Keeyask Generation Project

Aquatic Effects Monitoring Plan

Adult Lake Sturgeon Population Monitoring Report

(Upper Split Lake Area)

AEMP-2016-01

KEEYASK

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KEEYASK GENERATION PROJECT

AQUATIC EFFECTS MONITORING REPORT

Report #AEMP–2016–01

ADULT LAKE STURGEON POPULATION MONITORING IN THE UPPER SPLIT LAKE AREA, 2015

Prepared for

Manitoba Hydro

By

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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. During August and September, the flow in the north and central channels of Gull Rapids was blocked off and all the flow was diverted to the south channel. Cofferdams were constructed in the north and central channels and these channels were dewatered by fall (see construction site map below). The combination of high natural flows in the Nelson River and diversion of flow resulted in water levels on Gull Lake increasing about 1.3 m at the water level monitoring site at Caribou Island. The rise in water levels resulted in flooding along the shoreline and in low-lying areas. During the winter, a cofferdam was constructed extending into the south channel. During the spring of 2015, flows in the Nelson River decreased and water level on Gull Lake went down to pre-construction high water levels.

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 number and growth of juveniles up to ten years old (less than 800mm)
- Identifying spawning locations and numbers of spawning fish; and
- Movement studies to record seasonal habitat use and long distance movements(*i.e.* over GS's or rapids).

DATA SOURCE:
Orthophoto: Manitoba Hydro - June 21, 2015

CREATED BY:
North/South Consultants

COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z15N	26-FEB-10	30-MAY-16
0 0.15 0.3 Kilometres / 0 0.15 0.3 Miles	VERSION NO: 2.0	QA/QC: PMC/FSV/MWZ

KEEYASK

Construction Site

Map of instream structures at the Keeyask Generating Station site, June 2015.

Why is the monitoring being done?

This report presents results from adult Lake Sturgeon population monitoring in spring 2015 in the Upper Split Lake Area (see map)[1]. This area was picked as a location where the KHLP could support an effort to help a population of Lake Sturgeon recover to a large enough size that they are not in danger of disappearing completely from the area. Stocking of young Lake Sturgeon (hatched from the eggs of wild adults and raised in a hatchery) is being done to help the population in this area.

The adult Lake Sturgeon population monitoring in the Upper Split Lake Area is being done to answer several questions:

Is there a change in how many Lake Sturgeon are in the Upper Split Lake Area?

Population estimates will allow us to determine how the number of adults is changing as we try to increase the number of sturgeon by stocking young fish. Lake Sturgeon are different from other fish in Manitoba, in that they do not begin to reproduce until they are at least 20 years old, and can live a very long time (more than 60 years and even up to 100 years). If the remaining adult fish disappear before enough young fish are born or stocked, then the population will not recover.

Is there a change in the mortality rate of Lake Sturgeon in the Upper Split Lake Area?

The rate at which sturgeon are dying is important to know if we want the population of sturgeon to increase. If the mortality rate increases, then we would need to try and find a cause and possibly a way to reduce it.

Is there a significant change in the condition (how fat they are) of Lake Sturgeon in the Upper Split Lake Area?

This question is important because if sturgeon become fatter or skinnier then they used to be, something is changing in their environment. In the long term (more than 10 or 15 years), it might also mean that stocking has increased population levels to the point that there is not enough food,and stocking should be reduced or stopped.

What was done?

Sampling was conducted in the Upper Split Lake Area from May 23 to June 30, 2016, using gill nets. Nets were set along the rivers, including at spawning sites, because sturgeon gather there to spawn in spring and are easy to catch. 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 internal (PIT) tag. If the captured fish had already been tagged, then the

[1] Includes the Burntwood River below First Rapids to Split Lake, the Odei River at the Burntwood River, the Nelson River below the Kelsey GS to Split Lake, the Grass River below Witchai Lake Falls, and Split Lake close to the mouths of the Nelson and Burntwood rivers.

tag numbers were recorded before the fish was released. Tagging and recapturing fish makes it possible to estimate how many sturgeon are in a population. Six of the mature fish that were caught in the Burntwood River (five males and one female) were used as broodstock (parents) for a stocking program (described further in the Lake Sturgeon stocking report).

What was found?

A total of 256 Lake Sturgeon were caught in the Upper Split Lake Area. The majority (234) were classified as adults because they measured longer than 800 mm, with 48 classified as fish that would have spawned in the current year. Seventy-four had been captured in previous years and, with the exception of four fish, were all initially captured and tagged in the Upper Split Lake Area. The remaining four fish were originally captured and tagged between Birthday Rapids and Gull Rapids.

The population estimate for adult Lake Sturgeon in the Upper Split Lake Area was broken down into two populations: the Burntwood River and the Kelsey GS Area. Using a population model that estimates population size based on numbers of fish captured and recaptured in a given period of time, the Burntwood River population was estimated at 570 fish (the highest number estimated since data collection began in 2001). Annual survival (chance of living year to year) of the Burntwood River population was 87%, similar to the survival of other populations on the lower Nelson River. In the Kelsey GS Area the population was estimated at 426 individuals, which is higher than the previous three population estimates (extending back to 2009). Annual survival of Kelsey GS Area sturgeon was found to be 75%, which is lower than other Nelson River populations.

The condition factor (a measure of how fat a sturgeon is at a given size) was similar to previous years for large sturgeon (greater than 1 m in length). Among smaller sturgeon, some in the Burntwood River were fatter than in previous years while some in the Nelson River below the Kelsey GS were thinner. Overall, the condition factors of all the sturgeon were within the range seen elsewhere on the lower Nelson River.

What does it mean?

The population estimates vary over time because not all sturgeon come to the spawning areas each year, so it is not possible to definitely conclude that the population is growing. However, it is a positive sign that the population estimate is higher than in previous years.

Condition can be quite variable between years. Future monitoring will show whether the change seen in smaller sturgeon this year is a long term trend or just year-to-year variation.

What will be done next?

Monitoring will continue in the Upper Split Lake Area every two years until 2043. Further monitoring will show whether the trend of increased numbers seen over the past few years is a long-term trend or just year-to-year variation. In 15–20 years, we will begin to see stocked fish grow to adult size, if stocking is effective.

ACKNOWLEDGMENTS

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The collection of biological samples described in this report was authorized by Manitoba Conservation and Water Stewardship, Fisheries Branch, under terms of the Scientific Collection Permit #17-15.

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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 regarding various components of the aquatic environment, including the fish community, and in particular, Lake Sturgeon. The study area included in the Lake Sturgeon component of the AEMP 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 estimation of adult population size, condition factor and growth;
- Juvenile population monitoring – includes growth, condition factor and year-class-strength;
- Spawn monitoring – includes number and sex of spawning fish; and
- Movement monitoring – includes local movements (habitat use) and coarse scale movements between waterbodies.

Adult population studies were initiated in 2001. Two areas were considered:

- The area that would be directly affected by the Project, that is the reach of the Nelson River from Clark Lake to Gull Rapids, and Stephens Lake; and
- Rivers flowing into the upstream portion of Split Lake (referred to as the Upper Split Lake Area).

When studies were initiated in 2001, it was known that Lake Sturgeon habitat in the Upper Split Lake Area would not be affected by the Project, but the degree of interaction between Lake Sturgeon in the Upper Split Lake Area and Gull and Stephens Lakes was not known. Genetic studies completed since that time have demonstrated that sturgeon in Gull Lake are a separate population from sturgeon in the Upper Split Lake Area (Gosselin *et al*. 2016). However, some

movements of adult Lake Sturgeon between Gull Lake and the Nelson River downstream of the Kelsey GS have been recorded. Studies have continued in the Upper Split Lake area because this area was selected as a location where the KHLP could support the recovery of a Lake Sturgeon population outside the direct influence of the Project, as an offsettingmeasure[1].

Multiple years of data have been collected in the Upper Split Lake, Clark Lake to Gull Rapids, and Stephens Lake areas since 2001 (Barth and Mochnacz 2004; Barth 2005; Barth and Murray 2005; Barth and Ambrose 2006; Barth and MacDonald 2008; MacDonald 2008; MacDonald 2009; Michaluk and MacDonald 2010; MacDonald and Barth 2011; Hrenchuk and McDougall 2012; Hrenchuk 2013; Groening *et al*. 2014). Studies that focused on adults were conducted during alternate years among locations: in the Upper Split Lake Area during odd numbered years, and in the Nelson River between Clark Lake and Gull Rapids and Stephens Lake in even numbered years. These studies were conducted during spring and have identified sturgeon spawning areas, determined the relative importance of spawning sites, and contributed to the understanding of sturgeon movements. Further, mark-recapture data have been used to develop adult abundance estimates for populations in the Upper Split Lake Area and in the Nelson River between Clark Lake and Gull Rapids. It was not possible to develop an estimate for Stephens Lake because too few fish are captured. The last population estimate for the Upper Split Lake Area and Gull Lake was derived in 2012 (Nelson and Barth 2012).

This report presents the results of the adult Lake Sturgeon population monitoring conducted in the Upper Split Lake Area in spring 2015 (Map 2) and compares these results to previous years. Data from the adult population in the Upper Split Lake Area have been collected since 2001, however, 2015 represents the first year that separate estimates were calculated for the Burntwood River and the Kelsey GS (*i.e.*, Nelson River below the Kelsey GS and the Grass River) areas. These two areas were considered separately because: (i) genetic analysis indicated that Lake Sturgeon populations in the two areas are somewhat distinct (Gosselin *et al*. 2016); and (ii) the number of fish captured in the Kelsey GS area has increased. Although the population estimate was previously combined, the methodology used allows for re-calculation of the estimates for each area for the entire period of the study (back to 2001).

This report presents results of the first monitoring study conducted on adult Lake Sturgeon in the Upper Split Lake Area (upstream of the Project's hydraulic zone of influence) since construction of the Keeyask Project began in July 2014. Data collected during the field program address the adult population monitoring activity as well as providing information relevant to movement monitoring. The key questions set out in the AEMP for adult population monitoring in the Upper Split Lake Area were:

- Is there a biologically relevant (and statistically significant) change in the rate of population growth for the Upper Split Lake Area population?

[1] See the Fisheries Offsetting and Mitigation Plan for more information on the selection of stocking locations and the stocking plan.

- Is there a biologically relevant (and statistically significant) change in survival for the Upper Split Lake Area population?
- Is there a biologically relevant (and statistically observable) change in the condition factor of Lake Sturgeon?
- Over the long term, is there a measureable effect on population growth due to stocking?
- Over the long term, is the Lake Sturgeon population considered sustainable based on the size of the adult population and the population viability analysis?

Movement monitoring, as described in the AEMP, is based on both mark/recapture methods (this report) and acoustic telemetry (see adult movement report). The key question addressed by mark/recapture methods in this study were:

- Will the frequency of long-distance movements (from the Keeyask/Stephens Lake area to the Upper Split Lake Area) by sub-adult and adult Lake Sturgeon increase during construction and operation of the Project?

Although Lake Sturgeon in the Upper Split Lake area are not directly affected by construction and operation of the Project, for the purposes of data analysis, the period 2001 to 2014 is considered baseline and data collected from 2015 onwards are considered the monitoring period. Use of the same temporal division as in areas directly affected by the Project (the Clark to Gull Rapids reach and Stephens Lake) will allow comparisons of changes to Lake Sturgeon among areas.

2.0 THE KEEYASK STUDY SETTING

Adult population monitoring in 2015 was conducted in the Upper Split Lake Area, which consists of three locations: 1) the Burntwood River between First Rapids and Split Lake; 2) the Nelson River between the Kelsey GS and Split Lake (including the Grass River downstream of Witchai Lake Falls); and 3) Split Lake (Map 2). The sections of riverine and lacustrine habitat that represent the Upper Split Lake Area offer a diversity of physical conditions, including a variety of substrate types, variable water depths (ranging from 0 to 30 m) and water velocities. Water velocities were classified as low (0.2–0.5 m/s), moderate (0.5–1.5 m/s), or high (>1.5 m/s), as described in the Keeyask AE SV.

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 (Map 1). 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 hydrology of the Burntwood River has been affected by the Churchill River Diversion (CRD). Outflow from the Burntwood River to Split Lake prior to CRD was estimated at 90.0 m^3/s at First Rapids, and increased nearly 10-fold following diversion to 849.0 m^3/s.

The Kelsey GS is located on the upper Nelson River, approximately 90 km upstream of Gull Rapids (Map 1). 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.

The Grass River enters the Nelson River from the west immediately downstream of the Kelsey GS (Map 1). Between Witchai Lake Falls (approximately 5.0 km upstream of the mouth) and the mouth of the Grass River, the shorelines are gradual in slope and water velocities are generally lower than in the Nelson River. Witchai Lake Falls appears to be a natural barrier to upstream fish passage.

Split Lake, which is immediately downstream of the Kelsey GS at the confluence of the Burntwood and Nelson rivers, is the second largest waterbody in the study area (Map 1). Due to large inflows from the Nelson and Burntwood rivers, the lake has a 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.

3.0 METHODS

3.1 GILLNETTING

Large mesh gill nets were used to capture adult (>800 mm fork length) Lake Sturgeon in three locations within the Upper Split Lake Area: 1) the Burntwood River between First Rapids and Split Lake; 2) the Nelson River downstream of the Kelsey GS (including the Grass River); and 3) Split Lake (Map 2). All three locations were divided into distinct geographical zones to clarify the presentation of results and discussion of fish movements (see Maps 3–5). During spring of 2015, gill nets were set in the Burntwood River between 23 May and 30 June, in the Kelsey GS Area between 24 May and 1 July, and in Split Lake between16 June to 1 July.

Gillnet gangs consisted of two or four 25 yd (22.9 m) long, 2.7 yd (2.5 m) deep panels of a combination of 8, 9, 10, and 12” (203, 229, 254, and 305 mm) twisted nylon stretched mesh. Two-panel gangs included 8 and 10” or 9 and 12” mesh, and four-panel gangs included one panel of each mesh size. Equal numbers of all mesh sizes were set in order to maintain a consistent and quantifiable effort. Gill nets were checked approximately every 24 hours, weather permitting. At each gillnetting site, UTM coordinates were taken using a hand-held GPS unit (Garmin Limited, Olathe, Kansas).

Water temperature was measured once daily at each location using a hand-held thermometer (± 0.5°C). HOBO Water Temperature Pro data loggers (± 0.2°C) were also used to log water temperature at 6 hour intervals in the Burntwood and Nelson rivers. The loggers were set approximately 1 m off the substrate in the mainstem of both rivers.

Lake Sturgeon captured in gill nets were measured for fork length (FL) and total length (TL; ± 1 mm), weighed (with a hand-held or pan scale ± 1 lb; converted to g for data analysis), and externally marked with individually numbered plastic Floy-GD-94 T-bar anchor tags (Floy tags). Floy tags were inserted between the basal pterygiophores of the dorsal fin using a Dennison Mark II tagging gun. Lake Sturgeon were also tagged with individually numbered Passive Integrated Transponder (PIT) tags (Oregon RFID Ltd., Portland Oregon). PIT tags were injected under the third dorsal scute using Oregon RFID tag injector needles, dipped in Polysporin® to minimize the risk of infection. Tags were injected into muscle tissue (not the body cavity), parallel to the horizontal axis of the fish. Following implantation, the fish was scanned using an Agrident APR 350 Reader (Agrident Ltd., Steinkippenstrasse, Germany).

Sex and maturity were determined for individual adult Lake Sturgeon by applying pressure to the ventral surface of the fish to express gametes. If no gametes were expelled, sex and maturity codes were not assigned. The following sexual maturity codes were used:

Females (F)		Males (M)	
2 –	maturing to spawn (pre-spawn)	7 –	maturing to spawn (pre-spawn)
3 –	ripe	8 –	ripe
4 –	spent (post-spawn)	9 –	spent (post-spawn)
11 –	unknown	11 –	unknown

Species other than Lake Sturgeon were measured for FL (TL for Burbot and Freshwater Drum), weighed, and released.

3.2 DATA ANALYSIS

Mean FL (mm), weight (g), and condition factor (K) were calculated for all first-time captures and recaptured fish tagged in a previous year. Condition factor was calculated for individual fish 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)

Mean condition factor was calculated by 50 mm fork length interval for adult Lake Sturgeon. Condition factor for baseline data (2001–2014) was then compared to the first year of monitoring data, by fork-length interval, using Mann-Whitney U-tests in XLSTAT® (Addinsoft 2006). Significance was determined using a p-value of 0.05.

A length-frequency distribution for Lake Sturgeon was plotted in 50 mm length intervals (*e.g.*, 1,000–1,049 mm).

A length-weight relationship was calculated using least squares regression analysis on logarithmic transformations of fork lengths and round weights according to the following relationship:

$$Log_{10}(W) = Log_{10}(a) + b*Log_{10}(L)$$

Where:

W = round weight (g);

L = fork length (mm);

a = Y-intercept; and

b = slope of the regression line

Catch-per-unit-effort (CPUE) was calculated and expressed as the number of Lake Sturgeon captured in 45.7 m (50 yd) of net per 24 hour period using the following formula:

CPUE = Σ # Lake Sturgeon/Σ gillnetting hours x 24 h/ length of gill net used x 45.7 m

Where:

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

Set durations of all nets were standardized to 45.7 m net sets.

Lake Sturgeon that were tagged in a previous year and recaptured in 2015 were included in all analyses; however, current-year recaptures were excluded.

3.3 POPULATION ESTIMATION

Previous mark-recapture estimates have been calculated for the Upper Split Lake Area as a whole. For the current estimate, captured fish were split into two groups: fish collected over five- to six-week sampling periods during the spring of 11 different years from the Burntwood River (2001, 2002, 2005–2007, 2009–2013 and 2015); and 9 different years for the Kelsey GS Area (2001, 2002, 2005–2007, 2009, 2011, 2013 and 2015). All data for the period 2001–2014 were collected as part of environmental studies related to the pre-Project environment, while data from 2015 until 2038 will be collected as part of monitoring studies related to the Keeyask Project.

Only Lake Sturgeon classified as adults (*i.e.*, FL measuring longer than 800 mm) were included in the population estimate. Tag returns from resource users were also included in the analysis to provide information on harvested Lake Sturgeon and to ensure that the individual harvested was recorded as removed from the tagged population.

Data were analysed using the program MARK (White and Burnham 1999), which is an industry standard for the analysis of data from marked populations. Program MARK uses binary numbers to represent the encounter history of individuals, and then uses the cumulative pattern of 0's (not-encountered) and 1's (encountered) to generate a probability distribution of tag recaptures which form the basis of population estimation. Values of -1 allow the fish capture history up to the known date of death to be included. The POPAN (Arnason and Schwarz 2002) Jolly-Seber Model, as implemented within the program MARK, was used to estimate the annual abundance of adult Lake Sturgeon.

Specific model parameterizations were as follows:

- For the Burntwood River, two recapture rates were estimated and varied among years; 2001, 2005, 2010, and 2012 (p_1) had low recapture rates (0.09) compared with 2002, 2006, 2007, 2009, 2011, 2013 and 2015 (p_2) which had high recapture rates (0.21) (Appendix A3-1); and

- For the Kelsey Area, three recapture rates were estimated and varied among years; 2001, 2002 and 2005 (p_1) had low recapture rates (0.03); 2006, 2007, 2009 and 2011 (p_2) had medium recapture rates (0.15); and 2013 and 2015 (p_3) had high recapture rates (0.32) (Appendix A3-3).

To assess the long term trends in abundance, a Pradel Lambda variant of the Jolly-Seber model was run to estimate population growth (Pradel 1996). The Lambda parameter provides a measure of population growth between years, with values <1 indicating population decline, a value of 1 indicating equilibrium, and values >1 indicating population growth.

4.0 RESULTS

In total, 359 fish, comprised of nine species, were captured in large mesh gill nets set in the Upper Split Lake Area during spring 2015 (Table 1). Of these, 256 were Lake Sturgeon. Tag and biological data for first-time Lake Sturgeon captures are presented in Appendix 1. Data from recaptured Lake Sturgeon are presented in Appendix 2.

4.1 BURNTWOOD RIVER

4.1.1 RELATIVE ABUNDANCE/CPUE

Sixty-seven sites were fished in the Burntwood River between 23 May and 30 June, 2015 (Table 2; Map 3). Water temperature increased from 8 to 18°C over the duration of the study (Figure 1). The catch was comprised of six species, the majority of which (86%) were Lake Sturgeon (Table 1). A total of 109 Lake Sturgeon (102 adults; seven juveniles) were captured over 11,669 gillnetting hours, resulting in an overall CPUE of 0.22 LKST/45.7 m net/24 h, ranging from 0.0–1.2 LKST/45.7 m net/24 h by site (Table 2).

Gillnetting effort was highest in zone BWR-A (the area immediately downstream of First Rapids), at 8,143 hours (Map 3; Table 3). CPUE was highest in zone BWR-B, the middle portion of the Burntwood River (Map 3; Table 3). Overall CPUE by zone was:

- BWR-A = 0.23 LKST/45.7 m net/24 h;
- BWR-B = 0.35 LKST/45.7 m net/24 h; and
- BWR-C = 0.10 LKST/45.7 m net/24 h (Table 3).

The first Lake Sturgeon was captured on 26 May, 2015, when the water temperature measured 8ºC, and the last Lake Sturgeon was captured on the final day of sampling on 30 June, 2015, when the water temperature measured 18ºC (Figure 1; Appendix 1). The catch peaked on 9 June, 2015 (n = 10) when the water temperature was 14ºC (Figure 1; appendices 1 and 2).

4.1.2 BIOLOGICAL METRICS

Lake Sturgeon captured in the Burntwood River had a mean FL of 971 mm (range: 260–1,341 mm), a mean weight of 8,756 g (range: 1,588–22,906 g) and a mean condition factor of 0.89 (range 0.70–1.35) (Table 4). Lake Sturgeon in the 1000-1049 mm FL interval were captured most frequently at 20.1% (n = 22) (Figure 2). Mean condition factor was significantly higher for adult Lake Sturgeon captured in 2015 relative to baseline in three fork length intervals of fish measuring < 1050 mm FL (Mann Whitney U test, $P < 0.05$; Figure 3). There were no

significant differences in condition factor between the remaining eight size classes compared (Mann Whitney U test, P > 0.05; Figure 3). Lake Sturgeon that measured between 900 and 1149 mm FL made up 79.8% of the total catch. The length-weight relationship is presented in Figure 4.

Sex and maturity were determined for 45 individuals, two of which were current year recaptures (captured twice in 2015) whose maturity status progressed between captures (*e.g.*, fish was initially captured in pre-spawn condition and recaptured in ripe or spent condition) (Table 5). The capture included 16 pre-spawn and 28 ripe males, and one pre-spawn female (Table 5). All of these captures occurred in zones BWR-A and BWR-B. Five mature fish (Floy tag #89071 [female], #82334 [male], #89872 [male], #91166 [male], and #94498 [male]) were used as broodstock for a stocking program. Details on gamete collection, egg fertilization, egg transport, hatch, larval rearing, and stocking can be found in (Klassen *et al*. 2016).

4.1.3 MOVEMENTS

Floy tags were applied to all 67 newly captured Lake Sturgeon (Appendix 1). The remaining 42 fish (39% of the total catch) were tagged in a previous year (Appendix 2):

- Thirty were originally tagged in the Burntwood River between 2006 and 2013:
    - 29 have only been captured in the Burntwood River (Appendix 2).
    - Lake Sturgeon Floy tag #80023 was previously captured in the Kelsey GS Area in 2007 (Appendix 2).
- Eight were tagged in the Kelsey GS Area:
    - Lake Sturgeon Floy tag #49026 was originally tagged in the Kelsey GS Area (zone KGS-C) in 2001 (Map 4). It was recaptured twice in zone BWR-A in the Burntwood River in 2009 and 2011 (Map 3; Appendix 2).
    - Lake Sturgeon Floy tag #82334 was originally tagged in KGS-B in 2006 (Map 4; Appendix 2).
    - Two (Floy tag #74834 and 79554) were originally tagged in 2007, in KGS-A and KGS-C, respectively (Map 4; Appendix 2).
    - Lake Sturgeon Floy tag #84135 was originally tagged in zone KGS-A in 2013 (Map 4; Appendix 2).
    - Three (Floytag #98601, #98606, and #98992) were originally tagged in the Kelsey GS Area (zones KGS-A and KGS-B) in May 2015 (Map 4; Appendix 2). The maturity status of fish with Floy tag #98601 was assessed as an M7 when initially captured in KGS-A on 26 May, and later assessed as an M8 when recaptured on 9 June downstream of First Rapids (Zone BWR-A).
- Three were originally tagged in the Odei River (Map 2):
    - Two Lake Sturgeon (Floy tag #75461 and 75462) in 2007 (Appendix 2).

- One (Floy tag #89872) in 2011 (Appendix 2).

- One in Split Lake:
  - Lake Sturgeon Floy tag #74332 was originally tagged in SPL-A in 2005 (Map 5). It was recaptured in the Burntwood River (BWR-A) in both 2011 and 2013 (Map 3; Appendix 2).

4.1.4 POPULATION ESTIMATION

No tags from sturgeon originally tagged in the Burntwood River were returned from local resource users since the last population estimate in 2012. The population estimate for the Burntwood River in 2015 was 570 individuals (range: 426–714), which was greater than the 95% confidence limits estimated between 2001 and 2012, but within the 95% confidence limits of the estimate made for 2013 (Figure 5; Appendix 3). The population lambda (growth rate) in 2015 had confidence intervals that included one, suggesting that the population is stable (Figure 5; Appendix 3). Annual survival rate was estimated to be 0.87 (87%) (Appendix 3).

4.2 KELSEY GS AREA

4.2.1 RELATIVE ABUNDANCE/CPUE

Seventy-one sites were fished with large mesh gill nets in the Kelsey GS Area from 24 May to 1 July, 2015, during which time water temperatures ranged from 6 to 18ºC (Table 2; Figure 6; Map 4). A total of 211 fish were captured, comprised of eight fish species (Table 1). A total of 132 Lake Sturgeon were captured, representing 63% of the total catch (Table 1). The next most commonly captured fish was Northern Pike, representing 27% of the catch (Table 1).

A total of 15,293 gillnetting hours was done in the Kelsey GS area, yielding an overall CPUE of 0.21 LKST/45.7 m net/24 h (Table 2). The catch included 121 adult (CPUE = 0.19 LKST/45.7 m net/24 h) and 11 juveniles (CPUE = 0.02 LKST/45.7 m net/24 h) (Table 2). Overall effort was highest in zone KGS-A, the area downstream of the Kelsey GS including the Grass River (Map 4; Table 3). Overall CPUE by zone (Table 3) was:

- KGS-A = 0.34 LKST/45.7 m net/24 h;
- KGS-B = 0.15 LKST/45.7 m net/24 h;
- KGS-C = 0.12 LKST/45.7 m net/24 h; and
- KGS-D = 0.05 LKST/45.7 m net/24 h

The first Lake Sturgeon was captured on 26 May at a water temperature of 8ºC, and the last on 1 July, 2015 at a water temperature of 18ºC (Figure 6; appendices 1 and 2). The catch was

highest on both 22 and 23 June, 2015 (n = 11) when water temperature measured 16 ºC (Figure 6; appendices 1 and 2).

4.2.2 BIOLOGICAL METRICS

Captured Lake Sturgeon had a mean FL of 925 mm (range: 470–1,330 mm), a mean weight of 7,194 g (range: 1,134–21,999 g), and a mean condition factor of 0.87 (range: 0.46–1.16) (Table 4). Eleven of the 132 captured Lake Sturgeon were classified as juveniles. Lake Sturgeon in the 900–949 and 950–999 mm FL intervals were the most abundant in the catch, representing 44.3% of the total catch combined (Figure 7). Mean condition factor was significantly higher during baseline studiesfor fish in four fork-length intervals (between 850 and 1049 mm FL), when compared with similar sized fish captured in 2015 (Mann Whitney U test, $P < 0.05$) (Figure 8). There were no significant differences in mean condition factor in fork length intervals > 1050 mm FL (Mann Whitney U test $P > 0.05$). The length-weight relationship is presented in Figure 9.

Sex and maturity were determined for three fish, including one pre-spawn and two ripe males (Table 5). The pre-spawn male was captured in zone KGS-A, and the ripe males were captured in zone KGS-B and KGS-C (Map 4). The ripe males were captured on 12 and 13 June, 2015, when water temperature measured 15 ºC (Figure 6).

4.2.3 MOVEMENTS

Floy tags and PIT tags were applied to all 102 newly captured Lake Sturgeon. The remaining 30 fish (23% of the total catch) were recaptures tagged in a previous year (Appendix 2), as follows:

- Twenty-one were originally tagged in the Kelsey GS Area, between 2006 and 2013 (Appendix 2).
    - Eight of these have been captured multiple times since the original date of tagging; however, all recaptures have occurred in the Kelsey GS Area.
- Five recaptures were originally tagged in the Burntwood River:
    - Two (Floy tag #88698 and #88699) were tagged in 2013 in BWR-A (Map 3; Appendix 2).
    - Two (Floy tag #80042 and #80050) were tagged in 2006 in BWR-A (Map 3; Appendix 2).
    - One (Floy tag #89064) was tagged in 2015 in BWR-A (Map 3; Appendix 2).

- Four recaptures were originally tagged in the Nelson River between Birthday Rapids and Gull Rapids (Map 1):
    - Floy tag #82631 was originally captured in Gull Lake in 2006 and again immediately downstream of Birthday Rapids in 2011. It was first captured in the Kelsey GS Area (zone KGS-A) in 2013 (Appendix 2).
    - Floy tag #94030 was tagged immediately downstream of Birthday Rapids in 2010. It was recaptured in this location in 2011 as a pre-spawn male, and again in 2014 as a spawning male (Appendix 2). This fish was tagged with an acoustic transmitter in 2011. Its detailed movements can be found in Hrenchuk and Barth 2016.
    - Floy tag #94871 was previously captured a single time in Gull Lake in 2011 (Appendix 2).
    - Floy tag #101447 was previously captured a single time immediately downstream of Birthday Rapids in 2014 (Appendix 2).

4.2.4 POPULATION ESTIMATE

The 2015 population estimate for the Kelsey GS Area was 426 individuals (range: 254–598), which was within the 95% confidence limits of the 2013 estimate (Figure 10; Appendix 3). The population lambda (growth rate) in 2015 had confidence intervals that included one, indicating that the population is stable. The estimated annual survival rate was 75% (Figure 10; Appendix 3).

4.3 SPLIT LAKE

4.3.1 RELATIVE ABUNDANCE/CPUE

Twenty-seven sites were fished with large mesh gill nets in upper Split Lake from 16 June to 1 July, 2015 (Table 2; Map 5). A total of 21 fish were captured, including one Northern Pike, five Sauger and 15 Lake Sturgeon (Table 1). The 15 Lake Sturgeon (representing 71% of the total catch) were captured in 3,479 gillnet hours, resulting in an overall CPUE of 0.10 LKST/45.7 m net/24 h (Table 2). The total capture included 11 adult (CPUE = 0.08 LKST/45.7 m net/24 h) and four juvenile (CPUE = 0.03 LKST/45.7 m net/24 h) Lake Sturgeon (Table 2). The overall CPUE by zone is as follows:

- SPL-A = 0.10 LKST/45.7 m net/24 h; and
- SPL-B = 0.13 LKST/45.7 m net/24 h (Table 3).

The first Lake Sturgeon was captured on 19 June and the last on 20 June, 2015, with peak catch occurring on 24 June, 2015 (n = 4) (appendices 1 and 2).

4.3.2 BIOLOGICAL METRICS

Captured Lake Sturgeon had a mean FL of 884 mm (range: 225–1,190 mm), a mean weight of 7,560 g (range: 2,041–16,103 g), and a mean condition factor of 0.88 (range: 0.72–1.08) (Table 4). Lake Sturgeon in the 900–949 mm FL were the most abundant, representing 26.7% of the catch (Figure 11). Sex and maturity could not be determined for any of the captured fish.

4.3.3 MOVEMENTS

Thirteen of the 15 Lake Sturgeon were first-time captures, all of which were tagged with a Floy tag and PIT tag (Appendix 1). Two fish were recaptures, originally tagged in the Burntwood River. Floy tag #88698 was originally tagged in zone BWR-A in 2013 (Map 3; Appendix 2). Floy tag #89061 was originally tagged in zone BWR-A in 2015 (Map 3; Appendix 2).

4.3.4 POPULATION ESTIMATION

Fish captured in Split Lake were included in the population estimate derived for the Kelsey GS Area (see Section 4.2.4).

5.0 DISCUSSION

The main objective of this ongoing work is to monitor abundance and trajectory of the Lake Sturgeon population in the Upper Split Lake Area. In addition, continued monitoring will identify long-term trends in adult size, condition, survival, spawning, and whether coarse scale movement patterns have been altered. In the longer term, effects of stocking initiated in 2013 will be observed if stocking is successful. Population monitoring is planned to occur on a biannual basis in the Upper Split Lake Area until 2043, and the Keeyask Area and Stephens Lake will be sampled in even numbered years over the same time period. The discussion below provides the highlights of the 2015 monitoring results.

5.1 POPULATION ESTIMATES

A population estimate provides the number of adult Lake Sturgeon in a population. It increases when juveniles grow large enough to be considered adults, and decreases with survival rate. The survival rate estimate is defined as the percentage of the population of adult Lake Sturgeon within a given area that survives until the next year (*i.e.* a survival rate of 75% would mean that 75 out of 100 fish survive). It is affected by natural mortality and fishing mortality through harvest.

The 2015 population estimate for the Kelsey GS Area (426 individuals, 95% CI 254–598) was higher than the previous three estimates (*i.e.*, since 2009), and the Burntwood River estimate (570 individuals, 95% CI 426–714) was higher than all other years, suggesting that both populations may be increasing (Figures 5 and 10, Appendix 3). However, both the Burntwood River and Kelsey GS Area estimates for the rate of population growth (lambda) had confidence limits that included one, which indicates a stable population and is similar to population growth rate estimates in each of these areas since 2001 (Nelson and Barth 2012). Annual population growth for the Burntwood River and the Kelsey GS Area have fluctuated above and below one since 2002, but have been consistently at or above one since 2012 in the Burntwood River, and 2011 in the Kelsey GS Area. Population estimates tend to increase when the fish recapture rate is low relative to the total number of Lake Sturgeon captured. Recapture rate declines when tags are lost, tagged Lake Sturgeon are selectively harvested, or smaller adults without tags recruit into the sampling gear. It should be noted that, as in previous years, the lack of tag returns from domestic harvesters is potentially a confounding factor. Given that harvest is occurring, and that a high proportion of the adult fish are marked, it is likely that the actual number of fish is lower than the estimate, as unreported harvest of tagged fish leads to an overestimation of abundance. This may explain the difference between the observed increasing trends in population estimates at the same time as population growth remains stable.

The population model was used to estimate a constant survival rate (*i.e.* the proportion of the population that survives each year) for both the Kelsey and Burntwood populations

(Appendix 3). The survival rate for the Burntwood population is 87%, which is comparable to that observed in the Keeyask Area (2001–2012). The survival rate for the Kelsey population is 75%, which is much lower than other populations on the lower Nelson River. The population viability analysis conducted for the Keeyask population, which has similar growth parameters as the Kelsey population, indicated that populations are at increased risk of decline when the survival rate is less than 82.5%, which is the case for the Kelsey population. Although the population viability analysis indicates an increased risk of decline, this does not mean that the population will decline.

5.2 SPAWNING

Data collected during population monitoring also provides information on numbers of spawning fish, locations of spawning areas, and spawning periodicity. In the Upper Split Lake Area, spawning fish have represented 30% (n = 247) of fish captured since 2001, with the majority of these captured in the vicinity of First Rapids on the Burntwood River. In the Burntwood River, spawning sturgeon have been observed in 10 of the 11 years of sampling, and in 2015, the second highest number of spawners were captured (n = 43). Based on the maturity status of 14 male fish recaptured below First Rapids in different years (including three males caught multiple years), spawning periodicity has ranged from one year (*i.e.* a consecutive year spawner) to four years, with the majority of males (n = 12) spawning every two years (69%). In the Kelsey GS Area, current-year spawning sturgeon have been observed in only five of the 10 years, and the proportion of the catch in spawning condition has been very low (3%). Because few sturgeon are captured in spawning condition at this location each spring, it is unknown where sturgeon in this reach of the Nelson River spawn. Mark-recapture data indicate that only a small proportion of fish tagged in the Kelsey GS Area are moving into the Burntwood River to spawn downstream of First Rapids, and no fish originally tagged in the Kelsey GS Area have been recaptured in the Nelson River between Clark Lake and the Kettle GS. Therefore, a spawning area likely exists in the Kelsey GS Area. It is possible that fish are spawning immediately downstream of the Kelsey GS where it is difficult to set gill nets due to high water velocities and jagged bottom. Two spawning females have been captured at this location in previous years (2006 and 2013; MacDonald 2008, Groening *et al*. 2014).

5.3 SIZE DISTRIBUTION AND CONDITION FACTOR

The observed change in size distribution of captured sturgeon suggests that the population may experience an increasing number of spawning fish in the near future. Based on fork length frequency data, the majority of fish captured in the Kelsey GS Area are relatively small (<1100 mm FL). To put things in perspective, the spawning female captured in the Kelsey GS Area in 2006 measured 1225 mm FL (MacDonald 2008), while the one captured in 2013 measured 1252 mm FL (Groening *et al*. 2014). Only three fish over the size of 1200 mm were captured

during the current study (Figure 7), suggesting that the current number of spawning females in the population is low, but that in absence of harvest, a substantive proportion of the population should be reaching this size in the next 5–10 years. In the Burntwood River, three known females measuring approximately 1150 mm in length have been captured in recent years and, similar to the Kelsey Area, fork length frequency data indicates that the proportion of the population measuring > 1100 mm is low (Figure 4). However, also similar to the Kelsey Area, a large proportion of the population should reach this size in the next 5–10 years, meaning that larger numbers of sturgeon may be spawning at First Rapids within the next decade.

Condition factor of sturgeon captured during baseline studies and 2015 monitoring were similar for each size class > 1050 mm in both the Kelsey GS Area and the Burntwood River. However, mean condition factor was significantly higher than baseline for three size classes of adults measuring < 1050 mm FL in the Burntwood River, and significantly lower than baseline in four size classes of adults measuring < 1050 mm FL in the Kelsey Area. Future monitoring will determine if this trend continues. To provide some perspective, adult Lake Sturgeon condition factor from both areas continue to measure between 0.75 and 0.95, which is typical for adult Lake Sturgeon in Manitoba.

5.4 MOVEMENT

Mark-recapture data also provide information on fish movements. Overall, 353 Lake Sturgeon have been recaptured in the Upper Split Lake Area since tagging began in 2001. In general, most fish were tagged and recaptured in the same area (*i.e.* those originally tagged in the Burntwood River were recaptured in the Burntwood River, and those originally tagged in the Kelsey GS Area were recaptured in the Kelsey GS Area). Despite some movements between these areas, the majority of fish remained within the Upper Split Lake Area itself. In 2015, four fish (1.5% of captures) recaptured in the Kelsey GS Area were originally tagged in the Clark Lake to Gull Rapids reach of the Nelson River. Since studies began in 2001, 13 fish originally tagged in the Clark Lake to Gull Rapids reach of the Nelson River have been recaptured in the Upper Split Lake Area, and all of these recaptures occurred in the Kelsey Area. There have been no recaptures of fish tagged in the Upper Split Lake Area that moved downstream to the Keeyask Area.

Continued monitoring will indicate whether construction of the Keeyask GS results in more sturgeon from Gull Lake moving to the Upper Split Lake Area. An increase in emigration of adult Lake Sturgeon in response to sudden water level increases on Gull Lake was identified as one of the potential effects of the construction of the Keeyask GS during the assessment of the Project.

5.5 KEY QUESTIONS

Information related to the key questions in the AEMP related to the monitoring of adult Lake Sturgeon in the Upper Split Lake Area is presented in the preceding discussion; answers to key questions are provided in summary form below.

Is there a biologically relevant (and statistically significant) change in the rate of population growth for the Upper Split Lake Area population, and the Keeyask area population?

As discussed above, there may be an increasing trend in the population estimate, but the population growth rate is similar to previous years and indicates a stable rate (*i.e.*, neither increasing nor decreasing).

Is there a biologically relevant (and statistically significant) change in survival for the Upper Split Lake Area population, and the Keeyask area population?

The survival rate for the Burntwood population is 87%, which is comparable to that observed in the Keeyask Area. The survival rate for the Kelsey population is 75%, which is much lower than other populations on the lower Nelson River.

Is there a biologically relevant (and statistically observable) change in the condition factor of Lake Sturgeon?

Condition factor of sturgeon captured during baseline monitoring and construction were similar for each size class > 1050 mm in both the Kelsey GS Area and the Burntwood River. However, mean condition factor was significantly higher than baseline for three size classes of adults measuring < 1050 mm FL in the Burntwood River, and significantly lower than baseline in four size classes of adults measuring < 1050 mm FL in the Kelsey Area.

6.0 SUMMARY AND CONCLUSIONS

- Population monitoring was conducted in spring 2015 to derive an adult Lake Sturgeon population estimate and examine size and condition of the Upper Split Lake Area sturgeon population.
- A total of 256 Lake Sturgeon were captured. Of these, 109 were caught in the Burntwood River, 132 were captured in the Kelsey GS Area, and 15 were captured in Split Lake.
- Forty-three Lake Sturgeon in spawning condition were captured in the Burntwood River. Information from recaptured fish in the Burntwood River indicates that males spawn every one to four years, with the majority returning to spawn every two years. In the Kelsey GS Area, only three males in spawning condition were captured in 2015. The low number of fish in spawning condition may indicate a lack of spawning females, the existence of an alternative spawning location in the area that has not been discovered, or that sturgeon are spawning below the Kelsey GS in a location that is unsafe to sample.
- Mark-recapture data indicate that fish tagged in the study area tend to stay in the area in which they were originally tagged. Since studies began in 2001, 13 adult Lake Sturgeon have moved from the Nelson River between Clark Lake and Gull Rapids into the Upper Split Lake Area. Monitoring will reveal if long-range upstream movements become more common as construction of the GS progresses (emigration of Lake Sturgeon in response to water level changes in Gull Lake was identified as a potential effect of the construction of the Keeyask GS).
- Key questions in the AEMP related to Lake Sturgeon monitoring in the Upper Split Lake area are addressed below:
    - *Is there a biologically relevant (and statistically significant) change in the rate of population growth for the Burntwood and Kelsey populations?*

      A population estimate provides the number of adult Lake Sturgeon in a population. It increases when juveniles grow large enough to be considered adults, and decreases with survival rate. The 2015 population estimate for the Kelsey GS Area (426, 95% CI 254–598) was higher than the previous three estimates (*i.e.*, since 2009), and the Burntwood River estimate (570, 95% CI 426–714) was higher than all other years, suggesting that both populations may be increasing. However, both the Burntwood River and Kelsey GS Area estimates for the rate of population growth (lambda) had confidence limits that included one, which indicates a stable population. Although there may be an increasing trend in the population estimate, the population growth rate is similar to previous years.

- *Is there a biologically relevant (and statistically significant) change in survival for the Burntwood and Kelsey populations?*

  The survival rate estimate is defined as the percentage of the population of adult Lake Sturgeon within a given area that survives until the next year (*i.e.* a survival rate of 75% would mean that 75 out of 100 fish survive). It is affected by natural mortality and fishing mortality through harvest.The population model was used to estimate a constant survival rate (*i.e.* the proportion of the population that survives each year) for both the Kelsey and Burntwood populations (Appendix 3). The survival rate for the Burntwood population is 87%, which is comparable to that observed in the Keeyask Area (2001–2012). The survival rate for the Kelsey population is 75%, which is much lower than other populations on the lower Nelson River. The population viability analysis conducted for the Keeyask population, which has similar growth parameters as the Kelsey population, indicated that populations are at increased risk of decline when the survival rate is less than 82.5%, which is the case for the Kelsey population. Although the population viability analysis indicates an increased risk of decline, this does not mean that the population will decline.

- *Is there a biologically relevant (and statistically observable) change in the condition factor of Lake Sturgeon?*

  Condition factor of sturgeon captured during baseline monitoring and construction were similar for each size class > 1050 mm in both the Kelsey GS Area and the Burntwood River. However, mean condition factor was significantly higher than baseline for three size classes of adults measuring < 1050 mm FL (fork length) in the Burntwood River (800–849, 900–949, and 950–999 mm FL), and significantly lower than baseline in four size classes of adults measuring < 1050 mm FL in the Kelsey Area (four 500 mm fork-length intervals between 850 and 1049 mm FL). Future monitoring will determine if this trend continues. It should be noted, however, that the condition factor in Lake Sturgeon can vary considerably between years, and that condition factor from both areas continues to measure between 0.75 and 0.95, which is typical for adult Lake Sturgeon in Manitoba.

- Results of the 2015 monitoring do not indicate any need to modify the monitoring planned for 2017.

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TABLES

Table 1: Number of fish, by species, captured during adult Lake Sturgeon population monitoring in the Burntwood River (23 May – 30 June), the Kelsey GS Area (24 May – 1 July), and Split Lake (16 June – 1 July), spring 2015.

Species	Scientific Name	Abbreviation	Burntwood River	Kelsey GS Area	Split Lake	Total
Channel Catfish	*Ictalurus punctatus*	CHCT	-	3	-	**3**
Common Carp	*Cyprinus carpio*	CMCR	1	7	-	**8**
Freshwater Drum	*Aplodinotus grunniens*	FRDR	-	2	-	**2**
Lake Sturgeon	***Acipenser fulvescens***	**LKST**	**109**	**132**	**15**	**256**
Longnose Sucker	*Catostomus catostomus*	LNSC	1	1	-	**2**
Northern Pike	*Esox lucius*	NRPK	11	56	1	**68**
Sauger	*Sander canadensis*	SAUG		1	5	**6**
Walleye	*Sander vitreus*	WALL	4	9	-	**13**
White Sucker	*Catostomus commersonii*	WHSC	1	-	-	**1**
Total			**127**	**211**	**21**	**359**

Table 2: Lake Sturgeon catch-per-unit-effort (CPUE; # LKST/ 45.7 m net/24 h) values observed during mark/recapture studies in the Upper Split Lake Area from 2001–2015.

Location	Year	# Sites	Total # Lake Sturgeon [1]	Total CPUE
Burntwood River	2001	26	23	0.14
	2002	30	16	0.19
	2005	18	14	0.09
	2006	16	37	0.17
	2007	27	60	0.12
	2009	21	70	0.27
	2010	15	30	0.21
	2011	29	65	0.25
	2012	19	29	0.59
	2013	79	123	0.19
	2015	**67**	**109**	**0.22**
Kelsey GS Area	2001	44	13	0.06
	2002	26	5	0.03
	2005	20	7	0.05
	2006	56	29	0.04
	2007	47	60	0.08
	2009	42	45	0.17
	2010	5	1	0.05
	2011	34	46	0.13
	2013	138	123	0.23
	2015	**71**	**132**	**0.21**
Grass River [2]	2007	31	9	0.03
	2009	19	3	0.02
	2011	16	4	0.03
	2013	12	2	0.04
Split Lake	**2015**	**27**	**15**	**0.10**

1. Does not include fish recaptured in the same waterbody in the season/year in which they were tagged.
2. Data analyzed separately for fish captured in the Grass River during these years.

Table 3: Number and catch-per-unit-effort (CPUE; # LKST/ 45.7 m net/24 h) values, by zone, observed during adult Lake Sturgeon population monitoring in the Upper Split Lake Area, spring 2015.

Location	Zone	# Sites	Total # Lake Sturgeon [1]	Total Gillnet Hours	Total CPUE
Burntwood River	BWR-A	39	77	8143	0.23
	BWR-B	13	24	1665	0.35
	BWR-C	15	8	1862	0.10
Kelsey GS Area	KGS-A	27	87	6212	0.34
	KGS-B	26	29	4775	0.15
	KGS-C	13	12	2420	0.12
	KGS-D	5	4	1886	0.05
Split Lake	SPL-A	23	13	3103	0.10
	SPL-B	4	2	376	0.13

1. Does not include fish recaptured in the same waterbody in the season/year in which they were tagged.

Table 4: Mean fork length (mm), weight (g), and relative condition factor (K) of Lake Sturgeon captured during adult Lake Sturgeon population monitoring in the Upper Split Lake Area, spring, 2001–2015.

Location	Year	Fork Length (mm)				Weight (g)				K		
		n [1]	Mean	Std [2]	Range	n [1]	Mean	Std [2]	Range	n [1]	Mean	Range
Burntwood River	2001	23	945	189	600–1436	22	6620	3279	1600–15600	22	0.76	0.46–1.04
	2002	15	982	173	644–1315	16	9227	5716	2200–22000	15	0.81	0.71–0.92
	2005	14	1002	146	838–1310	14	9542	5637	4990–22226	14	0.86	0.70–1.01
	2006	37	1014	148	734–1325	37	9654	5030	3629–23133	37	0.86	0.66–1.02
	2007	59	984	159	354–1362	57	9179	4324	2727–25000	57	0.88	0.71–1.12
	2009	69	965	156	485–1360	69	8263	3864	907–21772	68	0.85	0.56–1.09
	2010	30	919	166	242–1100	28	6520	2277	1361–10886	28	0.76	0.52–1.11
	2011	63	987	133	641–1350	63	8686	4066	2100–25855	63	0.85	0.57–1.10
	2012	29	966	76	809–1105	26	7820	1874	4082–12701	26	0.87	0.71–1.11
	2013	119	942	173	560–1720	122	7714	6025	1247–54658	119	0.76	0.47–1.07
	2015	**109**	**971**	**152**	**260–1341**	**107**	**8756**	**3321**	**1588–22906**	**107**	**0.89**	**0.70–1.35**
Kelsey GS Area	2001	13	940	198	692–1423	12	8334	6522	3200–26000	12	0.92	0.81–1.09
	2002	5	963	144	774–1130	5	9370	5549	4300–18500	5	0.97	0.77–1.28
	2005	7	841	78	737–960	7	5520	1582	3182–7500	7	0.90	0.77–1.01
	2006	29	936	168	698–1346	29	8904	6070	3402–27216	28	0.98	0.69–1.48
	2007	60	906	185	605–1475	56	7565	5988	1588–33112	56	0.88	0.54–1.15
	2009	44	886	122	688–1295	44	7093	3074	3175–19958	44	0.98	0.63–1.26
	2010	1	-	-	955	1	-		7711	1	-	0.89
	2011	46	890	148	292–1403	46	7753	3597	702–24040	46	1.02	0.70–1.46
	2013	122	911	145	270–1438	121	8035	4056	75–26082	121	0.99	0.38–2.20
	2015	**132**	**926**	**116**	**470–1330**	**133**	**7194**	**2730**	**1134–21999**	**132**	**0.87**	**0.46–1.16**
Grass River [3]	2007	9	1191	248	840–1640	9	21747	13902	6804–49895	9	1.14	0.89–1.36
	2009	3	1310	382	910–1670	2	29257	32395	6350–52163	2	0.74	0.56–0.91
	2011	4	1353	335	888–1650	4	32432	19811	9979–19811	4	1.19	0.97–1.43
	2013	2	935	3	932–937	2	7598	340	7257–7938	2	0.93	0.90–0.10
Split Lake	**2015**	**15**	**884**	**239**	**225–1190**	**12**	**7560**	**4115**	**2041–16103**	**12**	**0.88**	**0.72–1.08**

1. Number of fish measured.
2. Standard deviation.
3. Data analyzed separately for fish captured in the Grass River during these years.

Table 5: Sex and maturity data for Lake Sturgeon captured in the Upper Split Lake Area during adult population monitoring, spring, 2001–2015.

Location	Year	Sex and Maturity						# of spawners	Unknown maturity	Total [1]
		Male			Female					
		7	8	9	2	3	4			
Burntwood River	2001	7	-	-	-	-	-	7	16	23
	2002	3	-	1	-	-	-	4	12	16
	2005		-	-	-	-	-	-	14	14
	2006	-	7	3	-	-	-	10(8)*	29	37
	2007	9	4	4	-	-	-	17(15)*	45	60
	2009	7	24	2	-	-	-	33(30)*	40	70
	2010	12	4	-	-	-	-	16	14	30
	2011	9	30	1	-	-	-	40	25	65
	2012	10	12	-	-	-	-	22(20)*	9	29
	2013	18	27	5	1	1	.	52	71	123
	2015	**16**	**28**	**-**	**1**	**-**	**-**	**45(43)***	**66**	**109**
Kelsey GS Area	2001	-	-	-	-	-	-	-	13	13
	2002	-	-	-	-	-	-	-	5	5
	2005	-	-	-	-	-	-	-	7	7
	2006	-	1	-	1	-	-	2	27	29
	2007	-	1	-	-	-	-	1	59	60
	2009	-	-	-	-	-	-	-	45	45
	2010	-	-	-	-	-	-	-	1	1
	2011	-	-	-	-	-	-	-	46	46
	2013	3	-	-	-	1	-	4	119	123
	2015	**1**	**2**	**-**	**-**	**-**	**-**	**3**	**128**	**131**
Grass River [2]	2007	-	-	1	-	-	-	1	8	9
	2009	-	-	1	-	-	-	1	2	3
	2011	-	1	-	-	-	-	1	3	4
	2013	-	1	-	-	-	-	1	1	2
Split Lake	**2015**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15**	**15**

1. Does not include fish recaptured in the same waterbody in the season/year in which they were tagged.
2. Data analyzed separately for fish captured in the Grass River during these years.

* Maturity status columns include recaptures of fish whose maturity status progressed between captures (*e.g.*, would include recaptures of fish initially captured in maturing condition and recaptured in ripe or spent condition). Number in brackets indicates the total number of individual spawners captured.

FIGURES

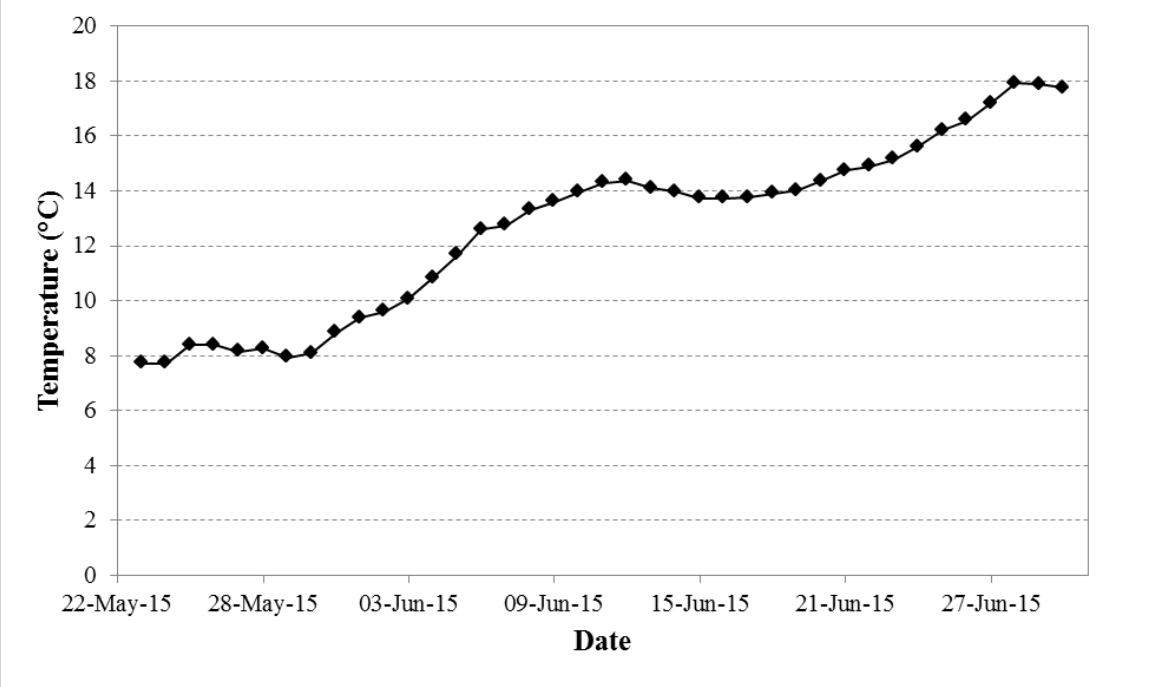


Figure 1: **Mean daily water temperature in the Burntwood River mainstem, 24 May – 1 July, 2015.**

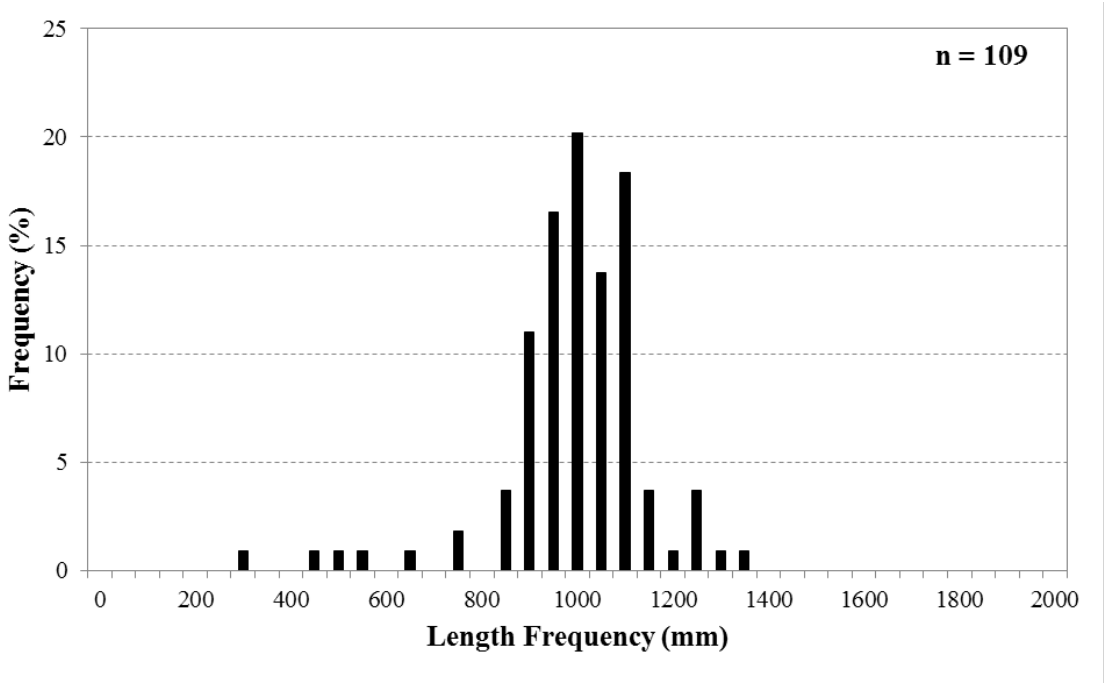


Figure 2: **Length-frequency distribution for Lake Sturgeon captured in large mesh gill nets set in the Burntwood River, spring 2015.**

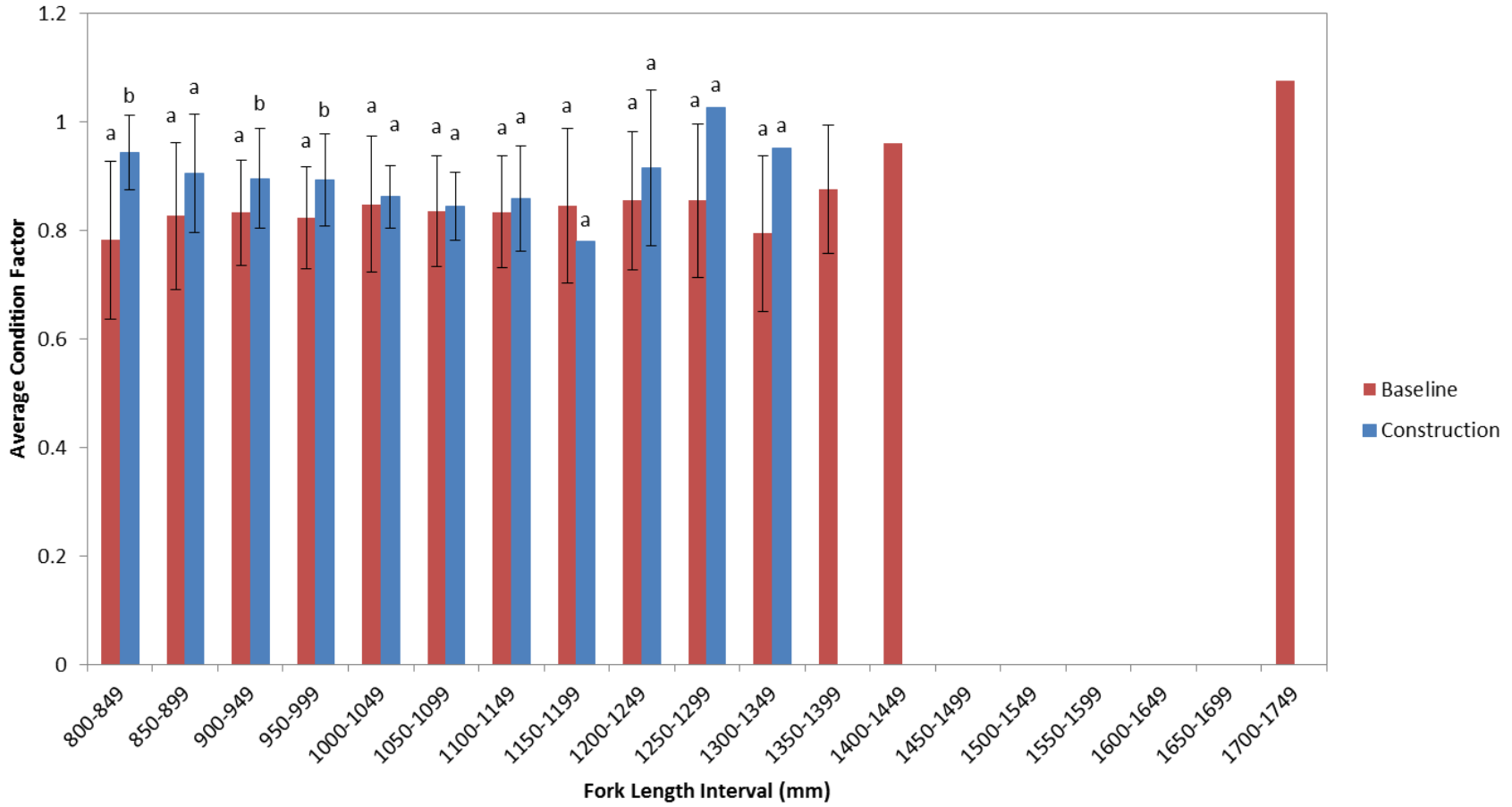


Figure 3: **Mean condition factor by 50 mm length intervals for adult (> 800 mm) Lake Sturgeon captured in the Burntwood River during baseline studies (red bars) and 2015 (blue bars). Letters denote significant differences between groups (Mann Whitney U test, P < 0.05). Error bars represent standard deviations.**

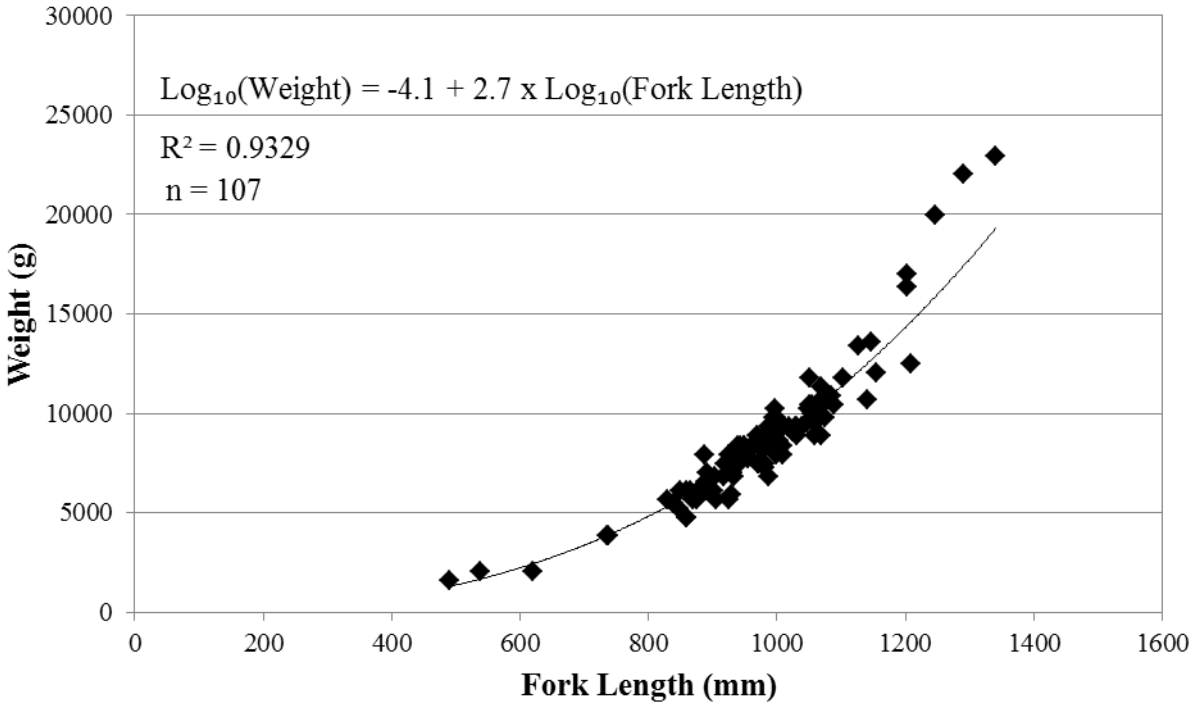


Figure 4: Length-weight regression for Lake Sturgeon captured in large mesh gill nets set in the Burntwood River, spring 2015.

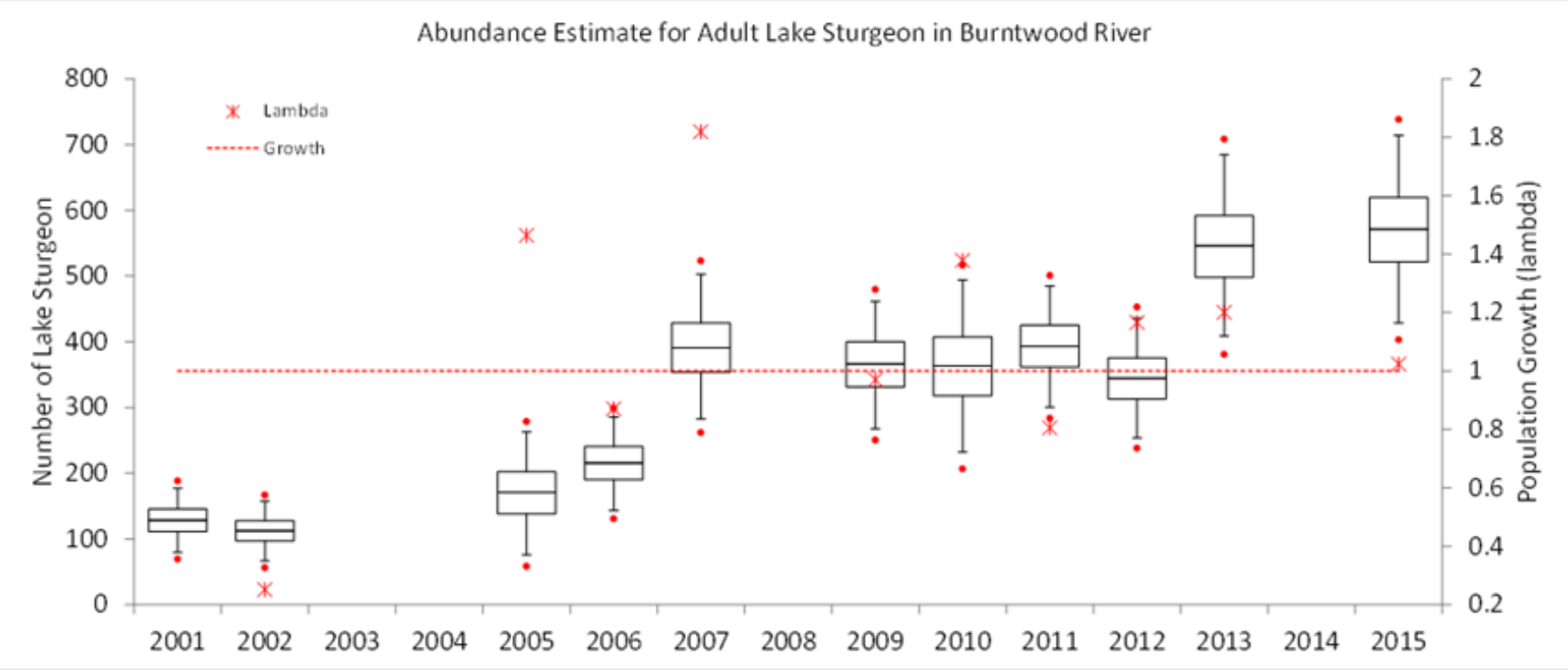


Figure 5: **Adult Lake Sturgeon abundance estimates (2001–2015) for the Burntwood River showing the estimate and upper and lower 95% confidence intervals (bar lines) based on POPAN best model (see Appendix 3). The population lambda (growth rate) are presented relative to 1 (equilibrium, dotted horizontal line) by the asterisk. Best model was constant survival and variable recapture.**

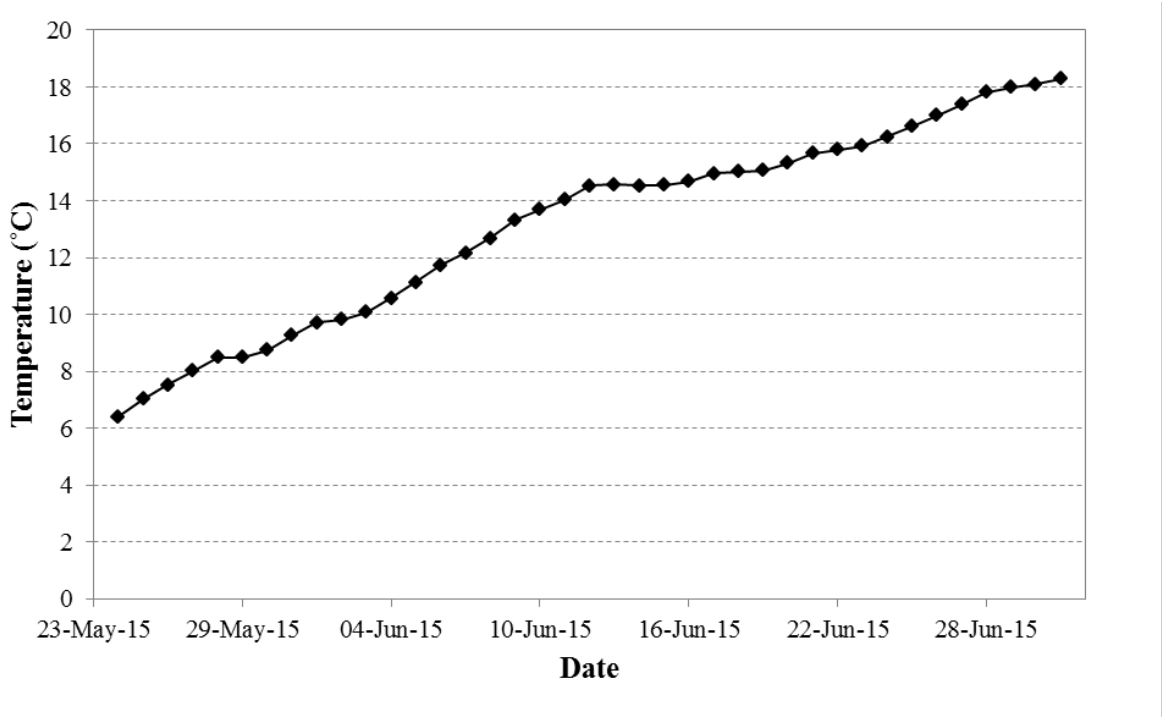


Figure 6: Mean daily water temperature in the Kelsey GS Area, 24 May – 1 July, 2015.

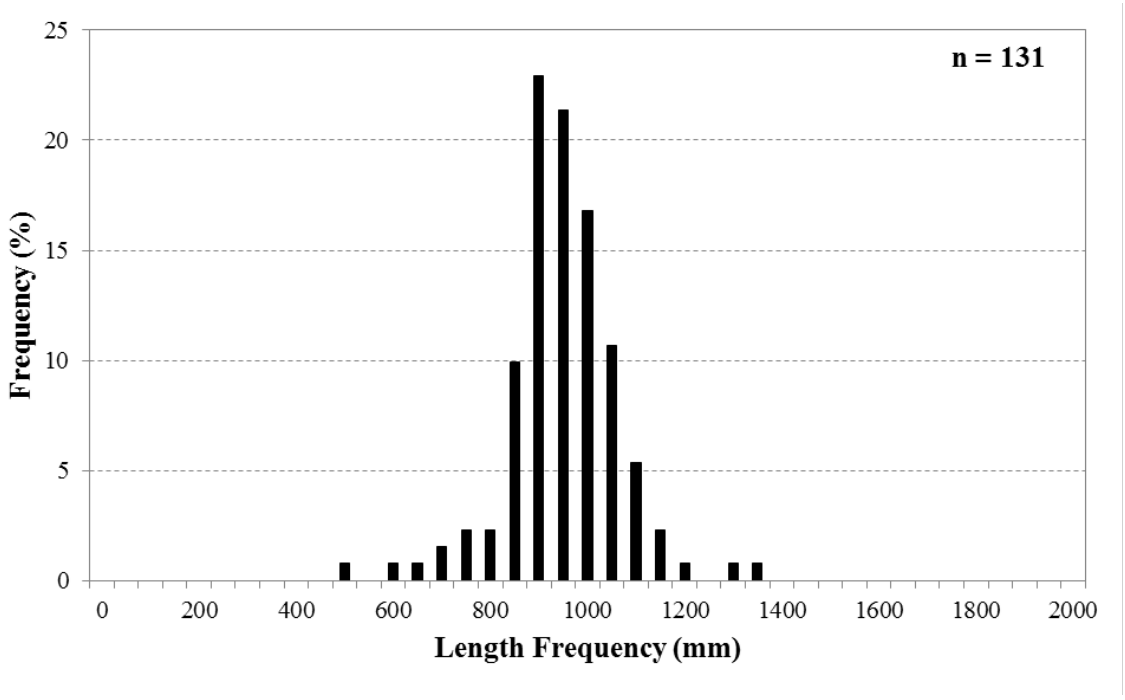


Figure 7: Length-frequency distribution for Lake Sturgeon captured in large mesh gill nets set in the Kelsey GS Area, spring 2015.

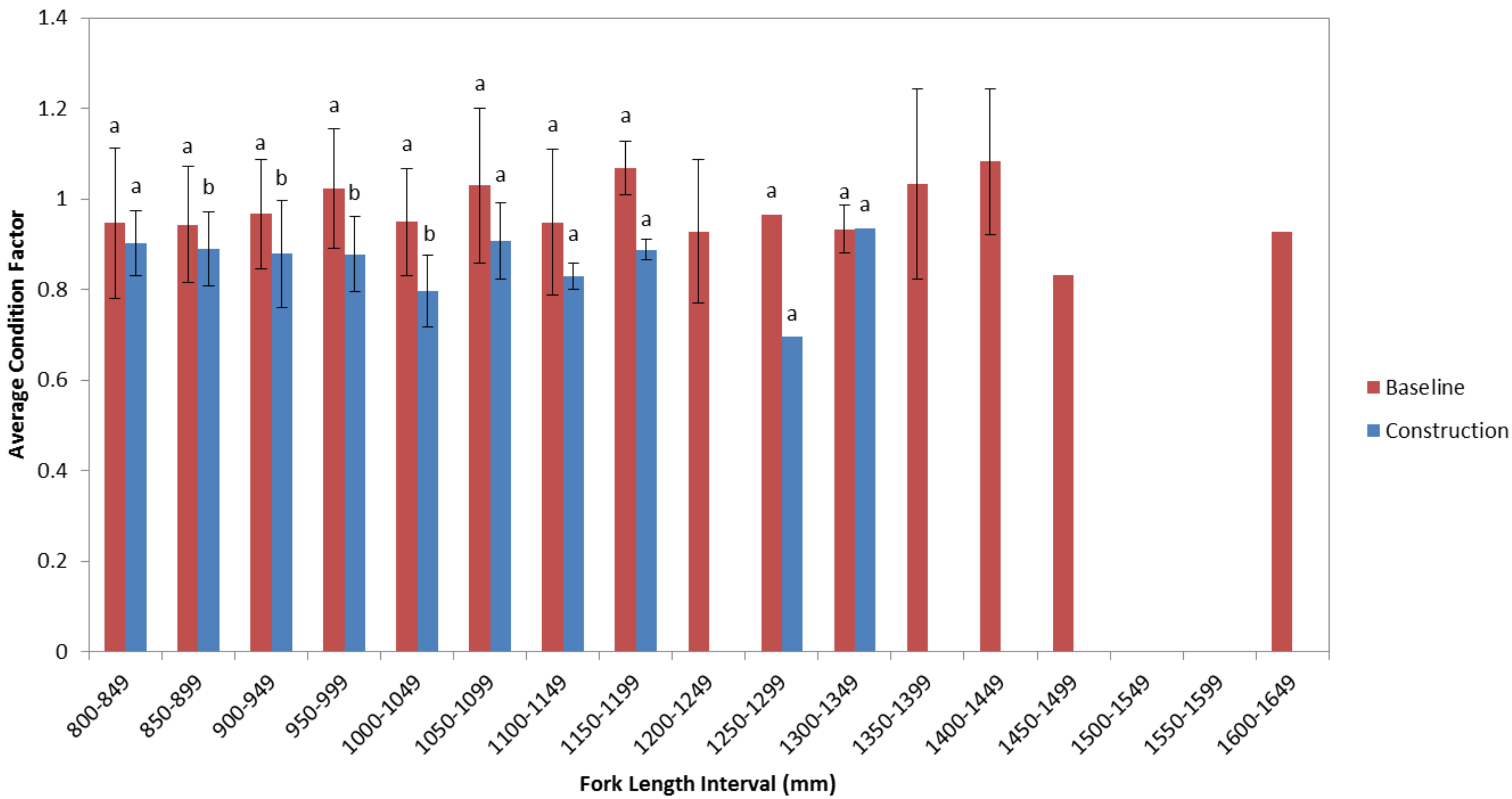


Figure 8: Mean condition factor by 50 mm length intervals for adult (> 800 mm) Lake Sturgeon captured in the Kelsey GS Area during baseline studies (red bars) and 2015 (blue bars). Letters denote significant differences between groups (Mann Whitney U test, P < 0.05). Error bars represent standard deviations.

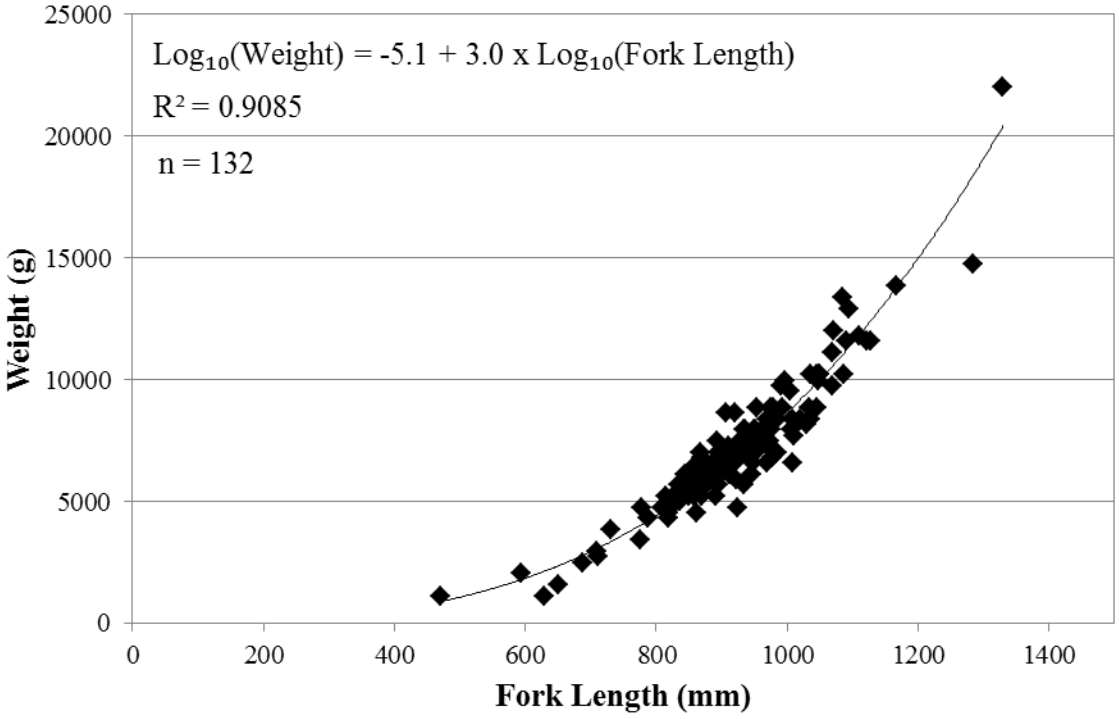


Figure 9: Length-weight regression for Lake Sturgeon captured in large mesh gill nets set in the Kelsey GS Area, spring 2015.

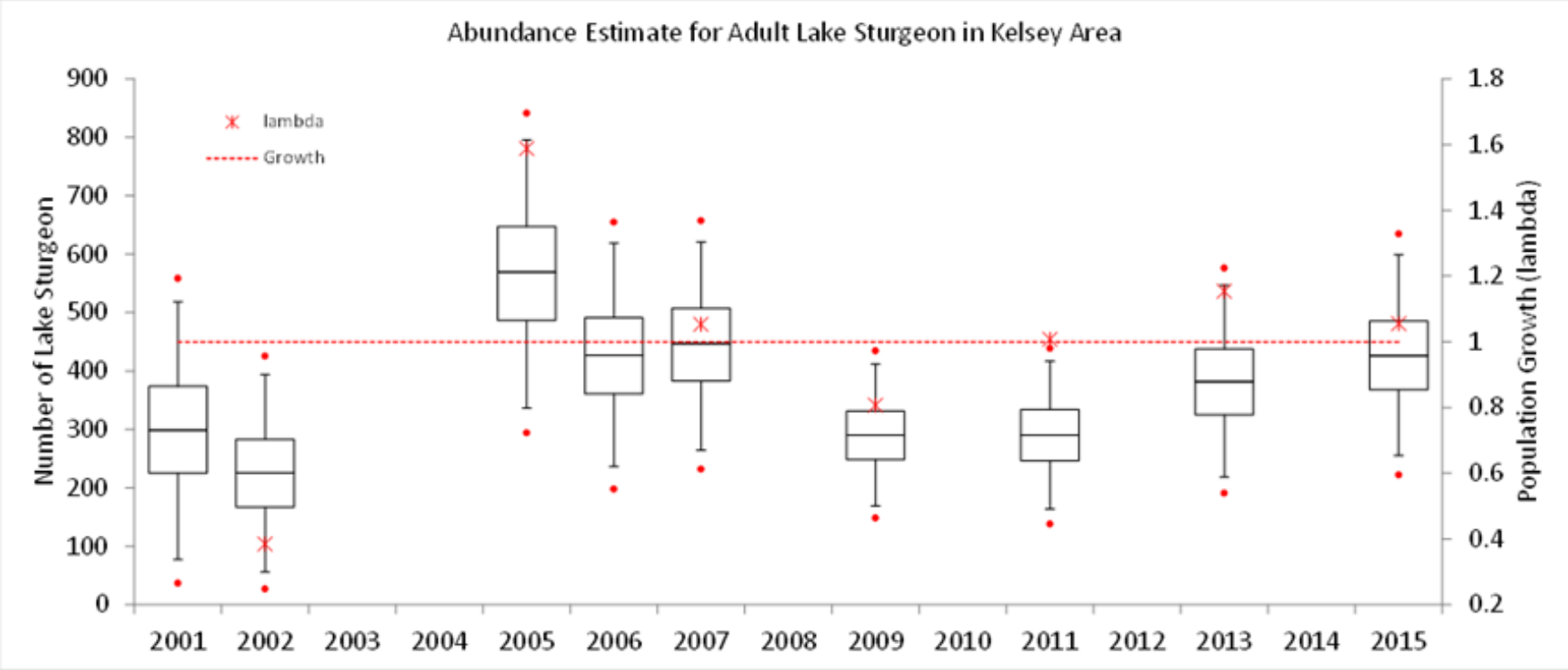


Figure 10: **Adult Lake Sturgeon abundance estimates (2001–2015) for the Kelsey GS Area showing the estimate and upper and lower 95% confidence intervals (bar lines) based on POPAN best model (see Appendix 3). The population lambda (growth rate) are presented relative to 1 (equilibrium, dotted horizontal line) by the asterisk. Best model was constant survival and variable recapture.**

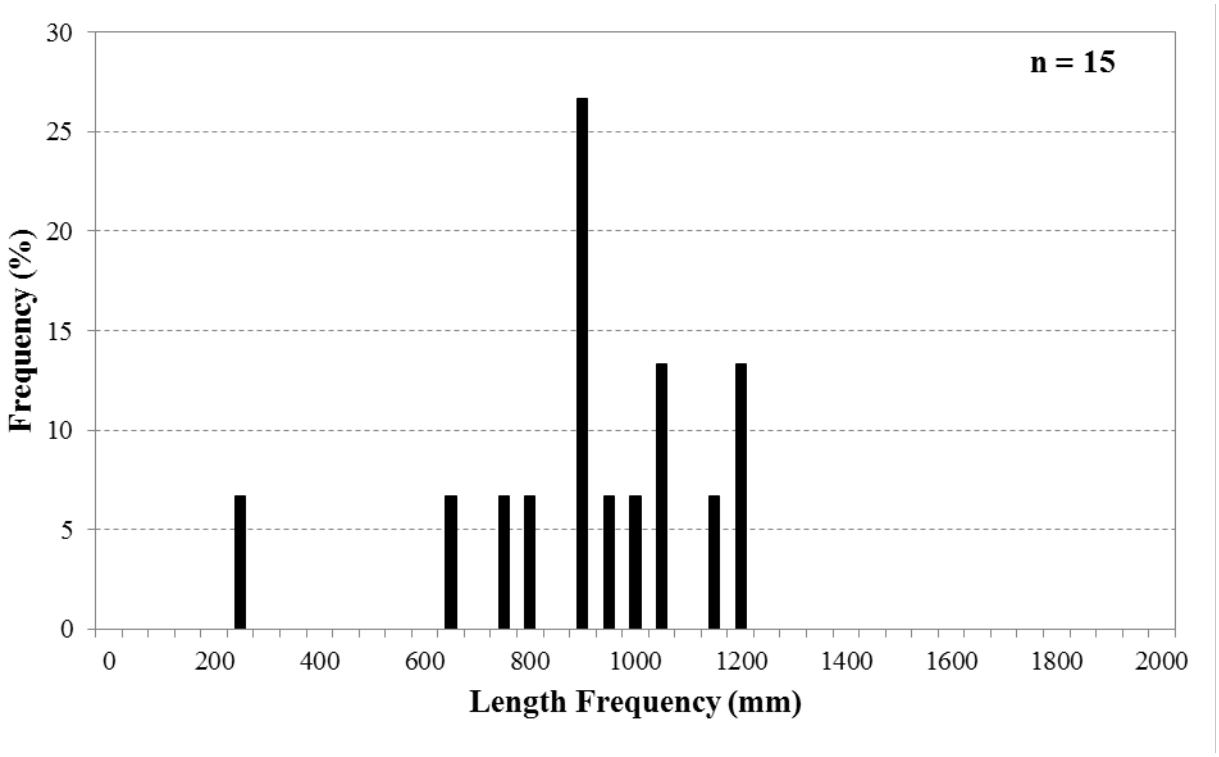


Figure 11: Length-frequency distribution for Lake Sturgeon captured in large mesh gill nets set in Split Lake, spring 2015.

MAPS

KEEYASK

DATA SOURCE:
Government of Manitoba, Province of Manitoba, Manitoba Hydro

CREATED BY:
North/South Consultants

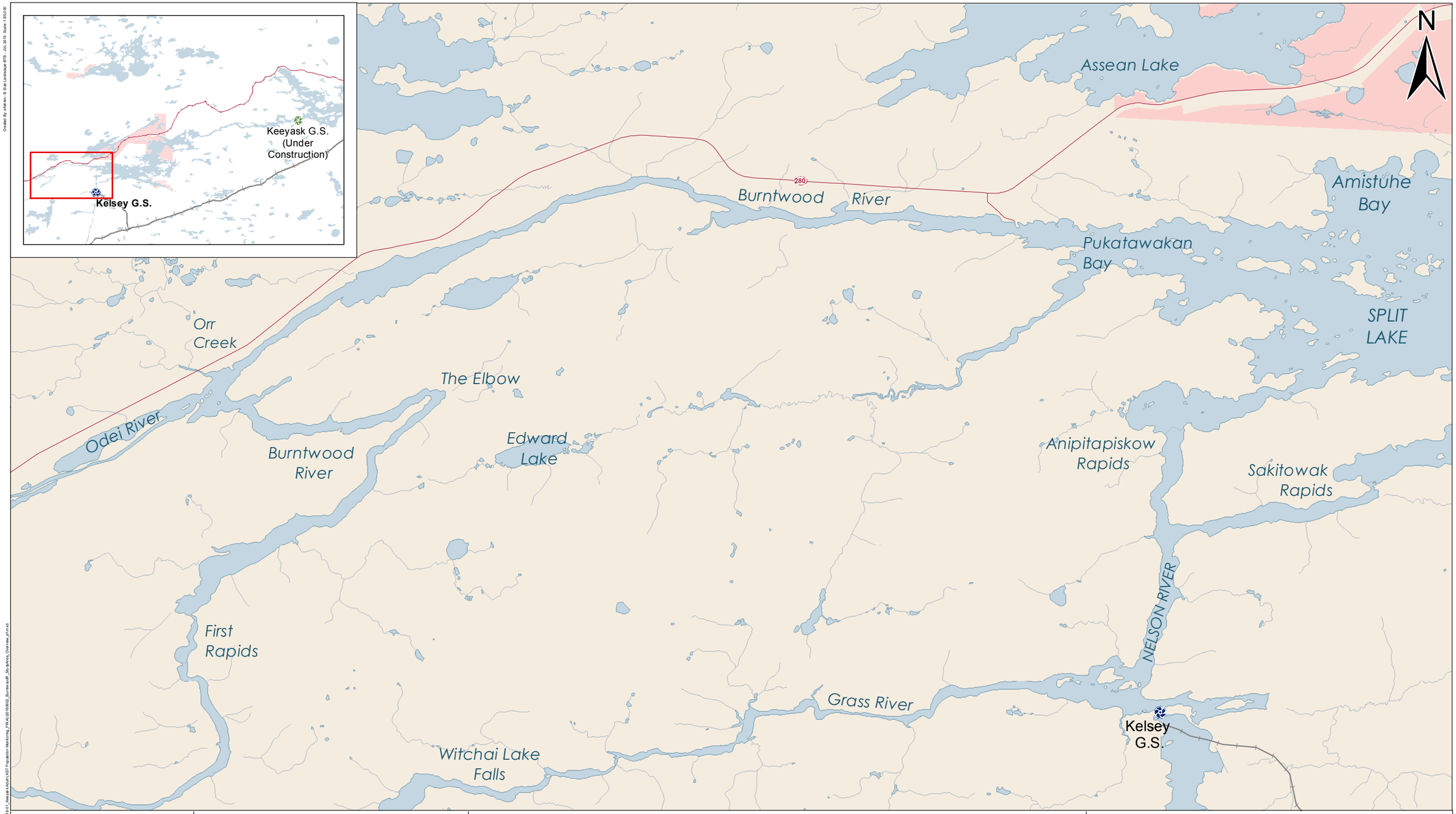
COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z15N	09-FEB-15	02-JUN-16
0 6 12 Kilometres / 0 5 10 Miles	VERSION NO: 1.0	QA/QC: CMP/YYY/ZZZ

Legend

- Town
- Community
- Generating Station (Existing)
- Generating Station (Under Construction)
- Generating Station (Potential)
- Highway
- Rail
- First Nation Reserve

Keeyask Study Area

Map 1: Map of the Keeyask study area.



DATA SOURCE:
Government of Manitoba, Province of Manitoba, Manitoba Hydro

CREATED BY:
North/South Consultants

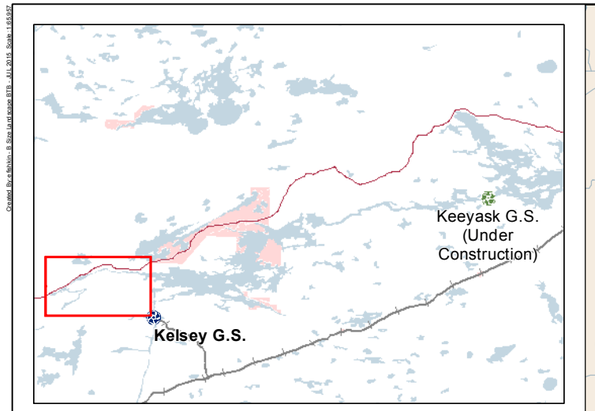
COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z15N	09-FEB-15	06-JUN-16
0 1 2 Kilometres / 0 0.8 1.6 Miles	VERSION NO: 1.0	QA/QC: CMP/YYY/ZZZ

Legend

- Generating Station (Existing)
- Generating Station (Under Construction)
- Highway
- First Nation Reserve

Study Area
Burntwood River

Map 2: Map of the Burntwood River Study Area.



KEEYASK

DATA SOURCE:
Government of Manitoba, Province of Manitoba, Manitoba Hydro

CREATED BY:
North/South Consultants

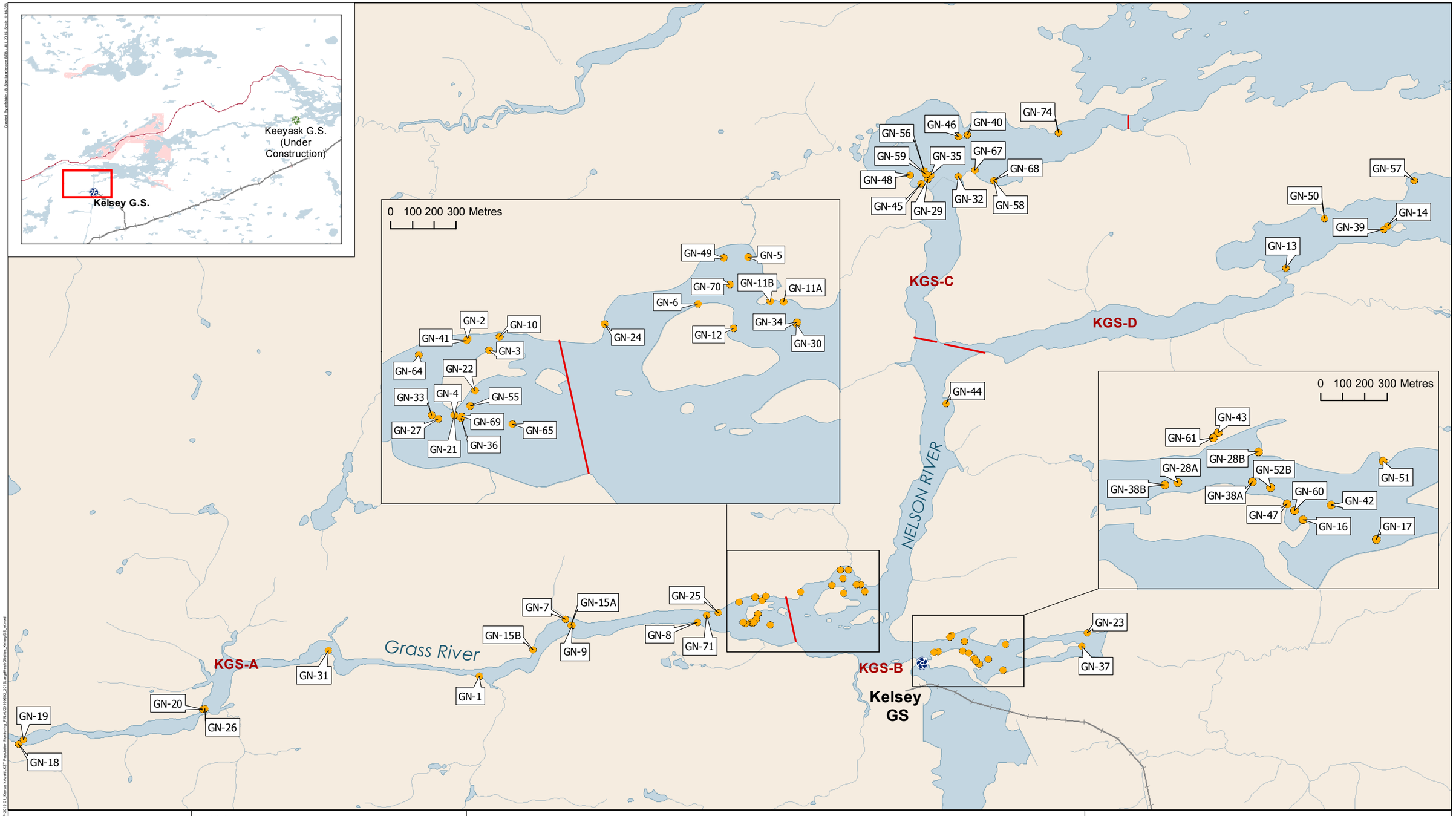
COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z14N	02-JUN-16	09-JUN-16
0 4.5 9 Kilometres / 0 3.5 7 Miles	VERSION NO: 1.0	QA/QC: XXX/YYY/ZZZ

Legend

- Large Mesh Gillnetting Sites
- Generating Station (Existing)
- Generating Station (Under Construction)
- Zones
- Highways
- Rail
- First Nation Reserve

2015 Large Mesh Gillnetting Sites
Burntwood River Area

Map 3: Sites fished with large mesh gill net gangs in the Burntwood River between First Rapids and Split Lake, spring 2015.



DATA SOURCE:
Government of Manitoba, Province of Manitoba, Manitoba Hydro

CREATED BY:
North/South Consultants

COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z14N	02-JUN-16	09-JUN-16
0 4.5 9 Kilometres / 0 3.5 7 Miles	VERSION NO: 1.0	QA/QC: XXX/YYY/ZZZ

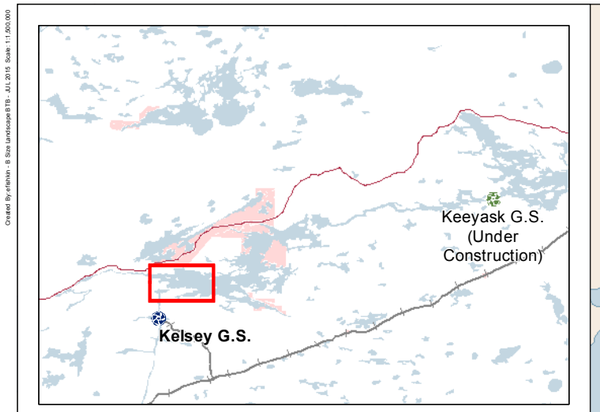
Legend

- Large Mesh Gillnetting Sites
- Generating Station (Existing)
- Generating Station (Under Construction)
- Zones
- Highways
- Rail
- First Nation Reserve

2015 Large Mesh Gillnetting Sites

Kelsey G.S. Area

Map 4: Sites fished with large mesh gill net gangs in the Kelsey GS Area, spring 2015.



KEEYASK

DATA SOURCE:
Government of Manitoba, Province of Manitoba, Manitoba Hydro

CREATED BY:
North/South Consultants

COORDINATE SYSTEM:	DATE CREATED:	REVISION DATE:
UTM NAD 1983 Z14N	09-FEB-15	09-JUN-16
0 0.45 0.9 Kilometres 0 0.35 0.7 Miles	VERSION NO: 1.0	QA/QC: CMP/YYY/ZZZ

Legend

- Large Mesh Gillnetting Sites
- Generating Station (Existing)
- Generating Station (Under Construction)
- Zones
- Highway
- Rail
- First Nation Reserve

2015 Large Mesh Gillnetting Sites

Split Lake Area

Map 5: Sites fished with large mesh gill net gangs in Split Lake, spring 2015.

APPENDICES

APPENDIX 1:
TAGGING AND BIOLOGICAL INFORMATION FOR LAKE STURGEON CAPTURED IN THE UPPER SPLIT LAKE AREA IN SPRING 2015

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015.

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-B	26-May-15	NSC	89055	900 226000703381	903	993	6804	-	-
Burntwood River	BWR-B	27-May-15	NSC	89056	900 226000703318	1290	1412	21999	-	-
Burntwood River	BWR-A	29-May-15	NSC	89057	900 226000577222	995	1084	8618	-	-
Burntwood River	BWR-B	29-May-15	NSC	89058	900 226000122737	1246	1378	19958	-	-
Burntwood River	BWR-A	31-May-15	NSC	89059	900 226000703380	917	1013	6804	-	-
Burntwood River	BWR-A	31-May-15	NSC	89060	900 226000629641	840	935	5443	-	-
Burntwood River	BWR-A	1-Jun-15	NSC	89061	900 226000703360	1004	1099	8618	M	7
Burntwood River	BWR-A	2-Jun-15	NSC	89062	900 226000629663	1128	1248	13381	-	-
Burntwood River	BWR-A	3-Jun-15	NSC	89063	900 226000703311	1047	1145	9525	-	-
Burntwood River	BWR-A	3-Jun-15	NSC	89064	900 226000628971	972	1078	7484	M	7
Burntwood River	BWR-B	3-Jun-15	NSC	89065	900 226000629644	930	1030	5897	M	7
Burntwood River	BWR-A	4-Jun-15	NSC	89066	900 226000703331	956	1061	7711	-	-
Burntwood River	BWR-A	4-Jun-15	NSC	89067	900 226000628873	1031	1119	9299	-	-
Burntwood River	BWR-A	4-Jun-15	NSC	89068	900 226000628816	1089	1200	10433	M	7
Burntwood River	BWR-B	4-Jun-15	NSC	89069	900 226000628814	1010	1115	8391	M	7
Burntwood River	BWR-A	5-Jun-15	NSC	89070	900 226000628899	1085	1191	10886	M	7
Burntwood River	BWR-B	5-Jun-15	NSC	89071	900 226000628813	1203	1310	16329	F	2
Burntwood River	BWR-B	6-Jun-15	NSC	89072	900 226000628884	1005	1107	9525	M	8
Burntwood River	BWR-B	6-Jun-15	NSC	89073	900 226000628799	1008	1129	9299	M	8
Burntwood River	BWR-B	6-Jun-15	NSC	89074	900 226000629371	1025	1140	9072	M	8
Burntwood River	BWR-A	7-Jun-15	NSC	89026	900 226000628882	934	1061	6804	-	-
Burntwood River	BWR-B	7-Jun-15	NSC	89075	900 226000628752	848	954	5216	-	-
Burntwood River	BWR-B	7-Jun-15	NSC	89027	900 226000628995	982	1087	7257	M	8
Burntwood River	BWR-A	8-Jun-15	NSC	89028	900 226000628894	950	1080	7711	M	8
Burntwood River	BWR-A	8-Jun-15	NSC	89029	900 226000628755	1060	1182	9525	-	-
Burntwood River	BWR-A	8-Jun-15	NSC	89030	900 226000628841	1208	1255	11793	-	-
Burntwood River	BWR-A	8-Jun-15	NSC	89031	900 226000628761	926	1061	7257	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-B	8-Jun-15	NSC	89032	900 226000628850	921	1140	6804	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	89033	900 226000628916	971	1090	6804	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	89036	900 226000628963	962	1079	7711	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	89037	900 226000628933	925	1042	4990	M	8
Burntwood River	BWR-A	9-Jun-15	NSC	89038	900 226000628998	963	1067	7711	M	8
Burntwood River	BWR-A	9-Jun-15	NSC	89040	900 226000628965	941	1046	6804	-	-
Burntwood River	BWR-A	10-Jun-15	NSC	89041	900 226000628898	860	975	5443	-	-
Burntwood River	BWR-A	10-Jun-15	NSC	89042	900 226000628855	932	1021	6350	-	-
Burntwood River	BWR-A	10-Jun-15	NSC	89043	900 226000628915	1050	1132	9525	M	8
Burntwood River	BWR-A	11-Jun-15	NSC	89044	-	877	970	5443	-	-
Burntwood River	BWR-A	11-Jun-15	NSC	89045	-	1070	1218	8165	M	8
Burntwood River	BWR-A	11-Jun-15	NSC	89046	-	982	1091	6804	M	8
Burntwood River	BWR-A	11-Jun-15	NSC	89047	-	1059	1172	9072	M	8
Burntwood River	BWR-A	12-Jun-15	NSC	89048	900 226000628857	866	971	5443	-	-
Burntwood River	BWR-A	13-Jun-15	NSC	89050	900 226000628817	849	971	5443	-	-
Burntwood River	BWR-A	14-Jun-15	NSC	89025	900 226000628935	1059	1161	8165	M	8
Burntwood River	BWR-B	14-Jun-15	NSC	89024	900 226000628989	980	1070	8165	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89023	900 226000628868	1080	1200	9979	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89022	900 226000628937	860	960	4082	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89021	900 226000628970	970	1091	8165	M	8
Burntwood River	BWR-A	15-Jun-15	NSC	89020	900 226000628778	943	1060	7711	-	-
Burntwood River	BWR-A	16-Jun-15	NSC	89019	900 226000628953	890	992	5897	-	-
Burntwood River	BWR-C	17-Jun-15	NSC	89018	900 226000628879	735	834	3175	-	-
Burntwood River	BWR-C	17-Jun-15	NSC	89017	900 226000628993	490	554	907	-	-
Burntwood River	BWR-A	17-Jun-15	NSC	89016	900 226000628824	930	1042	6804	-	-
Burntwood River	BWR-A	17-Jun-15	NSC	89015	900 226000628975	892	1001	6350	-	-
Burntwood River	BWR-A	17-Jun-15	NSC	89014	900 226000628798	1070	1129	9979	M	8
Burntwood River	BWR-C	18-Jun-15	NSC	89013	900 226000628852	538	600	1361	-	-
Burntwood River	BWR-A	18-Jun-15	NSC	89011	900 226000628918	1060	1171	9525	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	19-Jun-15	NSC	89010	900 226000628874	996	1104	9072	M	8
Burntwood River	BWR-A	21-Jun-15	NSC	89008	900 226000628856	906	1000	4990	-	-
Burntwood River	BWR-C	22-Jun-15	NSC	89006	900 226000628775	620	705	1361	-	-
Burntwood River	BWR-A	23-Jun-15	NSC	89003	900 226000628776	977	1082	6804	-	-
Burntwood River	BWR-A	23-Jun-15	NSC	89002	900 226000628803	998	1106	9072	-	-
Burntwood River	BWR-C	23-Jun-15	NSC	89001	900 226000543893	260	295	200	-	-
Burntwood River	BWR-C	23-Jun-15	NSC	85950	-	440	490	4990	-	-
Burntwood River	BWR-A	25-Jun-15	NSC	85948	900 226000628818	985	1072	7711	-	-
Burntwood River	BWR-A	27-Jun-15	NSC	85946	900 226000628830	949	1033	7711	-	-
Burntwood River	BWR-A	28-Jun-15	NSC	85945	900 226000628892	876	999	4990	-	-
Burntwood River	BWR-A	28-Jun-15	NSC	85944	900 226000628981	890	986	5443	-	-
Kelsey GS Area	KGS-A	26-May-15	NSC	98601	900 226000548500	1086	1211	9979	M	7
Kelsey GS Area	KGS-A	27-May-15	NSC	98603	900 226000548534	909	1009	6123	-	-
Kelsey GS Area	KGS-A	27-May-15	NSC	98604	900 226000548559	651	733	1361	-	-
Kelsey GS Area	KGS-A	28-May-15	N/A	98605	900 226000548614	886	990	5897	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98606	900 226000548580	837	940	4763	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98607	900 226000548598	975	1081	8618	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98608	900 226000548545	1121	1235	11340	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	98609	900 226000548627	1072	1212	11793	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	98610	900 226000548573	850	966	5443	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	98611	900 226000548612	1330	1472	21772	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	98612	900 226000548636	1005	1105	9299	-	-
Kelsey GS Area	KGS-A	30-May-15	NSC	98613	900 226000548727	1030	1142	7938	-	-
Kelsey GS Area	KGS-A	30-May-15	NSC	98614	900 226000548607	865	948	5897	-	-
Kelsey GS Area	KGS-A	31-May-15	NSC	98615	900 226000548531	890	990	5897	-	-
Kelsey GS Area	KGS-A	31-May-15	NSC	98616	900 226000548581	997	1115	9752	-	-
Kelsey GS Area	KGS-A	31-May-15	NSC	98617	900 226000548622	904	1014	6123	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98618	900 226000548663	815	905	4990	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98619	900 226000548527	1036	1140	8165	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98620	900 226000548709	984	1110	8391	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98621	900 226000548524	809	890	4536	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98622	900 226000548515	834	952	5443	-	-
Kelsey GS Area	KGS-A	2-Jun-15	NSC	98623	900 226000548546	850	951	5443	-	-
Kelsey GS Area	KGS-A	2-Jun-15	NSC	98624	900 226000548706	1020	1113	8165	-	-
Kelsey GS Area	KGS-A	3-Jun-15	NSC	98625	900 226000548589	778	866	4536	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98976	900 226000548537	868	970	5670	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98979	900 226000548551	940	1040	7257	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98980	900 226000548610	894	950	7257	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98978	900 226000548657	906	1025	8391	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98977	900 226000548577	855	947	6123	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98981	900 226000548518	818	925	4309	-	-
Kelsey GS Area	KGS-B	4-Jun-15	NSC	98982	900 226000548714	903	1014	6350	-	-
Kelsey GS Area	KGS-A	5-Jun-15	NSC	98983	900 226000548655	912	1027	5897	-	-
Kelsey GS Area	KGS-A	5-Jun-15	NSC	98984	900 226000548506	877	990	6123	-	-
Kelsey GS Area	KGS-A	5-Jun-15	NSC	98985	900 226000548501	863	974	5216	-	-
Kelsey GS Area	KGS-C	6-Jun-15	NSC	98986	900 226000548554	966	1054	7257	-	-
Kelsey GS Area	KGS-B	6-Jun-15	NSC	98987	900 226000548556	1048	1180	9752	-	-
Kelsey GS Area	KGS-A	7-Jun-15	NSC	98988	900 226000548541	941	1068	7484	-	-
Kelsey GS Area	KGS-A	8-Jun-15	NSC	98990	900 226000548555	878	988	5443	-	-
Kelsey GS Area	KGS-B	8-Jun-15	NSC	98991	900 226000548085	980	1086	8618	-	-
Kelsey GS Area	KGS-B	8-Jun-15	NSC	98992	900 226000548509	935	1023	7711	-	-
Kelsey GS Area	KGS-B	8-Jun-15	NSC	98993	900 226000548558	898	1002	5897	-	-
Kelsey GS Area	KGS-B	9-Jun-15	NSC	98994	900 226000548616	970	1076	6350	-	-
Kelsey GS Area	KGS-B	9-Jun-15	NSC	98995	900 226000548623	970	1085	8165	-	-
Kelsey GS Area	KGS-B	10-Jun-15	NSC	98996	900 226000548604	952	1051	6804	-	-
Kelsey GS Area	KGS-D	11-Jun-15	NSC	98998	900 226000548699	897	1012	5897	-	-
Kelsey GS Area	KGS-C	11-Jun-15	NSC	98999	901 226000548591	870	981	4990	-	-
Kelsey GS Area	KGS-B	11-Jun-15	NSC	99000	900 226000548658	1128	1243	11340	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-B	11-Jun-15	NSC	98650	900 226000548656	872	978	5443	-	-
Kelsey GS Area	KGS-C	12-Jun-15	NSC	98649	900 226000548665	1007	1133	7711	-	-
Kelsey GS Area	KGS-B	13-Jun-15	NSC	98648	900 226000548544	865	966	5443	M	8
Kelsey GS Area	KGS-A	14-Jun-15	NSC	98647	900 226000548547	985	1088	8165	-	-
Kelsey GS Area	KGS-B	14-Jun-15	NSC	98646	900 226000548590	950	1056	7711	-	-
Kelsey GS Area	KGS-B	14-Jun-15	NSC	98645	900 226000548587	895	1024	6804	-	-
Kelsey GS Area	KGS-D	15-Jun-15	NSC	98644	900 226000548652	850	954	4990	-	-
Kelsey GS Area	KGS-C	15-Jun-15	NSC	98643	900 226000548729	963	1086	7711	-	-
Kelsey GS Area	KGS-A	15-Jun-15	NSC	98642	900 226000548653	947	1053	6350	-	-
Kelsey GS Area	KGS-A	15-Jun-15	NSC	98641	900 226000548532	1008	1124	6350	-	-
Kelsey GS Area	KGS-A	15-Jun-15	NSC	98640	-	954	1062	8618	-	-
Kelsey GS Area	KGS-D	16-Jun-15	NSC	98639	900 226000548582	470	542	907	-	-
Kelsey GS Area	KGS-C	16-Jun-15	NSC	98638	900 226000548669	776	863	3175	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	98637	900 226000548693	936	1055	6804	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	98636	900 226000548091	898	1011	6350	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	98635	900 226000548562	871	982	5897	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	98634	900 226000548536	946	1063	5897	-	-
Kelsey GS Area	KGS-A	17-Jun-15	NSC	98633	900 226000548572	952	1075	7257	-	-
Kelsey GS Area	KGS-B	17-Jun-15	NSC	98632	900 226000548599	709	792	2722	-	-
Kelsey GS Area	KGS-C	18-Jun-15	NSC	98631	900 226000548644	844	946	5897	-	-
Kelsey GS Area	KGS-A	18-Jun-15	NSC	98630	900 226000548748	822	913	4536	-	-
Kelsey GS Area	KGS-A	18-Jun-15	NSC	98629	900 226000548668	594	673	1814	-	-
Kelsey GS Area	KGS-C	19-Jun-15	NSC	98626	900 226000548641	894	987	5443	-	-
Kelsey GS Area	KGS-A	19-Jun-15	NSC	98901	900 226000548600	832	925	4990	-	-
Kelsey GS Area	KGS-A	20-Jun-15	NSC	98902	900 226000548606	868	972	6804	-	-
Kelsey GS Area	KGS-C	21-Jun-15	NSC	98903	900 226000548596	730	814	3629	-	-
Kelsey GS Area	KGS-A	21-Jun-15	NSC	98904	900 226000548570	911	1021	6350	-	-
Kelsey GS Area	KGS-C	22-Jun-15	NSC	98905	900 226000548523	881	995	5897	-	-
Kelsey GS Area	KGS-C	22-Jun-15	NSC	98906	900 226000548615	857	970	4990	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-B	22-Jun-15	NSC	98907	900 226000548538	687	767	2268	-	-
Kelsey GS Area	KGS-B	22-Jun-15	NSC	98908	900 226000548645	889	997	5897	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	98909	900 226000548619	1095	1211	12701	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	98910	900 226000548533	973	1088	7257	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	98911	900 226000548621	888	1005	6350	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	98912	900 226000548744	965	1081	7257	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	98915	900 226000548530	991	1103	9525	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	98916	900 226000548647	925	1042	4536	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	98917	900 226000548738	1045	1171	8618	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	98918	900 226000548642	896	1008	5897	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	98919	900 226000548749	870	970	6577	-	-
Kelsey GS Area	KGS-C	24-Jun-15	NSC	98922	900 226000548575	629	709	907	-	-
Kelsey GS Area	KGS-A	24-Jun-15	NSC	98923	900 226000548519	937	1045	7711	-	-
Kelsey GS Area	KGS-A	24-Jun-15	NSC	98924	900 226000548710	975	1087	7711	-	-
Kelsey GS Area	KGS-A	24-Jun-15	NSC	98925	900 226000548676	895	1007	6350	-	-
Kelsey GS Area	KGS-A	25-Jun-15	NSC	98928	900 226000548019	1010	1108	7711	-	-
Kelsey GS Area	KGS-A	25-Jun-15	NSC	98929	900 226000548597	711	792	2722	-	-
Kelsey GS Area	KGS-A	26-Jun-15	NSC	98930	900 226000548640	861	953	4536	-	-
Kelsey GS Area	KGS-A	26-Jun-15	NSC	98931	900 226000548742	922	1013	6123	-	-
Kelsey GS Area	KGS-A	26-Jun-15	NSC	98932	900 226000548733	972	1070	7257	-	-
Kelsey GS Area	KGS-A	27-Jun-15	NSC	98933	900 226000548730	895	989	5670	-	-
Kelsey GS Area	KGS-A	27-Jun-15	NSC	98934	900 226000548517	992	1084	8845	-	-
Kelsey GS Area	KGS-B	28-Jun-15	NSC	98935	900 226000548571	977	1090	6804	-	-
Kelsey GS Area	KGS-A	1-Jul-15	NSC	98936	900 226000548685	929	1024	7257	-	-
Kelsey GS Area	KGS-A	1-Jul-15	NSC	98937	900 226000548505	943	1050	7257	-	-
Kelsey GS Area	KGS-A	7-Jun-15	NSC	98989	900 226000548718	835	930	5216	-	-
Split Lake	SPL-A	19-Jun-15	NSC	98628	900 226000548696	1102	1220	-	-	-
Split Lake	SPL-A	19-Jun-15	NSC	98627	900 226000548529	884	975	-	-	-
Split Lake	SPL-A	23-Jun-15	NSC	98913	900 226000548513	723	820	3175	-	-

Table A1-1: Tagging and biological information, by waterbody, for Lake Sturgeon marked with Floy tags and PIT tags in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Split Lake	SPL-A	23-Jun-15	NSC	98914	900 226000548611	891	1007	5443	-	-
Split Lake	SPL-A	24-Jun-15	NSC	98921	900 226000548736	976	1092	8165	-	-
Split Lake	SPL-A	25-Jun-15	NSC	98926	900 226000548635	880	955	5897	-	-
Split Lake	SPL-A	21-Jun-15	NSC	89007	900 226000628888	936	1056	8165	-	-
Split Lake	SPL-A	22-Jun-15	NSC	89005	900 226000628781	642	725	1361	-	-
Split Lake	SPL-A	22-Jun-15	NSC	89004	900 226000548253	225	256	200	-	-
Split Lake	SPL-A	24-Jun-15	NSC	85949	900 226000628962	1190	1306	15422	-	-
Split Lake	SPL-B	25-Jun-15	NSC	85947	900 226000628997	872	961	5897	-	-
Split Lake	SPL-B	28-Jun-15	NSC	85943	901 226000628865	755	819	3629	-	-
Split Lake	SPL-A	30-Jun-15	NSC	85942	900 226000628911	1002	1085	7031	-	-

APPENDIX 2:
TAGGING AND BIOLOGICAL INFORMATION FOR LAKE STURGEON RECAPTURED IN THE UPPER SPLIT LAKE AREA DURING SPRING 2015.

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015.

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-C	1-Jun-01	NSC	49026	-	-	855	952	5800	-	-
Kelsey GS Area	KGS-A	7-Jun-01	NSC	49026	-	-	-	-	-	-	-
Burntwood River	BWR-A	17-Jun-09	NSC	49026	-	-	990	1095	7711	-	-
Burntwood River	BWR-A	27-Jun-09	NSC	49026	-	-	-	-	-	-	-
Burntwood River	BWR-A	31-May-11	NSC	49026	-	-	1000	1090	8165	-	-
Burntwood River	BWR-A	10-Jun-11	NSC	49026	-	-	-	-	-	-	-
Burntwood River	BWR-A	1-Jun-15	NSC	49026	-	900 226000629588	1055	1158	9979	-	-
Split Lake	SPL-A	29-Jun-05	NSC	74332	74333	-	785	872	4773	-	-
Burntwood River	BWR-A	2-Jun-11	NSC	74332	74333	-	1005	1115	9979	M	8
Burntwood River	BWR-A	31-May-13	NSC	74332	74333	900 226000548280	1020	1115	9752	M	7
Burntwood River	BWR-B	27-May-15	NSC	74332	74333	900 226000548280	1051	1113	11793	-	7
Burntwood River	BWR-B	6-Jun-15	NSC	74332	74333	900 226000548280	-	-	11793	-	-
Kelsey GS Area	KGS-A	12-Jun-07	NSC	74834	-	900 226000629594	779	880	4082	-	-
Kelsey GS Area	KGS-A	26-Jun-09	NSC	74834	-	900 226000629594	858	962	4536	-	-
Burntwood River	BWR-B	3-Jun-15	NSC	74834	-	900 226000629594	978	1090	8165	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	74834	-	900 226000629594	-	-	6804	-	
											-
Burntwood River	BWR-B	20-Jun-07	NSC	75457	-	-	981	1070	7727	-	-
Burntwood River	BWR-A	5-Jun-10	NSC	75457	-	-	1000	1121	6350	M	8
Burntwood River	BWR-A	2-Jun-13	NSC	75457	-	900 226000548428	1032	1159	9979	M	7
Burntwood River	BWR-B	7-Jun-15	NSC	75457	-	900 226000548428	1060	1193	9525	M	8
Burntwood River	BWR-A	11-Jun-15	NSC	75457	-	900 226000548428	-	-	9979	-	
Burntwood River	BWR-A	12-Jun-15	NSC	75457	-	900 226000548428	-	-	9525	-	-
Burntwood River	BWR-C	25-Jun-15	NSC	75457	-	900 226000548428	-	-	9525	-	
Odei River	ODR-A	22-Jun-07	NSC	75461	-	-	985	1080	10227	-	-
Burntwood River	BWR-A	13-Jun-15	NSC	75461	-	900 226000548500	1075	1250	9072	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Odei River	ODR-A	22-Jun-07	NSC	75462	-	-	1068	1172	10227	-	-
Burntwood River	BWR-A	18-Jun-09	NSC	75462	-	-	1090	1220	9979	M	8
Burntwood River	BWR-A	2-Jun-11	NSC	75462	-	-	1090	1220	9979	M	8
Burntwood River	BWR-A	9-Jun-15	NSC	75462	-	900 226000628861	1142	1261	9979	-	-
Burntwood River	BWR-A	22-Jun-07	NSC	75463	-	-	1018	1101	8182	-	-
Burntwood River	BWR-A	7-Jun-13	NSC	75463	-	900 226000548263	1130	1281	9979	M	8
Burntwood River	BWR-A	18-Jun-15	NSC	75463	-	900 226000548263	1156	1270	11340	-	-
Burntwood River	BWR-A	18-Jun-13	NSC	76867	-	900 226000548353	1190	1323	12927	M	8
Burntwood River	BWR-A	9-Jun-15	NSC	76867	-	900 226000548353	1202	1310	16329	M	7
Kelsey GS Area	KGS-C	27-Jun-07	NSC	79554	-	-	913	1004	7031	-	-
Burntwood River	BWR-A	14-Jun-13	NSC	79554	-	-	-	-	-	-	-
Burntwood River	BWR-A	3-Jun-15	NSC	79554	-	900 22600629532	1003	1097	9525	M	7
Burntwood River	BWR-A	3-Jun-06	NSC	80023	80024	-	1004	1100	9072		
Kelsey GS Area	KGS-C	7-Jun-07	NSC	80023	80024	-	1005	1115	9072		
Burntwood River	BWR-A	2-Jun-11	NSC	80023	80024	-	1030	1145	9979	M	7
Burntwood River	BWR-A	30-May-13	NSC	80023	80024	900 226000548297	1057	1172	10206	M	7
Burntwood River	BWR-B	27-May-15	NSC	80023	80024	900 226000548297	1070	1169	11340	-	-
Burntwood River	BWR-A	11-Jun-15	NSC	80023	80024	900 226000548297	-	-	11340	-	
Burntwood River	BWR-A	13-Jun-06	NSC	80056	80057	-	858	954	4990	-	-
Burntwood River	BWR-A	19-Jun-06	NSC	80056	80057	-	-	-	-	-	-
Burntwood River	BWR-A	3-Jun-15	NSC	80056	80057	900 22600629666	987	1084	6804	-	-
Burntwood River	BWR-A	23-Jun-06	NSC	80087	80088	-	981	1089	7031	-	-
Burntwood River	BWR-A	29-Jun-06	NSC	80087	80088	-	-	-	-	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	29-May-10	NSC	80087	80088	-	1000	1100	6350	M	7
Burntwood River	BWR-A	28-May-13	NSC	80087	-	900 226000548442	1020	1125	8165	M	7
Burntwood River	BWR-A	29-May-15	NSC	80087	-	900 226000577126	1031	1199	8845	M	7
Burntwood River	BWR-A	23-Jun-06	NSC	80091	80092	-	967	1081	7484	-	-
Burntwood River	BWR-A	29-May-10	NSC	80091	80092	-	1010	1125	9072	M	7
Burntwood River	BWR-A	9-Jun-13	NSC	80091	87934	900 226000548395	1050	1170	8618	M	9
Burntwood River	BWR-A	1-Jun-15	NSC	80091	87934	900 226000548395	1055	1166	10433	M	7
Burntwood River	BWR-A	16-Jun-13	NSC	81953	-	900 226000548373	1051	1160	9299	M	8
Burntwood River	BWR-B	20-Jun-15	NSC	81953	-	900 226000548373	1080	1194	9979	M	8
Burntwood River	BWR-A	16-Jun-13	NSC	81954	-	900 226000548347	833	932	4450	-	-
Burntwood River	BWR-C	20-Jun-15	NSC	81954	-	900 226000548347	870	974	4990	-	-
Burntwood River	BWR-A	16-Jun-13	NSC	81956	-	900 226000548323	720	821	2550	-	-
Burntwood River	BWR-A	21-Jun-15	NSC	81956	-	900 226000548323	738	840	3175	-	-
Burntwood River	BWR-A	25-Jun-13	NSC	81974	-	900 226000548371	1050	1160	9525	M	9
Burntwood River	BWR-A	15-Jun-15	NSC	81974	-	900 226000548371	1065	1184	9072	-	-
Kelsey GS Area	KGS-B	21-Aug-06	NSC	82334	82335	-	1004	1120	10886	-	-
Burntwood River	BWR-A	5-Jun-11	NSC	82334	82335	-	1090	1175	11340	-	-
Burntwood River	BWR-A	8-Jun-13	NSC	82334	82335	900 226000548404	1119	1216	10433	M	8
Burntwood River	BWR-A	6-Jun-15	NSC	82334	82335	900 226000548404	1147	1247	13608	M	8
Burntwood River	BWR-A	14-Jun-13	NSC	86950	-	900 226000548367	1335	1474	19958	M	8
Burntwood River	BWR-A	9-Jun-15	NSC	86950	-	900 226000548367	1341	1428	22226	M	8

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	7-Jun-13	NSC	86932	-	900 226000548352	858	973	5443	M	7
Burntwood River	BWR-B	5-Jun-15	NSC	86932	-	900 226000548352	888	1005	7938	M	7
Burntwood River	BWR-B	6-Jun-15	NSC	86932	-	900 226000548352	-	-	7938	M	7
Burntwood River	BWR-A	12-Jun-13	NSC	86947	-	900 226000548413	806	904	3650	-	-
Burntwood River	BWR-A	11-Jun-15	NSC	86947	-	-	859	960	4082	-	-
Burntwood River	BWR-A	24-May-10	NSC	87926	-	-	889	1010	6804	-	-
Burntwood River	BWR-A	8-Jun-13	NSC	87926	-	900 226000548335	918	1049	6577	M	8
Burntwood River	BWR-B	4-Jun-15	NSC	87926	-	900 226000548335	935	1048	7938	M	7
Burntwood River	BWR-A	1-Jun-13	NSC	88687	-	900 226000548385	925	1042	6350	M	7
Burntwood River	BWR-A	26-Jun-15	NSC	88687	-	900 226000548385	-	-	7257	-	-
Burntwood River	BWR-A	3-Jun-13	NSC	88695	-	900 226000548489	877	985	3175	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	88695	-	-	901	1006	5443	M	8
Burntwood River	BWR-A	4-Jun-13	NSC	88697	-	900 226000548476	961	1060	6350	-	-
Burntwood River	BWR-C	25-Jun-15	NSC	88697	-	900 226000628831	1000	1070	9072	-	-
Burntwood River	BWR-A	17-Jun-15	NSC	89016	-	900 226000628824	930	1042	6804	-	-
Burntwood River	BWR-A	22-Jun-15	NSC	89016	-	900 226000628824	-	-	-	-	-
Burntwood River	BWR-A	26-Jun-15	NSC	89016	-	900 226000628824	-	-	-	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89023	-	900 226000628868	1080	1200	9979	-	-
Burntwood River	BWR-A	17-Jun-15	NSC	89023	-	900 226000628868	-	-	-	-	-
Burntwood River	BWR-A	24-Jun-15	NSC	89023	-	900 226000628868	-	-	-	-	-
Burntwood River	BWR-A	8-Jun-15	NSC	89030	-	900 226000628841	1208	1255	11793	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	13-Jun-15	NSC	89030	-	900 226000628841	-	-	-	-	-
Burntwood River	BWR-A	9-Jun-15	NSC	89040	-	900 226000628965	941	1046	6804	-	-
Burntwood River	BWR-A	13-Jun-15	NSC	89040	-	900 226000628965	-	-	-	-	-
Burntwood River	BWR-A	10-Jun-15	NSC	89042		900 226000628855	932	1021	6350	-	-
Burntwood River	BWR-A	27-Jun-15	NSC	89042	-	900 226000628855	-	-	-	-	
Burntwood River	BWR-A	11-Jun-15	NSC	89045	-	-	1070	1218	8165	M	8
Burntwood River	BWR-A	13-Jun-15	NSC	89045	-	-	-	-	-	-	-
Burntwood River	BWR-A	13-Jun-15	NSC	89050		900 226000628817	849	971	5443	-	-
Burntwood River	BWR-A	28-Jun-15	NSC	89050	-	900 226000628817	-	-	-	-	-
Burntwood River	BWR-A	31-May-15	NSC	89060	-	900 226000629641	840	935	5443	-	-
Burntwood River	BWR-C	25-Jun-15	NSC	89060	-	900 226000629641	-	-	-	-	-
Burntwood River	BWR-A	4-Jun-15	NSC	89068	-	900 226000628816	1089	1200	10433	M	7
Burntwood River	BWR-A	12-Jun-15	NSC	89068	-	900 226000628816	-	-	-	-	-
Burntwood River	BWR-B	6-Jun-15	NSC	89074	-	900 226000629371	1025	1140	9072	M	8
Burntwood River	BWR-A	14-Jun-15	NSC	89074	-	900 226000629371	-	-	-	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89074	-	900 226000629371	-	-	-	-	-
Burntwood River	BWR-A	14-Jun-09	NSC	89317	-	-	930	1030	7257	-	-
Burntwood River	BWR-B	6-Jun-15	NSC	89317	-	900 226000628893	1066	1192	9752	M	8
Burntwood River	BWR-B	7-Jun-15	NSC	89317	-	900 226000628893	-	-	-	M	8
Burntwood River	BWR-A	21-Jun-09	NSC	89363	-	-	940	1065	7257	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	30-May-15	NSC	89363	-	900 226000577102	1039	1158	9299	-	-
Odei River	OD-04	29-May-11	NSC	89872	-	-	1060	1180	8165	-	-
Burntwood River	BWR-A	6-Jun-15	NSC	89872	-	900 226000628847	1103	1218	11793	M	8
Burntwood River	BWR-A	30-May-11	NSC	89873	-	-	965	1080	7711	-	-
Burntwood River	BWR-A	5-Jun-11	NSC	89873	-	-	-	-	-	-	-
Burntwood River	BWR-A	15-Jun-15	NSC	89873	-	900 226000628926	1020	1162	8618	-	-
Burntwood River	BWR-A	22-Jun-11	NSC	91166	-	-	980	1087	7257	M	8
Burntwood River	BWR-A	23-Jun-13	NSC	91166	-	900 226000548325	970	1080	6350	M	8
Burntwood River	BWR-A	3-Jun-15	NSC	91166	-	900 226000548325	1009	1122	7938	M	7
Burntwood River	BWR-A	11-Jun-11	NSC	91177	-	-	871	965	4990	M	7
Burntwood River	BWR-A	2-Jun-13	NSC	91177	-	900 226000548337	881	982	4763	M	8
Burntwood River	BWR-B	2-Jun-15	NSC	91177	-	900 226000548337	900	976	6123	-	-
Kelsey GS Area	KGS-A	23-Jun-13	NSC	94135		900 226000548044	917	1024	8618	-	-
Burntwood River	BWR-A	10-Jun-15	NSC	94135	-	900 226000548044	939	1042	7711	-	-
Burntwood River	BWR-A	8-Jun-11	NSC	94484	-	-	1015	1126	9072	M	8
Burntwood River	BWR-A	28-May-13	NSC	94484	-	900 226000548380	1044	1162	9979	-	-
Burntwood River	BWR-A	29-May-15	NSC	94484	-	900 226000548380	1063	1183	10206	-	-
Burntwood River	BWR-A	4-Jun-15	NSC	94484	-	900 226000548380	-	-	-	-	-
Burntwood River	BWR-A	7-Jun-15	NSC	94484	-	900 226000548380	-	-	-	-	-
Burntwood River	BWR-B	15-Jun-15	NSC	94484	-	900 226000548380	-	-	-	-	-
Burntwood River	BWR-A	7-Jun-11	NSC	94486	-	-	1019	1058	9979	M	8
Burntwood River	BWR-A	10-Jun-12	NSC	94486	-	-	1018	1080	9979	M	8

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	31-May-13	NSC	94486	-	900 226000548324	1030	1098	9752	M	8
Burntwood River	BWR-A	5-Jun-15	NSC	94486	-	900 226000548324	1052	1118	10433	M	8
Burntwood River	BWR-A	5-Jun-11	NSC	94498	-	-	960	1055	7257	M	7
Burntwood River	BWR-A	3-Jun-15	NSC	94498	-	900 226000577022	1000	1094	7938	M	7
Burntwood River	BWR-A	2-Jun-11	NSC	94801	-	-	940	1025	6804	-	-
Burntwood River	BWR-A	30-May-13	NSC	94801	-	900 226000548330	963	1052	8165	M	8
Burntwood River	BWR-A	8-Jun-15	NSC	94801	-	900 226000628765	988	1084	8618	M	8
Burntwood River	BWR-A	12-Jun-15	NSC	94801	-	900 226000628765	-	-	8618	-	-
Burntwood River	BWR-A	5-Jun-11	NSC	94807	-	-	925	1025	7257	M	7
Burntwood River	BWR-B	5-Jun-15	NSC	94807	-	900 226000628972	1004	1100	9072	M	7
Kelsey GS Area	KGS-A	26-May-15	NSC	98601	-	900 226000548500	1086	1211	9979	M	7
Burntwood River	BWR-A	9-Jun-15	NSC	98601	-	900 226000548500	997	1214	9525	M	8
Burntwood River	BWR-A	13-Jun-15	NSC	98601	-	900 226000548500	-	-	-	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98606	-	900 226000548580	837	940	4763	-	-
Burntwood River	BWR-A	14-Jun-15	NSC	98606	-	900 226000548580	829	945	4990	-	-
Kelsey GS Area	KGS-B	8-Jun-15	NSC	98992	-	900 226000548509	935	1023	7711	-	-
Burntwood River	BWR-A	30-Jun-15	NSC	98992	-	900 226000548509	920	1002	6804	-	-
Burntwood River	BWR-A	4-Jun-12	NSC	102204	-	-	965	1078	7938	-	-
Burntwood River	BWR-B	4-Jun-15	NSC	102204	-	900 226000629560	1030	1111	9299	M	7
Burntwood River	BWR-B	5-Jun-15	NSC	102204	-	900 226000629560	-	-	-	-	-
Burntwood River	BWR-B	6-Jun-15	NSC	102204	-	900 226000629560	-	-	-	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Burntwood River	BWR-A	9-Jun-12	NSC	102215	-	-	956	1065	7711	M	8
Burntwood River	BWR-A	10-Jun-15	NSC	102215	-	900 226000628751	990	1100	7711	M	8
Burntwood River	BWR-A	4-Jun-13	NSC	88698	-	900 226000548394	890	1027	7031	-	-
Kelsey GS Area	KGS-D	9-Jun-15	NSC	88698	-	900 226000548394	928	1045	7257	-	-
Kelsey GS Area	KGS-A	30-May-07	NSC	74780	-	-	1246	1350	16329	M	8
Kelsey GS Area	KGS-B	1-Jun-07	NSC	74780	-	-	-	-	-	-	-
Kelsey GS Area	KGS-D	10-Jun-07	NSC	74780	-	-	-	-	-	-	-
Kelsey GS Area	KGS-A	8-Jun-15	NSC	74780	-	900 226000548504	1285	1391	14515	-	-
Kelsey GS Area	KGS-B	30-May-07	NSC	74781	-	-	810	990	4990	-	-
Kelsey GS Area	KGS-B	11-Jun-13	NSC	74781	-	900 226000548004	1041	1145	13381	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	74781	-	900 226000548004	1085	1195	13154	-	-
Burntwood River	BWR-A	9-Jun-06	NSC	80042	80043	-	833	933	4082	-	-
Burntwood River	BWR-A	18-Jun-06	NSC	80042	80043	-	-	-	-	-	-
Kelsey GS Area	KGS-A	12-Jun-15	NSC	80042	80043	900 226000548648	1070	1184	10886	-	-
Burntwood River	BWR-A	11-Jun-06	NSC	80050	80051	-	1051	1165	10433	M	8
Burntwood River	BWR-A	24-Jun-06	NSC	80050	80051	-	-	-	-	-	-
Kelsey GS Area	KGS-B	15-Jun-15	NSC	80050	-	900 226000548649	1166	1280	13608	-	-
Kelsey GS Area	BR-D	30-May-06	NSC	80279	80280	900 226000548664	830	900	4600	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	80279	80280	900 226000548664	1110	1220	11567	-	-
Kelsey GS Area	KGS-B	29-Jun-13	NSC	81991	-	900 226000548130	726	819	4763	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	81991	-	900 226000548130	788	883	4082	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Gull Lake	GL-B	31-Aug-06	NSC	82631	-	-	750	827	2722	-	-
Nelson River (CL-GR)	BR-D	9-Jun-11	NSC	82631	-	-	867	953	6124	-	-
Kelsey GS Area	KGS-A	3-Jun-13	NSC	82631	-	900 226000548029	898	993	6123	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	82631	-	900 226000548029	912	1013	5897	-	-
Kelsey GS Area	KGS-A	26-Jun-11	NSC	88616	-	-	952	1068	6900	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	88616	-	900 226000548745	1045	1175	9979	-	-
Burntwood River	BWR-A	5-Jun-13	NSC	88699	-	900 226000548446	934	1047	7031	M	8
Kelsey GS Area	KGS-A	23-Jun-15	NSC	88699	-	900 226000548446	973	1084	8165	-	-
Burntwood River	BWR-A	3-Jun-15	NSC	89064	-	900 226000628971	972	1078	7484	M	7
Kelsey GS Area	KGS-C	12-Jun-15	NSC	89064	-	900 226000628971	985	1080	6804	M	8
Kelsey GS Area	KGS-C	16-Jun-13	NSC	91362	-	900 226000548242	874	978	6123	-	-
Kelsey GS Area	KGS-A	24-Jun-15	NSC	91362	-	900 226000548242	918	1023	6350	-	-
Kelsey GS Area	KGS-A	29-Jun-15	NSC	91362	-	900 226000548242	-	-	-	-	-
Kelsey GS Area	KGS-B	18-Jun-13	NSC	91363	-	900 226000548191	905	1001	6804	-	-
Kelsey GS Area	KGS-A	3-Jun-15	NSC	91363	-	900 226000548191	951	1052	7711	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	91363	-	900 226000548191	-	-	-	-	-
Kelsey GS Area	KGS-A	21-Jun-13	NSC	91369	-	900 226000548123	885	997	7484	-	-
Kelsey GS Area	KGS-A	3-Jun-15	NSC	91369	-	900 226000548123	921	1046	8391	-	-
Kelsey GS Area	KGS-A	21-Jun-13	NSC	91372	-	900 226000548083	842	956	6577	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	91372	-	900 226000548083	895	1010	6350	-	-
Kelsey GS Area	KGS-A	1-Jun-13	NSC	91661	-	900 226000548207	865	963	6804	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-A	23-Jun-15	NSC	91661	-	-	-	-	-	-	-
Kelsey GS Area	KGS-A	2-Jun-13	NSC	91666	-	900 226000548192	890	1016	7257	-	-
Kelsey GS Area	KGS-A	31-May-15	NSC	91666	-	900 226000548192	919	1045	6804	-	-
Kelsey GS Area	KGS-A	2-Jun-13	NSC	91668	-	900 226000548023	836	949	5443	-	-
Kelsey GS Area	KGS-A	6-Jun-15	NSC	91668	-	900 226000548023	910	1034	7031	-	-
Kelsey GS Area	KGS-A	2-Jun-13	NSC	91674	-	900 226000548080	888	1000	7257	-	-
Kelsey GS Area	KGS-A	15-Jun-15	NSC	91674	-	900 226000548080	944	1057	7257	-	-
Kelsey GS Area	KGS-A	25-Jun-15	NSC	91674	-	900 226000548080	-	-	-	-	-
Kelsey GS Area	KGS-C	3-Jun-13	NSC	91675	-	900 226000548164	928	1037	6804	-	-
Kelsey GS Area	KGS-B	14-Jun-15	NSC	91675	-	900 226000548164	934	1062	5443	-	-
Kelsey GS Area	KGS-A	3-Jun-13	NSC	93877	-	900 226000548066	900	1000	7711	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	93877	-	900 226000548066	920	1020	6350	-	-
Kelsey GS Area	KGS-C	4-Jun-13	NSC	93882	-	900 226000548054	905	1003	5670	-	-
Kelsey GS Area	KGS-A	27-Jun-15	NSC	93882	-	900 226000548054	933	1013	7031	-	-
Kelsey GS Area	KGS-A	7-Jun-13	NSC	93896	-	900 226000548051	1005	1138	10206	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	93896	-	900 226000548051	1034	1173	8618	-	-
Nelson River (CL-GR)	BR-D	8-Jun-10	NSC	94030	-	-	900	998	6350	-	-
Nelson River (CL-GR)	BR-D	13-Jun-11	NSC	94030	-	-	915	1016	6804	M	7
Nelson River (CL-GR)	BR-D	9-Jun-14	NSC	94030	-	-	980	1085	9299	M	8
Kelsey GS Area	KGS-B	11-Jun-15	NSC	94030	-	900 226000548561	1009	1110	8165	-	-
Kelsey GS Area	KGS-B	13-Jun-15	NSC	94030	-	900 226000548561	-	-	-	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-A	26-Jun-13	NSC	94148	-	900 226000548050	821	930	4649	-	-
Kelsey GS Area	KGS-A	23-Jun-15	NSC	94148	-	900 226000548050	891	997	4990	-	-
Kelsey GS Area	KGS-A	16-Jun-11	NSC	94456	-	-	925	1025	10121	-	-
Kelsey GS Area	KGS-A	5-Jun-13	NSC	94456	-	900 226000548247	990	1100	10433	-	-
Kelsey GS Area	KGS-B	8-Jun-15	NSC	94456	-	900 226000548247	1035	1140	9979	-	-
Kelsey GS Area	KGS-C	10-Jun-11	NSC	94474	-	-	963	1074	9525	-	-
Kelsey GS Area	KGS-A	2-Jun-13	NSC	94474	-	900 226000548199	1040	1163	10886	-	-
Kelsey GS Area	KGS-A	18-Jun-15	NSC	94474	-	900 226000548199	1091	1203	11340	-	-
Kelsey GS Area	KGS-A	21-Jun-11	NSC	94846	-	-	980	1080	9525	-	-
Kelsey GS Area	KGS-B	14-Jun-13	NSC	94846	-	900 226000548155	1040	1159	10886	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	94846	-	900 226000548155	1070	1173	9525	-	-
Gull Lake	GL-B	23-Sep-11	NSC	94871	-	-	760	853	3500	-	-
Kelsey GS Area	KGS-A	22-Jun-15	NSC	94871	-	900 226000548557	818	911	4082	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98606	-	900 226000548580	837	940	4763	-	-
Kelsey GS Area	KGS-A	29-May-15	NSC	98606	-	900 226000548580	-	-	-	-	-
Kelsey GS Area	KGS-A	28-May-15	NSC	98608	-	900 226000548545	1121	1235	11340	-	-
Kelsey GS Area	KGS-A	6-Jun-15	NSC	98608	-	900 226000548545	-	-	-	-	-
Kelsey GS Area	KGS-A	16-Jun-15	NSC	98608	-	900 226000548545	-	-	-	-	-
Kelsey GS Area	KGS-A	31-May-15	NSC	98616	-	900 226000548581	997	1115	9752	-	-
Kelsey GS Area	KGS-A	6-Jun-15	NSC	98616	-	900 226000548581	-	-	-	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98618	-	900 226000548663	815	905	4990	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-A	10-Jun-15	NSC	98618	-	900 226000548663	-	-	-	-	-
Kelsey GS Area	KGS-B	17-Jun-15	NSC	98618	-	900 226000548663	-	-	-	-	-
Kelsey GS Area	KGS-A	25-Jun-15	NSC	98618	-	900 226000548663	-	-	-	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98619	-	900 226000548527	1036	1140	8165	-	-
Kelsey GS Area	KGS-A	14-Jun-15	NSC	98619	-	900 226000548527	-	-	-	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98620	-	900 226000548709	984	1110	839	-	-
Kelsey GS Area	KGS-A	7-Jun-15	NSC	98620	-	900 226000548709	-	-	-	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	98621	-	900 226000548524	809	890	4536	-	-
Kelsey GS Area	KGS-B	20-Jun-15	NSC	98621	-	900 226000548524	-	-	-	-	-
Kelsey GS Area	KGS-C	12-Jun-15	NSC	98649	-	900 226000548665	1007	1133	7711	-	-
Kelsey GS Area	KGS-C	13-Jun-15	NSC	98649	-	900 226000548665	-	-	-	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98978	-	900 226000548657	906	1025	8391	-	-
Kelsey GS Area	KGS-B	19-Jun-15	NSC	98978	-	900 226000548657	-	-	-	-	-
Kelsey GS Area	KGS-A	4-Jun-15	NSC	98980	-	900 226000548610	894	950	7257	-	-
Kelsey GS Area	KGS-A	17-Jun-15	NSC	98980	-	900 226000548610	-	-	-	-	-
Kelsey GS Area	KGS-C	6-Jun-15	NSC	98986	-	900 226000548554	966	1054	7257	-	-
Kelsey GS Area	KGS-D	16-Jun-15	NSC	98986	-	900 226000548554	-	-	-	-	-
Kelsey GS Area	KGS-B	6-Jun-15	NSC	98987	-	900 226000548556	1048	1180	9752	-	-
Kelsey GS Area	KGS-B	7-Jun-15	NSC	98987	-	900 226000548556	-	-	-	-	-
Kelsey GS Area	KGS-B	9-Jun-15	NSC	98994	-	900 226000548616	970	1076	6350	-	-

Table A2-1: Tagging and biological information for Lake Sturgeon recaptured in the Upper Split Lake Area, spring 2015 (continued).

Location	Zone	Date	Prefix	Floy tag 1	Floy tag 2	PIT Tag	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex	Maturity
Kelsey GS Area	KGS-B	12-Jun-15	NSC	98994	-	900 226000548616	-	-	-	-	-
Kelsey GS Area	KGS-B	9-Jun-15	NSC	98995	-	900 226000548623	970	1085	8165	-	-
Kelsey GS Area	KGS-B	16-Jun-15	NSC	98995	-	900 226000548623	-	-	-	-	-
Nelson River (BR-GR)	BR-D	23-Jun-14	NSC	101447	-	900 226000629123	1045	1167	9072	-	-
Kelsey GS Area	KGS-A	1-Jun-15	NSC	101447	-	900 226000629123	1050	1192	9979	-	-
Kelsey GS Area	KGS-A	7Jun-15	NSC	101447	-	900 226000629123	-	-	-	-	-
Kelsey GS Area	KGS-A	24-Jun-15	NSC	101447	-	900 226000629123	-	-	-	-	-
Burntwood River	BWR-A	2-Jun-13	NSC	88689	-	900 226000548350	1165	1279	16329	F	2
Split Lake	SPL-A	24-Jun-15	NSC	88689	-	900 226000548350	1165	1275	14061	-	-
Burntwood River	BWR-A	1-Jun-15	NSC	89061	-	900 226000703360	1004	1099	8618	M	7
Split Lake	SPL-A	24-Jun-15	NSC	89061	-	900 226000703360	1012	1109	7257	-	-

APPENDIX 3:
POPULATION ESTIMATE INFORMATION

Table A3-1: Results of POPAN analysis of adult Lake Sturgeon from the Burntwood River. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	Standard Error	95% Confidence Interval	
			Low	High
$Survival_{(constant)}$	0.87	0.02	0.82	0.91
$Recapture_{(low)}$	0.09	0.02	0.07	0.13
$Recapture_{(high)}$	0.21	0.02	0.16	0.25
2001	128.75	25.26	79	178
2002	112.66	23.09	67	158
2003	-	-	-	-
2004	-	-	-	-
2005	170.24	47.40	77	263
2006	215.25	37.14	142	288
2007	390.85	55.52	282	500
2008	-	-	-	-
2009	365.63	50.21	267	464
2010	362.88	66.74	232	494
2011	393.50	46.61	302	485
2012	344.31	46.79	253	436
2013	546.05	70.09	409	683
2014	-	-	-	-
2015	570.24	73.50	426	714

Table A3-2: Results of PRADEL Lambda Jolly-Seber analysis of adult Lake Sturgeon from the Burntwood River. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	Standard Error	95% Confidence Interval	
			Low	High
$\Phi_{(constant)}$	0.88	0.02	0.83	0.92
$Recapture_{(low)}$	0.06	0.01	0.04	0.10
$Recapture_{(high)}$	0.21	0.02	0.17	0.27
2002	0.25	0.09	0.13	0.49
2005	1.46	0.19	1.14	1.88
2006	0.87	0.30	0.46	1.66
2007	1.82	0.29	1.33	2.49
2009	0.97	0.06	0.85	1.10
2010	1.38	0.33	0.86	2.20
2011	0.81	0.19	0.51	1.27
2012	1.17	0.26	0.76	1.79
2013	1.20	0.26	0.79	1.84
2015	1.02	0.05	0.93	1.13

Table A3-3: Results of POPAN analysis of adult Lake Sturgeon from the Kelsey GS Area. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	Standard Error	95% Confidence Interval	
			Low	High
$Survival_{(constant)}$	0.75	0.04	0.67	0.81
$Recapture_{(low)}$	0.03	0.01	0.02	0.06
$Recapture_{(mid)}$	0.15	0.03	0.10	0.22
$Recapture_{(high)}$	0.32	0.07	0.21	0.47
2001	299.67	112.21	80	520
2002	225.05	85.72	57	393
2003	-	-	-	-
2004	-	-	-	-
2005	568.46	118.52	336	801
2006	426.91	95.80	239	615
2007	446.41	92.74	265	628
2008	-	-	-	-
2009	289.76	61.82	169	411
2010	-	-	-	-
2011	291.77	65.21	164	420
2012	-	-	-	-
2013	382.49	83.64	219	546
2014	-	-	-	-
2015	426.09	87.79	254	598

Table A3-4: Results of PRADEL Lambda Jolly-Seber analysis of adult Lake Sturgeon from the Kelsey GS Area. Best model was constant survival and variable recapture. Confidence intervals are rounded.

Parameter	Mean	Standard Error	95% Confidence Interval	
			Low	High
$\Phi_{(constant)}$	0.76	0.04	0.68	0.82
$Recapture_{(low)}$	0.00	0.00	0.00	0.34
$Recapture_{(mid)}$	0.15	0.03	0.10	0.22
$Recapture_{(high)}$	0.32	0.07	0.20	0.46
2002	0.38	0.20	0.15	1.01
2005	1.59	0.26	1.15	2.20
2006	0.00	0.00	0.00	0.00
2007	1.05	0.16	0.78	1.43
2009	0.81	0.07	0.69	0.95
2011	1.01	0.09	0.84	1.20
2013	1.15	0.14	0.91	1.46
2015	1.05	0.05	0.95	1.17

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