	6
Stephens Lake	GN-23	STL-B	17-Sep-19	117563	900 226000327778	482	501	800	6
Stephens Lake	GN-23	STL-B	17-Sep-19	110777	900 226000893958	791	900	3500	11[a]
Stephens Lake	GN-24	STL-A	17-Sep-19	117564	900 067000108677	305	351	125	1
Stephens Lake	GN-24	STL-A	17-Sep-19	117565	900 067000108628	288	326	100	1
Stephens Lake	GN-25	STL-B	18-Sep-19	117567	900 226000767211	375	423	400	3
Stephens Lake	GN-25	STL-B	18-Sep-19	117568	900 067000108651	274	311	100	1
Stephens Lake	GN-25	STL-B	18-Sep-19	117569	900 067000113384	325	365	100	1
Stephens Lake	GN-25	STL-B	18-Sep-19	117570	900 226001030395	375	425	300	3
Stephens Lake	GN-25	STL-B	18-Sep-19	117571	900 226001030368	680	762	2000	8
Stephens Lake	GN-25	STL-B	18-Sep-19	115150	900 226000327803	421	481	500	4
Stephens Lake	GN-21	STL-B	18-Sep-19	117572	900 067000113033	280	327	125	1
Stephens Lake	GN-21	STL-B	18-Sep-19	117573	900 067000113448	308	354	150	1
Stephens Lake	GN-26	STL-B	18-Sep-19	117574	900 067000112574	450	531	650	3
Stephens Lake	GN-26	STL-B	18-Sep-19	117575	900 226000767244	550	615	1050	5
Stephens Lake	GN-26	STL-B	18-Sep-19	117651	900 226000327737	576	654	1050	5
Stephens Lake	GN-26	STL-B	18-Sep-19	110564	900 043000103645	472	540	600	4[a]
Stephens Lake	GN-26	STL-B	18-Sep-19	101482	900 226000703493	871	975	5000	11[a]
Stephens Lake	GN-22	STL-B	18-Sep-19	117652	900 067000108627	295	334	100	1
Stephens Lake	GN-22	STL-B	18-Sep-19	117653	900 067000113063	297	340	100	1
Stephens Lake	GN-22	STL-B	18-Sep-19	117654	900 226000327718	310	345	150	2
Stephens Lake	GN-22	STL-B	18-Sep-19	117655	900 226001030345	382	440	400	3
Stephens Lake	GN-22	STL-B	18-Sep-19	117656	900 067000112651	460	532	700	3
Stephens Lake	GN-22	STL-B	18-Sep-19	117657	900 226001030365	495	584	1050	5
Stephens Lake	GN-22	STL-B	18-Sep-19	117658	900 226001030341	623	700	2000	7
Stephens Lake	GN-27	STL-B	18-Sep-19	117659	900 043000103587	335	375	250	2

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-27	STL-B	18-Sep-19	110000	900 043000103855	462	525	700	4[a]
Stephens Lake	GN-27	STL-B	18-Sep-19	93874	900 226000767298	667	742	1850	9
Stephens Lake	GN-27	STL-B	18-Sep-19	-	900 043000103684	584	665	1200	6
Stephens Lake	GN-28	STL-A	18-Sep-19	117661	900 067000109602	301	342	200	1
Stephens Lake	GN-28	STL-A	18-Sep-19	117662	900 226000767279	309	345	250	2
Stephens Lake	GN-28	STL-A	18-Sep-19	117663	900 226000767258	417	471	600	4
Stephens Lake	GN-25	STL-B	19-Sep-19	117664	900 067000113735	315	360	200	1
Stephens Lake	GN-21	STL-B	19-Sep-19	117665	900 067000059358	395	451	300	3
Stephens Lake	GN-21	STL-B	19-Sep-19	117666	900 226000327567	482	545	700	5
Stephens Lake	GN-21	STL-B	19-Sep-19	117667	900 226001030337	530	585	1000	6
Stephens Lake	GN-21	STL-B	19-Sep-19	-	900 067000109648	295	335	100	1
Stephens Lake	GN-26	STL-B	19-Sep-19	117668	900 226001030378	653	735	2000	8
Stephens Lake	GN-29	STL-B	19-Sep-19	117669	900 067000113443	320	371	200	1
Stephens Lake	GN-29	STL-B	19-Sep-19	117670	900 067000108648	312	360	150	1
Stephens Lake	GN-29	STL-B	19-Sep-19	117671	900 067000109666	290	330	250	1
Stephens Lake	GN-29	STL-B	19-Sep-19	117672	900 067000059399	385	444	400	3
Stephens Lake	GN-29	STL-B	19-Sep-19	117673	900 067000059328	423	480	500	3
Stephens Lake	GN-29	STL-B	19-Sep-19	117674	900 226000767222	760	855	3400	-
Stephens Lake	GN-29	STL-B	19-Sep-19	117675	900 226000767280	850	960	5500	-
Stephens Lake	GN-30	STL-B	19-Sep-19	117676	900 226000767290	554	638	1250	6
Stephens Lake	GN-31	STL-B	19-Sep-19	117677	900 226001030301	505	570	1000	4
Stephens Lake	GN-31	STL-B	19-Sep-19	117678	900 067000059220	415	475	400	3
Stephens Lake	GN-31	STL-B	19-Sep-19	117679	900 226001030379	745	839	3400	-
Stephens Lake	GN-31	STL-B	19-Sep-19	117680	900 226000767276	945	1050	6500	-
Stephens Lake	GN-31	STL-B	19-Sep-19	-	900 067000055464	551	624	1000	5
Stephens Lake	GN-32	STL-B	20-Sep-19	117681	900 067000113465	307	349	100	1
Stephens Lake	GN-32	STL-B	20-Sep-19	112949	900 226000154234	790	868	3700	-
Stephens Lake	GN-33	STL-B	20-Sep-19	117682	900 067000109624	294	336	100	1

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-33	STL-B	20-Sep-19	117683	900 226000767259	506	579	900	6
Stephens Lake	GN-33	STL-B	20-Sep-19	69875	900 226000577003	829	932	5000	-
Stephens Lake	GN-34	STL-B	20-Sep-19	117684	900 067000113412	306	355	150	1
Stephens Lake	GN-34	STL-B	20-Sep-19	117685	900 067000112073	405	460	450	3
Stephens Lake	GN-34	STL-B	20-Sep-19	117686	900 067000121203	374	423	350	4
Stephens Lake	GN-34	STL-B	20-Sep-19	117687	900 067000112141	415	479	450	3
Stephens Lake	GN-35	STL-B	20-Sep-19	117688	900 067000109289	285	321	100	1
Stephens Lake	GN-35	STL-B	20-Sep-19	117689	900 067000113032	345	395	200	1
Stephens Lake	GN-35	STL-B	20-Sep-19	117690	900 226000767241	385	439	350	3
Stephens Lake	GN-35	STL-B	20-Sep-19	117691	900 067000055229	514	588	800	5
Stephens Lake	GN-35	STL-B	20-Sep-19	117692	900 067000055211	566	644	1100	5
Stephens Lake	GN-35	STL-B	20-Sep-19	117693	900 226000767246	594	676	1500	7
Stephens Lake	GN-35	STL-B	20-Sep-19	109999	900 226000768861	784	888	3600	8[a]
Stephens Lake	GN-31	STL-B	20-Sep-19	117694	900 226000767286	473	535	700	4
Stephens Lake	GN-31	STL-B	20-Sep-19	117695	900 226000767221	598	671	1550	6
Stephens Lake	GN-31	STL-B	20-Sep-19	117696	900 226000767227	537	614	1100	5
Stephens Lake	GN-31	STL-B	20-Sep-19	117697	900 226000767237	385	450	350	4
Stephens Lake	GN-31	STL-B	20-Sep-19	117698	900 226001030359	813	895	4200	-
Stephens Lake	GN-31	STL-B	20-Sep-19	-	-	463	525	600	4
Stephens Lake	GN-36	STL-B	20-Sep-19	117627	900 067000113417	298	342	100	1
Stephens Lake	GN-36	STL-B	20-Sep-19	117626	-	287	351	100	-
Stephens Lake	GN-37	STL-B	21-Sep-19	117628	900 067000109639	265	301	100	1
Stephens Lake	GN-37	STL-B	21-Sep-19	117629	900 067000113774	295	333	150	1
Stephens Lake	GN-37	STL-B	21-Sep-19	117630	900 067000055444	521	599	900	5
Stephens Lake	GN-38	STL-B	21-Sep-19	117631	900 226000767214	365	409	300	3
Stephens Lake	GN-38	STL-B	21-Sep-19	117632	900 226000327755	405	451	400	3
Stephens Lake	GN-39	STL-B	21-Sep-19	117633	900 226000767245	405	453	450	3

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2019. Red text indicates sampling mortality (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-39	STL-B	21-Sep-19	117635	900 226001030312	486	560	900	4
Stephens Lake	GN-39	STL-B	21-Sep-19	117636	900 226000327783	836	944	5500	-
Stephens Lake	GN-31	STL-B	21-Sep-19	117637	900 067000113475	294	329	100	1
Stephens Lake	GN-31	STL-B	21-Sep-19	117638	900 226000767240	354	399	450	3
Stephens Lake	GN-31	STL-B	21-Sep-19	117639	900 226000767284	455	510	700	4
Stephens Lake	GN-40	STL-B	21-Sep-19	117640	900 067000113405	325	371	150	1

a – Ages assigned based on structures aged in a previous study year.

APPENDIX 3:
AGEING STRUCTURES OF JUVENILE LAKE STURGEON CAUGHT IN THE KEEYASK STUDY AREA.

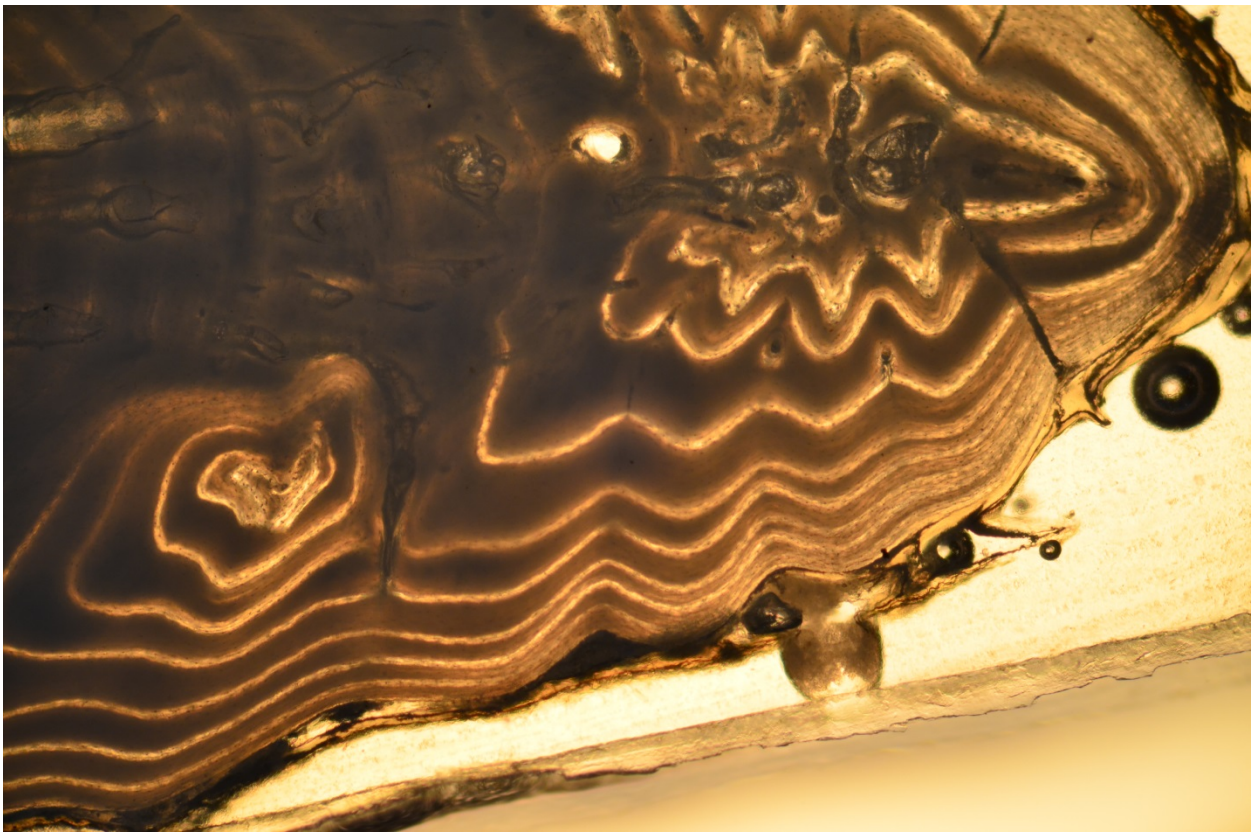


Figure A3-1: Ageing structure from a wild juvenile Lake Sturgeon (8-year-old) caught in Gull Lake.

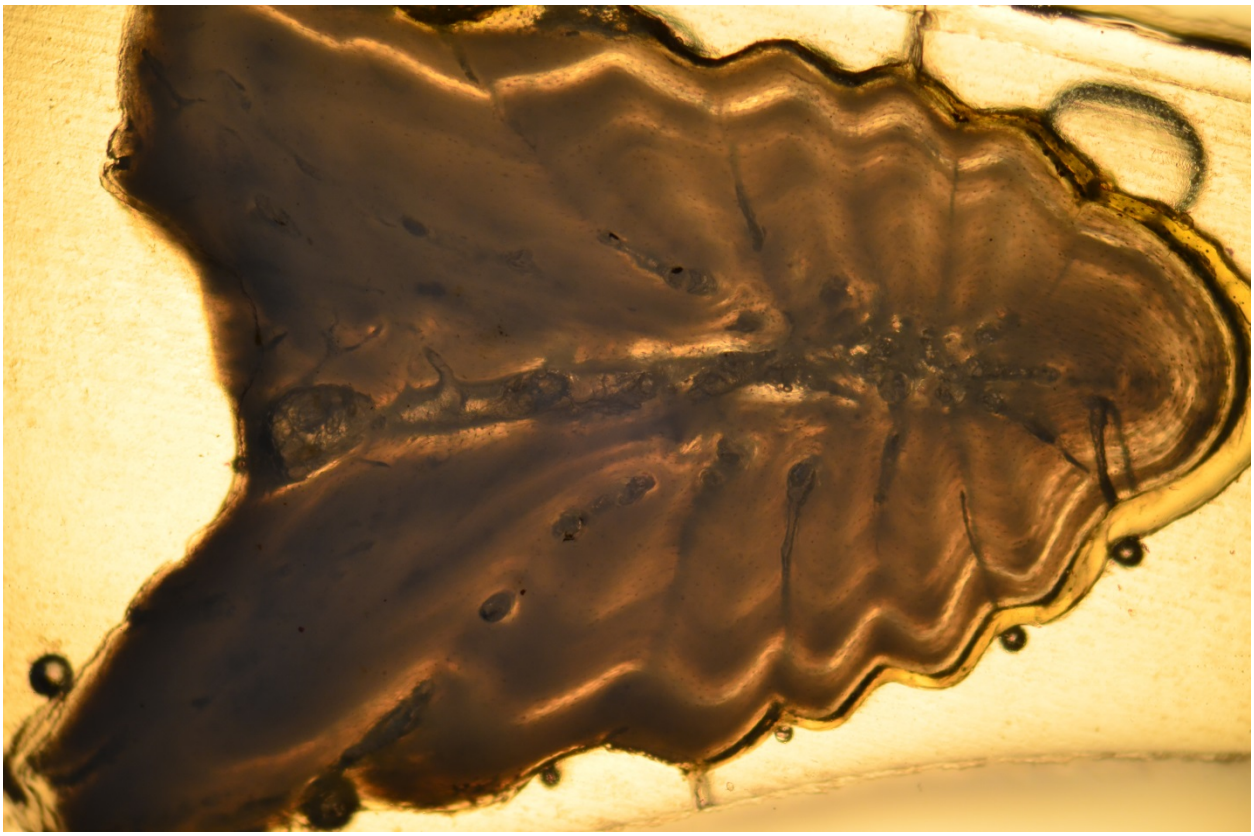


Figure A3-2: Ageing structure from a hatchery reared juvenile Lake Sturgeon caught in Stephens Lake (2-year-old). Agers noted the presence of a weak first annulus and false annuli typically observed in hatchery reared Lake Sturgeon.

APPENDIX 4:
WILD AND HATCHERY LAKE STURGEON RECAPTURE DATA, FALL 2019.

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019.

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Split Lake	113539	900 226000153706	SPL-A	13-Sep-19	705	781	2650	9	0.90	367
Split Lake	-	-	SPL-A	11-Sep-18	689	762	2550	8	-	-
				Growth	**16**	**19**	**100**			
Split Lake	113711	900 226000153791	SPL-A	14-Sep-19	582	656	1250	8	1.30	359
Split Lake	-	-	SPL-A	20-Sep-18	549	617	1050	7	-	-
				Growth	**33**	**39**	**200**			
Split Lake	93680	900 226000768064	SPL-A	14-Sep-19	704	790	2500	12	0.22	748
Split Lake	-	-		27-Aug-17	636	698	1990	-	-	-
				Growth	**68**	**92**	**510**			
Split Lake	55299	900 226000327422	SPL-A	15-Sep-19	852	951	-	-	48.26	89
Burntwood River	-	-	BWR-A	18-Jun-19	866	961	5126	-	-	-
				Growth	**-14[b]**	**-10[b]**	**-**			
Split Lake	113531	900 226000153777	SPL-A	15-Sep-19	461	528	790	6	4.53	369
Split Lake	-	-	SPL-A	11-Sep-18	400	455	450	5	-	-
				Growth	**61**	**73**	**340**			
Split Lake	110447	900 226000153301	SPL-A	15-Sep-19	651	736	2130	9	0.04	731
Split Lake	-	-	SPL-A	14-Sep-17	615	696	1814	7	-	-
				Growth	**36**	**40**	**316**			
Split Lake	109548	900 226000153321	SPL-A	15-Sep-19	908	1041	-	-	0.07	1101
Split Lake	-	-	SPL-A	9-Sep-16	884	983	6713	-	-	-
				Growth	**24**	**58**	**-**			
Split Lake	101470	900 226000327415	SPL-A	16-Sep-19	749	831	2800	12*	22.71	2565
Burntwood River	-	-		7-Sep-12	435	488	450	5	-	-
				Growth	**314**	**343**	**2350**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Split Lake	105693	900 226000629029	SPL-A	16-Sep-19	796	907	-	-	74.67	1902
future Keeyask reservoir	-	-		2-Jul-14	655	745	2250	-	-	-
				Growth	**141**	**162**	**-**			
Split Lake	103186	900 226000768053	SPL-A	16-Sep-19	933	1020	-	-	45.19	826
Burntwood River	-	-		12-Jun-17	910	1015	5806	-	-	-
				Growth	**23**	**5**	**-**			
Split Lake	75878	900 226000153895	SPL-A	16-Sep-19	718	814	2750	-	80.45	1176
future Keeyask reservoir	-	-		27-Jun-16	631	716	2495	-	-	-
				Growth	**87**	**98**	**255**			
future Keeyask reservoir	113032	900 226001031263	GL-C	12-Sep-19	530	607	1200	6	0.11	364
future Keeyask reservoir	113032	900 226000327548	GL-C	13-Sep-18	499	572	900	5	-	-
				Growth	**31**	**35**	**300**			
future Keeyask reservoir	105046	900 226000548737	GL-B	12-Sep-19	687	778	2300	11	6.43	1459
future Keeyask reservoir	-	-		14-Sep-15	565	658	1340	7	-	-
				Growth	**122**	**120**	**960**			
future Keeyask reservoir	113039	900 226000327575	GL-C	13-Sep-19	458	523	600	4	0.30	365
future Keeyask reservoir	-	-	GL-C	13-Sep-18	391	443	450	3	-	-
				Growth	**67**	**80**	**150**			
future Keeyask reservoir	113016	900 226000327568	GL-C	13-Sep-19	384	422	400	4	1.69	366
future Keeyask reservoir	-	-	GL-C	12-Sep-18	357	395	400	3	-	-
				Growth	**27**	**27**	**0**			

Table A4-1: Original capture date and biological data wild Lake Sturgeon fish recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	80366	900 226000153822	BR-D	13-Sep-19	1060	1160	8550	-	7.84	4112
future Keeyask reservoir	-	-		24-Jun-16	1028	1132	9299	-	-	-
future Keeyask reservoir	-	-		10-Jun-08	856	925	4763	-	-	-
				Growth	**204**	**235**	**3787**			
future Keeyask reservoir	100135	900 226001031203	BR-D	14-Sep-19	738	837	2800	11	10.80	2562
future Keeyask reservoir	-	-		8-Sep-12	465	525	650	4	-	-
				Growth	**273**	**312**	**2150**			
future Keeyask reservoir	111004	900 226000893684	GL-B	14-Sep-19	695	777	2300	11	5.61	1088
future Keeyask reservoir	-	-		21-Sep-16	617	698	1460	-	-	-
				Growth	**78**	**79**	**840**			
future Keeyask reservoir	109728	900 226000152954	GL-B	14-Sep-19	510	575	1000	6	6.26	725
future Keeyask reservoir	-	-		19-Sep-17	455	514	750	4	-	-
				Growth	**55**	**61**	**250**			
future Keeyask reservoir	88738	900 226000152999	GL-B	15-Sep-19	497	565	850	6	0.08	724
future Keeyask reservoir	-	-		21-Sep-17	455	519	650	4	-	-
				Growth	**42**	**46**	**200**			
future Keeyask reservoir	106457	900 226000153129	GL-B	15-Sep-19	400	474	400	4	2.97	735
future Keeyask reservoir	-	-		10-Sep-17	329	379	300	2	-	-
				Growth	**71**	**95**	**100**			
future Keeyask reservoir	113155	900 226000327540	GL-B	15-Sep-19	424	477	500	5	0.33	361
future Keeyask reservoir	-	-	GL-B	19-Sep-18	419	473	550	4	-	-
				Growth	**5**	**4**	**-50[b]**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	89988	900 226000629293	GL-A	17-Sep-19	657	748	2000	11	1.00	1827
future Keeyask reservoir	-	-		18-Sep-16	580	667	1320	8	-	-
future Keeyask reservoir	-	-		14-Sep-15	559	640	1260	7	-	-
future Keeyask reservoir	-	-		16-Sep-14	549	631	1100	6	-	-
				Growth	**108**	**117**	**900**			
future Keeyask reservoir	113156	900 226000327561	GL-B	17-Sep-19	340	390	400	3	0.22	370
future Keeyask reservoir	-	-	GL-B	12-Sep-18	302	345	250	2	-	-
				Growth	**38**	**45**	**150**			
future Keeyask reservoir	79413	900 226000154217	GL-B	17-Sep-19	635	722	1750	11	0.71	444
future Keeyask reservoir				30-Jun-18	608	690	-	-	-	-
				Growth	**27**	**32**	**-**			
future Keeyask reservoir	109571	900 226000893785	GL-B	17-Sep-19	446	518	550	6	0.77	734
future Keeyask reservoir	-	-		13-Sep-17	410	479	400	4	-	-
				Growth	**36**	**39**	**150**			
future Keeyask reservoir	111026	900 226000893923	GL-B	18-Sep-19	579	658	1350	8	0.20	733
future Keeyask reservoir	-	-		15-Sep-17	553	626	1200	6	-	-
				Growth	**26**	**32**	**150**			
future Keeyask reservoir	109643	900 226000893983	GL-B	18-Sep-19	700	790	2350	11	1.10	733
future Keeyask reservoir	-	-		15-Sep-17	658	750	2000	9	-	-
				Growth	**42**	**40**	**350**			
future Keeyask reservoir	79425	900 226000154259	GL-B	18-Sep-19	667	758	2100	11	1.62	447
future Keeyask reservoir	-	-		28-Jun-18	656	749	-	-	-	-
				Growth	**11**	**9**	**-**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	109551	900 226000893994	GL-C	18-Sep-19	395	450	300	4	0.53	736
future Keeyask reservoir	-	-		12-Sep-17	315	360	200	2	-	-
				Growth	**80**	**90**	**100**			
future Keeyask reservoir	79415	900 226000893260	GL-C	20-Sep-19	823	910	3800	-	1.09	447
future Keeyask reservoir	-	-		30-Jun-18	793	881	-	-	-	-
				Growth	**30**	**29**	**-**			
future Keeyask reservoir	113021	900 226000327576	GL-C	20-Sep-19	369	419	300	3	0.07	373
future Keeyask reservoir	-	-	GL-C	12-Sep-18	309	352	200	2	-	-
				Growth	**60**	**67**	**100**			
Stephens Lake	79256	900 226000629431	STL-A	13-Sep-19	760	862	3650	11	2.42	1812
Stephens Lake	-	-		27-Sep-14	585	663	1450	6	-	-
				Growth	**175**	**199**	**2200**			
Stephens Lake	116022	900 067000121331	STL-A	13-Sep-19	385	440	450	4[a]	0.11	731
Stephens Lake	-	-		12-Sep-17	259	295	100	1	-	-
				Growth	**126**	**145**	**350**			
Stephens Lake	110788	900 226000628487	STL-A	13-Sep-19	535	635	1350	6	1.64	728
Stephens Lake	-	-		15-Sep-17	505	569	950	4	-	-
				Growth	**30**	**66**	**400**			
Stephens Lake	113298	900 226000327925	STL-B	13-Sep-19	437	500	600	4	0.98	358
Stephens Lake	-	-	STL-B	20-Sep-18	410	468	525	3	-	-
				Growth	**27**	**32**	**75**			
Stephens Lake	111073	900 226000154254	STL-B	13-Sep-19	466	539	650	4	0.05	730
Stephens Lake	-	-		13-Sep-17	351	402	300	2	-	-
				Growth	**115**	**137**	**350**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	91714	900 226001030356	STL-B	14-Sep-19	950	1100	-	-	1.55	2906
Stephens Lake	-	-		18-Sep-12	767	860	3800	-	-	-
Stephens Lake	-	-		30-Sep-11	734	823	3450	-	-	-
				Growth	**216**	**277**	**-**			
Stephens Lake	110794	900 226000893916	STL-A	14-Sep-19	471	531	700	4	1.68	728
Stephens Lake	-	-		16-Sep-17	365	414	325	2	-	-
				Growth	**106**	**117**	**375**			
Stephens Lake	100142	1380348307	STL-B	16-Sep-19	808	904	4350	11	0.45	2550
Stephens Lake	-	-		24-Sep-15	637	694	1950	7	-	-
Stephens Lake	-	-		22-Sep-12	464	528	775	4	-	-
				Growth	**344**	**376**	**3575**			
Stephens Lake	113272	900 226000767664	STL-B	16-Sep-19	446	500	650	4	0.94	364
Stephens Lake	-	-	STL-B	17-Sep-18	406	450	525	3	-	-
				Growth	**40**	**50**	**125**			
Stephens Lake	112946	900 226000628311	STL-B	16-Sep-19	476	546	750	4	1.69	815
Stephens Lake	-	-		23-Jun-17	371	424	325	2	-	-
				Growth	**105**	**122**	**425**			
Stephens Lake	69863	900 226000768504	STL-B	16-Sep-19	848	956	4700	11	1.29	2914
Stephens Lake	-	-		24-Sep-11	413	474	500	3	-	-
				Growth	**435**	**482**	**4200**			
Stephens Lake	101047	900 226000629288	STL-A	16-Sep-19	635	721	1900	7[a]	2.28	1822
Stephens Lake	-	-		20-Sep-14	373	433	350	4	-	-
				Growth	**262**	**288**	**1550**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	110777	900 226000893958	STL-B	17-Sep-19	791	900	3500	11	1.58	731
Stephens Lake	-	-		16-Sep-17	735	840	2900	9	-	-
				Growth	**56**	**60**	**600**			
Stephens Lake	115150	900 226000327803	STL-B	18-Sep-19	421	481	500	4	0.16	371
Stephens Lake	-	-	STL-B	12-Sep-18	394	451	375	3	-	-
				Growth	**27**	**30**	**125**			
Stephens Lake	110564	900 043000103645	STL-B	18-Sep-19	472	540	600	4	3.23	1094
Stephens Lake	-	-		19-Sep-17	347	397	225	2	-	-
Stephens Lake	-	-		19-Sep-16	233	275	80	-		
				Growth	**239**	**265**	**520**			
Stephens Lake	101482	900 226000703493	STL-B	18-Sep-19	871	975	5000	11	0.84	1453
Stephens Lake	-	-		26-Sep-15	703	772	2450	7	-	-
				Growth	**168**	**203**	**2550**			
Stephens Lake	117659	900 043000103587	STL-B	18-Sep-19	335	375	250	2	0.61	365
Stephens Lake	-	-	STL-A	18-Sep-18	251	283	75	1	-	-
				Growth	**84**	**92**	**175**			
Stephens Lake	110000	900 043000103855	STL-B	18-Sep-19	462	525	700	4	1.90	1091
Stephens Lake	-	-		22-Sep-16	270	305	220	1	-	-
				Growth	**192**	**220**	**480**			
Stephens Lake	93874	900 226000767298	STL-B	18-Sep-19	667	742	1850	9	14.18	2919
future Keeyask reservoir	-	-	GL-C	21-Sep-11	273	303	150	-	-	-
				Growth	**394**	**439**	**1700**			
Stephens Lake	116848	900 043000103684	STL-B	18-Sep-19	584	665	1200	6	14.35	1829
future Keeyask reservoir	-	-	GL-C	15-Sep-14	237	271	125	-	-	-
				Growth	**347**	**394**	**1075**			

Table A4-1: Original capture date and biological data for wild Lake Sturgeon recaptured in gill nets, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	112949	900 226000154234	STL-B	20-Sep-19	790	868	3700	11	1.13	729
Stephens Lake	-	-		21-Sep-17	753	835	3550	9	-	-
				Growth	**37**	**33**	**150**			
Stephens Lake	69875	900 226000577003	STL-B	20-Sep-19	829	932	5000	11*	0.57	2917
Stephens Lake	-	-		21-Sep-17	760	865	4050	9	-	-
Stephens Lake	-	-		25-Sep-11	395	456	500	3		
				Growth	**434**	**476**	**4500**			
Stephens Lake	117686	900 067000121203	STL-B	20-Sep-19	374	423	350	4	0.15	367
Stephens Lake	-	-	STL-B	18-Sep-18	322	367	175	3	-	-
				Growth	**52**	**56**	**175**			
Stephens Lake	109999	900 226000768861	STL-B	20-Sep-19	784	888	3600	8	0.75	1092
Stephens Lake	-	-		23-Sep-16	674	772	2530	-	-	-
				Growth	**110**	**116**	**1070**			

* - Ages assigned based on structures aged in a previous study year

a – Assigned age in 2019 differed from ageing carried out in a previous year

b – Measurement discrepancies due to errors in measurement at release or recapture

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the Upper Split Lake Area, fall 2019.

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Split Lake	116690	900 067000109938	SPL-A	13-Sep-19	314	359	230	2	44.81	463
Burntwood River	-	-	BWR	7-Jun-18	210	242	72	1	-	-
				Growth	**104**	**117**	**158**			
Split Lake	116679	900 043000102970	SPL-A	13-Sep-19	481	554	740	6	-	-
Burntwood River	-	-	BWR	2-Oct-14	265	304	110	1	-	-
				Growth	**216**	**250**	**630**			
Split Lake	113798	900 043000102908	SPL-A	13-Sep-19	481	538	700	6	33.12	1807
Burntwood River	-	-	BWR	2-Oct-14	242	275	72	1	-	-
				Growth	**239**	**263**	**628**			
Split Lake	113785	900 067000110706	SPL-A	13-Sep-19	362	407	300	2	44.40	463
Burntwood River	-	-	BWR	7-Jun-18	233	274	82	1	-	-
				Growth	**129**	**133**	**218**			
Split Lake	116522	900 067000111843	SPL-A	13-Sep-19	304	345	160	2	26.96	470
Burntwood River	-	-	BWR	31-May-18	196	228	45	1	-	-
				Growth	**108**	**117**	**115**			
Split Lake	116501	900 067000110160	SPL-A	14-Sep-19	376	426	370	2	30.63	471
Burntwood River	-	-	BWR	31-May-18	198	227	45	1	-	-
				Growth	**178**	**199**	**325**			
Split Lake	116566	900 067000111293	SPL-A	14-Sep-19	339	385	230	2	26.96	471
Burntwood River	-	-	BWR	31-May-18	204	243	50	1	-	-
				Growth	**135**	**142**	**180**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the Upper Split Lake Area, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Split Lake	116643	900 067000110293	SPL-A	15-Sep-19	337	385	230	2	26.96	472
Burntwood River	-	-	BWR	31-May-18	224	258	70	1	-	-
			Growth		**113**	**127**	**160**			
Split Lake	116645	900 067000110350	SPL-A	15-Sep-19	328	372	190	2	26.96	472
Burntwood River	-	-	BWR	31-May-18	242	278	91	1	-	-
			Growth		**86**	**94**	**99**			
Split Lake	116624	900 067000109957	SPL-A	15-Sep-19	315	367	200	2	39.64	465
Burntwood River	-	-	BWR	7-Jun-18	211	253	66	1	-	-
			Growth		**104**	**114**	**134**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019.

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	116001	900 067000112083	GL-C	11-Sep-19	404	470	425	3	11.86	825
future Keeyask reservoir	-	-	GL-A	8-Jun-17	248	293	92	1	-	-
				Growth	**156**	**177**	**333**			
future Keeyask reservoir	109732	900 226001031286	GL-B	11-Sep-19	395	451	375	3	11.57	825
future Keeyask reservoir	-	900 067000112110	-	18-Sep-17	320	371	200	1	-	-
future Keeyask reservoir	-	-	GL-A	8-Jun-17	246	295	92	1	-	-
				Growth	**149**	**156**	**283**			
future Keeyask reservoir	116769	900 067000112162	GL-B	12-Sep-19	360	418	300	3	9.22	826
future Keeyask reservoir	-	-	GL-A	8-Jun-17	282	72	-	1	-	-
				Growth	**78**	**346**	**-**			
future Keeyask reservoir	116781	900 067000112106	GL-B	12-Sep-19	390	452	350	3	6.71	826
future Keeyask reservoir	-	-	GL-A	8-Jun-17	236	281	72	1	-	-
				Growth	**154**	**171**	**278**			
future Keeyask reservoir	116783	900 067000109883	GL-C	13-Sep-19	338	387	227	2	128.92	463
Burntwood River	-	-	BWR-A	7-Jun-18	241	280	87	1	-	-
				Growth	**97**	**107**	**140**			
future Keeyask reservoir	109629	900 067000055475	GL-C	13-Sep-19	426	789	500	5	4.47	1458
future Keeyask reservoir			GL-B	16-Sep-15	270	308	110	1	-	-
				Growth	**156**	**481**	**390**			
future Keeyask reservoir	113833	900 067000112140	GL-C	13-Sep-19	387	440	325	3	13.60	827
future Keeyask reservoir			GL-A	8-Jun-17	330	128	-	1	-	-
				Growth	**57**	**312**	**-**			
future Keeyask reservoir	116795	900 067000059562	GL-C	13-Sep-19	435	509	500	3	11.79	827
future Keeyask reservoir			GL-A	8-Jun-17	255	307	92	1	-	-
				Growth	**180**	**202**	**408**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	116797	900 067000109672	GL-C	13-Sep-19	283	325	125	1	2.71	99
future Keeyask reservoir	-	-	GL-B	6-Jun-19	229	267	67	1	-	-
				Growth	**54**	**58**	**58**			
future Keeyask reservoir	116798	900 067000113225	GL-B	13-Sep-19	265	310	100	1	0.40	99
future Keeyask reservoir	-	-	GL-B	6-Jun-19	210	253	58	1	-	-
				Growth	**55**	**57**	**42**			
future Keeyask reservoir	117051	900 067000112084	GL-B	13-Sep-19	353	404	300	3	9.07	827
future Keeyask reservoir	-	-	GL-A	8-Jun-17	210	249	57	1	-	-
				Growth	**143**	**155**	**243**			
future Keeyask reservoir	117052	900 043000119910	GL-B	13-Sep-19	462	521	600	6	111.94	1932
Burntwood River			BWR-B	30-May-14	195	222	32	1	-	-
				Growth	**267**	**299**	**568**			
future Keeyask reservoir	117056	900 067000112400	GL-B	13-Sep-19	374	434	325	3	9.15	827
future Keeyask reservoir			GL-A	8-Jun-17	220	257	58	1	-	-
				Growth	**154**	**177**	**267**			
future Keeyask reservoir	117058	900 067000059390	GL-B	13-Sep-19	360	413	275	3	9.15	827
future Keeyask reservoir			GL-A	8-Jun-17	249	289	87	1	-	-
				Growth	**111**	**124**	**188**			
future Keeyask reservoir	117059	900 067000112510	GL-B	13-Sep-19	361	412	300	3	9.15	827
future Keeyask reservoir			GL-A	8-Jun-17	234	270	74	1	-	-
				Growth	**127**	**142**	**226**			
future Keeyask reservoir	117073	900 067000055083	GL-B	14-Sep-19	426	485	425	5	2.60	1545
future Keeyask reservoir			GL-A	22-Jun-15	168	195	27	1	-	-
				Growth	**258**	**290**	**398**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	117083	900 067000055538	GL-B	14-Sep-19	530	602	900	5	2.68	1545
future Keeyask reservoir			GL-A	22-Jun-15	248	291	86	1	-	-
				Growth	**282**	**311**	**814**			
future Keeyask reservoir	117090	900 067000112938	GL-C	14-Sep-19	296	340	100	1	3.91	100
future Keeyask reservoir			GL-B	6-Jun-19	240	283	74	1	-	-
				Growth	**56**	**57**	**26**			
future Keeyask reservoir	117098	900 067000055374	GL-B	15-Sep-19	445	520	550	5	0.05	1460
future Keeyask reservoir			GL-B	16-Sep-15	315	369	179	1	-	-
				Growth	**130**	**151**	**371**			
future Keeyask reservoir	116801	900 067000059417	GL-B	15-Sep-19	377	430	300	3	8.96	829
future Keeyask reservoir			GL-A	8-Jun-17	222	258	60	1	-	-
				Growth	**155**	**172**	**240**			
future Keeyask reservoir	116805	900 067000113723	GL-C	15-Sep-19	300	349	100	1	1.49	101
future Keeyask reservoir			GL-C	6-Jun-19	230	270	62	1	-	-
				Growth	**70**	**79**	**38**			
future Keeyask reservoir	116808	900 067000113651	GL-C	15-Sep-19	329	386	200	1	0.39	101
future Keeyask reservoir			GL-C	6-Jun-19	255	304	90	1	-	-
				Growth	**74**	**82**	**110**			
future Keeyask reservoir	116809	900 067000113776	GL-C	15-Sep-19	291	338	100	1	0.39	101
future Keeyask reservoir			GL-C	6-Jun-19	210	245	51	1	-	-
				Growth	**81**	**93**	**49**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	116812	900 067000108586	GL-C	16-Sep-19	325	378	200	1	0.39	102
future Keeyask reservoir			GL-C	6-Jun-19	226	272	72	1	-	-
				Growth	**99**	**106**	**128**			
future Keeyask reservoir	116813	900 067000109379	GL-C	16-Sep-19	320	368	200	1	0.39	102
future Keeyask reservoir			GL-C	6-Jun-19	234	276	77	1	-	-
				Growth	**86**	**92**	**123**			
future Keeyask reservoir	116816	900 067000113750	GL-C	16-Sep-19	285	331	150	1	0.39	102
future Keeyask reservoir			GL-C	6-Jun-19	225	270	73	1	-	-
				Growth	**60**	**61**	**77**			
future Keeyask reservoir	116819	900 067000112892	GL-B	16-Sep-19	300	345	150	1	0.05	102
future Keeyask reservoir			GL-B	6-Jun-19	220	255	63	1	-	-
				Growth	**80**	**90**	**87**			
future Keeyask reservoir	113023	900 067000059421	GL-A	17-Sep-19	372	428	325	3	2.16	831
future Keeyask reservoir			GL-A	8-Jun-17	232	271	74	1	-	-
				Growth	**140**	**157**	**251**			
future Keeyask reservoir	116826	900 067000058715	GL-B	17-Sep-19	470	540	600	5	0.25	1548
future Keeyask reservoir			GL-B	22-Jun-15	231	271	67	1	-	-
				Growth	**239**	**269**	**533**			
future Keeyask reservoir	116830	900 067000109619	GL-C	17-Sep-19	325	377	150	1	0.32	103
future Keeyask reservoir			GL-C	6-Jun-19	240	277	72	1	-	-
				Growth	**85**	**100**	**78**			
future Keeyask reservoir	116831	900 067000113743	GL-C	17-Sep-19	325	372	150	1	0.32	103
future Keeyask reservoir			GL-C	6-Jun-19	255	301	90	1	-	-
				Growth	**70**	**71**	**60**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	116832	900 067000107947	GL-C	17-Sep-19	309	358	150	1	0.32	103
future Keeyask reservoir			GL-C	6-Jun-19	235	277	70	1	-	-
				Growth	**74**	**81**	**80**			
future Keeyask reservoir	116839	900 067000055012	GL-B	18-Sep-19	510	581	700	5	0.25	1549
future Keeyask reservoir			GL-B	22-Jun-15	213	247	52	1	-	-
				Growth	**297**	**334**	**648**			
future Keeyask reservoir	116840	900 067000109321	GL-B	18-Sep-19	309	355	100	1	0.28	104
future Keeyask reservoir			GL-B	6-Jun-19	211	252	53	1	-	-
				Growth	**98**	**103**	**47**			
future Keeyask reservoir	116841	900 067000112486	GL-B	18-Sep-19	360	420	200	3	8.97	832
future Keeyask reservoir			GL-A	8-Jun-17	214	252	54	1	-	-
				Growth	**146**	**168**	**146**			
future Keeyask reservoir	116847	900 067000109329	GL-B	18-Sep-19	295	340	100	1	0.90	104
future Keeyask reservoir			GL-B	6-Jun-19	208	246	49	1	-	-
				Growth	**87**	**94**	**51**			
future Keeyask reservoir	117102	900 067000113235	GL-C	18-Sep-19	312	370	150	1	4.06	104
future Keeyask reservoir			GL-B	6-Jun-19	231	275	71	1	-	-
				Growth	**81**	**95**	**79**			
future Keeyask reservoir	109628	900 067000055300	GL-C	18-Sep-19	528	610	950	5	0.77	1463
future Keeyask reservoir			GL-C	16-Sep-15	320	366	184	1	-	-
				Growth	**208**	**244**	**766**			
future Keeyask reservoir	117107	900 067000109364	GL-C	18-Sep-19	300	338	75	1	0.15	104
future Keeyask reservoir			GL-C	6-Jun-19	229	260	55	1	-	-
				Growth	**71**	**78**	**20**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	117108	900 067000113768	GL-C	18-Sep-19	315	363	150	1	0.15	104
future Keeyask reservoir			GL-C	6-Jun-19	230	270	66	1	-	-
				Growth	**85**	**93**	**84**			
future Keeyask reservoir	117109	900 067000113195	GL-C	18-Sep-19	300	350	100	1	4.38	104
future Keeyask reservoir			GL-B	6-Jun-19	208	249	50	1	-	-
				Growth	**92**	**101**	**50**			
future Keeyask reservoir	117126	900 067000113011	GL-B	19-Sep-19	266	314	100	1	0.90	105
future Keeyask reservoir			GL-B	6-Jun-19	225	268	64	1	-	-
				Growth	**41**	**46**	**36**			
future Keeyask reservoir	117127	900 067000112887	GL-B	19-Sep-19	296	343	125	1	0.90	105
future Keeyask reservoir			GL-B	6-Jun-19	210	251	49	1	-	-
				Growth	**86**	**92**	**76**			
future Keeyask reservoir	117128	900 067000113012	GL-B	19-Sep-19	297	343	100	1	0.90	105
future Keeyask reservoir			GL-B	6-Jun-19	217	260	51	1	-	-
				Growth	**80**	**83**	**49**			
future Keeyask reservoir	117129	900 067000112099	GL-B	19-Sep-19	389	440	300	3	8.16	833
future Keeyask reservoir			GL-A	8-Jun-17	260	305	106	1	-	-
				Growth	**129**	**135**	**194**			
future Keeyask reservoir	117132	900 067000055156	GL-B	19-Sep-19	480	555	650	5	1.92	1550
future Keeyask reservoir			GL-B	22-Jun-15	187	220	37	1	-	-
				Growth	**293**	**335**	**613**			
future Keeyask reservoir	117133	900 067000058546	GL-B	19-Sep-19	480	555	600	5	0.81	1550
future Keeyask reservoir			GL-B	22-Jun-15	222	261	63	1	-	-
				Growth	**258**	**294**	**537**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	117135	900 067000107911	GL-C	19-Sep-19	310	351	100	1	0.19	105
future Keeyask reservoir			GL-C	6-Jun-19	225	260	65	1	-	-
				Growth	**85**	**91**	**35**			
future Keeyask reservoir	117138	900 067000113685	GL-C	19-Sep-19	345	394	150	1	0.15	105
future Keeyask reservoir			GL-C	6-Jun-19	250	289	74	1	-	-
				Growth	**95**	**105**	**76**			
future Keeyask reservoir	117142	900 067000058522	GL-A	20-Sep-19	460	531	500	5	3.00	1551
future Keeyask reservoir			GL-B	22-Jun-15	200	237	46	1	-	-
				Growth	**260**	**294**	**454**			
future Keeyask reservoir	117145	900 067000055691	GL-B	20-Sep-19	502	585	700	5	5.82	1465
future Keeyask reservoir			GL-C	16-Sep-15	346	406	217	1	-	-
				Growth	**156**	**179**	**483**			
future Keeyask reservoir	117146	900 067000055755	GL-B	20-Sep-19	420	478	400	5	0.78	1551
future Keeyask reservoir			GL-B	22-Jun-15	144	167	17	1	-	-
				Growth	**276**	**311**	**383**			
future Keeyask reservoir	117148	900 067000113049	GL-B	20-Sep-19	280	330	125	1	0.28	106
future Keeyask reservoir			GL-B	6-Jun-19	212	255	52	1	-	-
				Growth	**68**	**75**	**73**			
future Keeyask reservoir	117149	900 067000059461	GL-B	20-Sep-19	380	438	400	3	9.03	834
future Keeyask reservoir			GL-A	8-Jun-17	214	250	53	1	-	-
				Growth	**166**	**188**	**347**			
future Keeyask reservoir	117150	900 067000111902	GL-B	20-Sep-19	390	453	400	3	9.03	834
future Keeyask reservoir			GL-A	8-Jun-17	267	314	118	1	-	-
				Growth	**123**	**139**	**282**			

Table A4-3: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in the future Keeyask reservoir, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
future Keeyask reservoir	117007	900 067000113724	GL-C	20-Sep-19	320	368	-	1	0.69	106
future Keeyask reservoir			GL-C	6-Jun-19	235	277	73	1	-	-
				Growth	**85**	**91**	**-**			
future Keeyask reservoir	117011	900 067000113693	GL-C	20-Sep-19	297	347	250	1	0.20	106
future Keeyask reservoir			GL-C	6-Jun-19	215	260	54	1	-	-
				Growth	**82**	**87**	**196**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019.

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116007	900 067000055209	STL-B	12-Sep-19	540	623	1075	5	1.58	1543
Stephens Lake	-	-	STL-B	22-Jun-15	218	257	60	1	-	-
	-	-	**Growth**		**322**	**366**	**1015**			
Stephens Lake	-	900 067000112987	STL-B	12-Sep-19	280	319	150	1	2.68	91
Stephens Lake	-	-	STL-A	13-Jun-19	217	252	56	1	-	-
	-	-	**Growth**		**63**	**67**	**94**			
Stephens Lake	-	900 067000113414	STL-B	12-Sep-19	310	360	175	1	2.68	91
Stephens Lake	-	-	STL-A	13-Jun-19	228	267	62	1	-	-
	-	-	**Growth**		**82**	**93**	**113**			
Stephens Lake	-	900 067000113273	STL-B	12-Sep-19	305	354	175	1	0.04	91
Stephens Lake	-	-	STL-B	13-Jun-19	205	241	46	1	-	-
	-	-	**Growth**		**100**	**113**	**129**			
Stephens Lake	-	900 067000113232	STL-B	12-Sep-19	305	345	150	1	0.04	91
Stephens Lake	-	-	STL-B	13-Jun-19	245	280	78	1	-	-
	-	-	**Growth**		**60**	**65**	**72**			
Stephens Lake	-	900 067000108582	STL-B	12-Sep-19	295	337	125	1	2.68	91
Stephens Lake	-	-	STL-A	13-Jun-19	231	266	66	1	-	-
	-	-	**Growth**		**64**	**71**	**59**			
Stephens Lake	116008	900 067000055565	STL-B	12-Sep-19	560	643	1025	5	1.84	1459
Stephens Lake	-	-	STL-A	14-Sep-15	314	363	154	1	-	-
	-	-	**Growth**		**246**	**280**	**871**			
Stephens Lake	116051	900 067000109372	STL-B	12-Sep-19	305	352	175	1	0.04	91
Stephens Lake	-	-	STL-B	13-Jun-19	226	266	71	1	-	-
	-	-	**Growth**		**79**	**86**	**104**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	91528	900 067000055109	STL-A	13-Sep-19	531	592	1025	5	3.22	1544
Stephens Lake	-	-	STL-B	22-Jun-15	241	279	75	1	-	-
	-	-	**Growth**		**290**	**313**	**950**			
Stephens Lake	116016	900 067000109308	STL-B	13-Sep-19	309	358	150	1	0.23	92
Stephens Lake	-	-	STL-B	13-Jun-19	238	281	77	1	-	-
	-	-	**Growth**		**71**	**77**	**73**			
Stephens Lake	116015	900 067000058419	STL-B	13-Sep-19	524	608	1000	5	0.84	1544
Stephens Lake	-	-	STL-B	22-Jun-15	250	294	91	1	-	-
	-	-	**Growth**		**274**	**314**	**909**			
Stephens Lake	116014	900 067000109583	STL-B	13-Sep-19	313	356	150	1	0.23	92
Stephens Lake	-	-	STL-B	13-Jun-19	235	270	66	1	-	-
	-	-	**Growth**		**78**	**86**	**84**			
Stephens Lake	116013	900 067000113447	STL-B	13-Sep-19	325	370	200	1	2.47	92
Stephens Lake	-	-	STL-A	13-Jun-19	267	310	117	1	-	-
	-	-	**Growth**		**58**	**60**	**83**			
Stephens Lake	116012	900 067000108610	STL-B	13-Sep-19	298	337	125	1	14.40	99
future Keeyask reservoir	-	-	GL-C	6-Jun-19	208	242	50	1	-	-
	-	-	**Growth**		**90**	**95**	**75**			
Stephens Lake	116011	900 067000112895	STL-B	13-Sep-19	310	355	150	1	15.60	99
future Keeyask reservoir	-	-	GL-B	6-Jun-19	250	286	78	1	-	-
	-	-	**Growth**		**60**	**69**	**72**			
Stephens Lake	116026	900 067000113054	STL-B	13-Sep-19	284	329	100	1	0.23	92
Stephens Lake	-	-	STL-B	13-Jun-19	208	251	49	1	-	-
	-	-	**Growth**		**76**	**78**	**51**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116028	900 067000108655	STL-B	13-Sep-19	290	334	100	1	2.68	92
Stephens Lake	-	-	STL-A	13-Jun-19	208	245	51	1	-	-
	-	-		**Growth**	**82**	**89**	**49**			
Stephens Lake	116029	900 067000109610	STL-B	13-Sep-19	310	353	100	1	2.68	92
Stephens Lake	-	-	STL-A	13-Jun-19	234	276	65	1	-	-
	-	-		**Growth**	**76**	**77**	**35**			
Stephens Lake	116030	900 067000055561	STL-B	13-Sep-19	502	580	700	5	0.77	1460
Stephens Lake	-	-	STL-B	14-Sep-15	265	308	97	1	-	-
	-	-		**Growth**	**237**	**272**	**603**			
Stephens Lake	116031	900 067000059065	STL-B	13-Sep-19	365	411	300	3	0.77	708
Stephens Lake	-	-	STL-B	5-Oct-17	280	322	150	1	-	-
	-	-		**Growth**	**85**	**89**	**150**			
Stephens Lake	116032	900 067000108625	STL-B	13-Sep-19	301	346	100	1	2.68	92
Stephens Lake	-	-	STL-A	13-Jun-19	224	255	53	1	-	-
	-	-		**Growth**	**77**	**91**	**47**			
Stephens Lake	116033	900 067000113445	STL-B	13-Sep-19	316	365	100	1	0.04	92
Stephens Lake	-	-	STL-B	13-Jun-19	250	293	78	1	-	-
	-	-		**Growth**	**66**	**72**	**22**			
Stephens Lake	-9999	900 067000109359	STL-B	13-Sep-19	279	312	75	1	0.04	92
Stephens Lake	-	-	STL-B	13-Jun-19	213	254	52	1	-	-
	-	-		**Growth**	**66**	**58**	**23**			
Stephens Lake	116041	900 067000113436	STL-B	14-Sep-19	318	363	150	1	2.47	93
Stephens Lake	-	-	STL-A	13-Jun-19	235	272	71	1	-	-
	-	-		**Growth**	**83**	**91**	**80**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116042	900 067000113029	STL-B	14-Sep-19	294	338	125	1	0.23	93
Stephens Lake	-	-	STL-B	13-Jun-19	215	255	58	1	-	-
	-	-		**Growth**	**79**	**83**	**67**			
Stephens Lake	116043	900 067000113051	STL-B	14-Sep-19	298	335	125	1	2.47	93
Stephens Lake	-	-	STL-A	13-Jun-19	207	242	48	1	-	-
	-	-		**Growth**	**91**	**93**	**77**			
Stephens Lake	116047	900 067000113756	STL-B	14-Sep-19	310	350	150	1	2.47	93
Stephens Lake	-	-	STL-A	13-Jun-19	255	295	86	1	-	-
	-	-		**Growth**	**55**	**55**	**64**			
Stephens Lake	116048	900 067000113397	STL-B	14-Sep-19	310	357	150	1	2.47	93
Stephens Lake	-	-	STL-A	13-Jun-19	222	261	61	1	-	-
	-	-		**Growth**	**88**	**96**	**89**			
Stephens Lake	116049	900 067000113737	STL-B	14-Sep-19	305	343	175	1	2.47	93
Stephens Lake	-	-	STL-A	13-Jun-19	236	272	71	1	-	-
	-	-		**Growth**	**69**	**71**	**104**			
Stephens Lake	116050	900 067000113045	STL-B	14-Sep-19	295	341	150	1	0.23	93
Stephens Lake	-	-	STL-B	13-Jun-19	205	244	47	1	-	-
	-	-		**Growth**	**90**	**97**	**103**			
Stephens Lake	116040	900 067000109606	STL-B	14-Sep-19	315	363	200	1	-	-
-	-	-	-	13-Jun-19	-	-	-	1	-	-
	-	-		**Growth**	**-**	**-**	**-**			
Stephens Lake	116046	900 067000113247	STL-B	14-Sep-19	369	360	150	1	0.23	93
Stephens Lake	-	-	STL-B	13-Jun-19	240	285	77	1	-	-
	-	-		**Growth**	**129**	**75**	**73**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	112915	900 067000055505	STL-B	14-Sep-19	536	614	1000	5	0.93	1461
Stephens Lake	-	-	STL-B	14-Sep-15	275	320	125	1	-	-
	-	-	**Growth**		**261**	**294**	**875**			
Stephens Lake	116054	900 067000113013	STL-B	14-Sep-19	295	330	100	1	0.23	93
Stephens Lake	-	-	STL-B	13-Jun-19	219	254	58	1	-	-
	-	-	**Growth**		**76**	**76**	**43**			
Stephens Lake	116056	900 067000109332	STL-B	14-Sep-19	313	365	150	1	0.04	93
Stephens Lake	-	-	STL-B	13-Jun-19	244	290	85	1	-	-
	-	-	**Growth**		**69**	**75**	**65**			
Stephens Lake	116057	900 067000108663	STL-B	14-Sep-19	330	372	150	1	2.68	93
Stephens Lake	-	-	STL-A	13-Jun-19	252	287	84	1	-	-
	-	-	**Growth**		**78**	**85**	**66**			
Stephens Lake	116059	900 067000112954	STL-B	14-Sep-19	300	340	100	1	14.49	100
future Keeyask reservoir	-	-	GL-C	6-Jun-19	230	270	71	1	-	-
	-	-	**Growth**		**70**	**70**	**29**			
Stephens Lake	116061	900 067000113259	STL-B	14-Sep-19	298	346	100	1	0.04	93
Stephens Lake	-	-	STL-B	13-Jun-19	235	275	71	1	-	-
	-	-	**Growth**		**63**	**71**	**29**			
Stephens Lake	116065	900 067000109361	STL-B	14-Sep-19	296	340	100	1	0.04	93
Stephens Lake	-	-	STL-B	13-Jun-19	220	260	61	1	-	-
	-	-	**Growth**		**76**	**80**	**39**			
Stephens Lake	116066	900 067000113464	STL-B	14-Sep-19	285	330	100	1	2.68	93
Stephens Lake	-	-	STL-A	13-Jun-19	220	258	62	1	-	-
	-	-	**Growth**		**65**	**72**	**38**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116069	900 067000113446	STL-B	14-Sep-19	322	377	150	1	0.04	93
Stephens Lake	-	-	STL-B	13-Jun-19	255	305	93	1	-	-
	-	-		**Growth**	**67**	**72**	**57**			
Stephens Lake	116074	900 067000113438	STL-B	15-Sep-19	301	341	200	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	220	251	60	1	-	-
	-	-		**Growth**	**81**	**90**	**140**			
Stephens Lake	116055	900 067000113406	STL-B	15-Sep-19	285	328	150	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	220	260	54	1	-	-
	-	-		**Growth**	**65**	**68**	**96**			
Stephens Lake	116058	900 067000113451	STL-B	15-Sep-19	287	328	150	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	240	280	78	1	-	-
	-	-		**Growth**	**47**	**48**	**72**			
Stephens Lake	116052	900 067000113708	STL-B	15-Sep-19	301	348	200	1	2.83	94
Stephens Lake	-	-	STL-A	13-Jun-19	235	280	73	1	-	-
	-	-		**Growth**	**66**	**68**	**127**			
Stephens Lake	116071	900 067000108623	STL-B	15-Sep-19	331	382	200	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	264	305	91	1	-	-
	-	-		**Growth**	**67**	**77**	**109**			
Stephens Lake	116062	900 067000113005	STL-B	15-Sep-19	298	344	175	1	2.83	94
Stephens Lake	-	-	STL-A	13-Jun-19	229	272	69	1	-	-
	-	-		**Growth**	**69**	**72**	**106**			
Stephens Lake	116067	900 067000109587	STL-B	15-Sep-19	270	305	100	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	225	263	68	1	-	-
	-	-		**Growth**	**45**	**42**	**32**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116053	900 067000108666	STL-B	15-Sep-19	261	295	100	1	2.83	94
Stephens Lake	-	-	STL-A	13-Jun-19	194	224	38	1	-	-
	-	-	**Growth**		**67**	**71**	**62**			
Stephens Lake	116076	900 067000109633	STL-B	15-Sep-19	287	332	100	1	0.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	225	265	64	1	-	-
	-	-	**Growth**		**62**	**67**	**36**			
Stephens Lake	116077	900 067000111970	STL-B	15-Sep-19	400	464	450	3	4.17	822
Stephens Lake	-	-	STL-A	15-Jun-17	214	251	59	1	-	-
	-	-	**Growth**		**186**	**213**	**391**			
Stephens Lake	116080	900 067000058502	STL-B	15-Sep-19	569	644	1200	5	0.69	1546
Stephens Lake	-	-	STL-B	22-Jun-15	238	275	73	1	-	-
	-	-	**Growth**		**331**	**369**	**1127**			
Stephens Lake	116083	900 067000113505	STL-B	15-Sep-19	391	447	400	3	3.85	822
Stephens Lake	-	-	STL-A	15-Jun-17	217	252	60	1	-	-
	-	-	**Growth**		**174**	**195**	**341**			
Stephens Lake	116084	900 067000113727	STL-B	15-Sep-19	307	348	150	1	2.47	94
Stephens Lake	-	-	STL-A	13-Jun-19	235	277	69	1	-	-
	-	-	**Growth**		**72**	**71**	**81**			
Stephens Lake	116086	900 067000113440	STL-B	15-Sep-19	302	346	150	1	0.23	94
Stephens Lake	-	-	STL-B	13-Jun-19	200	235	42	1	-	-
	-	-	**Growth**		**102**	**111**	**108**			
Stephens Lake	116087	900 043000102947	STL-B	15-Sep-19	382	431	450	6	137.95	1809
Burntwood River	-	-	BWR-A	2-Oct-14	210	241	54	1	-	-
	-	-	**Growth**		**172**	**190**	**396**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	116088	900 067000113239	STL-B	15-Sep-19	290	334	125	1	0.23	94
Stephens Lake	-	-	STL-B	13-Jun-19	225	269	62	1	-	-
	-	-	**Growth**		**65**	**65**	**63**			
Stephens Lake	116090	900 067000113000	STL-B	15-Sep-19	276	320	100	1	0.23	94
Stephens Lake	-	-	STL-B	13-Jun-19	200	235	44	1	-	-
	-	-	**Growth**		**76**	**85**	**56**			
Stephens Lake	116092	900 067000055366	STL-B	15-Sep-19	551	623	1100	5	0.66	1546
Stephens Lake	-	-	STL-B	22-Jun-15	232	269	66	1	-	-
	-	-	**Growth**		**319**	**354**	**1034**			
Stephens Lake	116096	900 067000113031	STL-A	15-Sep-19	324	372	200	1	1.19	94
Stephens Lake	-	-	STL-B	13-Jun-19	254	300	97	1	-	-
	-	-	**Growth**		**70**	**72**	**103**			
Stephens Lake	116099	900 067000055361	STL-A	15-Sep-19	586	683	1300	5	1.83	1546
Stephens Lake	-	-	STL-B	22-Jun-15	236	279	75	1	-	-
	-	-	**Growth**		**350**	**404**	**1225**			
Stephens Lake	116099	900 067000055231	STL-A	15-Sep-19	526	596	950	5	3.22	1546
Stephens Lake	-	-	STL-B	22-Jun-15	192	220	38	1	-	-
	-	-	**Growth**		**334**	**376**	**912**			
Stephens Lake	117576	900 067000055643	STL-B	16-Sep-19	476	550	575	5	0.43	1463
Stephens Lake	-	-	STL-B	14-Sep-15	290	338	126	1	-	-
	-	-	**Growth**		**186**	**212**	**449**			
Stephens Lake	117577	900 067000113060	STL-B	16-Sep-19	311	364	150	1	0.35	95
Stephens Lake	-	-	STL-B	13-Jun-19	234	284	75	1	-	-
	-	-	**Growth**		**77**	**80**	**75**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117578	900 067000059109	STL-B	16-Sep-19	389	448	400	3	1.88	711
Stephens Lake	-	-	STL-B	5-Oct-17	300	347	155	1	-	-
	-	-	**Growth**		**89**	**101**	**245**			
Stephens Lake	117579	900 067000055440	STL-B	16-Sep-19	577	655	1200	5	0.33	1547
Stephens Lake	-	-	STL-B	22-Jun-15	225	258	58	1	-	-
	-	-	**Growth**		**352**	**397**	**1142**			
Stephens Lake	117582	900 067000055352	STL-B	16-Sep-19	541	612	950	5	1.70	1463
Stephens Lake	-	-	STL-A	14-Sep-15	280	325	119	1	-	-
	-	-	**Growth**		**261**	**287**	**831**			
Stephens Lake	117583	900 067000113429	STL-B	16-Sep-19	281	322	100	1	0.18	95
Stephens Lake	-	-	STL-B	13-Jun-19	210	243	47	1	-	-
	-	-	**Growth**		**71**	**79**	**53**			
Stephens Lake	117584	900 067000055658	STL-B	16-Sep-19	530	611	950	5	14.79	1461
future Keeyask reservoir	-	-	GL-B	16-Sep-15	341	395	223	1	-	-
	-	-	**Growth**		**189**	**216**	**727**			
Stephens Lake	117588	900 067000113212	STL-B	16-Sep-19	333	380	225	1	0.89	95
Stephens Lake	-	-	STL-A	13-Jun-19	262	307	99	1	-	-
	-	-	**Growth**		**71**	**73**	**126**			
Stephens Lake	117589	900 067000058404	STL-B	16-Sep-19	506	575	900	5	1.00	1463
Stephens Lake	-	-	STL-B	14-Sep-15	290	333	144	1	-	-
	-	-	**Growth**		**216**	**242**	**756**			
Stephens Lake	117593	900 067000113490	STL-B	17-Sep-19	395	456	400	3	4.05	824
Stephens Lake	-	-	STL-A	15-Jun-17	230	269	72	1	-	-
	-	-	**Growth**		**165**	**187**	**328**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117594	900 067000109667	STL-B	17-Sep-19	301	350	150	1	0.10	96
Stephens Lake	-	-	STL-B	13-Jun-19	235	275	71	1	-	-
	-	-	**Growth**		**66**	**75**	**79**			
Stephens Lake	117595	900 067000113269	STL-B	17-Sep-19	313	352	125	1	2.66	96
Stephens Lake	-	-	STL-A	13-Jun-19	237	275	57	1	-	-
	-	-	**Growth**		**76**	**77**	**68**			
Stephens Lake	117596	900 067000108660	STL-B	17-Sep-19	295	338	100	1	2.66	96
Stephens Lake	-	-	STL-A	13-Jun-19	217	257	55	1	-	-
	-	-	**Growth**		**78**	**81**	**45**			
Stephens Lake	117597	900 067000113730	STL-B	17-Sep-19	284	324	100	1	2.66	96
Stephens Lake	-	-	STL-A	13-Jun-19	233	270	66	1	-	-
	-	-	**Growth**		**51**	**54**	**34**			
Stephens Lake	117598	900 067000113710	STL-B	17-Sep-19	278	322	125	1	2.66	96
Stephens Lake	-	-	STL-A	13-Jun-19	219	261	57	1	-	-
	-	-	**Growth**		**59**	**61**	**68**			
Stephens Lake	117599	900 067000113408	STL-B	17-Sep-19	285	326	100	1	0.17	96
Stephens Lake	-	-	STL-B	13-Jun-19	200	233	41	1	-	-
	-	-	**Growth**		**85**	**93**	**59**			
Stephens Lake	117553	900 067000055079	STL-B	17-Sep-19	552	622	1000	5	0.64	1548
Stephens Lake	-	-	STL-B	22-Jun-15	225	259	61	1	-	-
	-	-	**Growth**		**327**	**363**	**939**			
Stephens Lake	117554	900 067000113716	STL-B	17-Sep-19	286	335	100	1	2.98	96
Stephens Lake	-	-	STL-A	13-Jun-19	249	295	94	1	-	-
	-	-	**Growth**		**37**	**40**	**6**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117555	900 067000113226	STL-B	17-Sep-19	307	352	125	1	2.98	96
Stephens Lake	-	-	STL-A	13-Jun-19	223	256	55	1	-	-
	-	-	**Growth**		**84**	**96**	**70**			
Stephens Lake	117556	900 067000108670	STL-B	17-Sep-19	320	362	150	1	2.59	96
Stephens Lake	-	-	STL-A	13-Jun-19	240	282	71	1	-	-
	-	-	**Growth**		**80**	**80**	**79**			
Stephens Lake	117564	900 067000108677	STL-A	17-Sep-19	305	351	125	1	1.06	96
Stephens Lake	-	-	STL-A	13-Jun-19	222	259	53	1	-	-
	-	-	**Growth**		**83**	**92**	**72**			
Stephens Lake	117565	900 067000108628	STL-A	17-Sep-19	288	326	100	1	13.08	103
future Keeyask reservoir	-	-	GL-C	6-Jun-19	203	233	41	1	-	-
	-	-	**Growth**		**85**	**93**	**59**			
Stephens Lake	117568	900 067000108651	STL-B	18-Sep-19	274	311	100	1	2.68	97
Stephens Lake	-	-	STL-A	13-Jun-19	197	239	38	1	-	-
	-	-	**Growth**		**77**	**72**	**62**			
Stephens Lake	117569	900 067000113384	STL-B	18-Sep-19	325	365	100	1	2.68	97
Stephens Lake	-	-	STL-A	13-Jun-19	242	278	73	1	-	-
	-	-	**Growth**		**83**	**87**	**27**			
Stephens Lake	117572	900 067000113033	STL-B	18-Sep-19	280	327	125	1	0.17	97
Stephens Lake	-	-	STL-B	13-Jun-19	210	251	54	1	-	-
	-	-	**Growth**		**70**	**76**	**71**			
Stephens Lake	117573	900 067000113448	STL-B	18-Sep-19	308	354	150	1	0.17	97
Stephens Lake	-	-	STL-B	13-Jun-19	235	278	80	1	-	-
	-	-	**Growth**		**73**	**76**	**70**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117574	900 067000112574	STL-B	18-Sep-19	450	531	650	3	4.85	825
Stephens Lake	-	-	STL-A	15-Jun-17	240	288	80	1	-	-
	-	-	**Growth**		**210**	**243**	**570**			
Stephens Lake	117652	900 067000108627	STL-B	18-Sep-19	295	334	100	1	2.60	97
Stephens Lake	-	-	STL-A	13-Jun-19	222	253	60	1	-	-
	-	-	**Growth**		**73**	**81**	**40**			
Stephens Lake	117653	900 067000113063	STL-B	18-Sep-19	297	340	100	1	0.22	97
Stephens Lake	-	-	STL-B	13-Jun-19	220	258	59	1	-	-
	-	-	**Growth**		**77**	**82**	**41**			
Stephens Lake	117656	900 067000112651	STL-B	18-Sep-19	460	532	700	3	3.96	825
Stephens Lake	-	-	STL-A	15-Jun-17	241	284	81	1	-	-
	-	-	**Growth**		**219**	**248**	**619**			
Stephens Lake	117661	900 067000109602	STL-A	18-Sep-19	301	342	200	1	1.29	97
Stephens Lake	-	-	STL-B	13-Jun-19	230	274	74	1	-	-
	-	-	**Growth**		**71**	**68**	**126**			
Stephens Lake	117664	900 067000113735	STL-B	19-Sep-19	315	360	200	1	0.06	98
Stephens Lake	-	-	STL-A	13-Jun-19	235	271	64	1	-	-
	-	-	**Growth**		**80**	**89**	**136**			
Stephens Lake	117665	900 067000059358	STL-B	19-Sep-19	395	451	300	3	3.98	826
Stephens Lake	-	-	STL-A	15-Jun-17	220	255	60	1	-	-
	-	-	**Growth**		**175**	**196**	**240**			
Stephens Lake	-9999	900 067000109648	STL-B	19-Sep-19	295	335	100	1	0.54	98
Stephens Lake	-	-	STL-A	13-Jun-19	202	237	44	1	-	-
	-	-	**Growth**		**93**	**98**	**56**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117669	900 067000113443	STL-B	19-Sep-19	320	371	200	1	2.70	98
Stephens Lake	-	-	STL-A	13-Jun-19	265	310	115	1	-	-
	-	-	**Growth**		**55**	**61**	**85**			
Stephens Lake	117670	900 067000108648	STL-B	19-Sep-19	312	360	150	1	2.70	98
Stephens Lake	-	-	STL-A	13-Jun-19	238	280	68	1	-	-
	-	-	**Growth**		**74**	**80**	**82**			
Stephens Lake	117671	900 067000109666	STL-B	19-Sep-19	290	330	250	1	15.82	105
future Keeyask reservoir	-	-	GL-B	6-Jun-19	212	245	51	1	-	-
	-	-	**Growth**		**78**	**85**	**199**			
Stephens Lake	117672	900 067000059399	STL-B	19-Sep-19	385	444	400	3	1.68	714
Stephens Lake	-	-	STL-B	5-Oct-17	300	354	170	1	-	-
	-	-	**Growth**		**85**	**90**	**230**			
Stephens Lake	117673	900 067000059328	STL-B	19-Sep-19	423	480	500	3	24.86	833
future Keeyask reservoir	-	-	GL-A	8-Jun-17	228	268	67	1	-	-
	-	-	**Growth**		**195**	**212**	**433**			
Stephens Lake	117678	900 067000059220	STL-B	19-Sep-19	415	475	400	3	24.23	833
future Keeyask reservoir	-	-	GL-A	8-Jun-17	231	274	72	1	-	-
	-	-	**Growth**		**184**	**201**	**328**			
Stephens Lake	-	900 067000055464	STL-B	19-Sep-19	551	624	1000	5	15.17	1464
future Keeyask reservoir	-	-	GL-B	16-Sep-15	302	349	134	1	-	-
	-	-	**Growth**		**249**	**275**	**866**			
Stephens Lake	117681	900 067000113465	STL-B	20-Sep-19	307	349	100	1	2.77	99
Stephens Lake	-	-	STL-A	13-Jun-19	240	278	80	1	-	-
	-	-	**Growth**		**67**	**71**	**20**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117682	900 067000109624	STL-B	20-Sep-19	294	336	100	1	2.72	99
Stephens Lake	-	-	STL-A	13-Jun-19	197	227	39	1	-	-
	-	-	**Growth**		**97**	**109**	**61**			
Stephens Lake	117684	900 067000113412	STL-B	20-Sep-19	306	355	150	1	2.73	99
Stephens Lake	-	-	STL-A	13-Jun-19	235	288	84	1	-	-
	-	-	**Growth**		**71**	**67**	**66**			
Stephens Lake	117685	900 067000112073	STL-B	20-Sep-19	405	460	450	3	24.82	827
future Keeyask reservoir	-	-	GL-A	15-Jun-17	234	279	76	1	-	-
	-	-	**Growth**		**171**	**181**	**374**			
Stephens Lake	117687	900 067000112141	STL-B	20-Sep-19	415	479	450	3	24.82	834
future Keeyask reservoir	-	-	GL-A	8-Jun-17	298	93.35	-	1	-	-
	-	-	**Growth**		**117**	**386**	**-**			
Stephens Lake	117688	900 067000109289	STL-B	20-Sep-19	285	321	100	1	2.47	99
Stephens Lake	-	-	STL-A	13-Jun-19	225	260	62	1	-	-
	-	-	**Growth**		**60**	**61**	**38**			
Stephens Lake	117689	900 067000113032	STL-B	20-Sep-19	345	395	200	1	2.47	99
Stephens Lake	-	-	STL-A	13-Jun-19	255	294	97	1	-	-
	-	-	**Growth**		**90**	**101**	**103**			
Stephens Lake	117691	900 067000055229	STL-B	20-Sep-19	514	588	800	5	0.82	1551
Stephens Lake	-	-	STL-B	22-Jun-15	209	244	49	1	-	-
	-	-	**Growth**		**305**	**344**	**751**			
Stephens Lake	117692	900 067000055211	STL-B	20-Sep-19	566	644	1100	5	0.82	1551
Stephens Lake	-	-	STL-B	22-Jun-15	208	243	52	1	-	-
	-	-	**Growth**		**358**	**401**	**1048**			

Table A4-4: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets set in Stephens Lake, fall 2019 (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age	Distance (km)	Days Between Capture
Stephens Lake	117627	900 067000113417	STL-B	20-Sep-19	298	342	100	1	2.52	99
Stephens Lake	-	-	STL-A	13-Jun-19	217	253	46	1	-	-
	-	-	**Growth**		**81**	**89**	**54**			
Stephens Lake	117628	900 067000109639	STL-B	21-Sep-19	265	301	100	1	2.83	100
Stephens Lake	-	-	STL-A	13-Jun-19	181	211	32	1	-	-
	-	-	**Growth**		**84**	**90**	**68**			
Stephens Lake	117629	900 067000113774	STL-B	21-Sep-19	295	333	150	1	2.83	100
Stephens Lake	-	-	STL-A	13-Jun-19	229	265	65	1	-	-
	-	-	**Growth**		**66**	**68**	**85**			
Stephens Lake	117630	900 067000055444	STL-B	21-Sep-19	521	599	900	5	2.04	1468
Stephens Lake	-	-	STL-A	14-Sep-15	295	343	136	1	-	-
	-	-	**Growth**		**226**	**256**	**764**			
Stephens Lake	117637	900 067000113475	STL-B	21-Sep-19	294	329	100	1	0.39	100
Stephens Lake	-	-	STL-B	13-Jun-19	205	235	44	1	-	-
	-	-	**Growth**		**89**	**94**	**56**			
Stephens Lake	117640	900 067000113405	STL-B	21-Sep-19	325	371	150	1	2.37	100
Stephens Lake	-	-	STL-A	13-Jun-19	245	280	75	1	-	-
	-	-	**Growth**		**80**	**91**	**75**			

APPENDIX 5:
POPULATION ESTIMATE INFORMATION.

Mark-recapture population estimates were calculated for wild fish in the Upper Split Lake Area, future Keeyask reservoir and Stephens Lake during the fall of nine different years (2010 and 2012-2019). Only wild Lake Sturgeon classified as juveniles (*i.e.*, fork length less than 800 mm) were included in the population estimate. All data for the period 2008–2012 were collected annually as part of environmental studies related to the pre-Project environment, while data from 2014 until 2044 will be collected annually as part of monitoring studies related to the Keeyask GS Project.

Data were analysed using the program MARK (White and Burnham 1999; Kendall 2001; Arnason and Schwartz 2002), which is an industry standard for the analysis of data from marked populations. Program MARK uses binary numbers to represent the encounter history of individuals, and then uses the cumulative pattern of 0's (not-encountered) and 1's (re-encountered live capture) to generate a probability distribution of tag recaptures which form the basis of population estimation. Re-encounters can also be from dead recoveries (*e.g.*, the animal is harvested) in which case the model uses a value of -1. For example, the history "10-1" indicates than an animal was captured for the first time at sampling occasion 1, not encountered at sampling occasion 2, and recovered dead at sampling occasion 3.

Several different population model variants exist, most of which can be classified as either closed or open models. Closed models assume there are no births, deaths, immigration, or emigration between sample periods, while open models assume these processes occur. The Jolly-Seber model (POPAN formulation; Arnason and Schwarz 2002), as implemented within MARK, was used to estimate the annual abundance of juvenile Lake Sturgeon. This is an open model that requires few assumptions and modeled variables, and thus likely provides a reliable estimate of abundance.

Using first-time capture and recapture information, POPAN estimates the survival (*i.e.,* the probability that a fish will survive from one capture to the next), the probability of recapture (p; *i.e.,* the probability that a fish will be recaptured given that the animal is alive and in the study area), and abundance (N; *i.e.,* the number of juvenile Lake Sturgeon in the area during each capture period) (Tables A5-1, A5-2 and A5-4).

- Model fit for survival was calculated as 83% for the Upper Split Lake Area, 74% for the future Keeyask reservoir and 79% for Stephens Lake.
- The probability of recapture varied among years:
    - Recapture rates were split into six groups based on the model for the Upper Split Lake Area: i) 2012 (0.87); ii) 2013 (0.00); iii) 2014 (0.06); iv) 2015-2016 (0.01); v) 2017-2018 (0.02); and vi) 2019 (0.03).
    - For the future Keeyask reservoir rates were split into six groups: i) 2010 (0.45); ii) 2012 (0.08); iii) 2013 (0.02); iv) 2014-2016 (0.03); v) 2018 (0.04); and vi) 2017 and 2019 (0.06).

  - For Stephens Lake, recapture rates were split into eight groups: i) 2010 (1.00); ii) 2012 (0.24); iii) 2013 (0.04); iv) 2014 (0.08); v) 2015 (0.06); vi) 2016 and 2019 (0.11); vii) 2017 (0.12); and viii) 2018 (0.05).

- Abundance estimates for the Upper Split Lake Area are provided for the 2012-2019 study years and for the future Keeyask reservoir and Stephens Lake are provided for the 2010 and 2012-2019 study years.
- As sampling continues (*i.e.*, year to year) and data is added to the model, the parameters are recalculated. Thus, although survival rates and abundance estimates are calculated for the same time periods, they may differ among reporting periods. This allows the estimates to become more refined and precise over time.

The Cormack-Jolly-Seber model was used to calculate an estimate of survival of hatchery-reared lake Sturgeon in both the future Keeyask reservoir and Stephens Lake between 2015 (when stocking began) and 2019. This model calculates an estimate using the probability of recapture. For example if 426 juveniles were stocked in a system and the estimated survival rate was 0.93 over three years then the remaining number of hatchery fish in the system would be calculated by multiplying the number of stocked fish by the survival rate over three years. The resulting number would be calculated as follows: (426 hatchery fish) x (0.93) x (0.93) x (0.93) = 342 and would represent the number of hatchery fish estimated to still be present in the system after three years.

References

Arnason, A.N. and Schwarz, C.J. 2002. POPAN-6: Exploring convergence and estimate properties with SIMULATE. Journal of Applied Statistics 29: 649–668.

Kendall, W.L. 2001. The robust design for capture-recapture studies: Analysis using Program MARK. In Wildlife, Land, and People: Priorities for the 21st Century. Proceedings of the Second International Wildlife Management Congress. Edited by R. Field, R.J. Warren, H. Okarma, and P.R. Sievert. The Wildlife Society, Bethesda, Maryland, USA. p. 350–356.

White, G.C. and Burnham, K.P. 1999. Program MARK: Survival estimation from populations of marked animals. Bird Study 46 Supplement: 120–138.

Table A5-1: Results of POPAN analysis of juvenile Lake Sturgeon from the Upper Split Lake Area. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	SE	95% Confidence Interval	
			Low	High
Survival (all years)	0.82	0.17	0.33	0.98
2012 Recapture	0.87	32.97	0.00	1.00
2013 Recapture	0.00	0.00	0.00	0.08
2014 Recapture	0.06	0.06	0.01	0.34
2015–2016 Recapture	0.01	0.00	0.00	0.02
2017–2018 Recapture	0.02	0.01	0.00	0.08
2019 Recapture	0.03	0.02	0.01	0.12
2012 Abundance	28	1052	0	5473
2013 Abundance	899	1788	75	10727
2014 Abundance	749	777	140	4001
2015 Abundance	5749	2528	2522	13108
2016 Abundance	4742	2254	1957	11486
2017 Abundance	3910	2283	1353	11302
2018 Abundance	3226	2365	892	11668
2019 Abundance	4503	3056	1348	15044

Table A5-2: Results of POPAN analysis of juvenile Lake Sturgeon from the future Keeyask reservoir. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	SE	95% Confidence Interval	
			Low	High
Survival (all years)	0.74	0.06	0.60	0.84
2010 Recapture	0.45	6.34	0.00	1.00
2012 Recapture	0.08	0.05	0.02	0.23
2013 Recapture	0.02	0.02	0.01	0.09
2014–2016 Recapture	0.03	0.02	0.01	0.09
2018 Recapture	0.04	0.01	0.02	0.08
2017 and 2019 Recapture	0.06	0.02	0.03	0.12
2010 Abundance	153	2149	2	13880
2012 Abundance	1013	581	356	2880
2013 Abundance	2250	1572	654	7742
2014 Abundance	3756	2194	1299	10862
2015 Abundance	4089	1642	1916	8725
2016 Abundance	3081	1208	1468	6465
2017 Abundance	2482	840	1302	4734
2018 Abundance	3619	1408	1734	7553
2019 Abundance	2819	902	1529	5199

Table A5-3: Results of POPAN analysis of hatchery-reared juvenile Lake Sturgeon from the future Keeyask reservoir. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Year	Parameter	Mean	SE	95% Confidence Interval	
				Lower	Upper
Constant	Survival	0.83	0.13	0.45	0.96
2015	Recapture 2014 Cohort	0.01	0.00	0.00	0.02
2016	Recapture 2014 Cohort	0.03	0.01	0.01	0.07
2017	Recapture 2014 Cohort	0.07	0.04	0.02	0.18
2018	Recapture 2014 Cohort	0.06	0.04	0.01	0.19
2019	Recapture 2014 Cohort	0.09	0.07	0.02	0.35
2017	Recapture 2016 Cohort	0.04	0.01	0.02	0.07
2018	Recapture 2016 Cohort	0.03	0.01	0.01	0.06
2019	Recapture 2016 Cohort	0.07	0.04	0.02	0.18
2019	Recapture 2018 Cohort	0.10	0.02	0.07	0.16
2014	Cohort at Large	198		18	366
2016	Cohort at Large	316		96	431
2018	Cohort at Large	398		398	398
Total	Cohort at Large	912		512	1195
2019	Wild	2819		1529	5199
2019	Percent Hatchery	24.44%			

Table A5-4: Results of POPAN analysis of juvenile Lake Sturgeon from Stephens Lake. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	SE	95% Confidence Interval	
			Low	High
Survival (all years)	0.79	0.05	0.68	0.87
2010 Recapture	1.00	0.99	0.00	1.00
2012 Recapture	0.24	0.10	0.10	0.48
2013 Recapture	0.04	0.01	0.02	0.08
2014 Recapture	0.08	0.03	0.04	0.16
2015 Recapture	0.06	0.03	0.03	0.14
2016, 2019 Recapture	0.11	0.04	0.06	0.20
2017 Recapture	0.12	0.04	0.07	0.21
2018 Recapture	0.05	0.01	0.03	0.08
2010 Abundance	32	32	6	165
2012 Abundance	347	142	161	751
2013 Abundance	709	209	403	1249
2014 Abundance	563	176	309	1026
2015 Abundance	698	274	333	1466
2016 Abundance	577	171	327	1019
2017 Abundance	782	220	456	1344
2018 Abundance	1080	236	706	1650
2019 Abundance	857	225	517	1420

Table A5-5: Results of POPAN analysis of hatchery-reared juvenile Lake Sturgeon from Stephens Lake. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Year	Parameter	Mean	SE	95% Confidence Interval	
				Lower	Upper
Constant	Survival	0.93	0.20	0.04	1.00
2015	Recapture 2014 Cohort	0.01	0.01	0.00	0.03
2016	Recapture 2014 Cohort	0.01	0.01	0.00	0.04
2017	Recapture 2014 Cohort	0.04	0.03	0.01	0.14
2018	Recapture 2014 Cohort	0.03	0.02	0.00	0.15
2019	Recapture 2014 Cohort	0.06	0.07	0.01	0.40
2017	Recapture 2016 Cohort	0.04	0.01	0.02	0.07
2018	Recapture 2016 Cohort	0.01	0.01	0.00	0.03
2019	Recapture 2016 Cohort	0.02	0.01	0.00	0.07
2019	Recapture 2018 Cohort	0.21	0.05	0.13	0.33
2014	Cohort at Large	309		0	418
2016	Cohort at Large	619		1	720
2018	Cohort at Large	390		390	390
Total	Cohort at Large	1318		391	1527
2019	Wild	857		517	1420
2019	Percent Hatchery	60.60%			