Keeyask Generation Project

Aquatic Effects Monitoring Plan

Juvenile Lake Sturgeon Population Monitoring Report

AEMP-2018-02

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KEEYASK GENERATION PROJECT

AQUATIC EFFECTS MONITORING PLAN

REPORT #AEMP-2018-02

JUVENILE LAKE STURGEON POPULATION MONITORING, FALL 2017: YEAR 4 CONSTRUCTION

Prepared for

Manitoba Hydro

By

D.C. Burnett, C.L. Hrenchuk and C.C. Barth

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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 map). 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.

Lake Sturgeon were identified as one of the key species for monitoring. They were chosen because they are culturally important to local people, the local 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 relative number (catch-per-unit-effort) and growth of juveniles (less than 800 mm);
- 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.

Map of instream structures at the Keeyask Generating Station site, September 2017.

This report presents results of juvenile Lake Sturgeon population monitoring conducted during fall 2017. Data from juvenile populations in the study area have been collected intermittently since 2008 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.

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.

What was done?

Sampling was done in the Upper Split Lake Area (including the Burntwood River, the Nelson River downstream of the Kelsey GS, and Split Lake), the future Keeyask reservoir (the Nelson River between Clark Lake and Gull Rapids), and Stephens Lake in the fall of 2017. 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. An ageing structure (a small piece of fin) was also collected to determine the year that the fish was born.

What was found?

A total of 59 Lake Sturgeon were captured in the Upper Split Lake Area: 34 in the Burntwood River, 19 in Split Lake, and 6 near the Kelsey GS. In the Burntwood River, the presence of sturgeon born every year since 1999 shows that recruitment is occurring relatively consistently. Sturgeon caught in Split Lake and downstream of the Kelsey GS varied in size and age, with no obvious trends in year class strength. Three Lake Sturgeon born in 2017 (called young-of-the-year [YOY]) were captured in the Burntwood River. No YOY were caught in Split Lake or in the area downstream of the Kelsey GS. Of the 59 sturgeon caught, three were wild fish tagged in a previous year and recaptured in the Upper Split Lake Area in 2017: two in the Burntwood River and one in the area downstream of the Kelsey GS. The three fish did not move far from their original capture location (only between 0.14 and 0.70 km). Three additional tagged fish that were raised in the Grand Rapids hatchery and released as one-year-olds in 2014 were captured: two in the Burntwood River (14.05 and 25.09 km downstream of their release location downstream of First Rapids), and one in Split Lake (23.54 km from its release location).

In the future Keeyask reservoir, a total of 173 Lake Sturgeon were captured. Fish born in 2008 continued to be prominent in the catch. Sturgeon born in 2013, 2014, and 2016 were also caught relatively frequently. Two YOY sturgeon were captured showing that sturgeon successfully reproduced in 2017 (no stocking of YOY took place in this area in 2017). Seventeen of the 173 sturgeon had been tagged in a previous year (between 2011 and 2016), and a further 21 were tagged hatchery-reared sturgeon released as one-year-olds in 2014, 2015, and 2017. These fish made up a large proportion of the 2014 (44%) and 2016 (55%) year classes. One captured hatchery fish was released 114 km upstream in the Burntwood River in 2014. This is the third fish stocked into the Burntwood River that was caught in the future Keeyask reservoir since 2014.

In Stephens Lake, 148 Lake Sturgeon were captured. Unlike in the future Keeyask reservoir (which has high numbers of sturgeon born in 2008), the largest number of sturgeon caught were born in 2016. Fish born in 2014 and 2015 were also common in the catch. Five YOY (fish born in 2017) were captured in Stephens Lake in 2017. Twenty sturgeon tagged in a previous year were recaptured, as well as 51 hatchery-reared sturgeon (released as one-year olds with tags). Eleven of the hatchery-reared sturgeon were released in the future Keeyask reservoir while the remaining 40 were released in Stephens Lake. The sturgeon released in the future Keeyask reservoir were caught between 11.1 km and 25.1 km downstream of their release location, having passed through Gull Rapids. In Stephens Lake, 82% of the fish born in 2014 and 79% of the fish born in 2016 were tagged hatchery raised fish.

What does it mean?

The capture of YOY sturgeon in 2017 shows that, like in 2015 and 2016, reproduction in the wild is occurring during Keeyask construction. Sturgeon have been born in each year since construction started (2014–2017) in each of the three areas (Upper Split Lake, the future Keeyask reservoir, and Stephens Lake).

There were some changes in growth rate and condition between fish caught before construction and fish caught during construction. In the future Keeyask reservoir, age-4 fish were fatter and age-7 fish were shorter during construction than during baseline studies. In Stephens Lake, age-3 fish were skinnier and age-4 fish were shorter during construction than during baseline studies. However, there was no consistent pattern and the differences observed are likely not biologically significant.

The capture of a large number of hatchery-reared sturgeon released as one-year-olds in the future Keeyask reservoir and Stephens Lake suggests the stocking program is having a positive effect on juvenile numbers in these areas. It demonstrates that at least some of the stocked sturgeon are surviving in the wild and that they are growing after release. Very few hatchery-raised fish have been captured in the Burntwood River, so the fate of stocked fish in this area is not known.

What will be done next?

Monitoring will continue each fall until 2044. Further monitoring will show whether construction is affecting the growth of juveniles in Gull and Stephens lakes and whether sturgeon continue to reproduce. As more data are collected, the survival and growth of stocked fish will be determined.

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STUDY TEAM

Data Collection

Leslie Flett

Tim Flett

Shawn Flett

Michael John Garson

Martina Harvey

Claire Hrenchuk

Kelvin Kitchekeesik

Christine Lacho

Mike Legge

Data Analysis, Report Preparation, and Report Review

Ken Ambrose

Cam Barth

Mark Blanchard

Duncan Burnett

Claire Hrenchuk

Christine Lacho

Mike Legge

Craig McDougall

Patrick Nelson

Candace Parker

Jon Peake

Friederike Schneider-Vieira

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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 during the construction and operational phases of the Project. The AEMP focuses on several components of the aquatic environment, including the fish community, and in particular, Lake Sturgeon. The AEMP study area for Lake Sturgeon encompasses the reach of the Nelson River from the Kelsey GS to the Kettle GS, as well as waterbodies immediately adjacent to the Nelson River (Map 1).

The Lake Sturgeon section in the AEMP lists four programs:

- Adult population monitoring – includes measures of adult population size, condition factor and growth;
- Juvenile population monitoring – includes measures of relative abundance, distribution, growth, condition factor and year-class-strength;
- Spawn monitoring – measures number, locations and sex of spawning fish; and
- Movement monitoring – describes local movements (habitat use) and coarse scale movements between waterbodies.

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 803 mm (captured in 2016 in Stephens Lake).

Juvenile population monitoring is a key component of the overall Lake Sturgeon monitoring program. The Project is predicted to affect sturgeon recruitment by destroying existing spawning habitat at Gull Rapids (which will be replaced with constructed habitat) and altering spawning habitat at 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 and 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 cohort strength, identify changes in condition factor, determine whether natural reproduction is occurring, determine 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 2008; surveys were initiated in the Burntwood River in 2012 and in the Nelson River downstream of the Kelsey GS 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 *et al.* 2011; Henderson and Pisiak 2012; Henderson *et al.* 2013; Henderson *et al.* 2015; Burnett *et al.* 2016; Burnett *et al.* 2017). Results from the Burntwood River show that small numbers of juvenile Lake Sturgeon are spread amongst multiple cohorts, indicating that recruitment has occurred fairly consistently in the Burntwood River over the previous 10 years (Henderson and Pisiak 2012; Henderson *et al.* 2013; Henderson *et al.* 2015; Burnett *et al.* 2017). Catches of juvenile Lake Sturgeon in the Nelson River downstream of the Kelsey GS and in Split Lake are low, but a range of ages is represented. In both Gull and Stephens lakes, recruitment has also occurred fairly consistently over the past ten years, but the cohort-frequency distribution has been dominated by a single cohort produced in 2008 (Henderson *et al.* 2011; Henderson and Pisiak 2012; Henderson *et al.* 2013; Henderson *et al.* 2015; Burnett *et al.* 2017). It has been shown that the growth of Burntwood River Lake Sturgeon is slower than conspecifics captured in Gull and Stephens lakes (Henderson *et al.* 2013).

Lake Sturgeon stocking is being conducted using wild caught broodstock from the Burntwood River and from the Nelson River between Birthday Rapids and Gull Rapids. 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 Nelson River 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).

This report presents results from the 2017 juvenile population monitoring conducted in the Upper Split Lake Area, future Keeyask reservoir, and Stephens 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 2017 was conducted at three locations: 1) the Upper Split Lake Area (includes the Burntwood River between First Rapids and Split Lake and the Nelson River between the Kelsey GS 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.

The Kelsey GS is located on the Nelson River, approximately 90 km upstream of Gull Rapids (Maps 1 and 3). Kelsey GS was completed in 1961 and was the first hydroelectric station built on the Nelson River. Downstream of the GS there is an approximately 5 km long reach of the Nelson River, characterized by predominantly fast moving water with rocky shoreline and substrate, after which the Nelson River splits into two channels around a large island. Each channel contains a set of rapids: the Anipitapiskow Rapids (~7 km north of the GS on the north channel) and Sakitowak Rapids (~10.0 km northeast of the GS on the south channel). Both channels empty into Split Lake.

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 4), 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 is located approximately 3 km downstream of Caribou Island on the Nelson River (Map 1). Two large islands and several small islands occur within the rapids, prior to the river narrowing. The rapids are approximately 2 km in length, and the river elevation drops approximately 11 m over this distance. Two large islands and several small islands occur within the rapids, prior to the river narrowing; these features are within the project footprint and have been substantially altered during construction (Map 2).Gull Rapids is the site of the Keeyask Generation Project. A summary of construction activities is provided in Section 2.1.

Just below Gull Rapids, the Nelson River enters Stephens Lake (Maps 1 and 5). 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. 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. 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, which extends into the south channel of Gull Rapids, was completed in 2015. During 2016, there was little instream construction until placement of rock for the Tailrace Cofferdam began in late fall and continued into 2017. Large rocks were placed in the Nelson River to form the inner and outer groins of the Tailrace Cofferdam. An opening was left in the rock groins to allow fish to move into and out of the cofferdam. Placement of fine material between the two sections of the cofferdam began and was completed in late 2017. An opening was created to allow fish to move freely over the winter of 2017/18. The opening will be closed in spring 2018.

2.2 FLOWS AND WATER LEVELS

Inflow into Split Lake from May to mid-August 2017 exceeded the 95th percentile flow and during the spring melt in May 2017 rose to near record levels. These high inflows were due in large part to the Nelson River. On the Burntwood River at Thompson, flows peaked at record levels in

mid-May and then rapidly declined to somewhat below median levels by mid-June. Flows on the Burntwood River remained near median levels until the latter part of August when they rose to the upper quartile through September.

Water levels along the Nelson River from Clark Lake to Gull Rapids depend on the outflow from Split Lake. From October 2016 to October 2017, Split Lake outflows ranged from about 3,200–6,600 m^3/s. Flow exceeded the historical annual median flow of approximately 3,300 m^3/s each month except for October 2017 when it dropped to about 3,200 m^3/s. From about October 2016 through mid-September 2017, the flow exceeded the historical 75th percentile flow of about 3,780 m^3/s and from about May to mid-August 2017 the flows exceeded the 95th percentile flow of approximately 5,230 m^3/s. During the spring melt in May 2017, flow rose to about 6,590 m^3/s, which is near the historical maximum flow observed in August 2005. Water levels varied in conjunction with flow, ranging from about 154.9–156.6 m ASL on Gull Lake, with the highest level observed during the near historical maximum flow in May.

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 during Keeyask monitoring to enable comparisons of cohort strength, abundance, growth, and condition among years as well as with other sturgeon populations. The gillnetting methods described below have been used to capture juvenile Lake Sturgeon in the Keeyask study area since 2008.

Gillnetting was conducted in the Upper Split Lake Area, the future Keeyask reservoir, and the upper 10 km of Stephens Lake. Three locations were sampled in the Upper Split Lake Area: 1) the Burntwood River between First Rapids and Split Lake; 2) the Nelson River between the Kelsey GS and Split Lake; and 3) Split Lake. 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 = 12.4 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 2016. However, some sites have changed between years depending on water levels and flows. Locations and site-specific physical measurements collected at gillnetting sites in 2017 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), 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 to the articulation from each juvenile Lake Sturgeon captured for the first time. In cases where Lake Sturgeon had been previously aged, 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 genetic analysis.

3.3 TAGGING

Lake Sturgeon greater than 300 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). 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. During the winter period, when the water temperature remains close to 0°C and growth slows, wild Lake Sturgeon develop a well-defined annulus that is easy to recognize. However, hatchery reared sturgeon are often held at considerably higher and more constant temperatures than those experienced by wild fish (McDougall and Pisiak 2014). The higher temperatures over the first winter of growth cause a weak or missing first annulus. To account for this, current ageing methods add one year to the ages of fish with a weak/absent first annuli (McDougall and Pisiak 2012, 2014; Burnett and McDougall 2015) (see photo Appendix A3-2).

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. As a result, hatchery fish younger than 3-years-old are often over-aged by one year, as the false annulus is counted. Ageing accuracy has been found to increase with time spent in the wild (Burnett and McDougall 2015; McDougall and Nelson 2016). All age-one hatchery fish are tagged with PIT tags, so ages are known. Of the 75 known hatchery fish captured in 2017, 62 (83%) were over-aged by one year. These ages were decreased to their known age for analysis.

In cases where a fish is captured with a weak or missing first annulus but does not have a PIT tag, it cannot be determined whether the fish is hatchery-reared or wild. Weak annuli occasionally occur in wild fish, but more likely, these fish were stocked as yearlings and shed their PIT tags. Therefore, to account for this uncertainty, these fish were not included in analyses of hatchery-reared vs. wild fish but were treated as a separate group

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 (see 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. Lake Sturgeon not confirmed as being either hatchery or wild (based on ageing structure analysis; described in Section 3.4) were only included in totals. 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).

To determine if growth and condition of juvenile sturgeon were affected by construction, mean length-at-age and mean condition factor-at-age were compared using t-tests and Mann-Whitney U-Tests among fish captured pre-Project (*i.e.*, 2008–2013) and those captured during construction (*i.e.*, 2014–2016). Tagged hatchery fish were removed from these analyses. 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%).

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:

$$CPUE = \sum \#\ \text{Lake Sturgeon} / \sum \text{Effort} \times 24\ \text{h}$$

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.

Hatchery-reared Lake Sturgeon are released as larvae, fingerlings, and yearlings. However, 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. The exceptions to this classification are fish that are suspected to have lost their PIT tags based on size and ageing structure features (see Section 3.4), which were noted as “suspected hatchery fish.” Without genetic analysis, 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.

4.0 RESULTS

Biological and tagging information for Lake Sturgeon captured in 2017 are provided in Appendix 2.

4.1 UPPER SPLIT LAKE AREA

Water temperature in the Upper Split Lake Area ranged from 17.5°C to 14.5°C over the course of the study (Appendix A1-1).

4.1.1 BURNTWOOD RIVER

Seven fish species (n = 128) were captured at 24 sites in the Burntwood River between September 6 and 13, 2017 (Tables 2 and 3; Map 3). Lake Sturgeon (n = 34; 26.6%) were the second most abundant species captured after Longnose Sucker (n = 52) (Table 3). Gillnet site data as well as biological and tagging information for all Lake Sturgeon captured are provided in Appendices A1-1 and A2-1. Thirty-three juvenile and one adult Lake Sturgeon were captured in 659.7 gillnet hours, producing an overall CPUE of 1.24 LKST/100 m net/24 h (Table 4). During the sampling period, one Lake Sturgeon mortality occurred (2.9%). Gill nets were set at eight sites in all three zones of the Burntwood River below First Rapids (Map 3). CPUE values by zone were as follows:

- 1.84 LKST/100 m net/24 h in Zone BWR-A;
- 0.52 LKST/100 m net/24 h in Zone BWR-B; and
- 1.31 LKST/100 m net/24 h in Zone BWR-C (Table 4).

Annual CPUE values for the Burntwood River catch since 2011 are presented in Table 5.

4.1.1.1 YEAR-CLASS STRENGTH

Ageing structures were collected from all 33 juvenile Lake Sturgeon. Three-reader agreement for age assignment was 81.8% (n = 27). The modal age was used for six fish (ages 4, 6, 8, 13, 14, and 15), aged one year lower or higher by a single reader. Aged Lake Sturgeon ranged from 0 to 18 years old, with the 2016 cohort (age-1) making up the largest proportion (n = 7; 21.2%) of the catch (Figure 1). The next most abundant cohorts were the 2010 (age 7) and 2013 (age 4), accounting for 15.2% (n = 5) and 12.1% (n = 4) of aged sturgeon, respectively (Figure 1). Three YOY (2017 cohort) Lake Sturgeon were captured (two in zone BWR-A and one in zone BWR-C) (Map 3). Several cohorts (2000–2001, 2005–2007, and 2012) were not present in the catch. Cohort frequencies for all juvenile Lake Sturgeon captured in the Upper Split Lake Area

from 2011 to 2017 are presented in Table 6. Every cohort since 1999 has been present in the catch.

4.1.1.2 GROWTH AND CONDITION

Captured Lake Sturgeon had a:

- Mean FL of 431 mm (n = 34; StDev = 193 mm; range 99–831 mm);
- Mean weight of 880 g (n = 31; StDev = 955 g; range 73–4,082 g); and
- Mean condition factor of 0.60 (n = 31; StDev = 0.06; range 0.50–0.71) (Table 7).

Lake Sturgeon in the 350–399 mm (n = 5) and 550–599 mm (n = 5) FL intervals were captured most frequently, each representing 14.7% of the total catch (Figure 2). The length-weight relationship for Lake Sturgeon captured in the Burntwood River during fall 2017 was similar to those captured in other areas and is presented in Figure 3.

There were not enough baseline data available on condition factor and growth from this area to make cohort-specific statistical pre- and post-construction comparisons of these two metrics (Figures 4 and 5).

4.1.1.3 RECAPTURES

Two previously tagged juvenile Lake Sturgeon were captured in the Burntwood River (Table 8; Appendix A4-1). One was originally caught in 2014 and the other in 2016. The fish were caught 0.62 km upstream and 0.70 km downstream of their tagging location, respectively.

Two hatchery-reared Lake Sturgeon stocked as one-year olds in the Burntwood River in 2014 were captured in fall, 2017, 25.1 km downstream (released at stocking site 1) and 14.1 km downstream (released at stocking site 3) of their release locations (Map 4; Table 9). These fish grew 83 mm FL and 158 g in weight, and 195 mm FL and 314 g in weight, since their release (Appendix A4-2). An age breakdown of all the hatchery-reared fish captured between 2014 and 2017 is presented in Table 10.

4.1.2 KELSEY GS AREA

Nine fish species (n = 153) were captured at ten sites between September 14 and 16, 2017 (Tables 2 and 3; Map 3). Lake Sturgeon were the sixth most abundant species captured (n = 6; 3.9%; Table 3). Gillnet site data as well as biological and tagging information for all Lake Sturgeon captured are provided in Appendices A1-1 and A2-1.

Five juvenile and one adult Lake Sturgeon were captured in 232.0 gillnet hours, producing an overall CPUE of 0.62 LKST/100 m net/24 h (Table 4). Gill nets were set in four zones below the Kelsey GS (Map 3). CPUE values by zone were as follows:

- 0.00 LKST/100 m net/24 h in Zone KGS-A (n = 1 site);
- 0.00 LKST/100 m net/24 h in Zone KGS-B (n = 4 sites);
- 0.99 LKST/100 m net/24 h in Zone KGS-C (n = 3 sites); and
- 1.40 LKST/100 m net/24 h in Zone KGS-D (n = 2 sites) (Table 4).

Annual CPUE values for the Kelsey GS Area catch since 2011 are presented in Table 5.

4.1.2.1 YEAR-CLASS STRENGTH

Ageing structures were collected from the five juvenile Lake Sturgeon. Three-reader agreement for age assignment was 80% (n = 4). The modal age was used for one fish (age 5), aged one year higher by a single reader. Aged Lake Sturgeon from the Kelsey GS Area ranged from 5 to 12 years old. Two sturgeon were captured from the 2008 cohort and one sturgeon was captured from each of the 2005, 2011, and 2012 cohorts. Cohort frequency distributions for all zones sampled in the Kelsey GS Area in 2017 are presented in Figure 6.

4.1.2.2 GROWTH AND CONDITION

Captured Lake Sturgeon had a:

- Mean FL of 704 mm (n = 6; StDev = 68 mm; range 635–831 mm);
- Mean weight of 2,616 g (n = 6; StDev = 1,033 g; range 1,542–4,581 g); and
- Mean condition factor of 0.72 (n = 6; StDev = 0.07; range 0.60–0.80) (Table 7).

Lake Sturgeon in the 650–699 mm FL interval were the most frequently captured size class (n = 3; 50.0%; Figure 2). The length-weight relationship for Lake Sturgeon captured in the Kelsey GS Area during fall 2017 was similar to those captured in other areas and is presented in Figure 3.

4.1.2.3 RECAPTURES

One previously tagged Lake Sturgeon was recaptured in the Kelsey GS Area (Table 8):

- PIT #900226000768266 was recaptured in Zone KGS-C on September 15, 2017, 0.17 km upstream from where it was initially captured (Zone KGS-C) on June 5, 2017. The fish grew 29 mm (FL) since it was initially tagged.

4.1.3 SPLIT LAKE

Ten fish species (n = 175) were captured at eight sites between September 5 and 14, 2017 (Tables 2 and 3; Map 3). Seventeen juvenile and two adult Lake Sturgeon were caught in 175.4 gillnet hours, producing an overall CPUE of 2.60 LKST/100 m net/24 h (Table 4). One juvenile mortality occurred during sampling (5.3%). Lake Sturgeon were the third most abundant species captured (n = 19; 10.9%; Table 3). Gillnet site data as well as biological and tagging information for all Lake Sturgeon captured in Zone SPL-A (Map 3) are provided in Appendices A1-1 and A2-1. Annual CPUE values for the Split Lake catch since 2015 are presented in Table 5.

4.1.3.1 YEAR-CLASS STRENGTH

Ageing structures were collected from the 17 juvenile Lake Sturgeon caught in Split Lake. Three-reader agreement for age assignment was 94% (n = 16). Aged Lake Sturgeon from Split Lake ranged from 1 to 14 years old and represented the 2003, 2006–2011, 2013, and 2016 cohorts. The 2008, 2010, 2013, and 2016 cohorts were the most abundant year-classes, each accounting for 17.6% (n = 3) of the catch (Figure 7).

4.1.3.2 GROWTH AND CONDITION

Captured Lake Sturgeon had a:

- Mean FL of 616 mm (n = 19; StDev = 206 mm; range 235–884 mm);
- Mean weight of 2,373 g (n = 19; StDev = 1,820 g; range 77–6,713 g); and
- Mean condition factor of 0.74 (n = 19; StDev = 0.10; range 0.59–0.97) (Table 7).

Lake Sturgeon from the 750–799 mm FL interval (n = 5; 26.3%) were the most frequently captured size-class (Figure 2).

4.1.3.3 RECAPTURES

One hatchery-reared Lake Sturgeon released in the Burntwood River was recaptured in Split Lake (Table 8; Appendix A4-2):

- PIT #900043000119825 was released as a one-year-old at stocking site 1 (Map 4) on May 16, 2014, and was recaptured on September 14, 2017, 23.5 km downstream from where it was released (Zone SPL-A). The fish grew 265 mm FL and 325 g in weight since release.

4.2 FUTURE KEEYASK RESERVOIR

Nine species (n = 312) were captured at 51 sites between September 9 and 21, 2017 (Tables 2 and 3; Map 5). Lake Sturgeon (n = 173; 55.4%) were the most abundant species captured (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. Water temperature decreased from 16.0°C to 13.0°C during sampling (Appendix A1-2).

In total, 167 juvenile and six adult Lake Sturgeon were captured in 1,550.7 gillnet hours, producing an overall CPUE of 2.68 LKST/100 m net/24 h (Table 4). Four mortalities occurred during sampling (2.3%). 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). CPUE values by zone, from upstream to downstream, were as follows:

- 1.36 LKST/100 m/24 h in Zone BR-D (n = 4 sites);
- 3.11 LKST/100 m/24 h in Zone GL-A (n = 15 sites);
- 3.90 LKST/100 m/24 h in Zone GL-B (n = 17 sites); and
- 1.26 LKST/100 m/24 h in Zone GL-C (n = 15 sites; Table 4).

Total CPUE values recorded in the future Keeyask reservoir since 2007 are presented in Table 5. CPUE values in 2017 were slightly higher than 2016 but were within the range recorded in other years.

Of the 173 Lake Sturgeon captured, 21 were known hatchery-reared fish (*i.e.*, stocked as age-1 and marked with PIT tags; discussed in further detail in Section 4.2.4). Three fish could not be accurately identified as hatchery-reared or wild fish as they had an ageing structure typical of a hatchery-reared fish but no PIT tag (described in Section 3.4). CPUE values for wild and hatchery-reared Lake Sturgeon were as follows:

- 2.31 LKST/100 m/24 h (n = 149) for wild Lake Sturgeon; and
- 0.33 LKST/100 m/24 h (n = 21) for hatchery-reared Lake Sturgeon (Table 11).

4.2.1 YEAR-CLASS STRENGTH

Ageing structures were collected from 164 of the 167 juvenile Lake Sturgeon. Ageing structures were not collected from two juveniles that appeared to have had ageing structures previously removed from both pectoral fins (described in Section 3.2), and one YOY that was released without taking an ageing structure due to concerns about the welfare of the fish. Three of the 164 structures were unreadable; however, all three fish were aged in a previous year. Three-reader agreement for age assignment was 94% (n = 151). The modal age was used for 10 fish that were aged one year lower or higher by a single reader (age 1 [n = 2], age 4 [n = 1], age 6 [n = 2], age 9 [n = 1], age 10 [n = 1], age 11 [n = 2] and age 14 [n = 1]). Aged Lake Sturgeon

ranged from 0 to 14 years (2003–2017 cohorts). Of the 164 aged Lake Sturgeon, 140 were considered wild fish (did not exhibit weak annuli), three were classified as suspected hatchery fish (exhibited weak annuli but no PIT tag), and 21 were known hatchery fish (with PIT tags).

Two fish identified as being from the 2015 cohort, and one fish from the 2016 cohort exhibited weak/absent first annuli, characteristic of hatchery reared-fish; however, these fish did not have PIT tags. If these fish were hatchery-reared fish that shed their PIT tags, the fish identified as belonging to the 2015 cohort would likely belong to the 2016 cohort because, as discussed in Section 3.4, hatchery fish are typically aged one year above their true age (Figure 8). A comparison of fork lengths between the suspected hatchery fish from the 2015 cohort and known hatchery fish from the 2015 and 2016 cohorts did not adequately separate the unknown fish based on size (Figure 9).

Of the 161 wild and known-reared hatchery fish, the 2008 cohort was captured most frequently (n = 56; 34.8%). The 2016, 2014, and 2013 cohorts were also relatively abundant in the catch, accounting for 13.7% (n = 22), 11.2% (n = 18) and 13.0% (n = 21), respectively. The 2005 cohort was the only year-class absent in the catch. Two YOY fish (*i.e.*, 2017 cohort) were captured, both from Zone GL-C (Figure 8; Map 5). One of the YOY fish was aged, while the other was determined to be a YOY based on size, since an ageing structure was not collected due to concerns over the welfare of the fish. Known hatchery-reared fish accounted for 54.5%, 44.4%, and 4.8% of the 2016, 2014, and 2013 cohorts, respectively (Figure 8).

All cohorts since 1998, with the exception of the 2002 cohort, have been represented in the catch since studies began (Table 6).

4.2.2 GROWTH AND CONDITION

In 2017, 149 wild and 21 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 564 mm (n = 149; StDev = 170 mm; range 129–919 mm);
- Mean weight of 1,736 g (n = 144; StDev = 1,249 g; range 100–6,100 g); and
- Mean condition factor of 0.72 (n = 144; StDev = 0.09; range 0.47–0.96) (Table 7).

Mean condition factor-at-age was significantly higher for wild age-4 Lake Sturgeon captured during construction (*i.e.*, 2014–2017) than during baseline (*i.e.*, 2008–2012) studies (Mann-Whitney U test, $p < 0.05$; Figure 10). Mean FL-at-age was significantly lower for wild age-7 Lake Sturgeon captured during construction than during baseline studies (Mann-Whitney U test, $p < 0.05$) (Figure 11).

Lake Sturgeon in the 700–749 mm FL interval were captured most frequently, representing 15.4% (n = 23) of the wild catch (Figure 12). Fish measuring 600–649 mm and 650–699 mm FL

were also frequently captured, representing 13.4% (n = 20) and 12.8% (n = 19) of the wild catch respectively (Figure 12).

Hatchery-reared Lake Sturgeon had a:

- Mean FL of 380 mm (n = 21; StDev = 69 mm; range 285–465 mm);
- Mean weight of 355 g (n = 21; StDev = 176 g; range 100–600 g); and
- Mean condition factor of 0.59 (n = 21; StDev = 0.07; range 0.43–0.74) (Table 7).

Hatchery-reared Lake Sturgeon in the 400–449 mm FL interval were the most frequently captured, representing 33% of the hatchery catch (n = 7) (Figure 12).

Mean FL-at-age was significantly higher for age-1 and age-3 hatchery-reared Lake Sturgeon when compared to wild fish (Mann-Whitney U test, $p < 0.05$; Figure 13). Mean weight-at-age was not significantly different among hatchery and wild fish (t-test, $p < 0.05$; Figure 13). Mean condition factor-at-age was significantly lower for age-3 hatchery-reared fish than for wild Lake Sturgeon (Mann-Whitney U test, $p < 0.05$; Figure 13).

4.2.3 RECAPTURES

Seventeen Lake Sturgeon tagged in previous years were captured in Gull Lake (Table 8; Appendix A4-1). Of the fish tagged in previous years:

- Three were tagged in 2011;
- Four were tagged in 2012;
- Six were tagged in 2014;
- Three were tagged in 2015; and
- One was tagged in 2016.

Recaptured fish moved varying distances from their original capture locations:

- Six were recaptured less than 1.0 km from their last capture location;
- Ten were recaptured 1.0–6.4 km from their previous capture location; and
- One was recaptured 34.4 km downstream of its previous capture location at the outlet of Clark Lake. This fish measured 757 mm when it was tagged in 2012, and 807 mm when it was recaptured.

4.2.4 HATCHERY CAPTURES

The number of hatchery fish caught increased from 7 in 2016 to 21 in 2017 and has risen every year since stocking began in 2014 (Table 9; Appendix A4-2). An age breakdown of all the hatchery-reared fish captured between 2014 and 2017 is presented in Table 10.

Of the 21 known hatchery-reared Lake Sturgeon (*i.e.,* those PIT tagged and stocked as age-1):

- One (PIT # 900043000119802) was stocked in 2014 at stocking site 2 in the Burntwood River (Map 4). It was captured on September 21, 114.3 km downstream of its release location. Since release, its fork length increased by 195 mm.
  - This fish represents the third hatchery-reared Lake Sturgeon stocked in the Burntwood River in 2014 captured in the future Keeyask reservoir (Table 9).
- Eleven were stocked in Gull Lake in 2015 (Table 9):
  - Seven were stocked on June 22 in zone GL-B (at sites 1 and 2; Map 6). Six of these fish were captured within 0.2 to 2.8 km upstream and one was captured 7.3 km downstream of its release location. These fish grew between 213 and 249 mm FL and gained 399 to 559 g in weight since their release.
  - Four were stocked on September 16 in zone GL-C (at sites 6 and 7; Map 6). Two were caught between 0.5 and 4.4 km downstream of their release location and two were caught between 0.2 and 0.3 km upstream of their release location. These fish grew between 88 and 141 mm FL and gained 182 and 416 g in weight since release.
- Nine were stocked on June 8, 2017 in zone GL-A (at site 1; Map 6):
  - One was caught in zone GL-A, 2.63 km upstream of its release location. Fork length and weight increased by 93 mm and 132 g since release, respectively.
  - Eight were caught in zone GL-A between 8.1 and 12.0 km downstream of their release location. These fish grew between 62 and 87 mm FL and gained 76 to 130 g in weight since their release.

4.3 STEPHENS LAKE

Eleven fish species (n = 286) were captured at 40 gillnetting sites in upper Stephens Lake between September 9 and 21, 2017 (Tables 2 and 3; Map 7). Lake Sturgeon (n = 148; 51.7%) were the most abundant species captured (Table 3). Gillnet site data, as well as biological and tagging information for all Lake Sturgeon captured in Stephens Lake, are provided in Appendices A1-3 and A2-3.

In total, 142 juvenile and 6 adult Lake Sturgeon were captured in 1,796.1 gillnet hours, producing an overall CPUE of 1.98 LKST/100 m net/24 h (Table 4). No mortalities occurred

during sampling. Gill nets were set in both zones located within the upper 10 km of Stephens Lake (Map 7). CPUE values by zone were as follows:

- 1.75 LKST/100 m/24 h in Zone STL-A (n = 21 sites); and
- 2.20 LKST/100 m/24 h in Zone STL-B (n = 19 sites; Table 4).

CPUE values for the Stephens Lake sturgeon catches since 2007 are presented in Table 6. In 2017, Lake Sturgeon CPUE in Stephens Lake was higher than any previous study year (2007 to present).

Of the 148 Lake Sturgeon, 51 were known hatchery fish (*i.e.*, stocked as age-1 and marked with PIT tags; discussed in further detail in Section 4.3.4). Eleven fish could not be accurately identified as hatchery or wild fish as they had an ageing structure typical of a hatchery-reared fish but no PIT tag (described in Section 3.4). CPUE values split into wild Lake Sturgeon and hatchery-reared Lake Sturgeon were as follows:

- 1.15 LKST/100 m/24 h (n = 86) for wild Lake Sturgeon; and
- 0.68 LKST/100 m/24 h (n = 51) for hatchery-reared Lake Sturgeon (Table 11).

4.3.1 YEAR-CLASS STRENGTH

Ageing structures were collected from 135 of the 142 juvenile Lake Sturgeon. The remaining seven fish appeared to have had ageing structures previously removed from both pectoral fins or had deformed fins, so a structure was not collected. Three-reader agreement for age assignment was 94.1% (n = 127). The modal age was used for eight fish aged one year lower or higher by a single reader (age 1 [n = 1], 2 [n = 1], 3 [n = 1], 8 [n = 1], and 9 [n = 4]). Aged juvenile Lake Sturgeon ranged from 0–9 years. Of the 135 aged Lake Sturgeon, 73 were considered wild fish (did not exhibit weak annuli), 11 were classified as suspected hatchery fish (exhibit weak annuli but no PIT tag), and 51 were known hatchery fish (with PIT tags).

Eleven fish without hatchery implanted PIT tags exhibited weak/absent first annuli, characteristic of hatchery-reared fish. Of the eleven fish, nine were aged as two-year-olds, one was aged as a one-year old and one was aged as a four-year-old. It is likely these fish were stocked as yearlings and shed their PIT tags. As a result, the nine two-year-old fish have likely been over-aged and are believed to belong to the 2016 cohort (age-1 fish) and not the 2015 cohort (Figure 9). A comparison of fork lengths between the suspected hatchery fish from the 2015 cohort and known hatchery fish from the 2016 cohort showed they were similar in size to hatchery-reared fish from the 2016 cohort (Figure 9).

Of the 124 wild and known-hatchery fish, one-year old fish (2016 cohort) dominated the catch at 33.9% (n = 42) of the aged fish (Figure 14). The 2015, 2014, and 2008 cohorts (ages 2, 3 and 9) were the next most abundant age-classes, representing 16.1% (n = 20), 17.7% (n = 22), and 15.3% (n = 19) of the catch, respectively (Figure 14). Known hatchery-released fish accounted for the majority of fish caught from the 2014 (81.8%; n = 18) and 2016 (78.6%; n = 33) cohorts

(Figure 14). In 2017, Lake Sturgeon from the 1999–2007, 2010, and 2012 cohorts were not present in the catch. However, all cohorts between 2000 and 2017 have been represented in the catch since studies began (Table 6).

4.3.2 GROWTH AND CONDITION

In 2017, 97 wild and 51 known hatchery-reared Lake Sturgeon were caught. Length-weight relationships for hatchery-reared and wild Lake Sturgeon are presented in Figure 3.

Wild Lake Sturgeon had a:

- Mean FL of 506 mm (n = 86; StDev: 213 mm; range 135–851 mm);
- Mean weight of 1,662 g (n = 81; StDev: 1,591 g; range 75–5,425 g); and
- Mean condition factor of 0.73 (n = 81; StDev: 0.12; range 0.44–1.03) (Table 7).

Mean condition factor-at-age was significantly lower for wild age-3 Lake Sturgeon captured during construction (*i.e.,* 2014–2017) than during baseline (*i.e.*, 2009–2012) studies (t-test, $p < 0.05$; Figure 15). Mean FL-at-age did not differ significantly between baseline and construction; however, due to small sample sizes, only age 2, 3, and 4 fish could be compared (t-test; $p < 0.05$; Figure 16).

Lake Sturgeon in the 300–349 mm FL interval were captured most frequently accounting for 16.5% (n = 16) of the wild catch. The 350–399 mm, 700–749 mm, and 750–799 mm FL intervals were also strong and accounted for 14.4% (n = 14), 12.4% (n = 12), and 10.3% (n = 10) of the wild catch, respectively (Figure 12).

Hatchery-reared Lake Sturgeon had a:

- Mean FL of 362 mm (n = 51; StDev: 66 mm; range 262–487 mm);
- Mean weight of 322 g (n = 51; StDev: 191 g; range 75–750 g); and
- Mean condition factor of 0.61 (n = 51; StDev: 0.08; range 0.42–0.78) (Table 7).

Hatchery-reared Lake Sturgeon in the 300–349 mm FL interval were captured most frequently (52.9%; n = 27) (Figure 12). Fish in the 400–449 mm FL were also frequently caught (21.6%; n = 11).

Mean FL-at-age was significantly higher for age-1 and age-3 hatchery-reared Lake Sturgeon than for wild fish (Mann-Whitney U test, $p < 0.05$; Figure 17). Mean weight-at-age was not significantly different for the two age classes compared (t-test, $p < 0.05$; Figure 17). Mean condition factor-at-age was significantly lower for age-3 hatchery-reared Lake Sturgeon than for wild fish (Mann-Whitney U test, $p < 0.05$; Figure 17).

4.3.3 RECAPTURES

Twenty Lake Sturgeon tagged in a previous year were recaptured in Stephens Lake (Table 8; Appendix A4-1).

Seventeen fish were recaptured within 3.5 km of their original capture location in Stephens Lake:

- One was tagged in 2011;
- Two were tagged in 2012;
- Two (Floy #103231/Acoustic #32698 and Floy #103243/Acoustic #32663) were tagged on September 16, 2013, as part of the Keeyask juvenile Lake Sturgeon movement study. Details on their movements since 2013 can be found in Lacho and Hrenchuk (2017);
- Three were tagged in 2014;
- Two were tagged in 2015; and
- Seven were tagged in 2016.

Three fish were recaptured between 13.0 km and 16.2 km downstream of their initial capture locations in the future Keeyask reservoir. These fish represent the first confirmed wild juvenile Lake Sturgeon from the future Keeyask reservoir captured in Stephens Lake since studies began in 2008 (Table 9):

- Floy #107222 was tagged in Gull Lake (16.2 km upstream) in 2016. It was aged as age-8 in 2017. Since its original capture it increased 14 mm FL and 86 g weight.
- Floy #96513 was tagged in Gull Lake (13.0 km upstream) as an age-2 in 2014. It was captured again in 2015 0.6 km away from its original tagging site. When it was captured in Stephens Lake in 2017, this fish had increased 178 mm FL and 650 g weight since its original capture.
- Floy #79293 was tagged in Gull Lake (13.8 km upstream) as an age-2 in 2015. Since this time, it grew 166 mm FL and 733 g weight.

4.3.4 HATCHERY CAPTURES

A total of 51 hatchery-reared Lake Sturgeon released as one-year-olds were captured in Stephens Lake in 2017 compared to five in 2016 (Table 9; Appendix A4-2). Eleven of the hatchery-reared fish were originally stocked in Gull Lake between 2015 and 2017 (Table 9). An age breakdown of all the hatchery-reared fish captured between 2014 and 2017 is presented in Table 10.

Of the fifty-one hatchery reared fish, eight were stocked on June 22, 2015:

- Two were stocked in Gull Lake in zone GL-B (sites 1 and 2; Map 6). They were recaptured 13.5 km and 19.0 km downstream of their release location and their fork lengths increased by 271 mm and 238 mm respectively, since release.
- Six were stocked in Stephens Lake in zone STL-B (Site 3; Map 8). They were caught between 0.2 km and 3.2 km from their initial release location. These fish grew between 164 and 248 mm FL and gained 456 to 686 g since their release.

Seven were stocked in Stephens Lake on September 14, 2015:

- Four were stocked in zone STL-A (Site 5; Map 8) of which two were caught 1.9 km downstream and two were caught 0.7 km upstream of their release locations. These fish grew between 133 and 166 mm FL and gained 326 to 429 g since their release.
- Three were stocked in zone STL-B (Site 4; Map 8) of which two were caught within 0.3 and 0.4 km downstream and one was caught 0.3 upstream of its release location. These fish grew between 140 and 171 mm FL and gained 417 to 450 g since their release.

Three were stocked in Gull Lake in zone GL-C on September 16, 2015 (Site 7; Map 6).They were caught between 11.1 and 14.0 km downstream of their release location having passed through Gull Rapids. These fish grew between 130 and 147 mm FL and gained 391 to 450 g since release.

Six Lake Sturgeon were stocked in Gull Lake in zone GL-A on June 8, 2017 (Site 1; Map 6). They were caught between 24.5 and 25.1 km downstream of their release location having passed through Gull Rapids. The fish grew between 62 and 108 mm FL and gained 42 to 198 g since release.

Twenty-seven were stocked at the Keeyask boat launch (Site 1; Map 8) in Stephens Lake on June 15, 2017.

- Two were caught 1.7 km upstream of their release location. The fish grew 90 mm and 97 mm in fork length and gained between 125 and 141 g in weight since their release.
- Twenty-five were caught between 4.0 and 4.5 km downstream of their release location in zone STL-B. These fish grew between 42 and 98 mm FL and gained 14 to 155 g since their release.

5.0 DISCUSSION

5.1 JUVENILE ABUNDANCE

Relative abundance values suggest that numbers of juvenile Lake Sturgeon in the areas included in this monitoring program are low to moderate in comparison to several sections of the Winnipeg River, where relative abundance is considered to be high (*i.e.*, CPUE > 10 LKST/100 m net/24 h; COSEWIC 2017). In the Upper Split Lake Area, average CPUEs in Split Lake (2.60) and the Burntwood River (1.24) in 2017 were higher than in 2016 (Table 5). The relative abundance of juveniles in the Kelsey GS Area (0.62) remains low and few young sturgeon have been captured since monitoring was initiated. In the Upper Split Lake Area, only the Burntwood River has been sampled for a sufficient period to identify a potential trend in abundance; although relative abundance has varied since 2012, no consistent increasing or decreasing trend is apparent.

In the future Keeyask reservoir, average CPUE in 2017 (2.68) was higher than in 2016 (2.31); however, abundance varied between 2011 and 2015 (range: 3.25–4.39) and no increasing or decreasing trend is apparent. In Stephens Lake, average CPUE in 2017 (1.98) was higher than that observed during any of the pre- and post-construction study years (range: 0.65–1.75). The observed increase in juvenile relative abundance in Stephens Lake can be primarily attributed to the increased number of stocked Lake Sturgeon in the catch (see Section 5.3).

During development of the AEMP, CPUEs in Gull Lake were comparable to those found in the Sea Falls to Sugar Falls reach of the Nelson River, the eastern exit channel of the Nelson River from Playgreen Lake/Little Playgreen Lake (Map 9). The early warning trigger set out in the AEMP for juvenile year class strength (as defined by CPUE), after stocking has been initiated, was a CPUE less than observed at Sea Falls. This location was chosen since it was the most similar environment to Keeyask where stocking had been occurring, and stocked fish had exhibited high survival for several years. In 2017, CPUE in Stephens Lake (mean 1.98; range: 0.0–4.7) and the future Keeyask reservoir (mean 2.31; range: 0.0–10.8) were similar to 2014 values from Sea Falls (mean 2.09; range: 0.00–9.90; McDougall and Nelson 2016). More recent studies in the Sea Falls reach showed dramatic increases in juvenile Lake Sturgeon abundance after 2014 (largely due to continued stocking), and therefore data from more recent years is no longer useful as an early warning trigger.

5.2 RECRUITMENT

Juvenile monitoring results indicate that recruitment due to spawning downstream of First Rapids in the Burntwood River has occurred consistently at relatively low levels over the past decade. Individuals representing each cohort dating back to 1999 have been captured,

however, each year-class is relatively weak (*i.e.*, in comparison to the 2008 cohort in the future Keeyask reservoir and Stephens Lake).

Wild recruitment to the future Keeyask reservoir population due to spawning in the Nelson River (between Clark Lake and the upstream end of Gull Lake) has occurred every year since 2005. The 2008 cohort has dominated the catch in both the future Keeyask reservoir and Stephens Lake since the 2010 study year. Relative to 2008, the 2013 cohort is considered moderate, and all other cohorts are considered weak.

Based on similarities in cohort frequency data as well as genetic evidence (Gosselin *et al.* 2016), Henderson *et al.* (2015) hypothesized that recruitment to the Stephens Lake population was mainly due to spawning upstream of Gull Rapids (*i.e.*, in the Nelson River between Clark Lake and Gull Lake). However, results from studies after 2014 indicate that the cohort frequency distribution in Stephens Lake is beginning to differ from that in the future Keeyask reservoir. In Stephens Lake, the 2015 cohort appears to be strong, making up 27% of the wild catch in 2017. The same cohort made up only 7% of the wild catch in the future Keeyask reservoir. If these fish had been spawned upstream of Gull Rapids and drifted downstream, it is likely that a larger proportion would remain upstream. Therefore, it is possible that spawning at Gull Rapids could have contributed to the 2015 cohort in Stephens Lake. This observation is consistent with the recent increase in the number of mature males captured during spring adult surveys below Gull Rapids, which also suggest that spawning may be occurring at this location (Legge *et al*. 2017).

In both the future Keeyask reservoir and Stephens Lake, hatchery-reared fish made up a large proportion of the 2017 catch (see Section 5.3). Thus, stocking one-year old Lake Sturgeon appears to have considerably improved recruitment in 2014 and 2016.

5.3 HATCHERY FISH

The Keeyask stocking program began in 2014. At the time of the 2017 juvenile program, 618 age-1 (PIT tagged) Lake Sturgeon had been stocked in the Burntwood River, 886 in the future Keeyask reservoir, and 892 in Stephens Lake[1], in addition to stocking of larval and fingerling Lake Sturgeon in all three areas. An additional 246 yearlings that were held at the hatchery over the summer were released into Stephens Lake in October, after completion of the juvenile program. The number of known hatchery fish captured in the future Keeyask reservoir and Stephens Lake (based on the presence of hatchery implanted PIT tags) has increased every year since stocking began, from seven in 2015 to 72 in 2017. In Stephens Lake, hatchery-reared fish accounted for 81.8% (n = 18) and 76.7% (n = 33) of the 2014 and 2016 cohorts, respectively, and in the future Keeyask reservoir a substantial proportion of the 2014 (42.1%; n = 8) and 2016 (54.6%; n = 12) cohorts were hatchery-reared fish. This is not true, however, for the Burntwood River. Since stocking began in this area in 2014, only eight of 618 hatchery-

[1] Numbers exclude fall 2017 release because it occurred after the juvenile survey.

reared fish have been captured. Three hatchery-reared fish released in the Burntwood River were captured in Gull Lake, over 90 km downstream of their release sites, representing a large proportion (38%) of the stocking recaptures.

In 2017, 14 fish were captured that did not have hatchery PIT tags but were identified as having ageing structures characteristic of hatchery-reared fish (*i.e.*, weak or missing first annuli). Although the ages of PIT tagged hatchery fish are known, obtaining the correct age from pectoral fin rays has proved difficult. Of the 72 known-age hatchery-reared fish from the future Keeyask reservoir and Stephens Lake, 83.3% (three-reader agreement at 93.1%) were over-aged by one year due to the presence of weak first annuli in combination with the use of a correction for the missing first annulus. Ageing structure analysis suggests that PIT tag loss is occurring, particularly from fish released in 2017 (2016 cohort). In the future Keeyask reservoir, suspected hatchery fish accounted for 5% of the 2014 year-class and 17% of the 2015 year-class. In Stephens Lake, suspected hatchery fish accounted for 31% of the 2015 year-class. Based on size and ageing structure characteristics, it is likely that these fish are not part of the 2015 cohort, but belong to the 2016 hatchery-reared year-class stocked in 2017. In 2016, no one-year-old sturgeon (*i.e.*, 2015 cohort) were released in Gull or Stephens lakes. Larvae and fingerlings from the 2016 cohort were released but their ageing structures differ from sturgeon that overwinter in the hatchery. Analysis of genetics samples from the 14 suspected hatchery fish is underway to determine if they are the progeny of the 2016 hatchery broodstock.

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 2017, two wild YOY sturgeon were caught in the future Keeyask reservoir and five were caught in Stephens Lake indicating that successful spawning occurred in spring 2017.

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

Statistical analysis of condition factor-at-age and FL-at-age for wild juvenile Lake Sturgeon caught during baseline studies and construction monitoring found differences in several age classes. Similar to results observed in 2016, no consistent trends by location or age-class were evident. In the Upper Split Lake Area, no statistical comparisons could be made due to a lack of baseline data. A qualitative examination of the data suggests no obvious differences in condition factor-at-age or FL-at-age.

Average condition factor-at-age was significantly higher for age-4 fish caught during construction monitoring in the future Keeyask reservoir, and significantly lower for age-3 fish in Stephens Lake. Similarly, average FL-at-age showed no clear trends between baseline studies

and construction monitoring. Average FL-at age was significantly higher during construction monitoring for age-7 fish in the future Keeyask reservoir, and did not differ significantly for any age class in Stephens Lake.

Although no clear trends in FL-at-age and condition factor-at-age could be seen among sampling years, trends appear to be consistent between reporting years. The trends observed in 2017 were consistent with those observed in 2016 in both the future Keeyask reservoir and Stephens Lake. However, these differences may be due to small baseline sample sizes rather than biologically significant trends. For example, age-7 Lake Sturgeon captured in the future Keeyask reservoir have been found to be significantly shorter during construction than baseline since 2015. However, only 12 age-7 fish were captured during baseline, compared to a much larger sample (n = 75) during construction.

Analyses conducted to date have not included a comparative analysis of growth rate prior to and after construction. Adequate numbers of fish to support such an analysis were collected during the pre-construction period for the future Keeyask reservoir (2008–2012) and after completion of the 2018 field program a similar range of years will be available for construction period analysis (2014–2018). Therefore, this analysis will be included in the 2018 report. Too few juveniles were collected in Stephens Lake prior to construction to support a pre/post analysis; however, growth rates will be compared to the future Keeyask reservoir.

Two questions related to the stocking program are addressed below:

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

The survival rate of stocked sturgeon has not been estimated to date, pending collection of data over several years and sufficient number of recaptures to obtain an accurate estimate. As the number of recaptures increases, survival will be estimated using the POPAN method currently used to estimate adult Lake Sturgeon survival (described in Lacho *et al.* 2018).

The proportion of hatchery-reared Lake Sturgeon caught in juvenile nets increased dramatically in 2017. Hatchery fish accounted for only 7.4% of the catch in 2016 but increased to 19.7% in 2017. The majority of hatchery-reared fish were captured in Stephens Lake (51 of 75) with 21 caught in the future Keeyask reservoir, two caught in the Burntwood River and one caught in Split Lake. In both the future Keeyask reservoir and Stephens Lake, the 2014 and 2016 cohorts were dominated by hatchery fish accounting for 63.4% and 67.7% of the catch, respectively.

Several hatchery-reared Lake Sturgeon were captured in locations downstream of their original release sites in 2017. One fish stocked in the Burntwood River in 2014 was captured in the future Keeyask reservoir, approximately 114.3 km downstream of its original release site. This fish represents the third fish stocked in the Burntwood River captured in this area (along with one captured in 2014 and one in 2015).These fish represent a large proportion of the Burntwood River stocking captures (37.5%; *i.e.*, 3 of 8). Additionally, a large proportion of fish stocked in the future Keeyask reservoir were captured in Stephens Lake in 2017. Of the hatchery-reared

fish caught in Stephens Lake in 2017, 21.6% (*i.e.*, 11 of 51) were stocked in the future Keeyask reservoir. These fish represent 35.5% (*i.e.*, 11 of 31) of all captures in 2017 of fish stocked in the future Keeyask reservoir. These results indicate that a large proportion of the fish stocked in the future Keeyask reservoir may move downstream into Stephens Lake. However, six of the 11 fish that moved downstream through Gull Rapids were stocked in June 2017. During this time, flows were extremely high (Section 2.2), which may have increased the downstream dispersal rate of stocked fish.

The recapture of stocked fish with PIT tags indicates hatchery-reared sturgeon are growing and surviving in the wild. To date, the future Keeyask reservoir and Stephens Lake have been stocked with 2014 and 2016 cohorts, and these stocked yearlings made up a substantial portion of those year classes captured in 2017. Statistical analyses of FL, weight, and condition factor-at-age was compared between tagged hatchery-reared (including recaptures of all hatchery-reared fish from 2014 to present) and wild Lake Sturgeon, yielding the same results in both the future Keeyask reservoir and Stephens Lake. Age-1 and age-3 hatchery-reared Lake Sturgeon were significantly longer than wild fish of the same age. Age-1 hatchery-reared fish appear heavier and had a slightly higher condition than wild fish, while the opposite was true for age-3 fish, which had significantly lower condition than wild fish. When hatchery fish are stocked as age-1, they are both longer and heavier than wild fish of the same age. As time passes, hatchery fish remain longer but do not differ in weight from wild fish, thus their condition is lower. Continued monitoring of these fish will determine if these differences persist as the fish grow.

5.5 NEXT STEPS

The juvenile Lake Sturgeon population monitoring program will be repeated in 2018. Sampling locations in the Burntwood River will remain similar to previous years; however, given that few juvenile sturgeon (*i.e.*, 21 over three years of sampling) have been captured in the Nelson River immediately downstream of the Kelsey GS, sampling effort in this area will shift downstream into Split Lake. Increased netting effort in Split Lake (downstream of the Nelson and Burntwood rivers) will identify whether a large number of unidentified juveniles occur in the lake, and may also aid in locating juveniles stocked in the Burntwood River that have moved downstream. Sampling in the future Keeyask reservoir and Stephens Lake will remain similar to previous years.

Comparative analysis of juvenile Lake Sturgeon growth rate prior to and after construction has not been conducted to date. Adequate numbers of fish to support such an analysis were collected during the pre-construction period for the future Keeyask reservoir (2008–2012) and after completion of the 2018 field program a similar range of years will be available for analysis during the construction period (2014–2018). Therefore, this analysis will be included in the 2018 report. Too few juveniles were collected in Stephens Lake prior to construction to support a pre/post analysis; however, growth rates will be compared to the future Keeyask reservoir.

Adequate numbers of juvenile fish have not previously been collected to calculate a juvenile Lake Sturgeon population estimate. After sampling is completed in 2018, sufficient mark-recapture data will exist to support such an analysis for the future Keeyask reservoir and Stephens Lake. The number of recaptured juveniles in the Upper Split Lake area, however, is not expected to be sufficient to support such an analysis.

Similarly, there was little information about juvenile year-class strength patterns when sampling began. Because of this, year-class strengths in the study area were compared to those in the Sea Falls to Sugar Falls reach of the Nelson River. At the time of AEMP preparation, the CPUEs in both areas were comparable, and Sea Falls was a well-studied area where stocking occurred. However, since that time, CPUEs at Sea Falls have increased to very high levels due to continued stocking and are no longer useful for comparison. The juvenile monitoring program in Burntwood River, Gull Lake, and Stephens Lake has now been conducted consistently since 2008, contributing to a large dataset. In 2018 if no juveniles (either wild or hatchery-reared) ≤ 3 years old are found this may be considered an early warning trigger.

6.0 SUMMARY AND CONCLUSIONS

- Fifty-nine Lake Sturgeon were captured in the Upper Split Lake Area: 34 (33 juvenile and one adult) in the Burntwood River (659.7 gillnet hours, CPUE of 1.24 Lake Sturgeon/100 m net/24 h), six (five juvenile and one adult) near the Kelsey GS (232.0 gillnet hours, CPUE of 0.62 Lake Sturgeon/100 m net/24 h), and 19 (17 juvenile and two adult) in Split Lake (175.4 gillnet hours, CPUE of 2.60 Lake Sturgeon/100 m net/24 h). Three of the six recaptured fish were hatchery-reared fish released into the Burntwood River in 2014 (2013 cohort; two were captured in the Burntwood River and one in Split Lake). Each cohort since 2000 (*i.e.,* 0–18 year old fish) has been represented in the catch.
- In the future Keeyask reservoir, 173 (167 juvenile and six adult) Lake Sturgeon were captured in 1,550.7 gillnet hours for a total CPUE of 2.68 Lake Sturgeon/100 m net/24 h. Aged Lake Sturgeon (n = 164) ranged from 0 to 14 years old (only the 2005 cohort not represented), and eight-year-old fish (2008 cohort) were most prevalent in the catch (n = 56; 34.1%). Seventeen Lake Sturgeon tagged in previous years and 21 hatchery-reared sturgeon were captured. One of the hatchery fish was released in the Burntwood River in 2014 (2013 cohort), and was caught 114.3 km downstream of its release location. Eleven of the captured hatchery-reared fish were released into Gull Lake in 2015 (2014 cohort) and nine were released in 2017 (2016 cohort).
- In Stephens Lake, 148 (142 juvenile and six adult) Lake Sturgeon were captured in 1,796.1 gillnet hours for a total CPUE of 1.98 Lake Sturgeon/100 m net/24 h. Lake Sturgeon ages ranged from 0 to 9 with the 2016 cohort (age-1) being captured most frequently (n = 43; 31.9%). Twenty Lake Sturgeon tagged in a previous year and 51 hatchery-reared fish were captured. Eleven of the hatchery-reared fish were released in the future Keeyask reservoir (five in 2015 [2014 cohort] and six in 2017 [2016 cohort]) and 40 were released in Stephens Lake (13 in 2015 [2014 cohort] and 27 in 2017 [2016 cohort]).
- Ageing structures collected from hatchery-reared Lake Sturgeon have unique banding patterns increasing the likelihood of over-ageing hatchery fish. Hatchery implanted PIT tags are crucial in determining the known ages of hatchery released one-year-old fish but it appears PIT tag loss can be high. Genetic analysis may provide a useful tool for discriminating hatchery fish from wild caught sturgeon in the case of PIT tag loss.
- 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 2017, two wild YOY sturgeon were caught in the future Keeyask reservoir and five were caught in Stephens Lake indicating that successful spawning occurred in spring 2017.

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

  A comparison of mean condition factor- and FL-at-age for juvenile Lake Sturgeon collected during baseline and construction monitoring studies found significant differences in several age classes in both the future Keeyask reservoir and Stephens Lake. However, due to the lack of consistent findings in both FL-at-age and condition factor-at-age across years and waterbodies, the observed differences are not considered biologically meaningful.

- *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 rate of stocked sturgeon has not been calculated to date. The proportion of stocked fish in the catch from the future Keeyask reservoir and Stephens Lake has increased every year since stocking began, rising from seven fish (3.1% of the total catch) in 2015 to 72 (19.7% of the total catch) in 2017. The 2014 and 2016 cohorts were dominated by hatchery fish, accounting for 63.4% and 67.7% of the catch, respectively.

  One fish stocked in the Burntwood River was caught 114.3 km downstream in the future Keeyask reservoir. This marks the third fish stocked in the Burntwood River captured in this area since stocking began in 2014. Of the hatchery-reared fish caught in Stephens Lake in 2017, 21.6% (*i.e.*, 11 of 51) were stocked in the future Keeyask reservoir.

  Analysis of growth between hatchery and wild caught fish showed that FL-at-age was significantly higher for age-1 and age-3 hatchery fish when compared to wild fish. Condition was significantly lower for age-3 hatchery fish in both the future Keeyask reservoir and Stephens Lake.

- The juvenile Lake Sturgeon population monitoring program will be repeated in 2018. Sampling locations in the Burntwood River will remain similar to previous years; however, sampling effort downstream of the Kelsey GS will shift further downstream into Split Lake.
- Additional data analyses will be conducted in 2018:
  - Juvenile Lake Sturgeon growth rate will be compared between the pre-construction (2008–2012) and construction (2014–2018) periods for the future Keeyask reservoir. Growth rates of fish captured in Stephens Lake will be compared to those in the future Keeyask reservoir.

- Juvenile Lake Sturgeon population estimates will be calculated for the future Keeyask reservoir and Stephens Lake.
- Attention will be paid to whether there are juveniles (both wild and hatchery-reared) ≤ 3 years old in the 2018 monitoring as this may be an early warning trigger.

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TABLES

Table 1: Summary of Lake Sturgeon stocking since 2014. Numbers of stocked fish are from Klassen *et al.* 2018.

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	-	-	474 (720)[c]
Total	**71,740**	**3,765**	**618**	**345,093**	**5,436**	**886**	**184,134**	**799**	**892 (1,138)[c]**

a – Stocking year
b - From Birthday Rapids to Gull Rapids
c- number in parentheses includes fall 2017 stocking which occurred after juvenile survey

Table 2: Summary of start and completion dates, by location, where juvenile Lake Sturgeon monitoring was conducted during fall, 2017.

Location	Start Date	Completion Date	# of Sites
Upper Split Lake Area			
Burntwood River	06-Sep-17	13-Sep-17	24
Kelsey GS Area	14-Sep-17	16-Sep-17	10
Split Lake	05-Sep-17	14-Sep-17	8
Future Keeyask Reservoir	09-Sep-17	21-Sep-17	51
Stephens Lake	09-Sep-17	21-Sep-17	40

Table 3: Number (n) and frequency of occurrence (%), by species and sampling location, of fish captured during juvenile Lake Sturgeon monitoring, fall 2017.

Species	Scientific Name	Upper Split Lake Area						Future Keeyask Reservoir		Stephens Lake		Total n	Total %
		Burntwood River		Kelsey GS		Split Lake							
		n	%	n	%	n	%	n	%	n	%		
Burbot	*Lota lota*	10	7.8	0	0.0	3	1.7	11	3.5	17	5.9	41	3.9
Freshwater Drum	*Aplodinotus grunniens*	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	1	0.1
Lake Chub	*Couesius plumbeus*	0	0.0	0	0.0	4	2.3	0	0.0	0	0.0	4	0.4
Lake Sturgeon	*Acipenser fulvescens*	***34***	***26.6***	***6***	***3.9***	***19***	***10.9***	***173***	***55.4***	***148***	***51.7***	***380***	***36.1***
Lake Whitefish	*Coregonus clupeaformis*	0	0.0	0	0.0	3	1.7	0	0.0	1	0.3	4	0.4
Longnose Sucker	*Catostomus catostomus*	52	40.6	51	33.3	12	6.9	56	17.9	49	17.1	220	20.9
Mooneye	*Hiodon tergisus*	1	0.8	1	0.7	0	0.0	0	0.0	0	0.0	2	0.2
Northern Pike	*Esox lucius*	0	0.0	1	0.7	0	0.0	5	1.6	2	0.7	8	0.8
Sauger	*Sander canadensis*	0	0.0	10	6.5	18	10.3	12	3.8	8	2.8	48	4.6
Slimy Sculpin	*Cottus cognatus*	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	1	0.1
Shorthead Redhorse	*Moxostoma macrolepidotum*	1	0.8	20	13.1	4	2.3	6	1.9	1	0.3	32	3.0
Trout-perch	*Percopsis omiscomaycus*	0	0.0	0	0.0	3	1.7	8	2.6	5	1.7	16	1.5
Walleye	*Sander vitreus*	16	12.5	32	20.9	66	37.7	16	5.1	19	6.6	149	14.1
White Sucker	*Catostomus commersoni*	14	10.9	27	17.6	43	24.6	25	8.0	34	11.9	143	13.6
Yellow Perch	*Perca flavescens*	0	0.0	5	3.3	0	0.0	0	0.0	0	0.0	5	0.5
	Total	**128**	100	**153**	100	**175**	100	**312**	100	**286**	100	**1054**	100

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, 2017.

Location	Zone	# of Sites	Effort (gillnet hours)	# of Lake Sturgeon	CPUE (#LKST/100m/24h)
Burntwood River	BWR-A	8	182.9	14	1.84
	BWR-B	8	183.8	4	0.52
	BWR-C	8	293.1	16	1.31
Total		**24**	**659.7**	**34**	**1.24**
Kelsey GS Area	KGS-A	1	21.8	0	0.00
	KGS-B	4	86.2	0	0.00
	KGS-C	3	72.4	3	0.99
	KGS-D	2	51.5	3	1.40
Total		**10**	**232.0**	**6**	**0.62**
Split Lake	SPL-A	8	175.4	19	2.60
Total		**8**	**175.4**	**19**	**2.60**
Future Keeyask Reservoir	BR-D	4	105.7	6	1.36
	GL-A	15	532.0	69	3.11
	GL-B	17	455.3	74	3.90
	GL-C	15	457.8	24	1.26
Total		**51**	**1,550.7**	**173**	**2.68**
Stephens Lake	STL-A	21	878.0	64	1.75
	STL-B	19	918.0	84	2.20
Total		**40**	**1,796.1**	**148**	**1.98**

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 2016. 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	13-Sep	1" - 6"	24	660	34	1.24
Kelsey GS Area	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	16-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	14-Sep	1" - 6"	8	175	19	2.60
Future Keeyask Reservoir[c]	2008	12-Sep	27-Sep	1.5"- 8"	15	3,072	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	21-Sep	1" - 6"	51	1,551	173	2.68
Stephens Lake	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	1,193	87	1.75
	2014	18-Sep	28-Sep	1" - 6"	94	921	47	1.23
	2015	22-Sep	02-Oct	1" - 6"	44	1,154	54	1.12
	2016	12-Sep	23-Sep	1" - 6"	37	1,384	66	1.14
	2017	09-Sep	21-Sep	1" - 6"	40	1,796	148	1.98

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. Birthday Rapids to Gull Rapids.

Table 6: Number of wild Lake Sturgeon captured from 2008 to 2017, from which ages and cohorts were determined. Grey highlighted rows indicate construction monitoring and red values indicate cohorts not present in the corresponding study year.

Location	Cohort Year																			
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Upper Split Lake Area																				
Burntwood River																				
2011 Study Year	0	2	5	3	5	15	6	0	2	1	4	0	0	0	-	-	-	-	-	-
2012 Study Year	0	2	1	4	0	4	0	1	5	3	1	0	3	7	1	-	-	-	-	-
2015 Study Year	0	0	0	1	0	1	1	1	3	1	2	0	0	5	4	4	0	0	-	-
2016 Study Year	0	1	0	0	0	1	1	0	0	0	1	0	4	5	0	7	2	0	1	-
2017 Study Year	0	1	0	0	1	2	1	0	0	0	2	1	5	2	0	2	3	1	7	3
Total	**0**	**6**	**6**	**8**	**6**	**23**	**9**	**2**	**10**	**5**	**10**	**1**	**12**	**19**	**5**	**13**	**5**	**1**	**8**	**3**
Present in the Catch	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Split Lake																				
2015 Study Year	0	0	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	0	0	1	1	0	1	0	0	0	1	1	0	-
2017 Study Year	0	0	0	0	0	1	0	0	1	1	3	1	3	1	0	2	0	0	3	-
Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**5**	**1**	**4**	**2**	**0**	**6**	**2**	**1**	**3**	**0**
Present in the Catch	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
Kelsey GS																				
2015 Study Year	0	0	0	0	0	1	0	0	0	0	0	0	2	3	0	0	0	0	-	-
2016 Study Year	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	-
2017 Study Year	0	0	0	0	0	0	0	1	0	0	2	0	0	1	1	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**1**	**0**	**2**	**0**	**2**	**5**	**1**	**1**	**0**	**0**	**0**	**0**
Present in the Catch	**No**	**No**	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**No**
Future Keeyask Reservoir																				
2008 Study Year	0	0	0	0	0	0	0	0	12	2	14	-	-	-	-	-	-	-	-	-
2010 Study Year	1	0	1	0	0	6	3	1	3	5	18	0	0	-	-	-	-	-	-	-
2011 Study Year	0	1	0	0	0	5	2	2	7	5	94	1	2	0	-	-	-	-	-	-
2012 Study Year	0	0	0	0	0	2	2	2	12	6	60	3	1	4	0	-	-	-	-	-
2014 Study Year	0	0	0	1	0	1	0	1	6	2	58	3	4	7	3	9	0	-	-	-
2015 Study Year	0	0	0	0	0	0	1	3	10	7	71	1	1	3	6	11	3	4	-	-
2016 Study Year	0	0	0	0	0	0	0	1	15	0	29	2	1	5	6	13	6	4	4	-
2017 Study Year	0	0	0	0	0	1	1	0	6	3	56	2	2	11	7	20	10	10	10	1
Total	**1**	**1**	**1**	**1**	**0**	**15**	**9**	**10**	**71**	**30**	**400**	**12**	**11**	**30**	**22**	**53**	**19**	**18**	**14**	**1**
Present in the Catch	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 6: Number of wild Lake Sturgeon captured from 2008 to 2017, from which ages and cohorts were determined. Grey highlighted rows indicate construction monitoring and red values indicate cohorts not present in the corresponding study year (continued).

Location	Cohort Year																			
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Stephens Lake																				
2009 Study Year	0	0	1	1	0	0	1	3	1	0	2	0	-	-	-	-	-	-	-	
2010 Study Year	0	0	0	0	1	3	0	1	5	7	14	0	0	-	-	-	-	-	-	
2011 Study Year	0	0	0	0	0	1	0	0	0	2	28	2	0	1	-	-	-	-	-	
2012 Study Year	0	0	0	0	0	0	0	0	7	4	49	1	2	2	0	-	-	-	-	
2014 Study Year	0	0	0	0	0	1	1	0	5	4	25	1	4	5	0	0	0	-	-	
2015 Study Year	0	0	0	0	0	0	0	0	4	3	19	1	1	3	0	4	2	11	-	
2016 Study Year	0	0	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	0	0	19	2	0	3	0	11	4	20	9	5
Total	**0**	**0**	**1**	**1**	**1**	**5**	**3**	**4**	**26**	**24**	**187**	**7**	**7**	**16**	**1**	**18**	**10**	**39**	**9**	**5**
Present in the Catch	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 7: Mean length, weight, and condition factor (K) of Lake Sturgeon captured during juvenile Lake Sturgeon monitoring, fall 2017.

Waterbody	Fork Length (mm)				Weight (g)				K			
	n[a]	Mean	Std[b]	Range	n	Mean	Std	Range	n	Mean	Std	Range
Upper Split Lake Area												
Burntwood River	34	431	193	99–831	31	880	955	73–4,082	31	0.60	0.06	0.50–0.71
Kelsey GS Area	6	704	68	635–831	6	2,616	1,033	1,542–4,581	6	0.72	0.07	0.60–0.80
Split Lake	19	616	206	235–884	19	2,373	1,820	77–6,713	19	0.74	0.10	0.59–0.97
	59	**518**	**215**	**99–884**	**56**	**1,573**	**1,513**	**73–6,713**	**56**	**0.66**	**0.10**	**0.50–0.97**
Future Keeyask Reservoir												
Wild	149	564	170	129–919	144	1,736	1,249	100–6,100	147	0.72	0.09	0.47–0.96
Hatchery	21	380	69	285–465	21	355	176	100–600	21	0.59	0.07	0.43–0.74
	173[a]	**538**	**173**	**129–919**	**168[a]**	**1,537**	**1,257**	**100–6,100**	**168[a]**	**0.70**	**0.10**	**0.43–0.96**
Stephens Lake												
Wild	86	506	213	135–851	81	1,662	1,591	75–5,425	81	0.73	0.12	0.44–1.03
Hatchery	51	362	66	262–487	51	322	191	75–750	51	0.61	0.08	0.42–0.78
	148[b]	**444**	**183**	**135–851**	**143[c]**	**1,078**	**1,376**	**75–5,425**	**143[d]**	**0.68**	**0.12**	**0.42–1.03**

a – Number of fish measured.
b – Standard deviation.
c – Total includes an additional 3 fish that were not conclusively identified as either wild or hatchery fish.
d – Total includes an additional 11 fish that were not conclusively identified as either wild or hatchery fish.

Table 8: Recapture summary for Lake Sturgeon caught in the Keeyask Study Area between 2008 and 2017.

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
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
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

a – Number of Lake Sturgeon

Table 9: Number (n) and percentage (%) of catch of hatchery-reared Lake Sturgeon caught in the Keeyask Study Area between 2014 and 2017.

Recapture Location	Sampling Year	Release Location						Total
		Burntwood River		Future Keeyask Reservoir		Stephens Lake		
		n	% of Catch	n	% of Catch	n	% of Catch	
Upper Split Lake Area	2014	1	2.4	-	-	-	-	1
	2015	0	0.0	0	0.0	0	0.0	0
	2016	1	2.5	0	0.0	0	0.0	1
	2017	3	5.1	0	0.0	0	0.0	3
Future Keeyask Reservoir	2014	1	0.9	-	-	-	-	1
	2015	1	0.7	2	1.4	0	0.0	3
	2016	0	0.0	7	7.3	0	0.0	7
	2017	1	0.6	20	11.6	0	0.0	21
Stephens Lake	2014	0	0.0	-	-	-	-	-
	2015	0	0.0	0	0.0	4	7.4	4
	2016	0	0.0	1	1.5	4	6.1	5
	2017	0	0.0	11	7.4	40	27.0	51

Table 10: Number and ages of hatchery-reared Lake Sturgeon released as age-1 fish recaptured during juvenile Lake Sturgeon studies since 2014.

Monitoring Year	Burntwood River	Future Keeyask Reservoir	Stephens Lake
2014	1 (1 year old)	1 (1 year old)	-
2015	-	3 (2 were 1 year old) (1 was 2 years old)	4 (All were 1 year old)
2016	1 (3 years old)	7 (All were 2 years old)	5 (All were 2 years old)
2017	3 (All were 4 years old)	21 (9 were 1 year old) (11 were 3 years old) (1 was 4 years old)	51 (33 were 1 year old) (18 were 3 years old)

Table 11: Catch-per-unit-effort (CPUE; # fish/100 m net/24 h) for hatchery and wild caught Lake Sturgeon in Stephens Lake and the future Keeyask reservoir.

Location	Effort (gillnet hours)	# of Lake Sturgeon	CPUE (#LKST/100m/24h)
Future Keeyask Reservoir			
Wild	1,550.7	149	2.31
Hatchery	1,550.7	21	0.33
	Total	**173[a]**	**2.68**
Stephens Lake			
Wild	1,796.1	86	1.15
Hatchery	1,796.1	51	0.68
	Total	**148[b]**	**1.98**

a – total includes an additional 3 fish that were not conclusively identified as either wild or hatchery fish.
b – total includes an additional 11 fish that were not conclusively identified as either wild or hatchery fish.

FIGURES

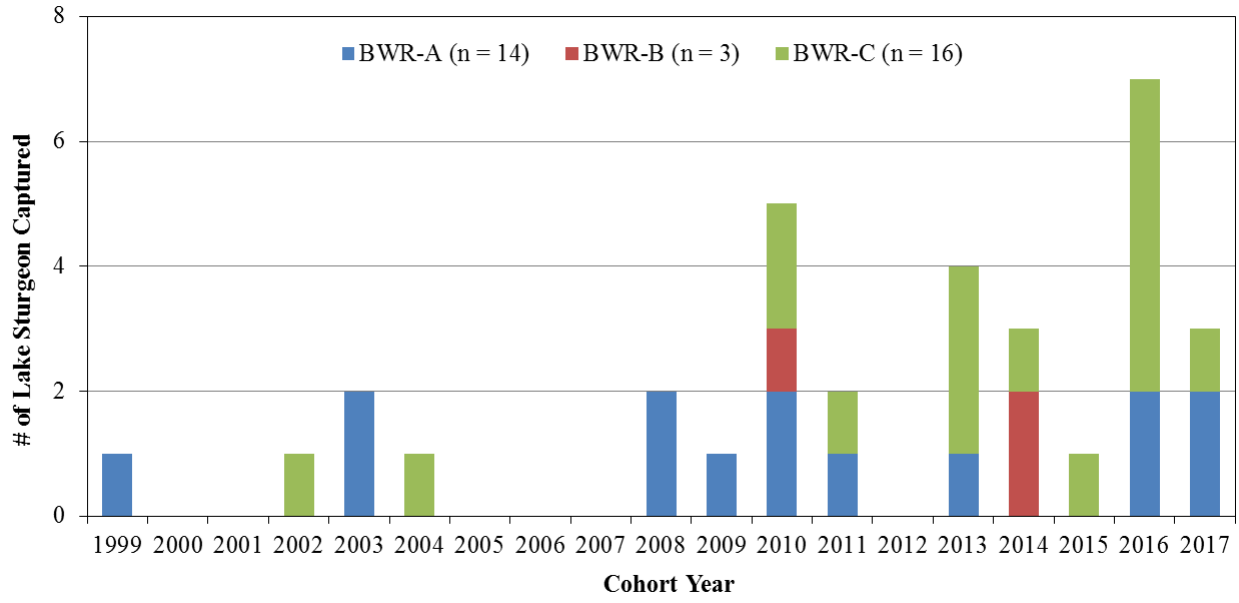


Figure 1: **Cohort frequency distribution by zone, for all aged Lake Sturgeon captured in the Burntwood River, fall 2017. Two hatchery-reared fish captured in zone BWR-C were included as part of the 2013 cohort.**

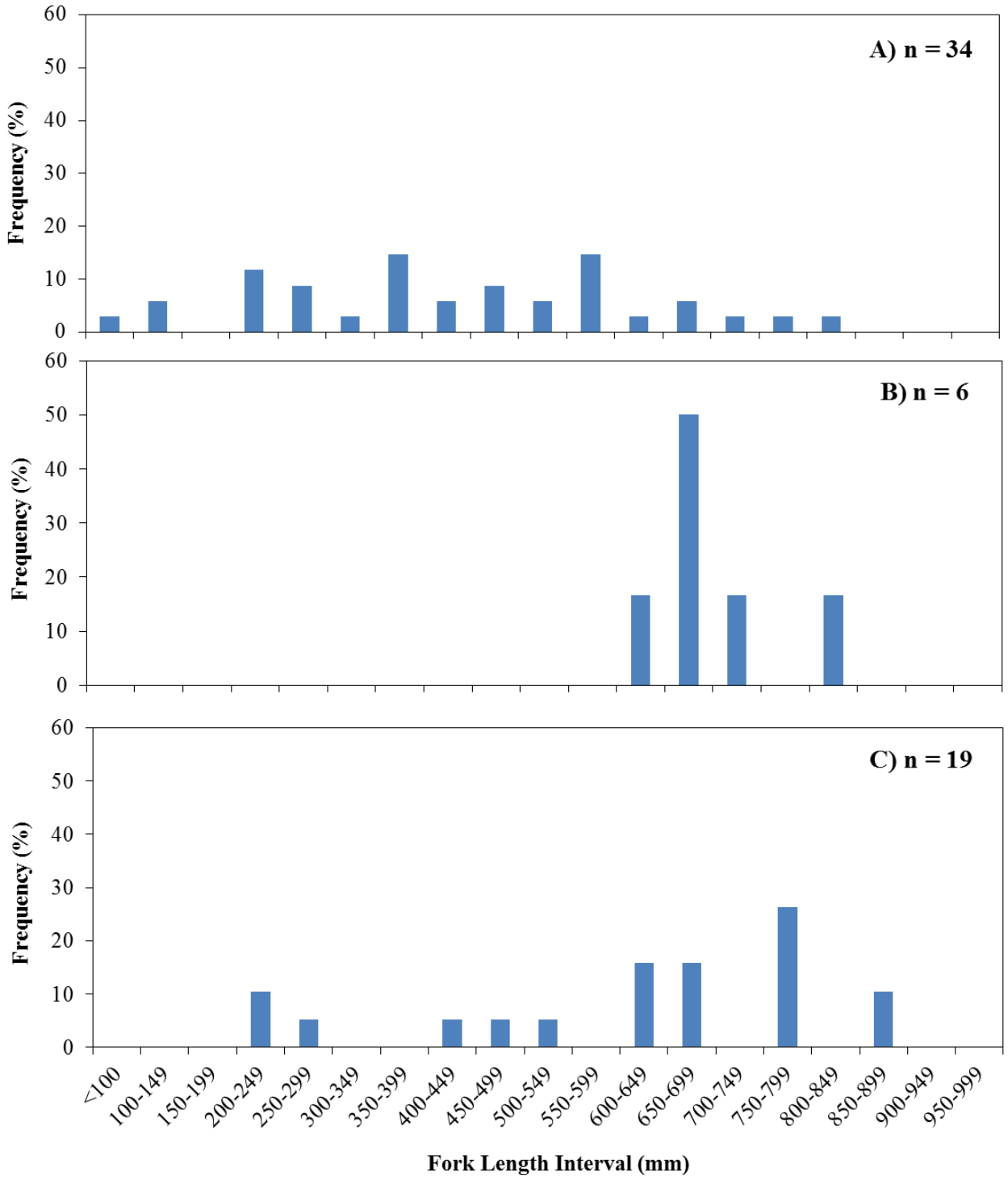


Figure 2: **Length-frequency distributions for Lake Sturgeon captured in gill nets set in the Upper Split Lake Area: A) the Burntwood River, B) the Kelsey GS Area, and C) Split Lake, fall 2017.**

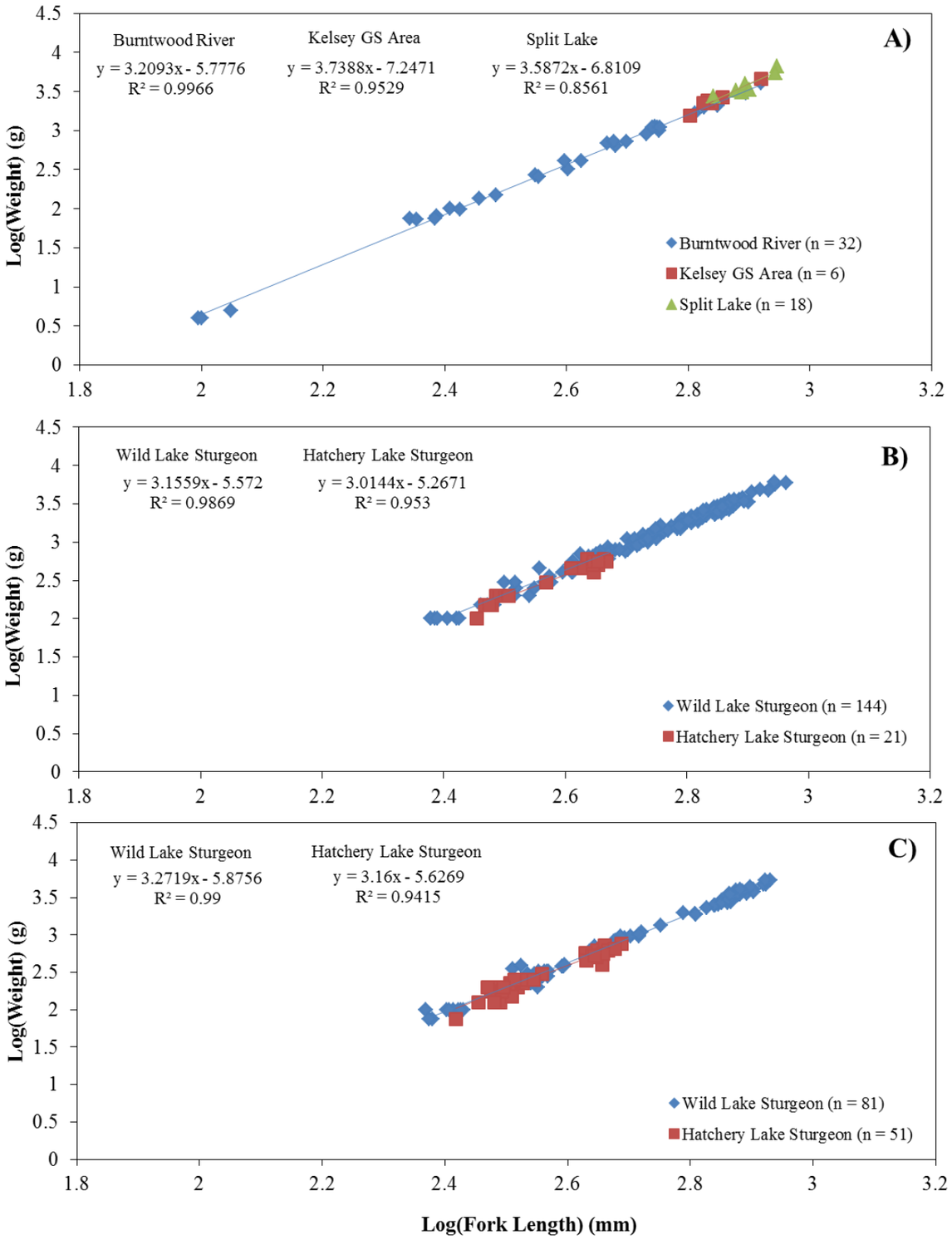


Figure 3: **Comparison of weight (g) at-fork length (mm) (log transformed) for Lake Sturgeon captured in: A) the Upper Split Lake Area B) the future Keeyask reservoir and C) Stephens Lake, fall 2017. The two hatchery-reared Lake Sturgeon captured in the Burntwood River and the one captured in Split Lake were not included in the Upper Split Lake Area (A) analyses as too few were captured.**

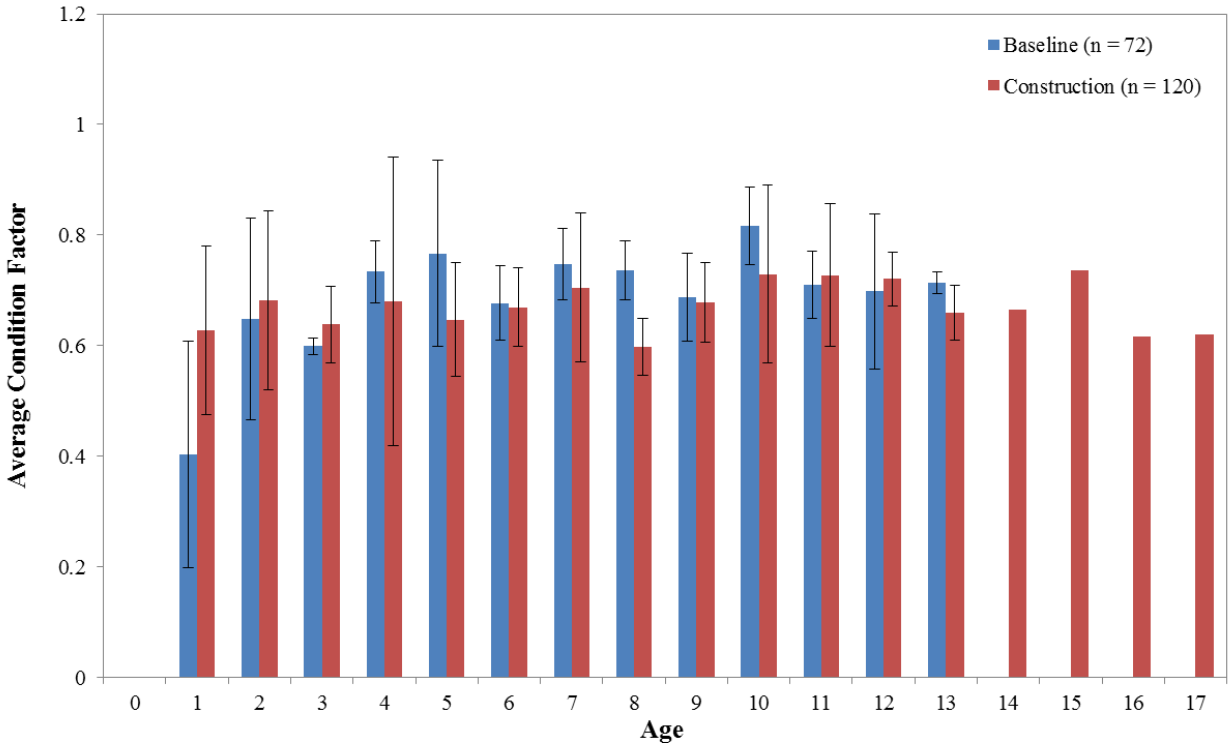


Figure 4: **Mean condition factor-at-age for Lake Sturgeon captured in the Upper Split Lake Area during baseline studies (2011–2013) and during the construction period (2014–2017). Error bars represent standard deviations. There were not enough baseline data to allow for significance testing.**

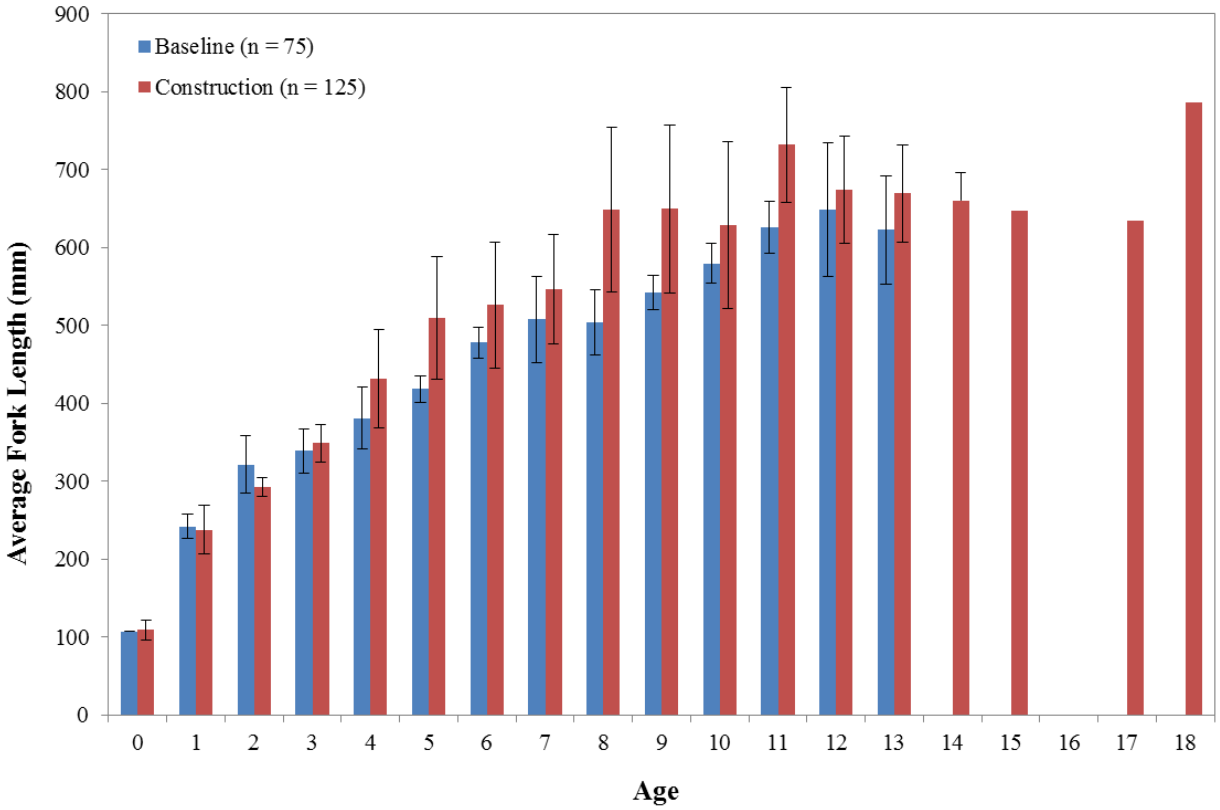


Figure 5: **Mean fork length-at-age for Lake Sturgeon captured in the Upper Split Lake Area during baseline studies (2011–2013) and the construction period (2014–2017). Error bars represent standard deviations. There were not enough baseline or construction data to allow for significance testing.**

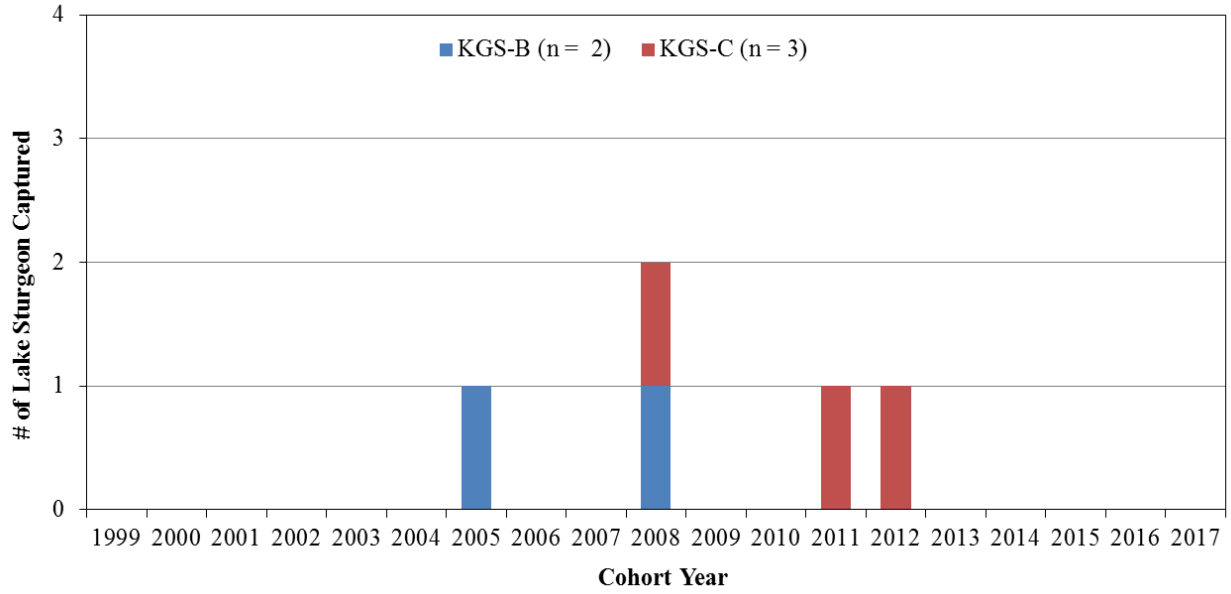


Figure 6: Cohort frequency distributions by zone, for all aged Lake Sturgeon captured in the Kelsey GS Area, fall 2017.

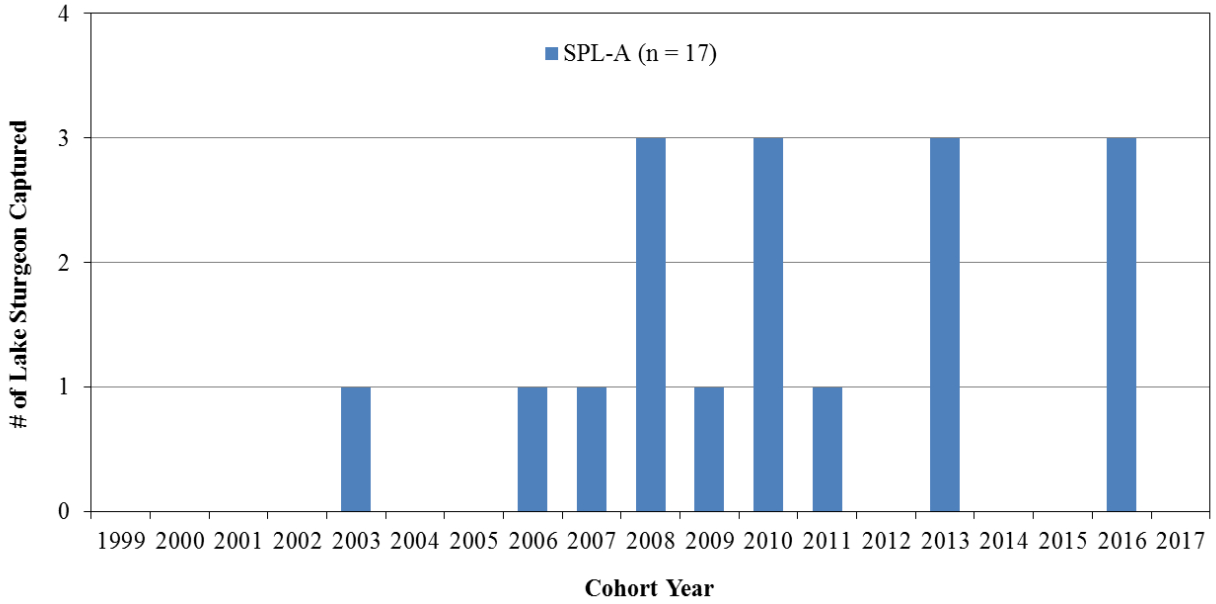


Figure 7: Cohort frequency distributions for all aged Lake Sturgeon captured in zone SPL-A of Split Lake, fall 2017. A single hatchery-reared fish captured in zone SPL-A was included as part of the 2013 cohort.

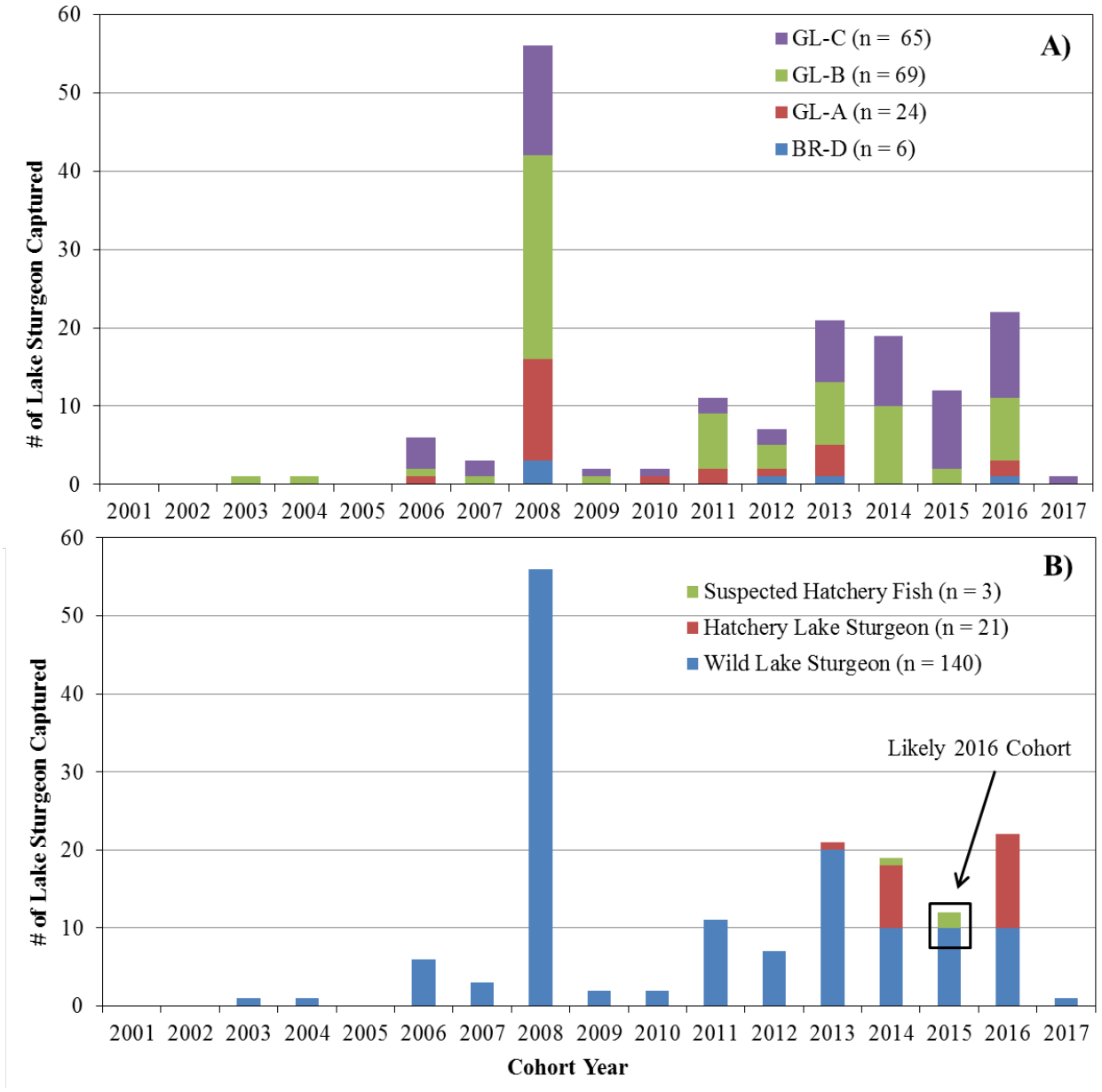


Figure 8: Cohort frequency distributions for all aged Lake Sturgeon captured by zone in the future Keeyask reservoir (A) and by hatchery and wild Lake Sturgeon (B), fall 2017.

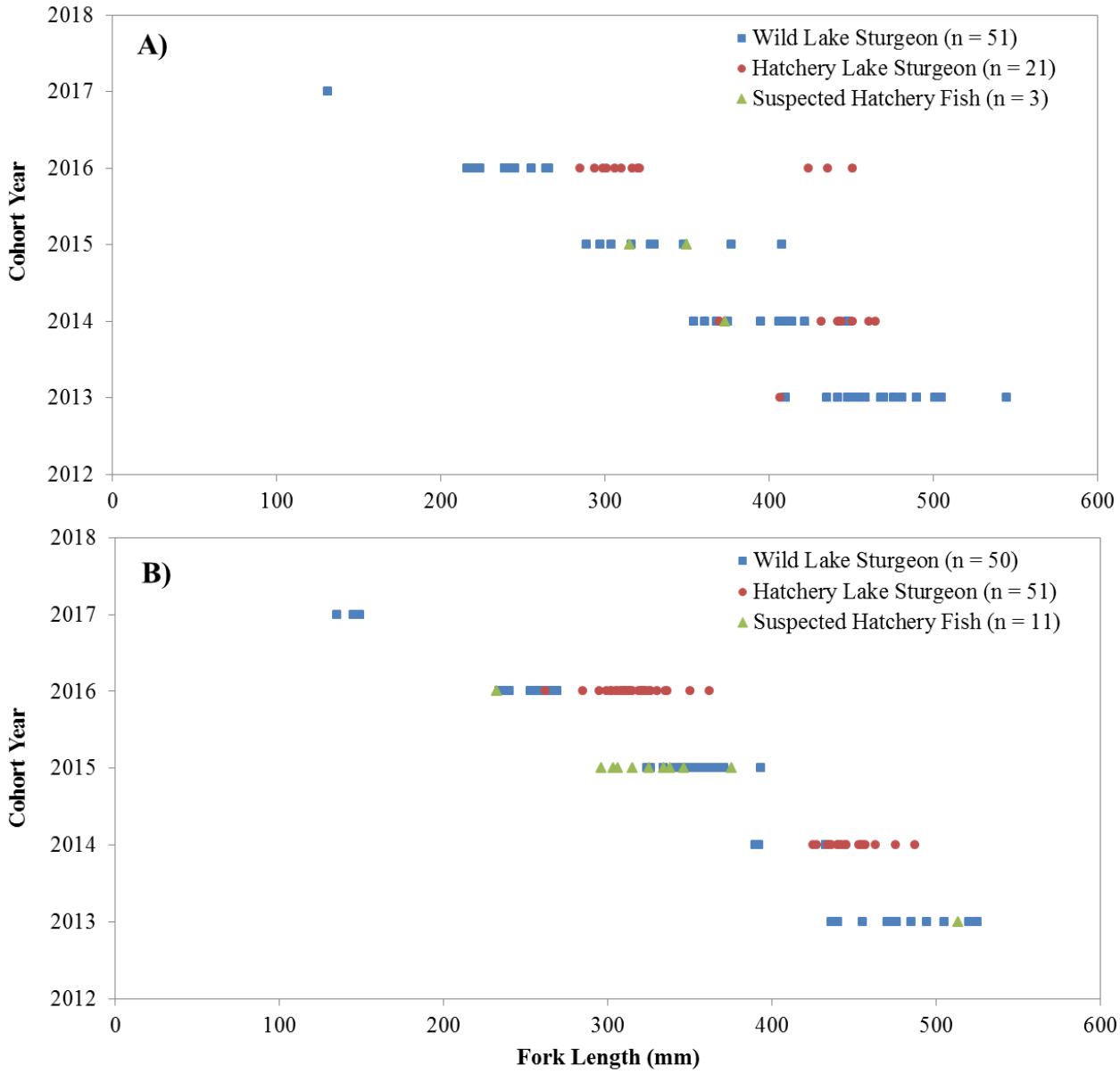


Figure 9: Fork length comparisons between cohorts for hatchery, wild, and suspected hatchery fish caught in the future Keeyask reservoir (A) and Stephens Lake (B), fall 2017.

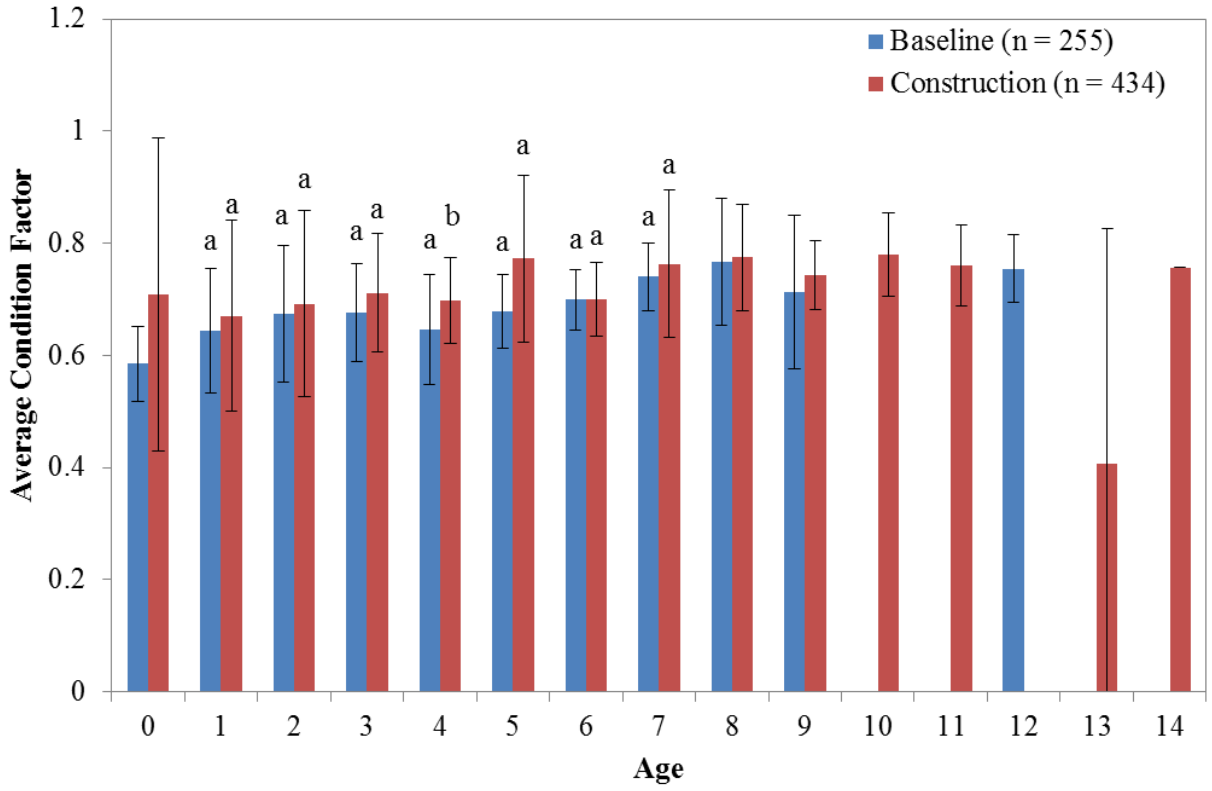


Figure 10: **Mean condition factor-at-age for wild Lake Sturgeon captured in the future Keeyask reservoir during baseline studies (2008–2013) and the construction period (2014–2017). Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

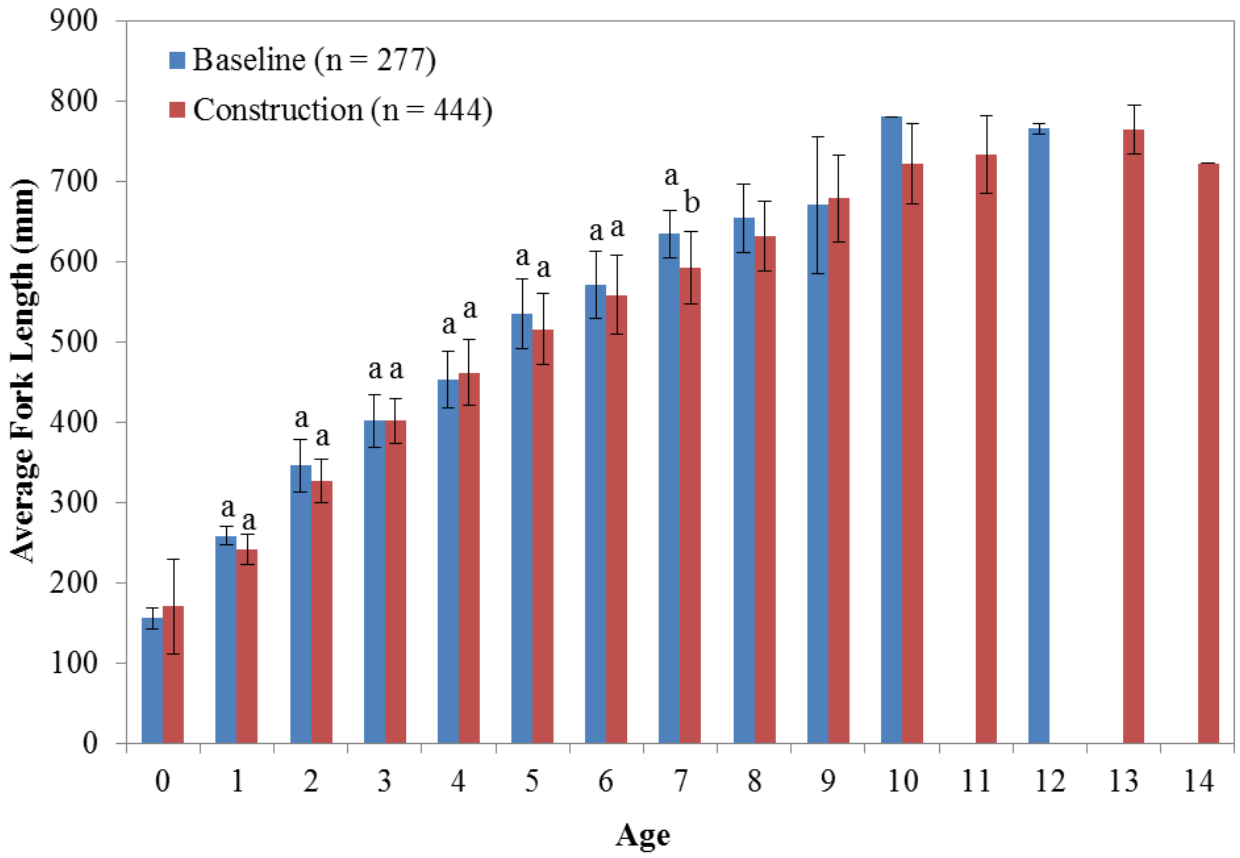


Figure 11: **Mean fork length-at-age for wild Lake Sturgeon captured in the future Keeyask reservoir during baseline studies (2008–2013) and the construction period (2014–2017). Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

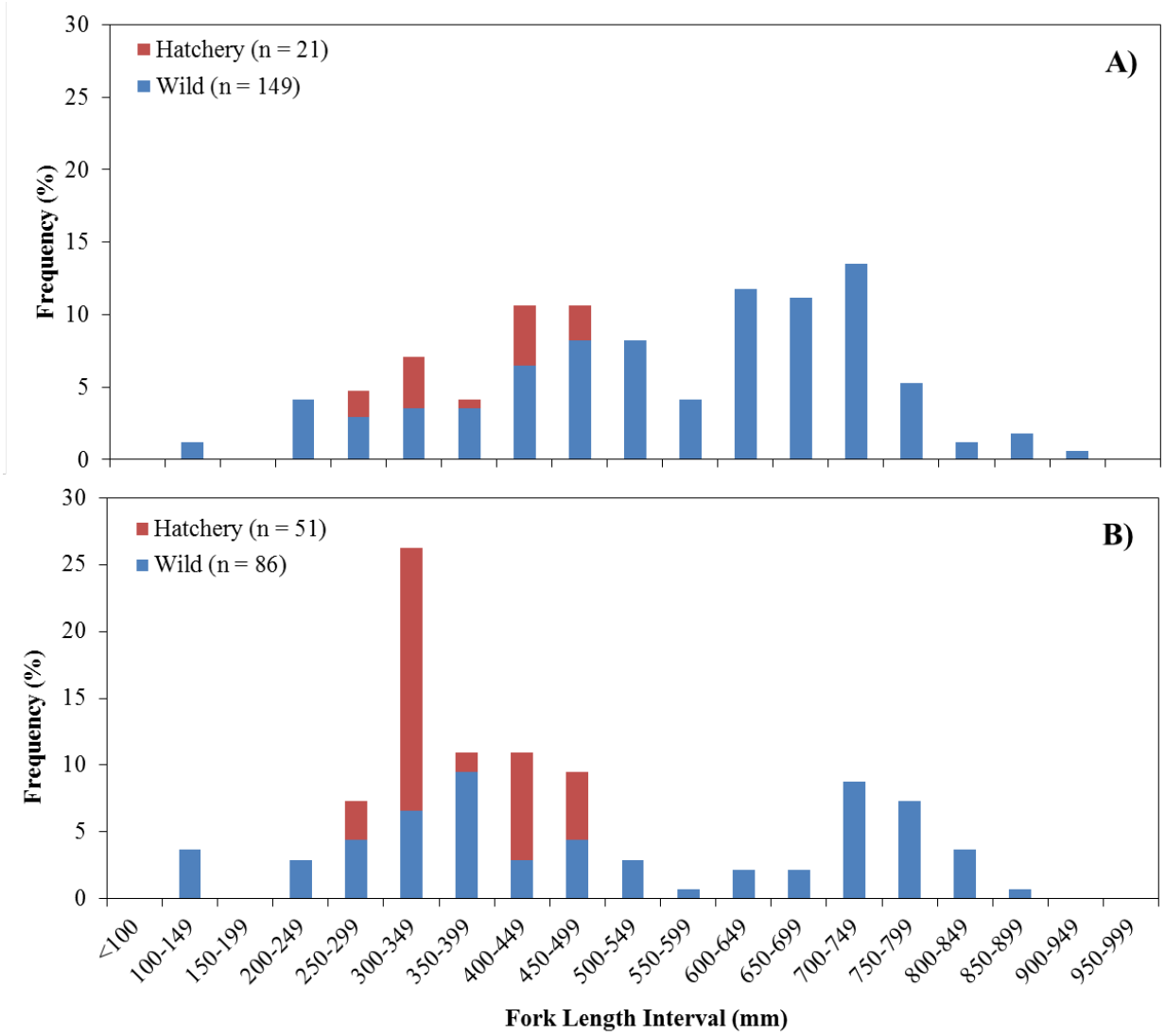


Figure 12: Fork length frequency distributions for Lake Sturgeon captured in gill nets set in: A) the future Keeyask reservoir and B) Stephens Lake, fall 2017.

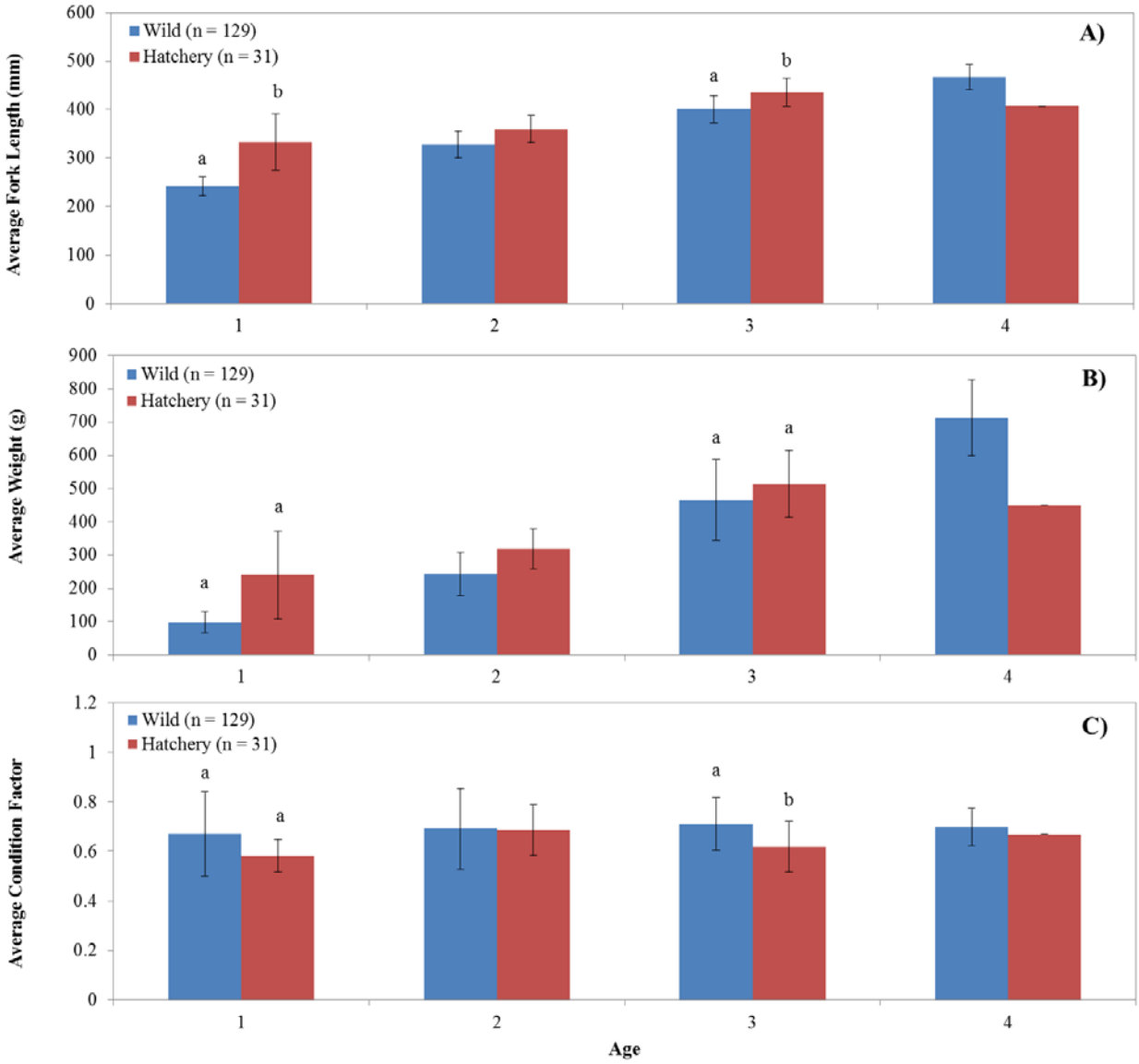


Figure 13: **Fork length-at-age (A), weight-at-age (B), and condition factor-at-age (B) for hatchery (blue bars) and wild (red bars) Lake Sturgeon caught in the future Keeyask reservoir since 2014. Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

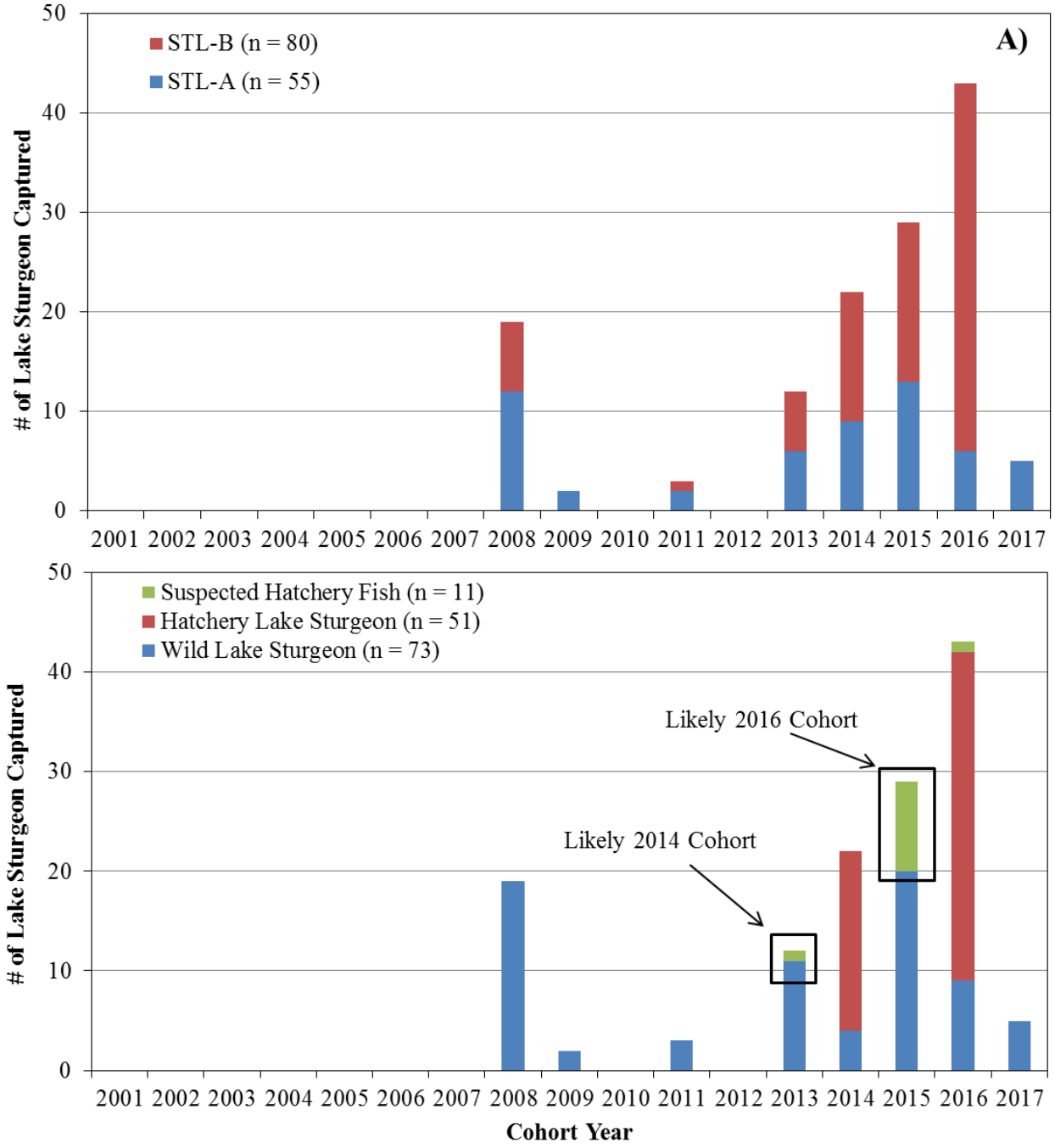


Figure 14: Cohort frequency distributions for all aged Lake Sturgeon captured in Stephens Lake by zone (A) and by hatchery and wild Lake Sturgeon (B), fall 2017.

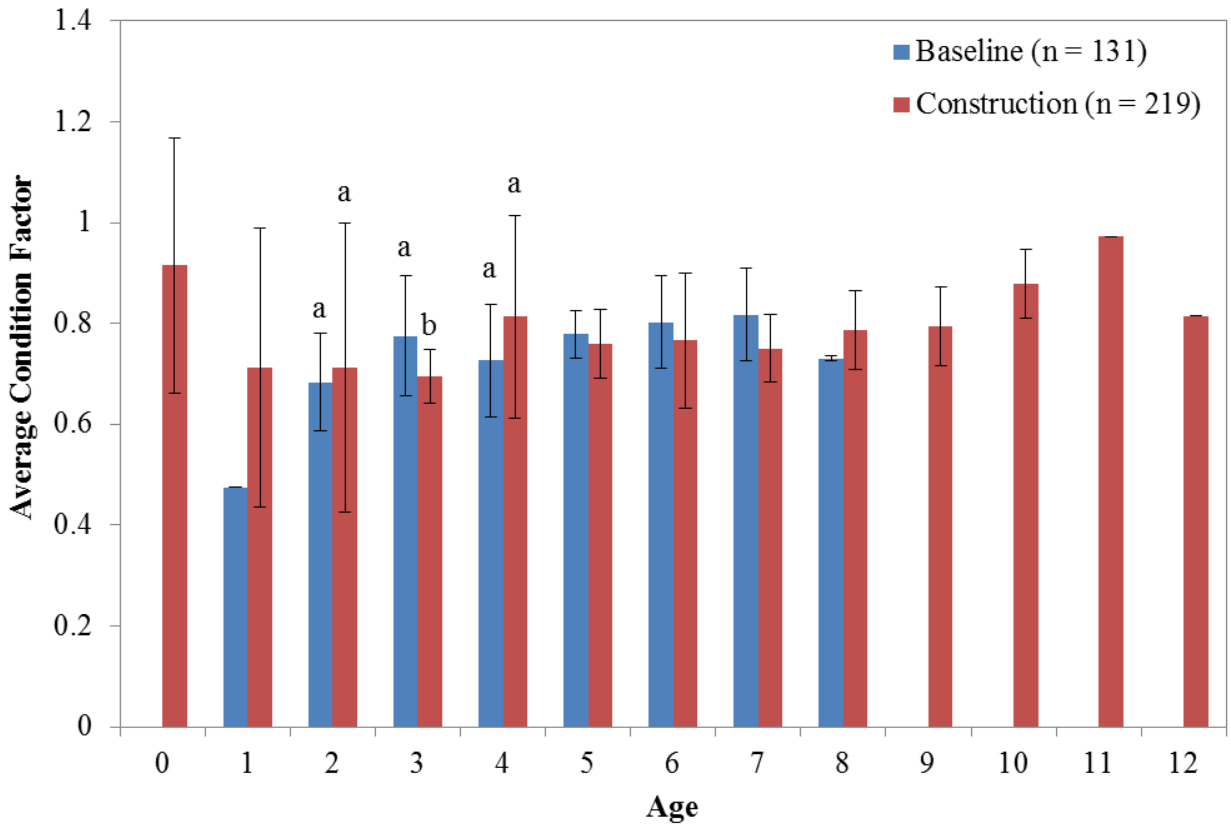


Figure 15: **Mean condition factor-at-age for Lake Sturgeon captured in Stephens Lake during baseline studies (2008–2013) and the construction period (2014–2017).Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

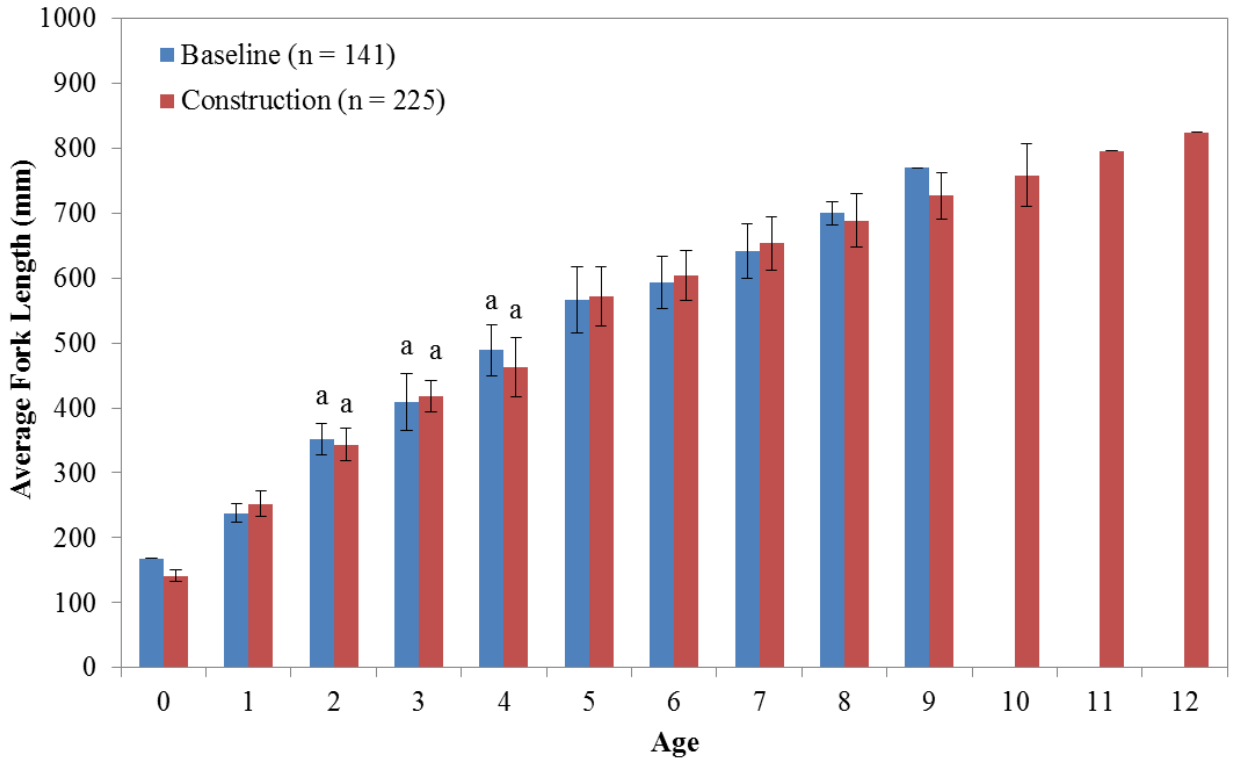


Figure 16: **Mean fork length-at-age for wild Lake Sturgeon captured in Stephens Lake during baseline studies (2008–2013) and the construction period (2014–2017). Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

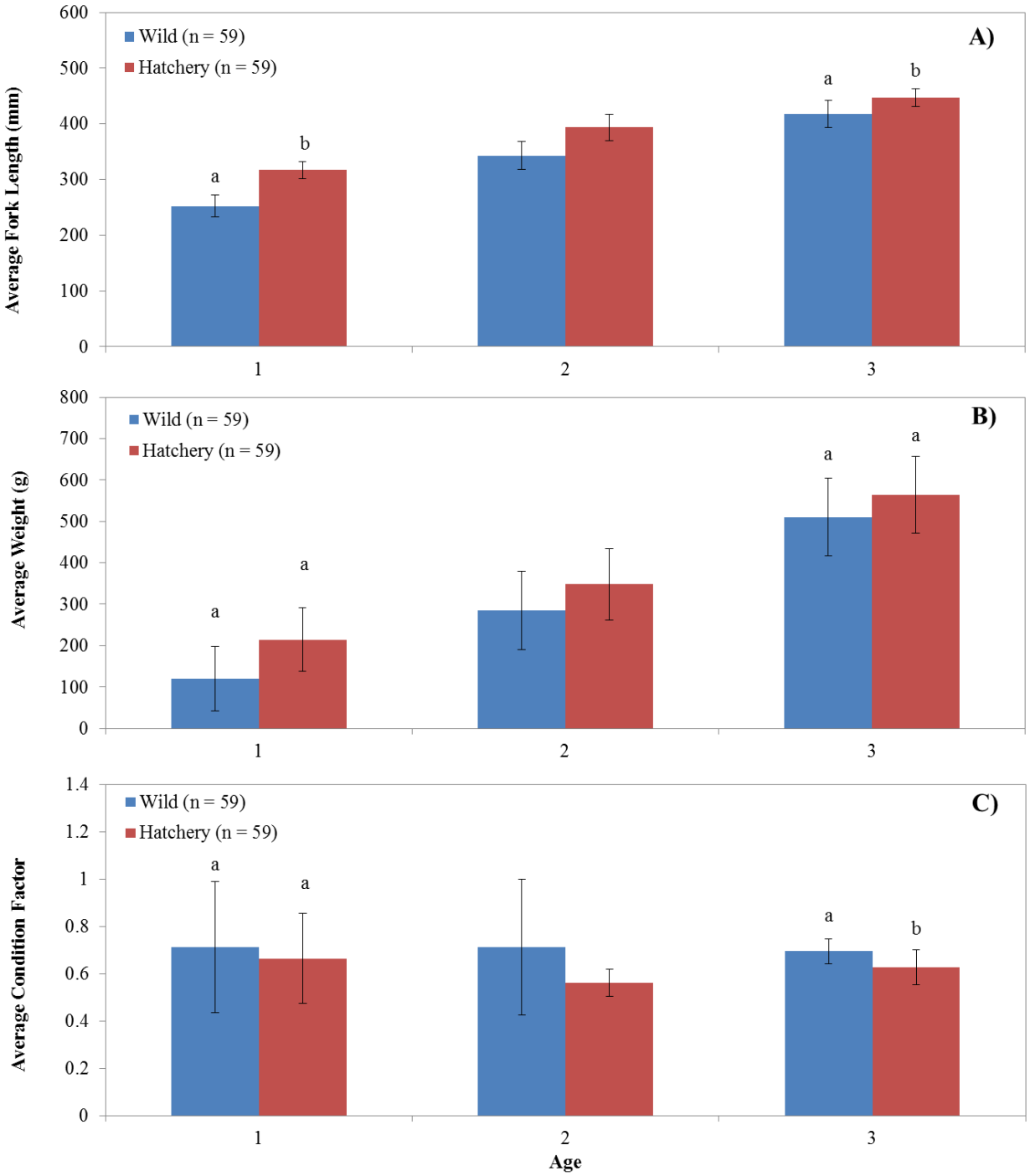
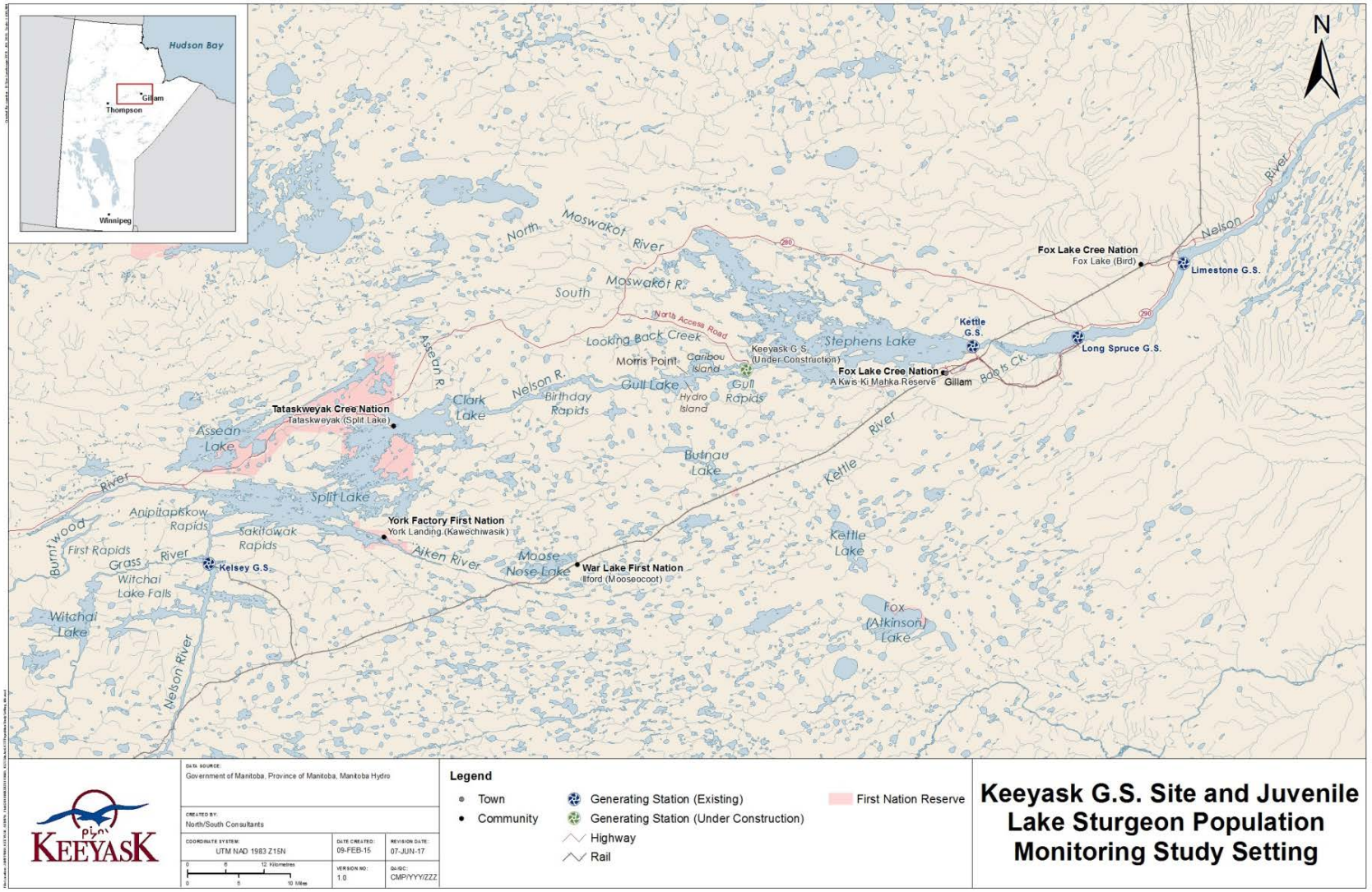


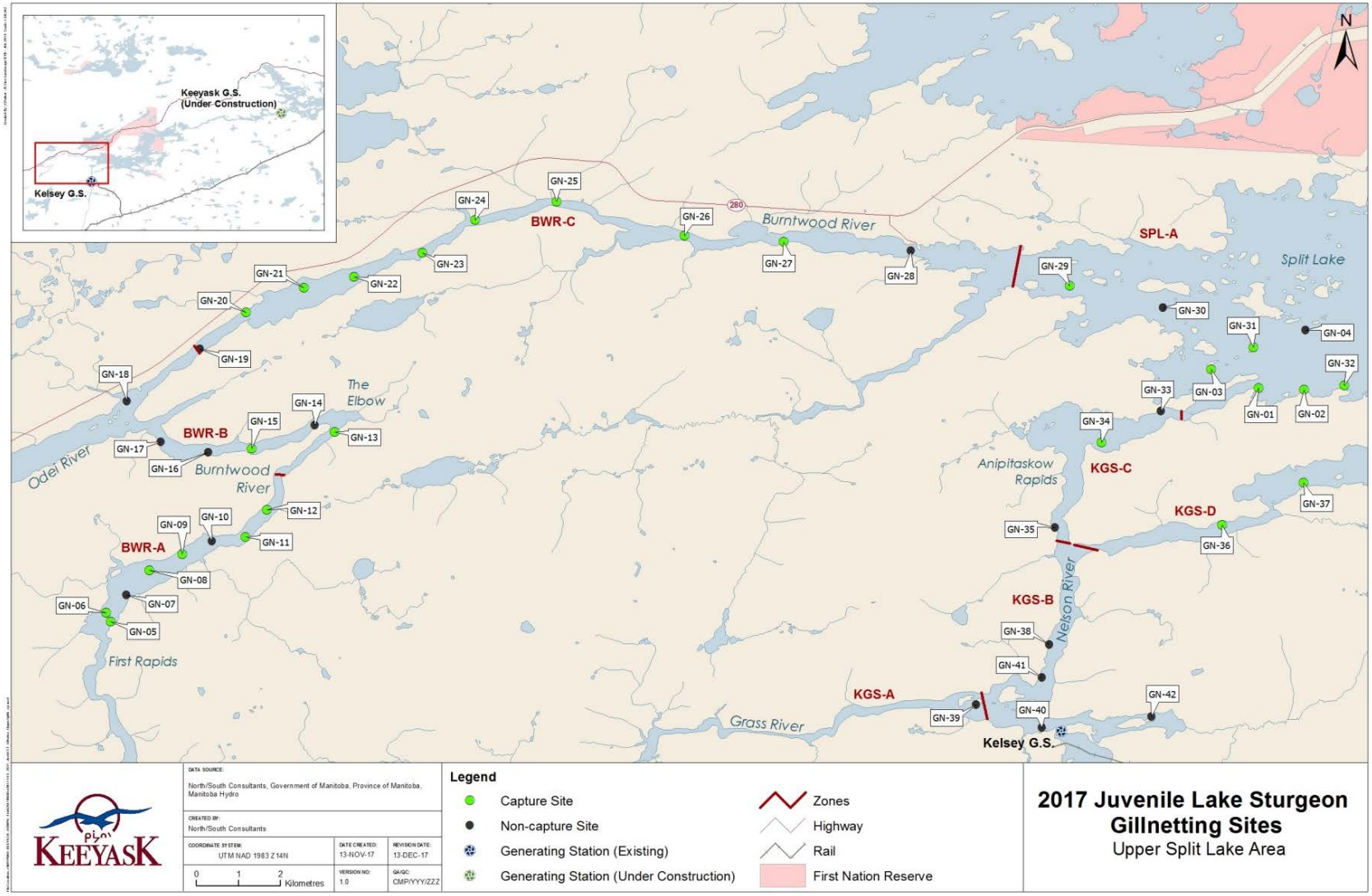
Figure 17: **Fork length-at-age (A), weight-at-age (B), and condition factor-at-age (B) for hatchery (blue bars) and wild (red bars) Lake Sturgeon caught in Stephens Lake. Letters denote significant differences between groups (t-test and Mann Whitney U test, $p < 0.05$). Statistical comparisons only conducted where sample sizes were greater than eight individuals. Error bars represent standard deviations.**

MAPS

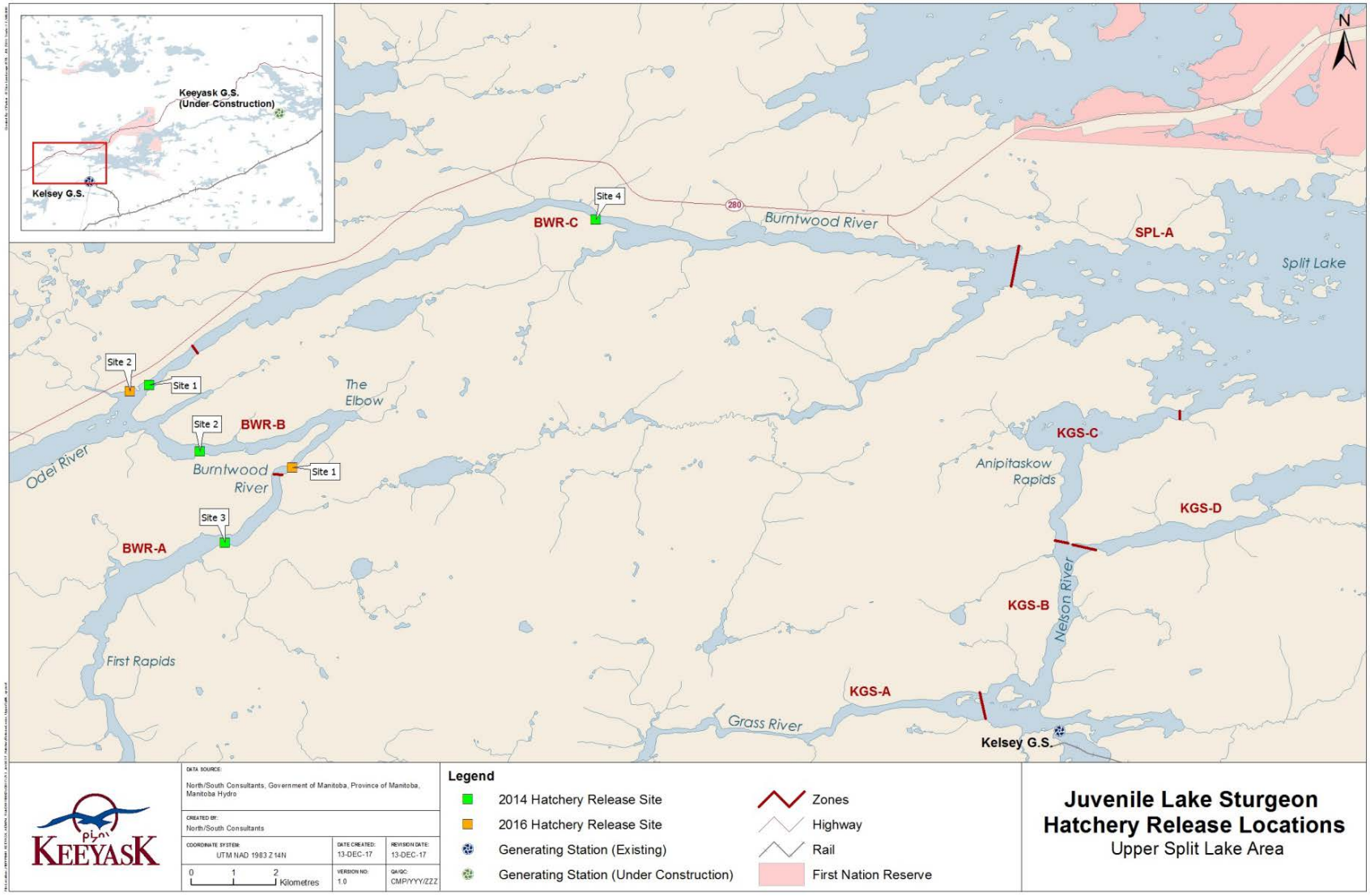


Map 1: Map of Nelson River showing the site of Keeyask Generating Station and the juvenile Lake Sturgeon population monitoring study setting.

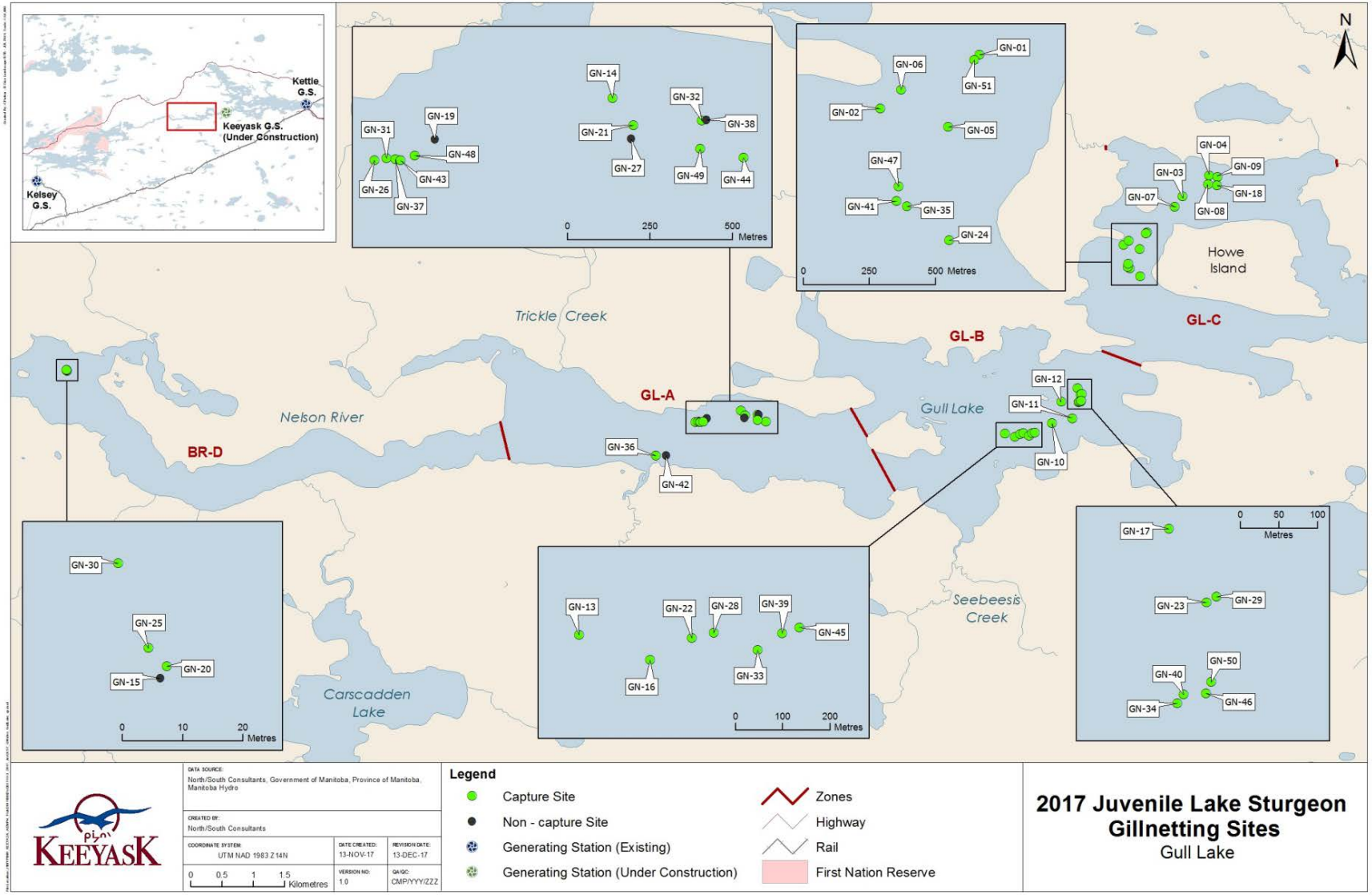
Map 2: Map of instream structures at the Keeyask Generating Station site, September 2017.



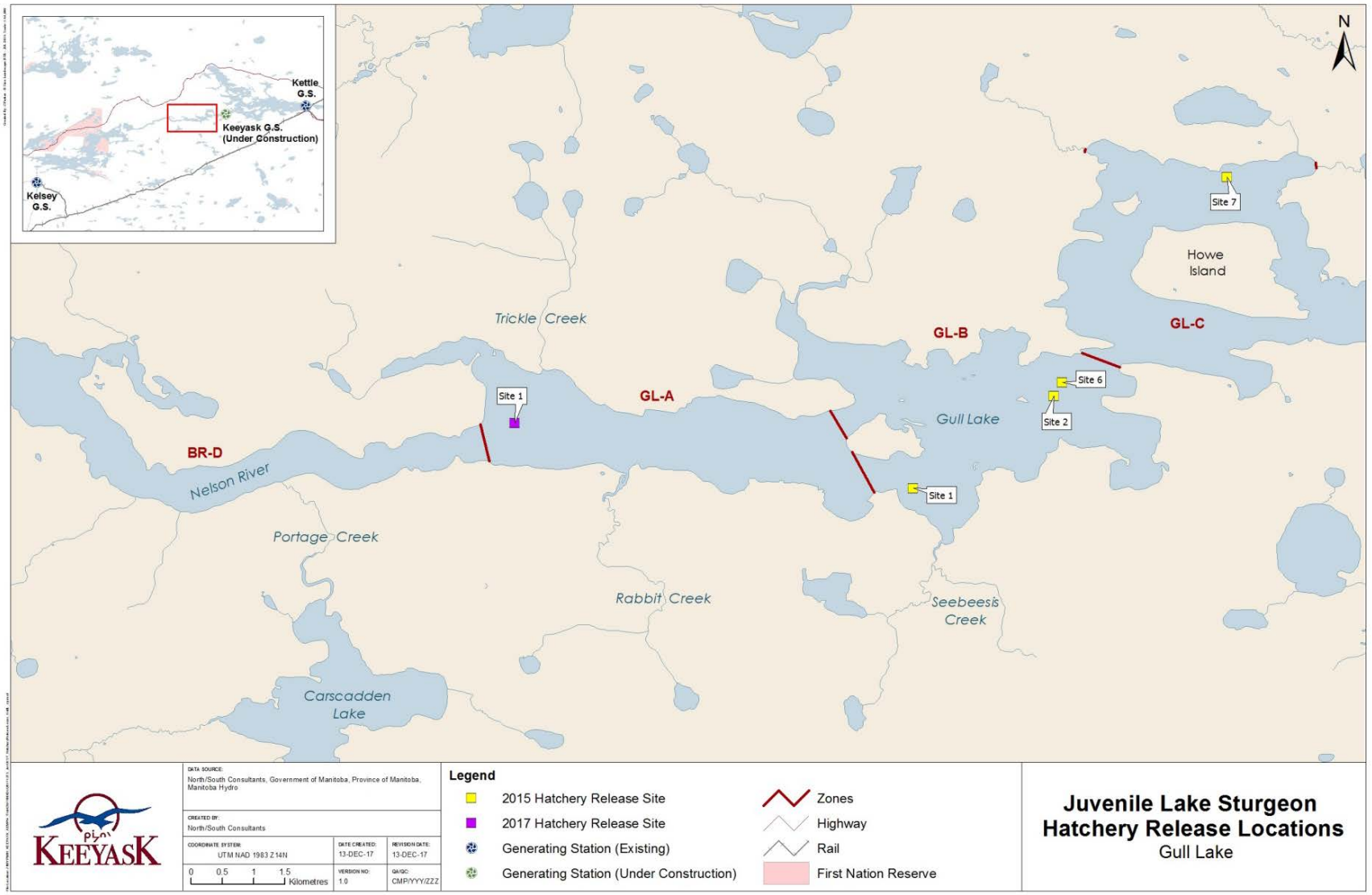
Map 3: Map of sites fished with gill nets in the Upper Split Lake Area (Burntwood River, Kelsey GS Area, and Split Lake), fall 2017.



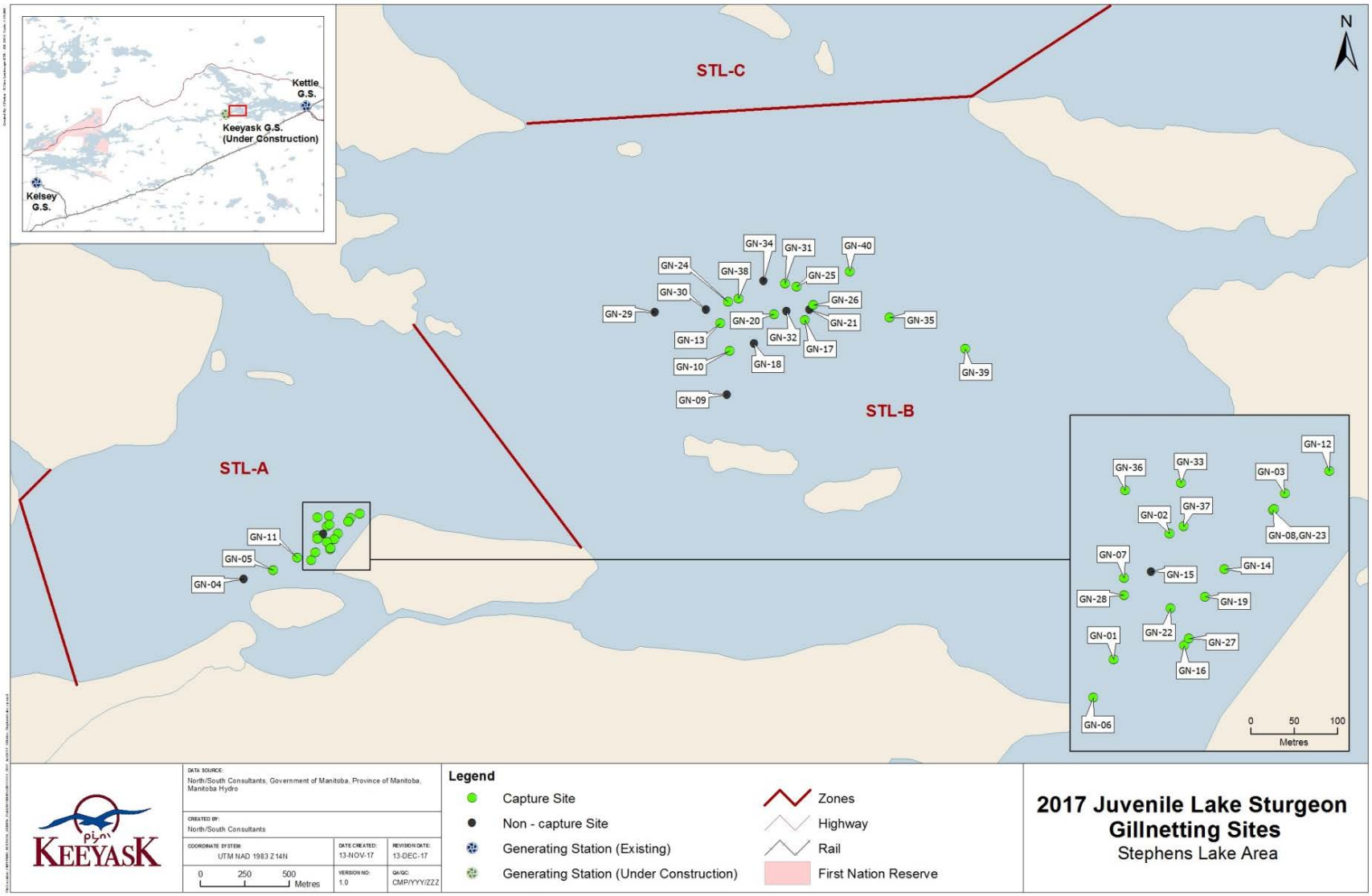
Map 4: Map of Lake Sturgeon yearling stocking sites in the Burntwood River since 2014.



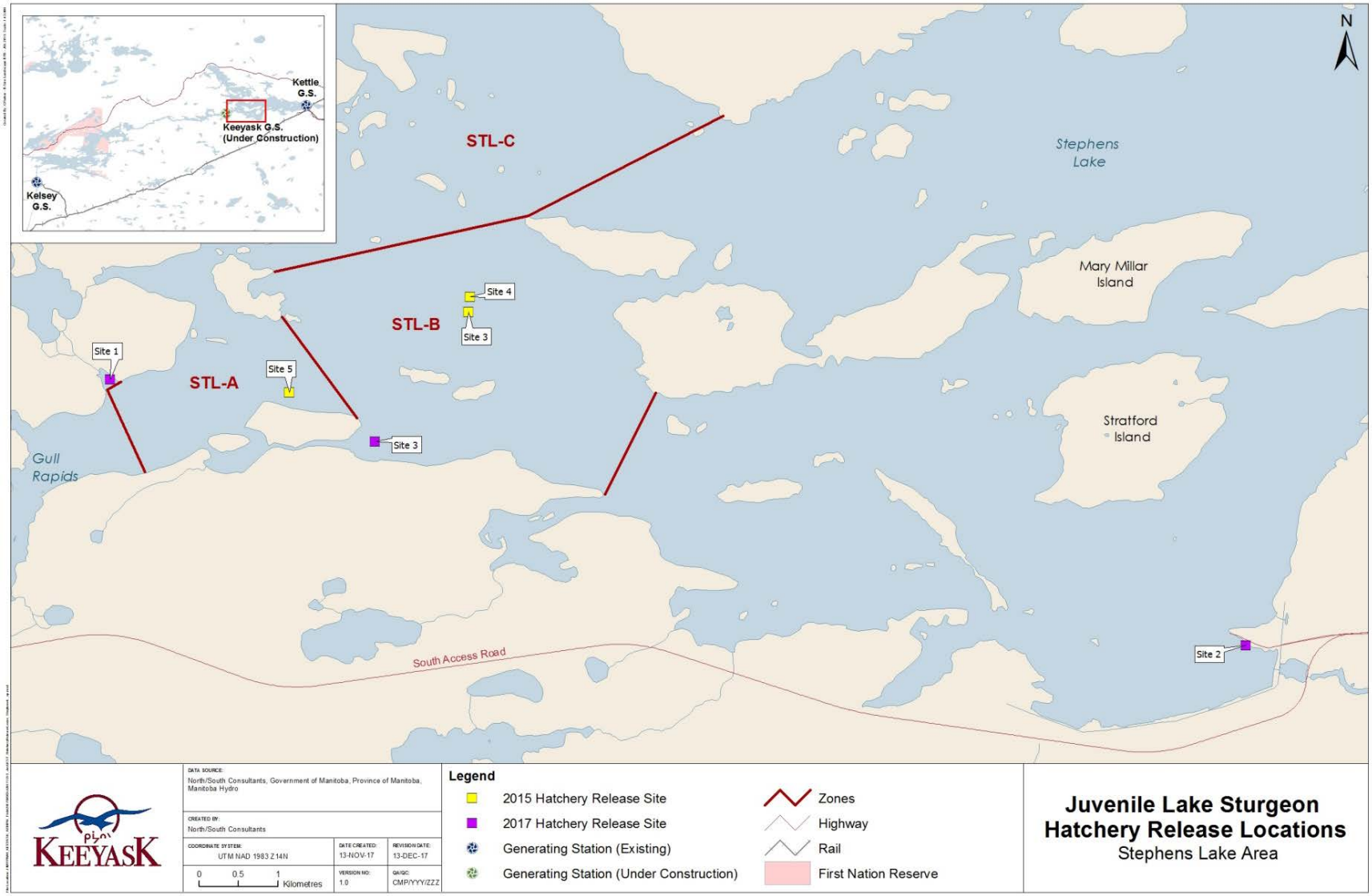
Map 5: Map of sites fished with gill nets upstream of Gull Rapids, fall 2017.



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 2017.



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

Map 9: Sea Falls to Sugar Falls reach of the Nelson River (from McDougall and Nelson 2016).

APPENDICES

APPENDIX 1:
LOCATIONS AND SITE-SPECIFIC PHYSICAL MEASUREMENTS COLLECTED AT GILLNETTING SITES, FALL 2017.

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 2017. 77

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 2017. 79

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2017. 81

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 2017. Sites set in each region are indicated as follows Burntwood River (BWR), Kelsey GS Area (KGS), 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	SPL-A	657364	6221812	5-Sep-17	17.5	6-Sep-17	17.0	20.22	8.1	11.1
GN-02	SPL-A	658451	6221877	5-Sep-17	17.5	6-Sep-17	17.0	20.72	12.2	10.3
GN-03	SPL-A	656211	6222159	5-Sep-17	17.5	6-Sep-17	17.0	21.77	7.6	11.8
GN-04	SPL-A	658358	6223287	5-Sep-17	17.5	6-Sep-17	17.0	21.00	5.1	5.7
GN-05	BWR-A	630695	6213933	6-Sep-17	17.0	7-Sep-17	15.5	19.22	10.1	4.5
GN-06	BWR-A	630565	6214129	6-Sep-17	17.0	7-Sep-17	15.5	19.63	5.2	9.8
GN-07	BWR-A	631010	6214588	6-Sep-17	17.0	7-Sep-17	15.5	20.08	8.0	12.4
GN-08	BWR-A	631509	6215226	6-Sep-17	17.0	7-Sep-17	15.5	20.52	8.0	8.1
GN-09	BWR-A	632250	6215672	7-Sep-17	15.5	8-Sep-17	15.5	19.53	9.4	10.6
GN-10	BWR-A	632933	6216044	7-Sep-17	15.5	8-Sep-17	15.5	20.00	10.9	11.2
GN-11	BWR-A	633708	6216214	7-Sep-17	15.5	8-Sep-17	15.5	20.28	7.9	11.3
GN-12	BWR-A	634154	6216898	7-Sep-17	15.5	8-Sep-17	15.5	20.73	7.1	7.2
GN-13	BWR-B	635601	6218878	8-Sep-17	15.5	9-Sep-17	16.0	20.82	8.9	5.9
GN-14	BWR-B	635127	6218997	8-Sep-17	15.5	9-Sep-17	16.0	20.97	8.9	9.8
GN-15	BWR-B	633680	6218303	8-Sep-17	15.5	9-Sep-17	16.0	21.00	9.2	8.6
GN-16	BWR-B	632659	6218132	8-Sep-17	15.5	9-Sep-17	16.0	19.70	7.1	5.1
GN-17	BWR-B	631511	6218286	9-Sep-17	16.0	10-Sep-17	16.0	18.98	5.7	7.0
GN-18	BWR-B	630623	6219174	9-Sep-17	16.0	10-Sep-17	16.0	19.22	7.6	11.6
GN-19	BWR-B	632253	6220555	9-Sep-17	16.0	10-Sep-17	16.0	19.98	7.0	7.7
GN-20	BWR-B	633256	6221520	9-Sep-17	16.0	10-Sep-17	16.0	20.10	2.7	5.2

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 2017. Sites set in each region are indicated as follows Burntwood River (BWR), Kelsey GS Area (KGS), 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-21	BWR-C	634577	6222218	10-Sep-17	16.0	12-Sep-17	15.0	44.82	7.5	9.5
GN-22	BWR-C	635742	6222583	10-Sep-17	16.0	12-Sep-17	15.0	45.17	8.8	10.3
GN-23	BWR-C	637305	6223287	10-Sep-17	16.0	12-Sep-17	15.0	45.38	7.4	14.6
GN-24	BWR-C	638485	6224177	10-Sep-17	16.0	12-Sep-17	15.0	45.67	6.5	11.6
GN-25	BWR-C	640382	6224776	12-Sep-17	15.0	13-Sep-17	15.0	18.43	10.1	8.4
GN-26	BWR-C	643469	6224243	12-Sep-17	15.0	13-Sep-17	15.0	18.63	10.9	12.4
GN-27	BWR-C	645834	6224290	12-Sep-17	15.0	13-Sep-17	15.0	18.95	6.9	12.7
GN-28	BWR-C	648866	6224353	12-Sep-17	15.0	13-Sep-17	15.0	19.35	6.9	12.3
GN-29	SPL-A	652690	6223844	13-Sep-17	15.0	14-Sep-17	14.5	17.02	5.2	5.0
GN-30	SPL-A	654947	6223521	13-Sep-17	15.0	14-Sep-17	14.5	17.37	3.2	3.0
GN-31	SPL-A	657165	6222771	13-Sep-17	15.0	14-Sep-17	14.5	17.38	6.1	6.0
GN-32	SPL-A	659390	6222049	13-Sep-17	15.0	14-Sep-17	14.5	17.93	12.2	7.1
GN-33	KGS-C	655103	6221070	14-Sep-17	14.5	15-Sep-17	15.0	20.57	9.2	8.4
GN-34	KGS-C	653762	6220203	14-Sep-17	14.5	15-Sep-17	15.0	21.02	13.6	8.1
GN-35	KGS-C	652836	6218099	14-Sep-17	14.5	15-Sep-17	15.0	21.75	11.0	8.3
GN-36	KGS-D	656782	6218504	14-Sep-17	14.5	15-Sep-17	15.0	22.40	12.1	6.0
GN-37	KGS-D	658630	6219668	14-Sep-17	14.5	15-Sep-17	15.0	22.65	7.5	10.6
GN-38	KGS-B	652948	6215324	15-Sep-17	15.0	16-Sep-17	15.0	18.65	8.3	19.3
GN-39	KGS-A	651344	6213748	15-Sep-17	15.0	16-Sep-17	15.0	19.10	6.1	17.7
GN-40	KGS-B	652946	6213340	15-Sep-17	15.0	16-Sep-17	15.0	19.20	4.9	17.6
GN-41	KGS-B	652845	6214525	15-Sep-17	15.0	16-Sep-17	15.0	18.32	5.2	4.7
GN-42	KGS-B	655512	6213828	15-Sep-17	15.0	16-Sep-17	15.0	19.27	5.4	10.2

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 2017.

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	GL-C	355521	6247294	9-Sep-17	16.0	10-Sep-17	16.0	21.67	8.3	7.4
GN-02	GL-C	355147	6247091	9-Sep-17	16.0	10-Sep-17	16.0	22.70	10.5	9.0
GN-03	GL-C	356088	6247864	9-Sep-17	16.0	10-Sep-17	16.0	23.63	9.0	8.8
GN-04	GL-C	356511	6248198	9-Sep-17	16.0	10-Sep-17	16.0	24.15	11.6	13.0
GN-05	GL-C	355403	6247023	10-Sep-17	16.0	12-Sep-17	15.0	46.45	8.6	9.2
GN-06	GL-C	355225	6247163	10-Sep-17	16.0	12-Sep-17	15.0	47.45	9.4	7.7
GN-07	GL-C	355959	6247703	10-Sep-17	16.0	12-Sep-17	15.0	46.65	9.0	8.7
GN-08	GL-C	356491	6248058	10-Sep-17	16.0	12-Sep-17	15.0	47.67	8.1	8.4
GN-09	GL-C	356644	6248173	12-Sep-17	15.0	13-Sep-17	15.0	23.42	11.6	14.8
GN-10	GL-B	354007	6244255	12-Sep-17	15.0	13-Sep-17	15.0	17.98	11.1	14.1
GN-11	GL-B	354329	6244336	12-Sep-17	15.0	13-Sep-17	15.0	17.28	12.9	12.1
GN-12	GL-B	354154	6244596	12-Sep-17	15.0	13-Sep-17	15.0	21.02	6.8	10.5
GN-13	GL-B	353261	6244094	12-Sep-17	15.0	13-Sep-17	15.0	20.22	13.2	11.8
GN-14	GL-A	349051	6244461	13-Sep-17	15.0	14-Sep-17	14.0	23.53	7.4	11.8
GN-15	BR-D	338314	6245090	13-Sep-17	15.0	14-Sep-17	14.0	22.32	8.3	10.9
GN-16	GL-B	353412	6244041	13-Sep-17	15.0	14-Sep-17	14.0	22.42	7.8	11.7
GN-17	GL-B	354416	6244814	13-Sep-17	15.0	14-Sep-17	14.0	23.30	10.9	10.8
GN-18	GL-C	356636	6248040	13-Sep-17	15.0	14-Sep-17	14.0	17.92	7.0	8.2
GN-19	GL-A	348513	6244336	14-Sep-17	14.0	15-Sep-17	14.0	25.65	12.8	12.6
GN-20	BR-D	338315	6245092	14-Sep-17	14.0	15-Sep-17	14.0	23.90	8.0	8.3
GN-21	GL-A	349115	6244379	14-Sep-17	14.0	15-Sep-17	14.0	24.38	10.9	10.8
GN-22	GL-B	353500	6244087	14-Sep-17	14.0	15-Sep-17	14.0	24.48	11.6	10.1
GN-23	GL-B	354465	6244719	14-Sep-17	14.0	15-Sep-17	14.0	23.28	12.7	12.7
GN-24	GL-C	355408	6246594	15-Sep-17	14.0	16-Sep-17	14.0	28.08	9.1	8.1
GN-25	BR-D	338312	6245095	15-Sep-17	14.0	16-Sep-17	14.0	22.83	11.0	7.2
GN-26	GL-A	348330	6244273	15-Sep-17	14.0	16-Sep-17	14.0	22.82	11.5	12.3
GN-27	GL-A	349108	6244337	15-Sep-17	14.0	16-Sep-17	14.0	22.82	8.6	10.8

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 2017 (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-B	353547	6244098	15-Sep-17	14.0	16-Sep-17	14.0	21.83	11.6	10.5
GN-29	GL-B	354478	6244726	15-Sep-17	14.0	16-Sep-17	14.0	21.93	11.4	12.9
GN-30	BR-D	338307	6245109	16-Sep-17	14.0	17-Sep-17	14.0	23.42	8.7	7.3
GN-31	GL-A	348366	6244279	16-Sep-17	14.0	17-Sep-17	14.0	23.43	12.3	13.1
GN-32	GL-A	349321	6244392	16-Sep-17	14.0	17-Sep-17	14.0	23.62	12.7	12.6
GN-33	GL-B	353640	6244062	16-Sep-17	14.0	17-Sep-17	14.0	22.78	12.2	10.2
GN-34	GL-B	354427	6244588	16-Sep-17	14.0	17-Sep-17	14.0	22.98	11.7	12.7
GN-35	GL-C	355248	6246721	16-Sep-17	14.0	17-Sep-17	14.0	23.13	10.0	8.3
GN-36	GL-A	347700	6243739	17-Sep-17	14.0	18-Sep-17	13.5	23.25	11.0	12.3
GN-37	GL-A	348392	6244275	17-Sep-17	14.0	18-Sep-17	13.5	23.22	13.7	12.6
GN-38	GL-A	349336	6244395	17-Sep-17	14.0	18-Sep-17	13.5	23.48	12.8	12.6
GN-39	GL-B	353691	6244097	17-Sep-17	14.0	18-Sep-17	13.5	23.00	10.3	11.4
GN-40	GL-B	354435	6244600	17-Sep-17	14.0	18-Sep-17	13.5	23.02	12.3	11.9
GN-41	GL-C	355207	6246742	17-Sep-17	14.0	18-Sep-17	13.5	22.58	9.2	8.4
GN-42	GL-A	347859	6243745	18-Sep-17	13.5	19-Sep-17	13.0	23.35	12.4	14.0
GN-43	GL-A	348408	6244272	18-Sep-17	13.5	19-Sep-17	13.0	22.95	12.5	12.8
GN-44	GL-A	349448	6244281	18-Sep-17	13.5	19-Sep-17	13.0	22.93	11.3	10.8
GN-45	GL-B	353728	6244109	18-Sep-17	13.5	19-Sep-17	13.0	22.83	9.4	11.1
GN-46	GL-B	354464	6244601	18-Sep-17	13.5	19-Sep-17	13.0	22.87	11.9	11.6
GN-47	GL-C	355216	6246797	18-Sep-17	13.5	19-Sep-17	13.0	22.78	9.0	9.5
GN-48	GL-A	348452	6244287	19-Sep-17	13.0	21-Sep-17	13.0	47.53	12.6	12.5
GN-49	GL-A	349317	6244308	19-Sep-17	13.0	21-Sep-17	13.0	47.53	10.3	11.8
GN-50	GL-B	354471	6244616	19-Sep-17	13.0	21-Sep-17	13.0	47.13	13.0	12.0
GN-51	GL-C	355502	6247274	19-Sep-17	13.0	21-Sep-17	13.0	47.12	8.3	7.4

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2017.

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	366605	6247300	9-Sep-17	16.0	10-Sep-17	15.0	28.75	18.6	18.0
GN-02	STL-A	366669	6247445	9-Sep-17	16.0	10-Sep-17	15.0	26.00	18.3	16.3
GN-03	STL-A	366802	6247491	9-Sep-17	16.0	10-Sep-17	15.0	26.75	15.2	15.3
GN-04	STL-A	366205	6247151	9-Sep-17	16.0	10-Sep-17	15.0	23.92	13.8	15.1
GN-05	STL-A	366367	6247199	10-Sep-17	15.0	12-Sep-17	15.0	48.50	14.0	14.5
GN-06	STL-A	366581	6247256	10-Sep-17	15.0	12-Sep-17	15.0	48.33	17.0	18.6
GN-07	STL-A	366617	6247394	10-Sep-17	15.0	12-Sep-17	15.0	49.75	18.3	16.6
GN-08	STL-A	366788	6247472	10-Sep-17	15.0	12-Sep-17	15.0	47.25	16.0	15.6
GN-09	STL-B	368910	6248184	12-Sep-17	15.0	13-Sep-17	15.0	25.37	13.8	13.5
GN-10	STL-B	368925	6248427	12-Sep-17	15.0	13-Sep-17	15.0	26.47	16.6	15.5
GN-11	STL-A	366502	6247271	12-Sep-17	15.0	13-Sep-17	15.0	21.58	14.1	17.9
GN-12	STL-A	366853	6247517	12-Sep-17	15.0	13-Sep-17	15.0	21.43	15.8	13.9
GN-13	STL-B	368873	6248582	12-Sep-17	15.0	13-Sep-17	15.0	22.33	17.5	19.8
GN-14	STL-A	366732	6247404	13-Sep-17	15.0	14-Sep-17	14.5	24.83	-	16.8
GN-15	STL-A	366648	6247401	13-Sep-17	15.0	14-Sep-17	14.5	23.17	19.0	16.0
GN-16	STL-A	366686	6247316	13-Sep-17	15.0	14-Sep-17	14.5	21.50	18.0	13.7
GN-17	STL-B	369345	6248600	13-Sep-17	15.0	14-Sep-17	14.5	23.30	17.2	18.5
GN-18	STL-B	369063	6248470	13-Sep-17	15.0	14-Sep-17	14.5	23.83	15.5	16.9
GN-19	STL-A	366710	6247372	14-Sep-17	14.5	15-Sep-17	14.0	24.75	18.4	14.4
GN-20	STL-B	369173	6248634	14-Sep-17	14.5	15-Sep-17	14.0	24.15	18.3	14.6
GN-21	STL-B	369372	6248660	14-Sep-17	14.5	15-Sep-17	14.0	24.67	17.7	20.0
GN-22	STL-A	366670	6247359	15-Sep-17	14.0	16-Sep-17	14.0	23.63	18.6	16.9

Table A1-3: Location and site-specific physical measurements collected at gillnetting sites during juvenile Lake Sturgeon investigations conducted in Stephens Lake, fall 2017 (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-23	STL-A	366789	6247473	15-Sep-17	14.0	16-Sep-17	14.0	23.00	16.0	15.0
GN-24	STL-B	368915	6248704	15-Sep-17	14.0	16-Sep-17	14.0	23.67	18.0	14.0
GN-25	STL-B	369300	6248787	15-Sep-17	14.0	16-Sep-17	14.0	24.50	17.2	17.9
GN-26	STL-B	369393	6248685	15-Sep-17	14.0	16-Sep-17	14.0	22.67	16.9	17.7
GN-27	STL-A	366691	6247324	16-Sep-17	14.0	17-Sep-17	14.0	25.92	18.5	13.7
GN-28	STL-A	366617	6247374	16-Sep-17	14.0	17-Sep-17	14.0	24.75	18.0	17.2
GN-29	STL-B	368507	6248646	16-Sep-17	14.0	17-Sep-17	14.0	19.17	15.4	16.4
GN-30	STL-B	368794	6248658	17-Sep-17	14.0	18-Sep-17	14.0	24.05	18.9	-
GN-31	STL-B	369235	6248805	17-Sep-17	14.0	18-Sep-17	14.0	24.42	16.2	15.4
GN-32	STL-B	369243	6248651	17-Sep-17	14.0	18-Sep-17	14.0	24.00	16.5	17.6
GN-33	STL-A	366682	6247503	17-Sep-17	14.0	18-Sep-17	14.0	23.80	16.1	15.6
GN-34	STL-B	369115	6248820	18-Sep-17	14.0	19-Sep-17	14.0	26.32	16.1	16.7
GN-35	STL-B	369820	6248616	18-Sep-17	14.0	19-Sep-17	14.0	24.00	17.8	21.8
GN-36	STL-A	366618	6247495	18-Sep-17	14.0	19-Sep-17	14.0	20.75	15.6	15.9
GN-37	STL-A	366685	6247453	19-Sep-17	14.0	21-Sep-17	13.0	50.08	18.2	15.7
GN-38	STL-B	368975	6248721	19-Sep-17	14.0	21-Sep-17	13.0	48.27	16.2	16.5
GN-39	STL-B	370244	6248440	19-Sep-17	14.0	21-Sep-17	13.0	46.17	16.8	18.4
GN-40	STL-B	369597	6248872	19-Sep-17	14.0	21-Sep-17	13.0	45.58	18.4	17.1

APPENDIX 2:
BIOLOGICAL AND TAG INFORMATION FOR LAKE STURGEON CAPTURED IN FALL 2017.

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River, Kelsey GS, and Split Lake), fall 2017. 84

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017. 87

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017. 95

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River, Kelsey GS, and Split Lake), fall 2017.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Upper Split Lake Area	GN-01	SPL-A	6-Sep-17	109550	900 226000153306	695	795	2767	10
Upper Split Lake Area	GN-01	SPL-A	6-Sep-17	109549	900 226000153305	757	858	3221	9
Upper Split Lake Area	GN-02	SPL-A	6-Sep-17	109548	900 226000153321	884	983	6713	-
Upper Split Lake Area	GN-02	SPL-A	6-Sep-17	103901	900 226000153317	878	976	5443	-
Upper Split Lake Area	GN-02	SPL-A	6-Sep-17	103902	900 226000153139	774	832	3084	8
Upper Split Lake Area	GN-02	SPL-A	6-Sep-17	103903	900 226000153342	784	891	3946	11
Upper Split Lake Area	GN-03	SPL-A	6-Sep-17	103904	900 226000153314	795	894	3357	9
Upper Split Lake Area	GN-05	BWR-A	7-Sep-17	103905	900 226000703384	671	749	1996	14
Upper Split Lake Area	GN-06	BWR-A	7-Sep-17	103906	900 226000628142	565	633	998	9
Upper Split Lake Area	GN-06	BWR-A	7-Sep-17	103907	900 226000153396	786	884	2994	18
Upper Split Lake Area	GN-06	BWR-A	7-Sep-17	103908	900 226000153359	556	631	1134	9
Upper Split Lake Area	GN-06	BWR-A	7-Sep-17	103909	900 226000153391	500	580	726	6
Upper Split Lake Area	GN-08	BWR-A	7-Sep-17	103910	900 067000121670	99	113	-	0
Upper Split Lake Area	GN-08	BWR-A	7-Sep-17	103911	900 226000153373	706	793	2087	14
Upper Split Lake Area	GN-08	BWR-A	7-Sep-17	103912	900 226000153329	562	642	1089	7
Upper Split Lake Area	GN-08	BWR-A	7-Sep-17	110451	900 226000767723	551	612	1089	7
Upper Split Lake Area	GN-09	BWR-A	8-Sep-17	110452	900 226000153127	567	640	1089	8
Upper Split Lake Area	GN-09	BWR-A	8-Sep-17	110453	900 067000121249	286	317	134	1
Upper Split Lake Area	GN-09	BWR-A	8-Sep-17	110456	900 067000121454	256	290	100	1
Upper Split Lake Area	GN-11	BWR-A	8-Sep-17	110457	900 067000121467	100	110	-	0
Upper Split Lake Area	GN-12	BWR-A	8-Sep-17	110458	900 226000153361	421	483	408	4
Upper Split Lake Area	GN-13	BWR-B	9-Sep-17	97401	900 226000153119	354	407	272	3
Upper Split Lake Area	GN-15	BWR-B	9-Sep-17	97402	900 226000628533	479	542	635	7

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River, Kelsey GS, and Split Lake), fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Upper Split Lake Area	GN-15	BWR-B	9-Sep-17	97403	900 226000153313	400	452	318	3
Upper Split Lake Area	GN-20	BWR-B	10-Sep-17	97404	900 226000153353	831	922	4082	-
Upper Split Lake Area	GN-21	BWR-C	12-Sep-17	97405	900 226000153370	465	528	680	7
Upper Split Lake Area	GN-22	BWR-C	12-Sep-17	103923	900 226000768556	540	612	907	7
Upper Split Lake Area	GN-22	BWR-C	12-Sep-17	97406	900 226000153324	395	445	408	4
Upper Split Lake Area	GN-22	BWR-C	12-Sep-17	98532	900 043000103665	244	272	81	1
Upper Split Lake Area	GN-23	BWR-C	12-Sep-17	98533	900 226000153358	476	542	726	6
Upper Split Lake Area	GN-23	BWR-C	12-Sep-17	-	-	112	126	-	0
Upper Split Lake Area	GN-24	BWR-C	12-Sep-17	98534	900 067000121268	266	296	99	1
Upper Split Lake Area	GN-24	BWR-C	12-Sep-17	98535	900 067000121214	220	255	74	1
Upper Split Lake Area	GN-25	BWR-C	13-Sep-17	98537	900 067000121657	226	259	73	1
Upper Split Lake Area	GN-26	BWR-C	13-Sep-17	98538	900 226000153322	689	774	2268	13
Upper Split Lake Area	GN-26	BWR-C	13-Sep-17	98539	900 226000153187	647	737	1678	15
Upper Split Lake Area	GN-26	BWR-C	13-Sep-17	98540	900 043000119595	389	445	357	4
Upper Split Lake Area	GN-26	BWR-C	13-Sep-17	98541	900 043000119511	381	438	303	4
Upper Split Lake Area	GN-26	BWR-C	13-Sep-17	98542	900 226000153109	305	346	149	2
Upper Split Lake Area	GN-27	BWR-C	13-Sep-17	98543	900 067000121468	242	272	75	1
Upper Split Lake Area	GN-27	BWR-C	13-Sep-17	98544	900 226000628523	359	409	257	3
Upper Split Lake Area	GN-29	SPL-A	14-Sep-17	98545	900 043000119825	408	459	408	4
Upper Split Lake Area	GN-31	SPL-A	14-Sep-17	98546	900 067000121403	245	275	96	1
Upper Split Lake Area	GN-31	SPL-A	14-Sep-17	98548	900 067000121598	235	266	77	1
Upper Split Lake Area	GN-31	SPL-A	14-Sep-17	98550	900 043000103629	260	281	104	1
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110450	900 226000768850	650	732	2223	7

Table A2-1: Biological and tag information for Lake Sturgeon captured in the Upper Split Lake Area (Burntwood River, Kelsey GS, and Split Lake), fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110449	900 226000893995	644	722	1860	6
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110448	900 226000893981	660	749	2177	7
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110447	900 226000153301	615	696	1814	7
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110446	900 226000628736	626	705	1950	14
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110445	900 226000628699	511	572	998	4
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	110444	900 226000153304	497	561	953	4
Upper Split Lake Area	GN-32	SPL-A	14-Sep-17	-	-	795	896	3901	9
Upper Split Lake Area	GN-34	KGS-C	15-Sep-17	110443	900 226000628588	831	932	4581	-
Upper Split Lake Area	GN-34	KGS-C	15-Sep-17	110442	900 226000153344	690	776	2223	9
Upper Split Lake Area	GN-34	KGS-C	15-Sep-17	110761	900 226000768266	679	746	2404	12
Upper Split Lake Area	GN-36	KGS-D	15-Sep-17	110441	900 226000153300	720	823	2676	9
Upper Split Lake Area	GN-37	KGS-D	15-Sep-17	110440	900 226000153315	669	759	2268	6
Upper Split Lake Area	GN-37	KGS-D	15-Sep-17	110439	900 226000768802	635	704	1542	5

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-01	GL-C	09-Sep-17	106451	900 226000893883	330	380	250	2
Future Keeyask Reservoir	GN-01	GL-C	09-Sep-17	106452	900 226000893960	679	767	2500	8
Future Keeyask Reservoir	GN-01	GL-C	09-Sep-17	106453	900 226000893793	710	815	2500	9
Future Keeyask Reservoir	GN-01	GL-C	09-Sep-17	106454	900 226000767412	545	624	1200	6
Future Keeyask Reservoir	GN-01	GL-C	09-Sep-17	106456	900 226000893809	504	584	1100	5
Future Keeyask Reservoir	GN-02	GL-C	09-Sep-17	106457	900 226000153129	329	379	300	2
Future Keeyask Reservoir	GN-02	GL-C	09-Sep-17	106458	900 226000893753	316	364	300	2
Future Keeyask Reservoir	GN-03	GL-C	09-Sep-17	106459	900 226000767435	770	874	3600	11
Future Keeyask Reservoir	GN-03	GL-C	09-Sep-17	106460	900 226000893864	410	460	550	3
Future Keeyask Reservoir	GN-04	GL-C	09-Sep-17	106461	900 226000767410	361	411	450	3
Future Keeyask Reservoir	GN-04	GL-C	09-Sep-17	106462	900 226000893868	700	788	2500	9
Future Keeyask Reservoir	GN-04	GL-C	09-Sep-17	106463	900 226000154225	700	800	2850	9
Future Keeyask Reservoir	GN-04	GL-C	09-Sep-17	106464	900 067000055151	432	501	600	3
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106465	900 226000893965	796	903	3300	11
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106466	900 226000893775	644	725	2000	9
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	89821	900 226000768842	709	804	2900	-
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106467	900 226000152977	348	395	200	2
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	-	900 067000121327	221	252	-	1
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106468	900 067000112432	306	352	200	1
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106469	900 226000893798	505	579	800	4
Future Keeyask Reservoir	GN-05	GL-C	12-Sep-17	106475	900 226000893980	435	504	650	4
Future Keeyask Reservoir	GN-06	GL-C	12-Sep-17	-	900 067000121302	264	302	100	1
Future Keeyask Reservoir	GN-06	GL-C	12-Sep-17	-	900 067000121291	243	273	100	1
Future Keeyask Reservoir	GN-06	GL-C	12-Sep-17	-	900 067000121338	239	274	100	1

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (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	12-Sep-17	106474	900 226000893837	919	1000	5950	-
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	106473	900 226000893929	727	789	3000	9
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	103539	900 226000767446	680	762	2400	10
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	-	-	129	146	-	-
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	109551	900 226000893994	315	360	200	-
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	109552	900 226000154201	490	549	800	4
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	109553	900 226000893835	448	494	650	4
Future Keeyask Reservoir	GN-07	GL-C	12-Sep-17	109554	900 226000768715	468	544	850	4
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109555	900 226000154241	761	852	3150	9
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109556	900 226000767490	753	848	2950	10
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109557	900 226000893859	368	413	300	3
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109558	900 226000893946	328	378	200	2
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109559	900 226000893924	881	980	5700	-
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109560	900 226000893928	726	820	3150	9
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	79280	900 226000548874	532	606	1100	5
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109561	900 226000154205	768	875	3400	9
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109562	900 226000893951	625	706	2000	7
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109563	900 226000893903	448	506	600	3
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109564	900 226000893911	545	616	1000	4
Future Keeyask Reservoir	GN-08	GL-C	12-Sep-17	109565	900 226000893801	481	559	800	4
Future Keeyask Reservoir	GN-11	GL-B	13-Sep-17	109566	900 226000893882	375	433	350	3
Future Keeyask Reservoir	GN-11	GL-B	13-Sep-17	109567	900 067000112415	310	355	200	1
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	-	-	680	770	2250	9
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	109568	900 226000893908	742	845	2650	9

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	112543	900 226000629452	563	641	1100	6
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	109569	900 226000893788	350	408	300	-
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	109570	900 226000893966	459	519	600	4
Future Keeyask Reservoir	GN-10	GL-B	13-Sep-17	109571	900 067000058510	410	479	400	3
Future Keeyask Reservoir	GN-13	GL-B	13-Sep-17	109572	900 226000154283	625	701	1700	9
Future Keeyask Reservoir	GN-12	GL-B	13-Sep-17	109573	900 067000112558	317	375	200	1
Future Keeyask Reservoir	GN-12	GL-B	13-Sep-17	109575	900 226000153110	377	430	300	2
Future Keeyask Reservoir	GN-12	GL-B	13-Sep-17	-	900 067000121642	239	271	100	1
Future Keeyask Reservoir	GN-12	GL-B	13-Sep-17	109626	900 226000893844	578	662	1350	6
Future Keeyask Reservoir	GN-09	GL-C	13-Sep-17	109627	900 226000893851	718	821	3000	9
Future Keeyask Reservoir	GN-09	GL-C	13-Sep-17	109628	900 067000055300	461	529	600	3
Future Keeyask Reservoir	GN-09	GL-C	13-Sep-17	109629	900 067000055475	370	423	300	3
Future Keeyask Reservoir	GN-09	GL-C	13-Sep-17	-	-	623	712	1900	6
Future Keeyask Reservoir	GN-18	GL-C	14-Sep-17	109630	900 226000893949	715	815	2650	11
Future Keeyask Reservoir	GN-14	GN-14	14-Sep-17	109631	900 226000893959	658	740	1850	9
Future Keeyask Reservoir	GN-16	GL-B	14-Sep-17	109632	900 226000893856	459	532	700	4
Future Keeyask Reservoir	GN-16	GL-B	14-Sep-17	109633	900 226000893779	462	516	600	5
Future Keeyask Reservoir	GN-17	GL-B	14-Sep-17	109634	900 226000893778	641	732	1900	9
Future Keeyask Reservoir	GN-17	GL-B	14-Sep-17	109635	900 226000122789	725	808	2600	9
Future Keeyask Reservoir	GN-17	GL-B	14-Sep-17	109636	900 226000893936	442	511	650	4
Future Keeyask Reservoir	GN-17	GL-B	14-Sep-17	109637	900 226000893814	470	541	600	5
Future Keeyask Reservoir	GN-20	BR-D	15-Sep-17	109638	900 226000768683	515	584	1050	5
Future Keeyask Reservoir	GN-20	BR-D	15-Sep-17	109639	900 226000893800	470	541	750	4
Future Keeyask Reservoir	GN-20	BR-D	15-Sep-17	-	900 067000121347	266	294	100	1

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-21	GN-21	15-Sep-17	109640	900 226000154246	720	809	2650	9
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109641	900 226000893766	670	762	2050	10
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109642	900 226000154250	626	723	1800	9
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109643	900 226000893983	658	750	2000	9
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109644	900 226000768743	608	701	1700	9
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109645	900 226000893783	622	710	1700	9
Future Keeyask Reservoir	GN-22	GL-B	15-Sep-17	109646	900 226000893999	618	699	1800	9
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	109647	900 226000893925	640	722	2100	9
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	-	900 067000112176	301	354	150	1
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	109648	900 226000154274	735	830	2750	9
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	109649	900 067000055165	436	500	450	1
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	90253	900 226000629476	528	615	950	6
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	109650	900 067000055535	451	522	500	1
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111026	900 226000893923	553	626	1200	6
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111027	900 067000055078	424	489	450	1
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111028	900 226000768830	406	461	500	3
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111029	900 226000767411	448	510	700	4
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111030	900 226000893915	501	556	750	4
Future Keeyask Reservoir	GN-23	GL-B	15-Sep-17	111031	900 226000154293	518	598	1100	6
Future Keeyask Reservoir	GN-25	BR-D	16-Sep-17	111032	900 226000152960	740	844	3500	9
Future Keeyask Reservoir	GN-25	BR-D	16-Sep-17	111033	900 226000152953	671	743	2100	9
Future Keeyask Reservoir	GN-26	GL-A	16-Sep-17	111034	900 226000153186	695	784	2450	9
Future Keeyask Reservoir	GN-26	GL-A	16-Sep-17	111035	900 226000893852	656	747	2300	9
Future Keeyask Reservoir	GN-26	GL-A	16-Sep-17	111036	900 226000893760	476	540	750	4

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-28	GL-B	16-Sep-17	111037	900 226000154222	715	786	2500	9
Future Keeyask Reservoir	GN-28	GL-B	16-Sep-17	111038	900 226000153349	643	745	1750	9
Future Keeyask Reservoir	GN-29	GL-B	16-Sep-17	111039	900 226000154290	523	596	900	6
Future Keeyask Reservoir	GN-29	GL-B	16-Sep-17	111040	900 067000058596	443	518	400	3
Future Keeyask Reservoir	GN-29	GL-B	16-Sep-17	111041	900 226000893866	547	627	1200	9
Future Keeyask Reservoir	GN-29	GL-B	16-Sep-17	111042	900 226000154258	618	709	1950	9
Future Keeyask Reservoir	GN-24	GL-C	16-Sep-17	111043	900 226000893910	354	409	250	3
Future Keeyask Reservoir	GN-24	GL-C	16-Sep-17	111044	900 226000767481	782	875	3500	9
Future Keeyask Reservoir	GN-30	BR-D	17-Sep-17	111045	900 226000893877	618	695	1700	9
Future Keeyask Reservoir	GN-31	GL-A	17-Sep-17	111046	900 226000154260	660	737	2000	9
Future Keeyask Reservoir	GN-31	GL-A	17-Sep-17	111047	900 226000767453	656	739	1950	11
Future Keeyask Reservoir	GN-31	GL-A	17-Sep-17	111048	900 226000152997	596	666	1600	7
Future Keeyask Reservoir	GN-31	GL-A	17-Sep-17	111049	900 226000893750	534	606	1250	6
Future Keeyask Reservoir	GN-32	GL-A	17-Sep-17	111050	900 226000893991	705	799	2350	9
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109750	900 226000767421	880	1000	6100	-
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109749	900 226000893968	860	980	4700	-
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109748	900 226000154273	572	672	1650	9
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109747	900 226000893761	422	476	700	3
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109746	900 226000893997	395	451	400	3
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	109745	900 226000893988	629	712	1750	9
Future Keeyask Reservoir	GN-33	GL-B	17-Sep-17	-	900 067000055159	442	515	500	3
Future Keeyask Reservoir	GN-34	GL-B	17-Sep-17	89816	900 226000893754	744	839	3200	9
Future Keeyask Reservoir	GN-34	GL-B	17-Sep-17	109744	900 226000893763	698	789	2700	9
Future Keeyask Reservoir	GN-34	GL-B	17-Sep-17	109743	900 226000153100	537	611	1050	6

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-35	GL-C	17-Sep-17	82838	900 226000629321	779	870	3800	9
Future Keeyask Reservoir	GN-35	GL-C	17-Sep-17	109742	900 226000768713	679	774	2450	9
Future Keeyask Reservoir	GN-35	GL-C	17-Sep-17	109741	900 226000152934	674	746	2300	9
Future Keeyask Reservoir	GN-35	GL-C	17-Sep-17	109740	900 067000055160	465	534	550	3
Future Keeyask Reservoir	GN-35	GL-C	17-Sep-17	-	900 067000121288	297	339	150	2
Future Keeyask Reservoir	GN-36	GL-A	18-Sep-17	90251	900 226000629441	672	757	2150	9
Future Keeyask Reservoir	GN-37	GL-A	18-Sep-17	109739	900 226000152963	616	710	1500	6
Future Keeyask Reservoir	GN-37	GL-A	18-Sep-17	109737	900 226000152928	490	559	800	4
Future Keeyask Reservoir	GN-37	GL-A	18-Sep-17	109736	900 226000152902	452	524	700	4
Future Keeyask Reservoir	GN-39	GL-B	18-Sep-17	109735	900 226000152978	680	761	2200	9
Future Keeyask Reservoir	GN-39	GL-B	18-Sep-17	109734	900 226000152904	755	861	3550	11
Future Keeyask Reservoir	GN-39	GL-B	18-Sep-17	109733	900 226000152994	414	475	450	3
Future Keeyask Reservoir	GN-39	GL-B	18-Sep-17	109732	900 067000112110	320	371	200	1
Future Keeyask Reservoir	GN-39	GL-B	18-Sep-17	-	900 043000103826	703	806	2250	9
Future Keeyask Reservoir	GN-40	GL-B	18-Sep-17	100411	900 226000152940	807	912	4500	-
Future Keeyask Reservoir	GN-40	GL-B	18-Sep-17	94857	900 226000629338	720	821	3000	9
Future Keeyask Reservoir	GN-40	GL-B	18-Sep-17	101976	900 226000703499	588	674	1400	5
Future Keeyask Reservoir	GN-40	GL-B	18-Sep-17	109731	900 226000152924	609	687	1500	9
Future Keeyask Reservoir	GN-40	GL-B	18-Sep-17	109730	900 226000152983	613	714	1600	8
Future Keeyask Reservoir	GN-41	GL-C	18-Sep-17	109729	1380347899	408	471	400	2
Future Keeyask Reservoir	GN-41	GL-C	18-Sep-17	-	900 067000112417	294	341	150	1
Future Keeyask Reservoir	GN-41	GL-C	18-Sep-17	-	900 067000121673	289	316	150	2
Future Keeyask Reservoir	GN-41	GL-C	18-Sep-17	-	900 067000121379	224	232	-	1
Future Keeyask Reservoir	GN-43	GL-A	19-Sep-17	109728	900 226000152954	455	514	750	4

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-43	GL-A	19-Sep-17	109726	900 067000112381	321	368	200	1
Future Keeyask Reservoir	GN-44	GL-A	19-Sep-17	-	900 067000121350	255	288	100	1
Future Keeyask Reservoir	GN-45	GL-B	19-Sep-17	111005	900 226000893729	833	942	4850	-
Future Keeyask Reservoir	GN-45	GL-B	19-Sep-17	106472	900 226000152952	711	803	2600	9
Future Keeyask Reservoir	GN-45	GL-B	19-Sep-17	88750	900 226000152901	643	734	2150	9
Future Keeyask Reservoir	GN-46	GL-B	19-Sep-17	100423	900 226000152950	785	870	3400	13
Future Keeyask Reservoir	GN-46	GL-B	19-Sep-17	88749	900 226000152932	373	433	300	-
Future Keeyask Reservoir	GN-47	GL-C	19-Sep-17	88748	900 226000152912	680	770	2650	11
Future Keeyask Reservoir	GN-48	GL-A	21-Sep-17	88747	900 226000154299	545	626	1100	5
Future Keeyask Reservoir	GN-48	GL-A	21-Sep-17	88746	900 226000152930	701	799	2600	9
Future Keeyask Reservoir	GN-49	GL-A	21-Sep-17	88745	900 226000152927	719	811	2400	9
Future Keeyask Reservoir	GN-49	GL-A	21-Sep-17	88744	900 226000629715	711	774	2450	9
Future Keeyask Reservoir	GN-49	GL-A	21-Sep-17	88743	900 226000152970	671	765	2250	9
Future Keeyask Reservoir	GN-49	GL-A	21-Sep-17	88742	900 226000893776	647	726	2000	9
Future Keeyask Reservoir	GN-49	GL-A	21-Sep-17	89825	900 226000152975	635	720	1900	-
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	88741	900 067000058547	444	521	550	3
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	88740	900 226000152951	722	810	2850	14
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	-	-	561	646	1500	9
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	88739	900 226000152944	470	536	700	4
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	88738	900 226000152999	455	519	650	4
Future Keeyask Reservoir	GN-50	GL-B	21-Sep-17	88737	900 067000055102	451	521	550	3
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	-	131	149	-	0
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	90273	900 226000629340	671	757	2600	9
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	88736	900 043000119802	407	447	450	4

Table A2-2: Biological and tag information for Lake Sturgeon captured in the future Keeyask reservoir, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	900 067000112473	285	332	100	1
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	900 067000112464	299	347	150	1
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	900 067000121639	304	341	150	2
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	900 067000121358	245	281	100	1
Future Keeyask Reservoir	GN-51	GL-C	21-Sep-17	-	900 067000121287	216	245	-	1

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017.

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-01	STL-A	10-Sep-17	107222	900 226000768481	642	723	1900	8
Stephens Lake	GN-01	STL-A	10-Sep-17	111051	900 226000893939	780	885	3600	9
Stephens Lake	GN-01	STL-A	10-Sep-17	111052	900 226000893795	700	784	2550	9
Stephens Lake	GN-02	STL-A	10-Sep-17	111053	900 226000154228	334	371	200	2
Stephens Lake	GN-03	STL-A	10-Sep-17	101041	900 226000629381	800	915	4010	-
Stephens Lake	GN-03	STL-A	10-Sep-17	101492	900 043000103456	525	586	1075	4
Stephens Lake	GN-05	STL-A	12-Sep-17	111054	900 226000154223	755	845	3475	9
Stephens Lake	GN-05	STL-A	12-Sep-17	111055	900 226000628835	710	792	2900	8
Stephens Lake	GN-06	STL-A	12-Sep-17	96513	900 226000154249	521	585	950	-
Stephens Lake	GN-06	STL-A	12-Sep-17	111056	900 067000111925	330	380	200	1
Stephens Lake	GN-08	STL-A	12-Sep-17	111057	900 226000154230	851	946	5425	-
Stephens Lake	GN-08	STL-A	12-Sep-17	111058	900 226000893898	324	365	350	2
Stephens Lake	GN-08	STL-A	12-Sep-17	111059	900 226000893870	392	446	375	3
Stephens Lake	GN-07	STL-A	12-Sep-17	111060	900 226000154296	838	941	4775	-
Stephens Lake	GN-07	STL-A	12-Sep-17	101997	900 226000703456	735	829	2725	9
Stephens Lake	GN-07	STL-A	12-Sep-17	111061	900 067000111887	305	353	200	1
Stephens Lake	GN-07	STL-A	12-Sep-17	111062	900 226000154242	326	367	200	2
Stephens Lake	GN-07	STL-A	12-Sep-17	-	900 067000121331	259	295	100	1
Stephens Lake	GN-11	STL-A	13-Sep-17	111063	900 226000767157	334	379	250	2
Stephens Lake	GN-11	STL-A	13-Sep-17	111064	900 067000121333	349	387	250	2
Stephens Lake	GN-11	STL-A	13-Sep-17	111065	900 226000893992	494	553	900	4
Stephens Lake	GN-07	STL-A	13-Sep-17	111068	900 226000154211	343	387	300	2
Stephens Lake	GN-07	STL-A	13-Sep-17	-	900 067000121298	234	263	100	1
Stephens Lake	GN-12	STL-A	13-Sep-17	111069	900 226000154295	830	945	4725	-

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-10	STL-B	13-Sep-17	111070	900 067000112641	311	366	200	1
Stephens Lake	GN-13	STL-B	13-Sep-17	111071	900 067000112114	362	412	300	1
Stephens Lake	GN-13	STL-B	13-Sep-17	111073	900 226000154254	351	402	300	2
Stephens Lake	GN-13	STL-B	13-Sep-17	111074	900 067000059534	313	362	200	1
Stephens Lake	GN-13	STL-B	13-Sep-17	-	900 067000121294	296	335	150	-
Stephens Lake	GN-13	STL-B	13-Sep-17	-	900 067000121367	269	304	100	1
Stephens Lake	GN-13	STL-B	13-Sep-17	111075	900 067000055378	435	507	500	3
Stephens Lake	GN-16	STL-A	14-Sep-17	111066	900 226000893803	693	786	2500	9
Stephens Lake	GN-16	STL-A	14-Sep-17	112924	900 226000768894	363	398	280	2
Stephens Lake	GN-14	STL-A	14-Sep-17	112923	900 226000893794	690	796	2450	9
Stephens Lake	GN-14	STL-A	14-Sep-17	112922	900 226000628986	750	836	3950	9
Stephens Lake	GN-14	STL-A	14-Sep-17	112921	900 067000055074	453	529	400	3
Stephens Lake	GN-17	STL-B	14-Sep-17	112920	900 067000112035	311	360	175	1
Stephens Lake	GN-17	STL-B	14-Sep-17	112919	900 226000154243	390	445	375	3
Stephens Lake	GN-17	STL-B	14-Sep-17	112918	900 226000153104	360	400	300	2
Stephens Lake	GN-17	STL-B	14-Sep-17	112915	900 067000055505	445	508	575	3
Stephens Lake	GN-17	STL-B	14-Sep-17	112917	900 067000055224	487	554	750	3
Stephens Lake	GN-13	STL-B	14-Sep-17	110584	900 043000103858	670	760	2275	9
Stephens Lake	GN-13	STL-B	14-Sep-17	112916	900 067000059307	336	380	225	1
Stephens Lake	GN-13	STL-B	14-Sep-17	112914	900 067000121336	433	480	525	3
Stephens Lake	GN-13	STL-B	14-Sep-17	112913	900 067000055476	440	503	500	3
Stephens Lake	GN-14	STL-A	15-Sep-17	112912	900 226000768171	303	352	225	-
Stephens Lake	GN-14	STL-A	15-Sep-17	110552	900 226000768822	455	505	675	4
Stephens Lake	GN-19	STL-A	15-Sep-17	112911	900 226000154265	800	889	3725	-

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-19	STL-A	15-Sep-17	112909	900 067000055362	455	521	650	3
Stephens Lake	GN-13	STL-B	15-Sep-17	112910	900 067000111939	335	386	250	1
Stephens Lake	GN-20	STL-B	15-Sep-17	-	900 067000121332	240	272	75	1
Stephens Lake	GN-20	STL-B	15-Sep-17	112908	900 067000112380	306	355	200	1
Stephens Lake	GN-20	STL-B	15-Sep-17	112907	900 067000113549	315	362	175	1
Stephens Lake	GN-20	STL-B	15-Sep-17	112906	900 067000056629	321	362	200	1
Stephens Lake	GN-20	STL-B	15-Sep-17	112905	900 067000058407	445	515	625	3
Stephens Lake	GN-20	STL-B	15-Sep-17	112904	900 067000055296	457	520	725	3
Stephens Lake	GN-20	STL-B	15-Sep-17	112903	900 067000055125	434	487	525	3
Stephens Lake	GN-17	STL-B	15-Sep-17	103231	900 226000893914	835	941	5300	-
Stephens Lake	GN-17	STL-B	15-Sep-17	112902	900 226000893830	334	382	385	2
Stephens Lake	GN-17	STL-B	15-Sep-17	112901	900 226000153133	440	496	700	4
Stephens Lake	GN-22	STL-A	16-Sep-17	110776	900 226000153135	760	862	3525	9
Stephens Lake	GN-23	STL-A	16-Sep-17	110777	900 226000893958	735	840	2900	9
Stephens Lake	GN-24	STL-B	16-Sep-17	110778	900 067000055061	463	535	625	3
Stephens Lake	GN-24	STL-B	16-Sep-17	110779	900 067000112522	319	368	175	1
Stephens Lake	GN-24	STL-B	16-Sep-17	110780	900 067000113492	325	374	225	1
Stephens Lake	GN-24	STL-B	16-Sep-17	110781	900 067000059571	350	395	250	1
Stephens Lake	GN-24	STL-B	16-Sep-17	110782	900 226000154298	436	498	625	4
Stephens Lake	GN-20	STL-B	16-Sep-17	110784	900 067000111960	302	351	175	1
Stephens Lake	GN-20	STL-B	16-Sep-17	-	900 067000121345	264	290	100	1
Stephens Lake	GN-20	STL-B	16-Sep-17	110785	900 226000893813	341	369	275	2
Stephens Lake	GN-20	STL-B	16-Sep-17	110786	900 067000113541	321	366	225	1
Stephens Lake	GN-20	STL-B	16-Sep-17	110787	900 226000893784	375	429	425	-

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-20	STL-B	16-Sep-17	110788	900 226000628487	505	569	950	4
Stephens Lake	GN-26	STL-B	16-Sep-17	-	900 067000121243	253	284	100	1
Stephens Lake	GN-26	STL-B	16-Sep-17	110789	900 067000112068	308	354	175	1
Stephens Lake	GN-26	STL-B	16-Sep-17	110790	900 067000113522	323	371	225	1
Stephens Lake	GN-25	STL-B	16-Sep-17	110791	900 067000059339	321	367	175	1
Stephens Lake	GN-25	STL-B	16-Sep-17	110792	900 067000112679	308	359	175	1
Stephens Lake	GN-25	STL-B	16-Sep-17	110793	900 067000112528	310	360	175	1
Stephens Lake	GN-25	STL-B	16-Sep-17	110794	900 226000893916	365	414	325	2
Stephens Lake	GN-25	STL-B	16-Sep-17	110795	900 226000893678	433	500	600	3
Stephens Lake	GN-24	STL-B	17-Sep-17	-	900 067000121318	234	248	100	1
Stephens Lake	GN-24	STL-B	17-Sep-17	110797	900 067000111920	320	371	175	1
Stephens Lake	GN-24	STL-B	17-Sep-17	110798	900 067000112042	299	340	175	1
Stephens Lake	GN-24	STL-B	17-Sep-17	110799	900 067000112075	314	355	200	1
Stephens Lake	GN-24	STL-B	17-Sep-17	110800	900 067000112546	326	371	250	1
Stephens Lake	GN-24	STL-B	17-Sep-17	110796	900 226000893817	485	550	950	4
Stephens Lake	GN-25	STL-B	17-Sep-17	94959	900 226000893942	746	840	3600	-
Stephens Lake	GN-20	STL-B	17-Sep-17	100675	900 226000768148	306	349	175	-
Stephens Lake	GN-20	STL-B	17-Sep-17	100674	900 226000154210	325	366	200	-
Stephens Lake	GN-20	STL-B	17-Sep-17	-	900 067000112367	262	300	75	-
Stephens Lake	GN-28	STL-A	17-Sep-17	100673	900 067000055481	425	497	575	3
Stephens Lake	GN-28	STL-A	17-Sep-17	100672	900 226000768195	476	536	850	4
Stephens Lake	GN-28	STL-A	17-Sep-17	100671	900 226000768698	370	412	275	2
Stephens Lake	GN-27	STL-A	17-Sep-17	110592	900 226000768848	726	821	2675	-
Stephens Lake	GN-24	STL-B	18-Sep-17	100670	900 067000112064	309	356	125	1

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-24	STL-B	18-Sep-17	100669	900 226000768162	356	397	200	2
Stephens Lake	GN-24	STL-B	18-Sep-17	100668	900 067000111909	323	354	150	1
Stephens Lake	GN-24	STL-B	18-Sep-17	100667	900 226000768668	353	400	225	2
Stephens Lake	GN-31	STL-B	18-Sep-17	100666	900 067000055084	443	504	500	3
Stephens Lake	GN-31	STL-B	18-Sep-17	100665	900 067000113538	311	360	175	1
Stephens Lake	GN-31	STL-B	18-Sep-17	100664	900 226000893987	334	377	200	-
Stephens Lake	GN-31	STL-B	18-Sep-17	100663	900 226000893847	338	386	225	-
Stephens Lake	GN-31	STL-B	18-Sep-17	100662	900 067000059476	302	351	125	1
Stephens Lake	GN-28	STL-A	18-Sep-17	100661	900 067000055249	442	510	500	3
Stephens Lake	GN-33	STL-A	18-Sep-17	103625	900 226000893974	760	870	3500	-
Stephens Lake	GN-33	STL-A	18-Sep-17	101002	900 226000548853	755	862	3650	-
Stephens Lake	GN-36	STL-A	19-Sep-17	100660	900 226000153164	565	660	1325	6
Stephens Lake	GN-36	STL-A	19-Sep-17	100659	900 067000055712	436	502	525	3
Stephens Lake	GN-36	STL-A	19-Sep-17	110564	900 043000103645	347	397	225	2
Stephens Lake	GN-36	STL-A	19-Sep-17	100658	900 226000628317	725	822	3050	9
Stephens Lake	GN-36	STL-A	19-Sep-17	100657	900 226000628077	315	363	175	-
Stephens Lake	GN-36	STL-A	19-Sep-17	-	-	135	154	-	0
Stephens Lake	GN-28	STL-A	19-Sep-17	-	-	147	168	-	0
Stephens Lake	GN-24	STL-B	19-Sep-17	100656	900 226000893971	346	394	250	-
Stephens Lake	GN-35	STL-B	19-Sep-17	100655	900 226000768159	790	882	4425	-
Stephens Lake	GN-31	STL-B	19-Sep-17	100654	900 067000055512	475	542	650	3
Stephens Lake	GN-31	STL-B	19-Sep-17	100653	900 067000111944	313	362	200	1
Stephens Lake	GN-31	STL-B	19-Sep-17	100652	900 067000112541	285	326	125	1
Stephens Lake	GN-39	STL-B	21-Sep-17	100651	900 226000893786	769	870	3850	9

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (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-17	112950	-	730	815	3600	9
Stephens Lake	GN-39	STL-B	21-Sep-17	112949	900 226000154234	753	835	3550	9
Stephens Lake	GN-39	STL-B	21-Sep-17	69875	900 226000577003	760	865	4050	9
Stephens Lake	GN-39	STL-B	21-Sep-17	103243	900 226000893937	715	805	3000	9
Stephens Lake	GN-39	STL-B	21-Sep-17	112948	900 226000768178	615	705	1950	6
Stephens Lake	GN-39	STL-B	21-Sep-17	112947	900 226000768150	474	524	825	4
Stephens Lake	GN-40	STL-B	21-Sep-17	101043	900 226000629291	710	792	2650	9
Stephens Lake	GN-40	STL-B	21-Sep-17	112946	900 226000628311	371	424	325	2
Stephens Lake	GN-31	STL-B	21-Sep-17	112945	900 226000893689	513	589	1000	-
Stephens Lake	GN-31	STL-B	21-Sep-17	-	900 067000121377	237	269	75	1
Stephens Lake	GN-31	STL-B	21-Sep-17	-	900 067000121329	255	291	100	1
Stephens Lake	GN-38	STL-B	21-Sep-17	112944	900 226000628259	357	395	325	2
Stephens Lake	GN-38	STL-B	21-Sep-17	112943	900 067000112286	295	341	200	1
Stephens Lake	GN-36	STL-A	21-Sep-17	112942	900 067000055397	454	513	550	3
Stephens Lake	GN-36	STL-A	21-Sep-17	110576	900 226000767155	727	806	3000	9
Stephens Lake	GN-36	STL-A	21-Sep-17	112941	900 067000055582	427	475	450	3
Stephens Lake	GN-36	STL-A	21-Sep-17	112940	900 067000055264	440	511	525	3
Stephens Lake	GN-36	STL-A	21-Sep-17	-	900 067000121289	267	294	100	1
Stephens Lake	GN-36	STL-A	21-Sep-17	-	900 067000121334	232	260	75	-
Stephens Lake	GN-36	STL-A	21-Sep-17	-	-	145	162	-	0
Stephens Lake	GN-36	STL-A	21-Sep-17	-	-	148	171	-	0
Stephens Lake	GN-37	STL-A	21-Sep-17	112938	900 226000768161	733	822	3425	9

Table A2-3: Biological and tag information for Lake Sturgeon captured in Stephens Lake, fall 2017 (continued).

Waterbody	Site	Zone	Date	Floy-tag #	Pit-tag #	Fork Length (mm)	Total Length (mm)	Weight (g)	Age
Stephens Lake	GN-37	STL-A	21-Sep-17	101044	900 226000629449	645	723	1875	6
Stephens Lake	GN-37	STL-A	21-Sep-17	112937	900 226000768685	470	528	725	4
Stephens Lake	GN-37	STL-A	21-Sep-17	79293	900 226000703443	520	586	1000	4
Stephens Lake	GN-37	STL-A	21-Sep-17	112936	900 226000893917	393	448	400	2
Stephens Lake	GN-37	STL-A	21-Sep-17	110570	900 043000103816	368	427	325	2
Stephens Lake	GN-37	STL-A	21-Sep-17	-	-	149	168	-	0

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. 103
Figure A3-2: Ageing Structure from a hatchery reared juvenile Lake Sturgeon caught in Stephens Lake (2-year-old).....104

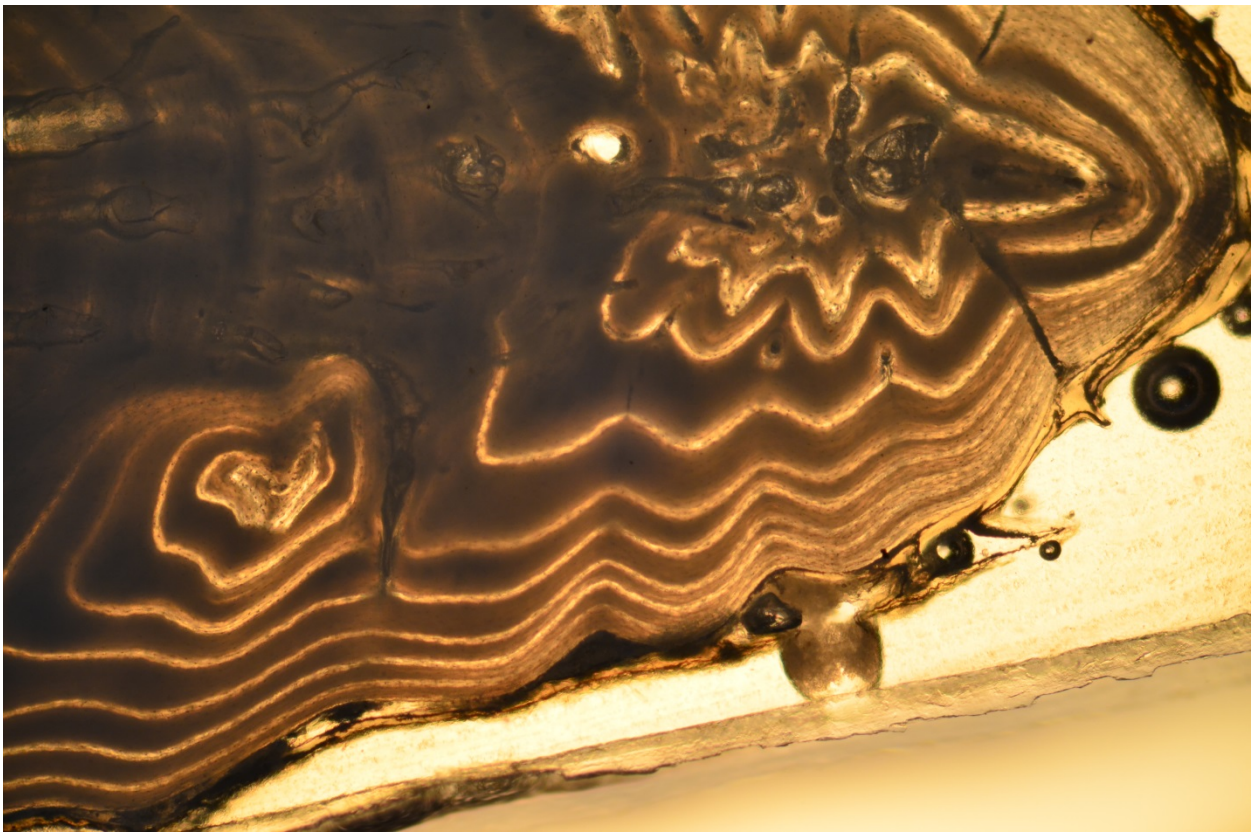


Figure A3-1: Ageing Structure from a wild juvenile Lake Sturgeon (8-year-old) caught in Gull Lake.

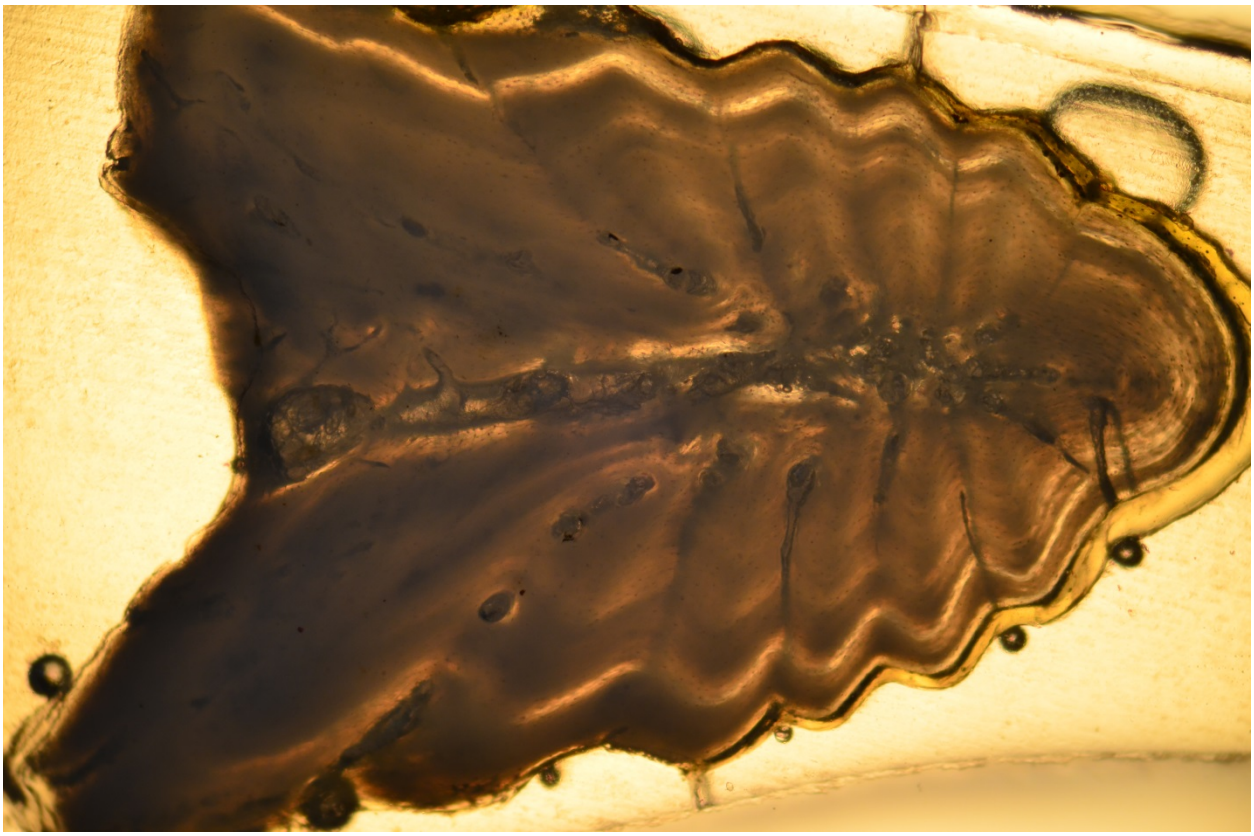


Figure A3-2: Ageing Structure from a hatchery reared juvenile Lake Sturgeon caught in Stephens Lake (2-year-old). Agers noted the presence of a weak first annulus and false annuli typically observed in hatchery reared Lake Surgeon.

APPENDIX 4:
WILD AND HATCHERY LAKE STURGEON RECAPTURE DATA, FALL 2017.

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017.....106
Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. 111

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017.

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	89821	900 226000768842	GL-C	12-Sep-17	709	804	2900	-	0.2	1839
Future Keeyask Reservoir	-	-	GL-C	30-Aug-12	560	624	1300	-		
				Growth	**149**	**180**	**1600**			
Future Keeyask Reservoir	103539	900 226000767446	GL-C	12-Sep-17	680	762	2400	10	3.7	1831
Future Keeyask Reservoir	-	-	GL-B	07-Sep-12	478	535	800	5		
				Growth	**202**	**227**	**1600**			
Future Keeyask Reservoir	79280	900 226000548874	GL-C	12-Sep-17	532	606	1100	5	0.5	734
Future Keeyask Reservoir	-	-	GL-C	09-Sep-15	385	440	424	-		
				Growth	**147**	**166**	**676**			
Future Keeyask Reservoir	112543	900 226000629452	GL-B	13-Sep-17	563	641	1100	6	0.9	726
Future Keeyask Reservoir	103463[c]	-	GL-B	18-Sep-15	446	512	539	4	0.2	372
Future Keeyask Reservoir	-	-	GL-C	11-Sep-14	399	457	425	3		-
				Growth	**164**	**184**	**675**			
Future Keeyask Reservoir	90253	900 226000629476	GL-B	15-Sep-17	528	615	950	6	6.4	1098
Future Keeyask Reservoir	-	-	GL-A	13-Sep-14	407	472	450	3	-	-
				Growth	**121**	**143**	**500**			
Future Keeyask Reservoir	89816	900 226000893754	GL-B	17-Sep-17	744	839	3200	9	3.0	2186
Future Keeyask Reservoir	-	-	GL-B	23-Sep-11	418	475	475	-	-	-
				Growth	**326**	**364**	**2725**			
Future Keeyask Reservoir	82838	900 226000629321	GL-C	17-Sep-17	779	870	3800	9	1.6	1100
Future Keeyask Reservoir	-	-	GL-C	13-Sep-14	605	655	1500	6	-	-
				Growth	**174**	**215**	**2300**			
Future Keeyask Reservoir	90251	900 226000629441	GL-A	18-Sep-17	672	757	2150	9	1.0	1101
Future Keeyask Reservoir	-	-	GL-A	13-Sep-14	539	605	1100	6	-	-
				Growth	**133**	**152**	**1050**			

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017 (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	105686	900 043000103826	GL-B	18-Sep-17	703	806	2250	9	0.4	1174
Future Keeyask Reservoir	-	-	GL-B	02-Jul-14	560	650	1400	-	-	-
				Growth	**143**	**156**	**850**			
Future Keeyask Reservoir	100411	900 226000152940	GL-B	18-Sep-17	807	912	4500	-	34.4	1933
Future Keeyask Reservoir	-	-	BR-U	03-Jun-12	757	834	3600	-	-	-
				Growth	**50**	**78**	**900**			
Future Keeyask Reservoir	94857	900 226000629338	GL-B	18-Sep-17	720	821	3000	9	2.5	1099
Future Keeyask Reservoir	-	-	GL-C	15-Sep-14	582	665	1500	-	0.3	1089
Future Keeyask Reservoir	-	-	GL-B	22-Sep-11	400	461	475	-	-	-
				Growth	**320**	**360**	**2525**			
Future Keeyask Reservoir	101976	900 226000703499	GL-B	18-Sep-17	588	674	1400	5	4.0	730
Future Keeyask Reservoir	-	-	GL-C	19-Sep-15	458	523	650	3	-	-
				Growth	**130**	**151**	**750**			
Future Keeyask Reservoir	109729	1380347899	GL-C	18-Sep-17	408	471	400	2	1.4	732
Future Keeyask Reservoir	-	-	GL-C	17-Sep-15	224	252	79	0	-	-
				Growth	**184**	**219**	**321**			
Future Keeyask Reservoir	111005	900 226000893729	GL-B	19-Sep-17	833	942	4850	-	1.1	363
Future Keeyask Reservoir	-	-	GL-B	21-Sep-16	809	920	4560	-	-	-
				Growth	**24**	**22**	**290**			
Future Keeyask Reservoir	100423	900 226000152950	GL-B	19-Sep-17	785	870	3400	13	0.7	1928
Future Keeyask Reservoir	-	-	GL-B	09-Jun-12	622	678	1550	-	-	-
				Growth	**163**	**192**	**1850**			
Future Keeyask Reservoir	89825	900 226000152975	GL-C	21-Sep-17	635	720	1900	-	1.4	2190
Future Keeyask Reservoir	-	-	GL-B	23-Sep-11	377	432	400	-	8.0	-
				Growth	**258**	**288**	**1500**			

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017 (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	90273	900 226000629340	GL-C	21-Sep-17	671	757	2600	9	1.2	1101
Future Keeyask Reservoir	-	-	GL-C	16-Sep-14	542	625	1275	6	-	
				Growth	**129**	**132**	**1325**			
Stephens Lake	107222	900 226000768481	STL-A	10-Sep-17	642	723	1900	8	16.2	462
Future Keeyask Reservoir	-	-	GL-B	5-Jun-16	628	709	1814	-		
				Growth	**14**	**14**	**86**			
Stephens Lake	101041	900 226000629381	STL-A	10-Sep-17	800	915	4010	9	0.3	1087
Stephens Lake	-	-	STL-A	19-Sep-14	671	743	2050	6	-	
				Growth	**129**	**172**	**1960**			
Stephens Lake	101492	900 043000103456	STL-A	10-Sep-17	525	586	1075	4	1.4	712
Stephens Lake	-	-	STL-A	29-Sep-15	360	387	460	2	-	
				Growth	**165**	**199**	**615**			
Stephens Lake	96513	900 226000154249	STL-A	12-Sep-17	521	585	950	5*	12.3	726
Future Keeyask Reservoir	-	900 043000103672[d]	GL-C	17-Sep-15	382	435	363	3	0.6	366
Future Keeyask Reservoir	-	-	GL-C	16-Sep-14	343	392	300	2	-	-
				Growth	**178**	**193**	**650**			
Stephens Lake	101997	900 226000703456	STL-A	12-Sep-17	735	829	2725	9	2.5	718
Stephens Lake	-	-	STL-A	25-Sep-15	651	710	1900	7	-	
				Growth	**84**	**119**	**825**			
Stephens Lake	110584	900 043000103858	STL-B	14-Sep-17	670	760	2275	9	0.5	362
Stephens Lake	-	-	STL-B	17-Sep-16	622	715	1980	8	-	
				Growth	**48**	**45**	**295**			
Stephens Lake	110552	900 226000768822	STL-A	15-Sep-17	455	505	675	4	3.0	362
Stephens Lake	-	-	STL-B	18-Sep-16	405	466	490	3	-	
				Growth	**50**	**39**	**185**			

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017 (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	103231	900 226000893914	STL-B	15-Sep-17	835	941	5300	-	-	1460
Stephens Lake	-	-	-	16-Sep-13	610	699	1800	-	-	-
				Growth	**225**	**242**	**3500**			
Stephens Lake	94959	900 226000893942	STL-B	17-Sep-17	746	840	3600	11*	0.4	1821
Stephens Lake	-	-	STL-B	22-Sep-12	540	814	1225	6	-	
				Growth	**206**	**26**	**2375**			
Stephens Lake	110592	900 226000768848	STL-A	17-Sep-17	726	821	2675	9*	0.2	367
Stephens Lake	-	-	STL-A	15-Sep-16	662	749	1960	8	-	
				Growth	**64**	**72**	**715**			
Stephens Lake	103625	900 226000893974	STL-A	18-Sep-17	760	870	3500	9*	0.1	1827
Stephens Lake	-	-	STL-A	17-Sep-12	490	563	925	4	-	
				Growth	**270**	**307**	**2575**			
Stephens Lake	101002	900 226000548853	STL-A	18-Sep-17	755	862	3650	-	1.4	448
Stephens Lake	-	-	STL-A	27-Jun-16	669	721	2722	-	-	-
				Growth	**86**	**141**	**928**			
Stephens Lake	110564	900 043000103645	STL-A	19-Sep-17	347	397	225	2	0.2	365
Stephens Lake	-	-	STL-B	19-Sep-16	233	275	80	1	-	
				Growth	**114**	**122**	**145**			
Stephens Lake	69875	900 226000577003	STL-B	21-Sep-17	760	865	4050	9	1.0	2188
Stephens Lake	-	-	STL-B	25-Sep-11	395	456	500	3	-	
				Growth	**365**	**409**	**3550**			
Stephens Lake	103243	900 226000893937	STL-B	21-Sep-17	715	805	3000	9	-	1461
Stephens Lake	-	-	-	21-Sep-13	539	610	1000	-	-	
				Growth	**176**	**195**	**2000**			
Stephens Lake	101043	900 226000629291	STL-B	21-Sep-17	710	792	2650	9	1.1	1098
Stephens Lake	-	-	STL-B	19-Sep-14	564	635	1375	6	-	
				Growth	**146**	**157**	**1275**			

Table A4-1: Original capture date and biological data for fish recaptured in gill nets, fall 2017 (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	110576	900 226000767155	STL-A	21-Sep-17	727	806	3000	9	3.1	368
Stephens Lake	-	-	STL-B	18-Sep-16	680	761	2380	-	-	
				Growth	**47**	**45**	**620**			
Stephens Lake	101044	900 226000629449	STL-A	21-Sep-17	645	723	1875	7[a]	2.2	1098
Stephens Lake	-	-	STL-B	19-Sep-14	453	505	625	3	-	
				Growth	**192**	**218**	**1250**			
Stephens Lake	79293	900 226000703443	STL-A	21-Sep-17	520	586	1000	4	13.8	734
Future Keeyask Reservoir	-	-	GL-B	18-Sep-15	354	398	267	2		
				Growth	**166**	**188**	**733**			
Stephens Lake	110570	900 043000103816	STL-A	21-Sep-17	368	427	325	2	0.1	365
Stephens Lake	-	-	STL-B	21-Sep-16	274	315	130	1	-	
				Growth	**94**	**112**	**195**			
Burntwood River	103906	900 226000628142	BWR-A	7-Sep-17	565	633	998	9	0.7	1089
Burntwood River	101032[c]	-	BWR-A	14-Sep-14	501	563	650	-	-	
				Growth	**64**	**70**	**348**			
Burntwood River	103923	900 226000768556	BWR-C	12-Sep-17	540	612	907	7	0.6	362
Burntwood River	-	-	BWR-C	15-Sep-16	506	572	820	6	-	
				Growth	**34**	**40**	**87**			
Kelsey GS	110761	900 226000768266	KGS-C	15-Sep-17	679	746	2404	12	0.2	102
Kelsey GS	-	-	KGS-C	05-Jun-17	650	705	3629	-	-	
				Growth	**29**	**41**	**-1225[b]**			

* - Ages assigned based on structures aged in a previous study year.
a – Assigned age in 2017 differed from ageing carried out in a previous year.
b - Measurement discrepancies due to errors in measurement at release or recapture.
c – Original Floy has been lost.
d – Original PIT tag has been lost.

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017.

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	106464	900 067000055151	GL-C	09-Sep-17	432	501	600	3	7.3	810
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	193	227	41	1	-	-
				Growth	**239**	**274**	**559**			
Future Keeyask Reservoir	106468	900 067000112432	GL-C	12-Sep-17	306	352	200	1	11.8	96
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	244	283	79.72	1	-	-
				Growth	**62**	**69**	**120**			
Future Keeyask Reservoir	109567	900 067000112415	GL-B	13-Sep-17	310	355	200	1	8.7	97
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	232	270	69.59	1	-	-
				Growth	**78**	**85**	**130**			
Future Keeyask Reservoir	109573	900 067000112558	GL-B	13-Sep-17	317	375	200	1	8.6	97
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	230	277	72.29	1	-	-
				Growth	**87**	**98**	**128**			
Future Keeyask Reservoir	109628	900 067000055300	GL-C	13-Sep-17	461	529	600	3	0.5	728
Future Keeyask Reservoir	-	-	GL-C	16-Sep-15	320	366	184	1	-	-
				Growth	**141**	**163**	**416**			
Future Keeyask Reservoir	109629	900 067000055475	GL-C	13-Sep-17	370	423	300	3	4.4	728
Future Keeyask Reservoir	-	-	GL-B	16-Sep-15	270	308	110	1	-	-
				Growth	**100**	**115**	**190**			
Future Keeyask Reservoir	-	900 067000112176	GL-B	15-Sep-17	301	354	150	1	9.0	99
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	235	275	74.48	1	-	-
				Growth	**66**	**79**	**76**			
Future Keeyask Reservoir	109649	900 067000055165	GL-B	15-Sep-17	436	500	450	3	0.2	816
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	215	249	50.62	1	-	-
				Growth	**221**	**251**	**399**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	109650	900 067000055535	GL-B	15-Sep-17	451	522	500	3	2.8	816
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	251	295	94.05	1	-	-
				Growth	**200**	**227**	**406**			
Future Keeyask Reservoir	111027	900 067000055078	GL-B	15-Sep-17	424	489	450	3	2.8	816
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	211	246	49.65	1	-	-
				Growth	**213**	**243**	**400**			
Future Keeyask Reservoir	111040	900 067000058596	GL-B	16-Sep-17	443	518	400	3	0.2	731
Future Keeyask Reservoir	-	-	GL-B	16-Sep-15	355	415	218	1	-	-
				Growth	**88**	**103**	**182**			
Future Keeyask Reservoir	-	900 067000055159	GL-B	17-Sep-17	442	515	500	3	1.0	818
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	211	247	49.58	1	-	-
				Growth	**231**	**268**	**450**			
Future Keeyask Reservoir	109740	900 067000055160	GL-C	17-Sep-17	465	534	550	3	2.6	818
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	226	266	60.06	1	-	-
				Growth	**239**	**268**	**490**			
Future Keeyask Reservoir	109732	900 067000112110	GL-B	18-Sep-17	320	371	200	1	8.1	102
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	246	295	91.63	1	-	-
				Growth	**74**	**76**	**108**			
Future Keeyask Reservoir	-	900 067000112417	GL-C	18-Sep-17	294	341	150	1	11.4	102
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	213	250	60.24	1	-	-
				Growth	**81**	**91**	**90**			
Future Keeyask Reservoir	109726	900 067000112381	GL-A	19-Sep-17	321	368	200	1	2.6	103
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	228	266	67.63	1	-	-
				Growth	**93**	**102**	**132**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	88741	900 067000058547	GL-B	21-Sep-17	444	521	550	3	0.3	736
Future Keeyask Reservoir	-	-	GL-B	16-Sep-15	340	400	226	1	-	-
				Growth	**104**	**121**	**324**			
Future Keeyask Reservoir	88737	900 067000055102	GL-B	21-Sep-17	451	521	550	3	0.3	822
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	202	236	48.85	1	-	-
				Growth	**249**	**285**	**501**			
Future Keeyask Reservoir	88736	900 043000119802	GL-C	21-Sep-17	407	447	450	4	114.3	1210
Burntwood River	-	-	BWR-B	30-May-14	212	236	54.34	1	-	-
				Growth	**195**	**211**	**396**			
Future Keeyask Reservoir	-	900 067000112473	GL-C	21-Sep-17	285	332	100	1	12.0	105
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	207	243	49.22	1	-	-
				Growth	**78**	**89**	**51**			
Future Keeyask Reservoir	-	900 067000112464	GL-C	21-Sep-17	299	347	150	1	12.0	105
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	213	249	56.39	1	-	-
				Growth	**86**	**98**	**94**			
Stephens Lake	111056	900 067000111925	STL-A	12-Sep-17	330	380	200	1	1.7	89
Stephens Lake	-	-	STL-A	15-Jun-17	240	283	75	1	-	-
				Growth	**90**	**97**	**125**			
Stephens Lake	111061	900 067000111887	STL-A	12-Sep-17	305	353	200	1	1.7	89
Stephens Lake	-	-	STL-A	15-Jun-17	208	244	59.3	1	-	-
				Growth	**97**	**109**	**141**			
Stephens Lake	111070	900 067000112641	STL-B	13-Sep-17	311	366	200	1	4.0	90
Stephens Lake	-	-	STL-A	15-Jun-17	234	275	70.9	1	-	-
				Growth	**77**	**91**	**129**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	111071	900 067000112114	STL-B	13-Sep-17	362	412	300	1	24.5	97
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	259	305	102.33	1	-	-
				Growth	**103**	**107**	**198**			
Stephens Lake	111074	900 067000059534	STL-B	13-Sep-17	313	362	200	1	24.5	97
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	239	281	81.89	1	-	-
				Growth	**74**	**81**	**118**			
Stephens Lake	111075	900 067000055378	STL-B	13-Sep-17	435	507	500	3	1.9	730
Stephens Lake	-	-	STL-A	14-Sep-15	295	348	145	1	-	-
				Growth	**140**	**159**	**355**			
Stephens Lake	112921	900 067000055074	STL-A	14-Sep-17	453	529	400	3	13.5	815
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	182	217	35.08	1	-	-
				Growth	**271**	**312**	**365**			
Stephens Lake	112920	900 067000112035	STL-B	14-Sep-17	311	360	175	1	4.4	91
Stephens Lake	-	-	STL-A	15-Jun-17	224	260	63.21	1	-	-
				Growth	**87**	**100**	**112**			
Stephens Lake	112915	900 067000055505	STL-B	14-Sep-17	445	508	575	3	0.3	731
Stephens Lake	-	-	STL-B	14-Sep-15	275	320	125	1	-	-
				Growth	**170**	**188**	**450**			
Stephens Lake	112917	900 067000055224	STL-B	14-Sep-17	487	554	750	3	0.2	815
Stephens Lake	-	-	STL-B	22-Jun-15	223	261	64.02	1	-	-
				Growth	**264**	**293**	**686**			
Stephens Lake	112916	900 067000059307	STL-B	14-Sep-17	336	380	225	1	4.0	91
Stephens Lake	-	-	STL-A	15-Jun-17	238	275	78.27	1	-	-
				Growth	**98**	**105**	**147**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	112913	900 067000055476	STL-B	14-Sep-17	440	503	500	3	1.9	731
Stephens Lake	-	-	STL-A	14-Sep-15	307	361	174	1	-	-
				Growth	**133**	**142**	**326**			
Stephens Lake	112909	900 067000055362	STL-A	15-Sep-17	455	521	650	3	3.1	816
Stephens Lake	-	-	STL-B	22-Jun-15	208	243	54.06	1	-	-
				Growth	**247**	**278**	**596**			
Stephens Lake	112910	900 067000111939	STL-B	15-Sep-17	335	386	250	1	4.0	92
Stephens Lake	-	-	STL-A	15-Jun-17	258	304	95	1	-	-
				Growth	**77**	**82**	**155**			
Stephens Lake	112908	900 067000112380	STL-B	15-Sep-17	306	355	200	1	4.3	92
Stephens Lake	-	-	STL-A	15-Jun-17	234	274	82.3	1	-	-
				Growth	**72**	**81**	**118**			
Stephens Lake	112907	900 067000113549	STL-B	15-Sep-17	315	362	175	1	4.3	92
Stephens Lake	-	-	STL-A	15-Jun-17	225	265	65.8	1	-	-
				Growth	**90**	**97**	**109**			
Stephens Lake	112906	900 067000056629	STL-B	15-Sep-17	321	362	200	1	4.3	92
Stephens Lake	-	-	STL-A	15-Jun-17	225	260	64.83	1	-	-
				Growth	**96**	**102**	**135**			
Stephens Lake	112905	900 067000058407	STL-B	15-Sep-17	445	515	625	3	0.4	816
Stephens Lake	-	-	STL-B	22-Jun-15	216	250	60.19	1	-	-
				Growth	**229**	**265**	**565**			
Stephens Lake	112904	900 067000055296	STL-B	15-Sep-17	457	520	725	3	0.4	816
Stephens Lake	-	-	STL-B	22-Jun-15	209	241	58.5	1	-	-
				Growth	**248**	**279**	**667**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	112903	900 067000055125	STL-B	15-Sep-17	434	487	525	3	0.4	732
Stephens Lake	-	-	STL-B	14-Sep-15	263	302	108	1	-	-
				Growth	**171**	**185**	**417**			
Stephens Lake	110778	900 067000055061	STL-B	16-Sep-17	463	535	625	3	14.0	731
Future Keeyask Reservoir	-	-	GL-C	16-Sep-15	316	370	175	1	-	-
				Growth	**147**	**165**	**450**			
Stephens Lake	110779	900 067000112522	STL-B	16-Sep-17	319	368	175	1	4.2	93
Stephens Lake	-	-	STL-A	15-Jun-17	232	270	65.84	1	-	-
				Growth	**87**	**98**	**109**			
Stephens Lake	110780	900 067000113492	STL-B	16-Sep-17	325	374	225	1	4.2	93
Stephens Lake	-	-	STL-A	15-Jun-17	233	272	74.1	1	-	-
				Growth	**92**	**102**	**151**			
Stephens Lake	110781	900 067000059571	STL-B	16-Sep-17	350	395	250	1	25.1	100
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	242	288	79.38	1	-	-
				Growth	**108**	**107**	**171**			
Stephens Lake	110784	900 067000111960	STL-B	16-Sep-17	302	351	175	1	4.3	93
Stephens Lake	-	-	STL-A	15-Jun-17	233	276	81.1	1	-	-
				Growth	**69**	**75**	**94**			
Stephens Lake	110786	900 067000113541	STL-B	16-Sep-17	321	366	225	1	4.3	93
Stephens Lake	-	-	STL-A	15-Jun-17	241	278	86.7	1	-	-
				Growth	**80**	**88**	**138**			
Stephens Lake	110789	900 067000112068	STL-B	16-Sep-17	308	354	175	1	4.5	93
Stephens Lake	-	-	STL-A	15-Jun-17	226	265	70.9	1	-	-
				Growth	**82**	**89**	**104**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	110790	900 067000113522	STL-B	16-Sep-17	323	371	225	1	4.5	93
Stephens Lake	-	-	STL-A	15-Jun-17	230	267	72	1	-	-
				Growth	**93**	**104**	**153**			
Stephens Lake	110791	900 067000059339	STL-B	16-Sep-17	321	367	175	1	24.9	100
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	238	279	82.22	1	-	-
				Growth	**83**	**88**	**93**			
Stephens Lake	110792	900 067000112679	STL-B	16-Sep-17	308	359	175	1	4.4	93
Stephens Lake	-	-	STL-A	15-Jun-17	228	265	64.6	1	-	-
				Growth	**80**	**94**	**110**			
Stephens Lake	110793	900 067000112528	STL-B	16-Sep-17	310	360	175	1	4.4	93
Stephens Lake	-	-	STL-A	15-Jun-17	220	260	60.12	1	-	-
				Growth	**90**	**100**	**115**			
Stephens Lake	110797	900 067000111920	STL-B	17-Sep-17	320	371	175	1	4.2	94
Stephens Lake	-	-	STL-A	15-Jun-17	243	286	77.9	1	-	-
				Growth	**77**	**85**	**97**			
Stephens Lake	110798	900 067000112042	STL-B	17-Sep-17	299	340	175	1	4.2	94
Stephens Lake	-	-	STL-A	15-Jun-17	227	267	72.6	1	-	-
				Growth	**72**	**73**	**102**			
Stephens Lake	110799	900 067000112075	STL-B	17-Sep-17	314	355	200	1	4.2	94
Stephens Lake	-	-	STL-A	15-Jun-17	225	258	60.14	1	-	-
				Growth	**89**	**97**	**140**			
Stephens Lake	110800	900 067000112546	STL-B	17-Sep-17	326	371	250	1	25.1	101
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	240	280	83.05	1	-	-
				Growth	**86**	**91**	**167**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	-	900 067000112367	STL-B	17-Sep-17	262	300	75	1	4.3	94
Stephens Lake	-	-	STL-A	15-Jun-17	220	255	60.84	1	-	-
				Growth	**42**	**45**	**14**			
Stephens Lake	100673	900 067000055481	STL-A	17-Sep-17	425	497	575	3	11.1	732
Future Keeyask Reservoir	-	-	GL-C	16-Sep-15	295	349	140	1	-	-
				Growth	**130**	**148**	**435**			
Stephens Lake	100670	900 067000112064	STL-B	18-Sep-17	309	356	125	1	4.2	95
Stephens Lake	-	-	STL-A	15-Jun-17	230	270	66.79	1	-	-
				Growth	**79**	**86**	**58**			
Stephens Lake	100668	900 067000111909	STL-B	18-Sep-17	323	354	150	1	4.2	95
Stephens Lake	-	-	STL-A	15-Jun-17	260	303	109.1	1	-	-
				Growth	**63**	**51**	**41**			
Stephens Lake	100666	900 067000055084	STL-B	18-Sep-17	443	504	500	3	19.0	819
Future Keeyask Reservoir	-	-	GL-B	22-Jun-15	205	236	46.93	1	-	-
				Growth	**238**	**268**	**453**			
Stephens Lake	100665	900 067000113538	STL-B	18-Sep-17	311	360	175	1	4.4	95
Stephens Lake	-	-	STL-A	15-Jun-17	225	265	69.7	1	-	-
				Growth	**86**	**95**	**105**			
Stephens Lake	100662	900 067000059476	STL-B	18-Sep-17	302	351	125	1	24.7	102
Future Keeyask Reservoir	-	-	GL-A	08-Jun-17	240	280	83.05	1	-	-
				Growth	**62**	**71**	**42**			
Stephens Lake	100661	900 067000055249	STL-A	18-Sep-17	442	510	500	3	3.2	819
Stephens Lake	-	-	STL-B	22-Jun-15	199	237	43.66	1	-	-
				Growth	**243**	**273**	**456**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (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	100659	900 067000055712	STL-A	19-Sep-17	436	502	525	3	11.2	734
Future Keeyask Reservoir	-	-	GL-C	16-Sep-15	294	337	134	1	-	-
				Growth	**142**	**165**	**391**			
Stephens Lake	100654	900 067000055512	STL-B	19-Sep-17	475	542	650	3	0.3	736
Stephens Lake	-	-	STL-B	14-Sep-15	335	390	220	1	-	-
				Growth	**140**	**152**	**430**			
Stephens Lake	100653	900 067000111944	STL-B	19-Sep-17	313	362	200	1	4.4	96
Stephens Lake	-	-	STL-A	15-Jun-17	239	280	80	1	-	-
				Growth	**74**	**82**	**120**			
Stephens Lake	100652	900 067000112541	STL-B	19-Sep-17	285	326	125	1	4.4	96
Stephens Lake	-	-	STL-A	15-Jun-17	214	248	60.71	1	-	-
				Growth	**71**	**78**	**64**			
Stephens Lake	112943	900 067000112286	STL-B	21-Sep-17	295	341	200	1	4.1	98
Stephens Lake	-	-	STL-A	15-Jun-17	200	234	45	1	-	-
				Growth	**95**	**107**	**155**			
Stephens Lake	112942	900 067000055397	STL-A	21-Sep-17	454	513	550	3	0.7	738
Stephens Lake	-	-	STL-A	14-Sep-15	288	336	121	1	-	-
				Growth	**166**	**177**	**429**			
Stephens Lake	112941	900 067000055582	STL-A	21-Sep-17	427	475	450	3	0.7	738
Stephens Lake	-	-	STL-A	14-Sep-15	265	310	114	1	-	-
				Growth	**162**	**165**	**336**			
Stephens Lake	112940	900 067000055264	STL-A	21-Sep-17	440	511	525	3	3.1	822
Stephens Lake	-	-	STL-B	22-Jun-15	208	242	46.9	1	-	-
				Growth	**232**	**269**	**478**			

Table A4-2: Original release date and biological data for hatchery-reared Lake Sturgeon captured in gill nets, fall 2017. (continued).

Location	Floy-tag #	Pit-tag No.	Zone	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Age*	Distance (km)	Days Between Capture
Burntwood River	98540	900 043000119595	BWR-C	13-Sep-17	389	445	357	4	25.1	1216
Burntwood River	-	-	BWR-A	16-May-14	194	226	43	1	-	-
				Growth	**195**	**219**	**314**			
Burntwood River	98541	900 043000119511	BWR-C	13-Sep-17	381	438	303	4	14.1	1089
Burntwood River	-	-	BWR-B	20-Sep-14	298	346	145	1	-	-
				Growth	**83**	**92**	**158**			
Split Lake	98545	900 043000119825	SPL-A	14-Sep-17	408	459	408	4	23.5	1217
Burntwood River	-	-	BWR-B	16-May-14	143	277	83	1	-	-
				Growth	**265**	**182**	**325**			

* - Assigned age based on known stocking cohort