



Keeyask Generation Project Fisheries Offsetting and Mitigation Plan

Lake Sturgeon Production and Stocking Report

FOMP-2019-01



KEEYASK GENERATION PROJECT

FISHERIES OFF-SETTING AND MITIGATION PLAN

REPORT #FOMP-2019-01

LAKE STURGEON PRODUCTION AND STOCKING SUMMARY FOR BIRTHDAY RAPIDS AND BURNTWOOD RIVER POPULATIONS

NOVEMBER 2017 TO OCTOBER 2018: YEAR 5 CONSTRUCTION

Prepared for

Manitoba Hydro

By

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SUMMARY

Background

Construction of the Keeyask Generation Project at Gull Rapids began in July 2014. Before government allowed construction to begin, the owner, Keeyask Hydropower Limited Partnership (KHLP), had to prepare a plan outlining activities that could reduce the potential effects of the Keeyask Generation Project on fish and water quality in the Nelson River (the Fisheries Off-setting and Mitigation Plan, FOMP). The plan also explained how the proposed activities would be completed and monitored.

Activities directed at Lake Sturgeon (*Namao* in Cree) were included in the plan because of its importance to the partner First Nations, because the population in Gull and Stephens lakes were low before the Project, and because the generating station will change or destroy habitat. Spawning habitat at Gull Rapids is being lost due to construction of the generating station. Reservoir impoundment will raise water levels, which will change spawning habitat at Birthday Rapids and altered flows will change young-of-the-year habitat in Stephens Lake.

In April 2017, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reviewed and maintained the previous (2006) recommendation of listing the Nelson River population of Lake Sturgeon as Endangered. The goal of the KHLP is to have self-sustaining populations of Lake Sturgeon in this area in the future. To help achieve this, the KHLP has made a commitment to produce and release hatchery-reared sturgeon into the Keeyask area (i.e., future Keeyask reservoir and Stephens Lake) and the Burntwood River until there is a self-sustaining population.

This summary describes the hatchery production and stocking activities of Lake Sturgeon from November 2017 to October 2018.

Stocking Program

Lake Sturgeon are produced at the Grand Rapids Fish Hatchery (GRFH) located in Grand Rapids, MB from the eggs and milt (sperm) of wild adults. Offspring are reared in fiberglass troughs using well water. Fish are started on a diet of newly hatched brine shrimp and later transitioned to frozen bloodworm.

Lake Sturgeon have typically been released as larvae (less than 1 month old) and fingerlings (3-4 months old) when lack of tank space limits fish growth. At these stages, fish are not large enough to be marked. Instead, tissue samples from individuals representing each family group are preserved to provide a genetic “fingerprint”, allowing future identification of stocked individuals. Beginning in 2018, at the recommendation of fish health experts, provincial regulators no longer accept virus test results for Lake Sturgeon until after they have reached a minimum age of 9 weeks post-hatch. Therefore, approvals to release the larvae cannot be

obtained and density reductions during the first 9 weeks of development are achieved through fish culls.

Each year some of the fingerlings are kept over winter at GRFH and released as yearlings (12 to 15 months old). Prior to release, yearlings are marked with uniquely numbered Passive Integrated Transponder (PIT) tags (8 mm long x 1.4 mm diameter) inserted into the muscle along the fish's back. PIT tag scanners held over the fish can detect a tag and display the number on a screen. This marking technique helps to identify hatchery-reared fish caught in the river and can be used to assess the movement and growth of individual fish following stocking.

Effort is made to produce Lake Sturgeon in the hatchery that are genetically similar to individuals hatched in the wild. A recent high resolution genetics study on the Nelson River detected differences between populations of Lake Sturgeon located close together geographically (Gosselin et al. 2014). Therefore, eggs are mixed with the milt of males collected at the same spawning location as the female. The offspring of each pairing are then released into areas where both parents are known to inhabit. For example, offspring produced from the pairing of males and females collected in the Burntwood River are stocked back into the Burntwood River.

Since 2013, when the KHLP began producing Lake Sturgeon, a large number of larvae, fingerlings and yearlings have been stocked (see table below). GRFH operates under provincially issued Live Fish Handling Permits. Stocking approvals are granted by Manitoba Sustainable Development.

Summary of Lake Sturgeon stocking in the Keeyask area since 2014

Year	Burntwood River			Future Keeyask Reservoir			Stephens Lake		
	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1
2014	0	0	595	152,926	4,656	0	0	0	0
2015	0	0	0	0	0	423	0	0	418
2016	0	0	23	192,167	780	0	184,134	799	0
2017	71,740	3,765	0	0	0	463	0	0	720
2018	0	0	739	0	933	0	0	1,009	0
Total	71,740	3,765	1,357	345,093	6,369	886	184,134	1,808	1,138

BURNTWOOD RIVER (2017 YEAR-CLASS)

Hatchery Production

Eggs and milt were collected in spring 2017 from spawning adults captured below First Rapids. A total of 745 Birthday Rapids fingerlings were kept at the hatchery for the 2017/18 winter. Survival from the beginning of November 2017 until the spring stocking in May/June 2018 was over 95%.

Stocking

On May 31, 2018 a total of 362 Lake Sturgeon yearlings were transported by truck to the Orr Creek boat launch located on the Burntwood River and released from shore. This was due to poor weather conditions that did not allow for release by boat (Site 1, see map below).

On June 7, 2018 another 377 yearlings were transported by truck to the Orr Creek boat launch. Of those, 357 fish were released by boat at a single location downstream of First Rapids with assistance from Manitoba Hydro's boat patrol crews (Site 2, see map below). The remaining 20 sturgeon were stocked from shore in a ceremonial release event (Site 1, see map below).

Yearlings had an average total length of 25 cm (range: 16 to 34 cm) and average weight of 68 g (range: 15 to 145 g).



Stocking sites for Burntwood River (2017 year-class) released in spring 2018 (Sites 1, 2). Yearlings were the offspring of spawning adults collected at First Rapids (Site A).

BIRTHDAY RAPIDS POPULATION (2018 YEAR-CLASS)

Spawn Camp

Wild Lake Sturgeon adults were captured using gill nets set downstream of Birthday Rapids in June 2018. Adults identified as spawning fish were maintained in tanks along the shore of the Nelson River for several days. Selected adults received a small dose of hormone to facilitate the release of eggs and milt. Use of this product does not present a threat to the Lake Sturgeon or to humans. The hormone is produced by the fish naturally and is present within their body during spawn. This method has been successfully used by other sturgeon conservation

programs in North America and helps to synchronize egg and milt collection for fertilization activities at the spawn camp.

The first sign of eggs is typically 36 hours following hormone injection. In 2018, the first eggs were observed approximately 50 hours following the injection, an outcome likely due to cooler than average river temperatures. Late in the day on June 6, the milt of 4 males was mixed with the eggs from 1 female to create 4 family groups (F1/M1, F1/M2, F1/M3, F1/M4). A total of 2.1 L of eggs (unfertilized) was collected. Due to space constraints at GRFH, approximately 600 ml of eggs were left at the spawn camp and fertilized/released at Birthday Rapids. The number of fertilized eggs transported to GRFH the following day on June 7 was estimated to be 144,335.

Following egg collection, recovery of the female was monitored closely and she was released in good health. Prior to release the female was implanted with an acoustic tag and she was detected a number of times throughout the summer and fall. The males were released immediately following milt collection. Virus testing of the broodstock revealed that M2 was positive for Namao Virus. All other broodstock and the offspring tested negative for the virus.

Hatchery Production

Prior to entering GRFH, the sturgeon eggs were soaked in a disinfectant for 10 minutes to kill any potential pathogens (e.g., viruses) that may have attached to the surface of the egg during fertilization and/or transportation. Five days following fertilization, eggs were checked for viability. The percentage of viable eggs among all four family groups was high (>80%). Hatch began on June 16 resulting in an estimated 124,765 larvae (86% hatch success).

From the point of hatch to the end of October, monthly survival rates were typically greater than 70% and approached 100% in the months leading up to the fall stocking. The month of July was an exception when unusually high mortality was experienced by some family groups. It is speculated that the small larval sizes in July may have resulted in some fish not being able to transition successfully onto bloodworm. Fish counting and sorting activities that occurred in early July may have also been a contributing factor.

Given the new virus testing criteria (i.e., sampling at least 9 weeks post-hatch), an estimated 82,000 larvae were culled in early July due to space constraints in the hatchery. Another six individuals were euthanized in October by hatchery staff for testing due to concerns about the health of the fish. Analysis by the province's Veterinary Diagnostic Services Laboratory concluded symptoms were the likely result of dermatitis due to unfavourable rearing conditions (although water quality and densities were at or within acceptable targets at the time). Symptoms have since disappeared from all but 3 fish.

Following the fingerling release in October, a total of 803 fish from the Birthday Rapids population were kept at GRFH for further growth over the winter.

Stocking

On September 26, 2018 a total of 958 fingerlings were transported by truck to the Keeyask camp and released from shore into Stephens Lake due to poor weather conditions that did not allow for release by boat (Site 1, see map below).

On September 28, 2018 a total of 51 fingerlings were transported by plane to Gillam, MB for a Kischi Sipi Namao Committee release event at the Butnau Marina. Fish were released from shore into Stephens Lake (Site 2, see map below).

On October 10, 2018 another 933 fingerlings were transported by truck to the Keeyask camp and released into the future Keeyask reservoir with assistance from Manitoba Hydro's boat patrol crews (Site 3, see map below).

Fingerlings had an average total length of 10 cm (range: 8 to 12 cm) and average weight of 4 g (range: 2 to 7 g)



Stocking sites for Birthday Rapids Lake Sturgeon (2018 year-class) released in September 2018 (Sites 1, 2) and October 2018 (Sites 3). Fish were the offspring of spawning adults collected at Birthday Rapids (Site A)

Future Activities

Hatchery-reared sturgeon from the Birthday Rapids population will be released as yearlings back into the Keeyask area in 2019, pending provincial approval. Egg and milt collection from wild adults will take place in the Burntwood River at First Rapids during spring 2019.

A final design for the Grand Rapids Fish Hatchery upgrade and expansion project is expected to be completed in early 2019 with construction anticipated to begin in fall 2019. This project is

being undertaken to increase the number of yearling Lake Sturgeon that can be produced at the hatchery and to improve the rearing conditions for the fish. Upgrades are also necessary to reach national and provincial biosecurity standards, which have been developed to reduce the risk of pathogens (e.g., virus) from entering a facility and spreading.

PRODUCTION AND STOCKING TEAM

Grand Rapids Fish Hatchery

- Yhana Michaluk, Fish Culture Supervisor
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- Cory Ferland, Fish Culturist
- Jesse Scott, Assistant Fish Culturist
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Environmental Licensing and Protection Department

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- Leslie Flett (TCN)
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Sustainable Sturgeon Culture

- Joe Hunter (Rainy River First Nation)

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	BURNTWOOD RIVER POPULATION (2017 YEAR-CLASS).....	5
2.1	PAST PRODUCTION AND STOCKING	5
2.2	PRODUCTION	5
2.2.1	Winter	5
2.3	STOCKING	10
2.3.1	Spring.....	10
3.0	BIRTHDAY RAPIDS POPULATION (2018 YEAR-CLASS).....	12
3.1	SPAWN CAMP	12
3.1.1	Broodstock Collection	12
3.1.2	Egg and Milt Collection	13
3.1.3	Broodstock Health	14
3.2	PRODUCTION	15
3.2.1	Egg Incubation and Hatch	15
3.2.2	Larvae and Fingerlings	15
3.2.3	Fingerling Health	19
3.3	STOCKING	19
3.3.1	Fall	19
4.0	POST-STOCKING RECAPTURES	22
5.0	PRODUCTION AND STOCKING ACTIVITIES IN 2018/19	24
6.0	LITERATURE CITED.....	25

LIST OF TABLES

Table 1:	Summary of Lake Sturgeon stocking in the lower Nelson and Burntwood rivers since 2014	3
Table 2:	Number of Burntwood River sturgeon (2017 year-class) released into the Burntwood River in spring 2018	10
Table 3:	Broodstock tag numbers, weight and GnRH dose used during gamete collection in the Nelson River at Birthday Rapids, June 2018	12
Table 4:	Number of Birthday Rapids sturgeon (2018 year-class) released into the Keeyask area in 2018	20
Table 5:	Number of Lake Sturgeon yearlings stocked into the lower Nelson and Burntwood rivers and number recaptured between 2014 and 2018	22
Table A1-1:	Survival (%) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018	28
Table A1-2:	Monthly average (\pm SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Burntwood River Sturgeon (2017 year-class) reared at Grand Rapids Fish Hatchery	29
Table A1-3:	Monthly average (\pm SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Burntwood River Lake Sturgeon (2017 year-class) reared at Grand Rapids Fish Hatchery	31
Table A1-4:	Biological and PIT tag information for hatchery-reared Lake Sturgeon yearlings released into the Burntwood River in 2018	32
Table A2-1:	Survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from June 17 (hatch) to October 31, 2018	61
Table A2-2:	Monthly average (\pm SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Birthday Rapids Sturgeon (2018 year-class) reared at Grand Rapids Fish Hatchery	62
Table A2-3:	Monthly average (\pm SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Birthday Rapids Lake Sturgeon (2018 year-class) reared at Grand Rapids Fish Hatchery	63
Table A3-1:	Reported Lake Sturgeon threshold values for Dissolved Oxygen, Dissolved Carbon Dioxide, pH, Ammonia-Nitrogen and Nitrite Nitrogen	65

LIST OF FIGURES

Figure 1:	Monthly survival (%) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018.....	6
Figure 2:	Average daily water temperature (°C) in rearing troughs holding Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018	7
Figure 3:	Average rearing density (fish per m ²) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018	7
Figure 4:	Average monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO ₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO ₂ -N) values in rearing troughs holding Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018.....	8
Figure 5:	Average total length (mm) and weight (g) for Burntwood River sturgeon (2017 year-class) at GRFH from November 2017 to the end of May 2018	9
Figure 6:	Average daily water temperature (°C) in rearing troughs holding Birthday Rapids (2018 year-class) at GRFH from June 7 to October 31, 2018.....	15
Figure 7:	Monthly survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from June 7 to October 31, 2018. July survival is following the fish cull.	16
Figure 8:	Average total length (mm) and weight (g) for Birthday Rapids sturgeon (2018 year-class) at GRFH from July to the end of October, 2018	16
Figure 9:	Average rearing density (fish per m ²) of Birthday Rapids sturgeon (2018 year-class) at GRFH from July to the end of October 2018	17
Figure 10:	Average monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO ₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO ₂ -N) values in rearing troughs holding Birthday Rapids sturgeon (2018 year-class) at GRFH from June 7 to the end of October 2017. Solid and dashed lines indicate lower and upper thresholds, respectively.....	18

LIST OF MAPS

Map 1:	Location of Keeyask Generation Project and Grand Rapids Fish Hatchery.....	2
Map 2:	Stocking locations for Burntwood River sturgeon (2017 year-class) released into the Burntwood River in spring 2018. First Rapids is marked as 'A'.....	11
Map 3:	Stocking locations for Birthday Rapids sturgeon (2018 year-class) released into the Future Keeyask Reservoir and Stephens Lake. Birthday Rapids is marked as 'A'.....	21

LIST OF PHOTOS

Photo 1:	GRFH rearing troughs used for Lake Sturgeon production.....	4
Photo 2:	Equipment used to test dissolved oxygen (A), dissolved carbon dioxide (B), pH (C), total ammonia nitrogen (D) and nitrite-nitrogen (E) at GRFH	9
Photo 3:	Kischi Sipi Namao Committee stocking event at the Orr Creek boat launch (Burntwood River) on June 7, 2018.....	11
Photo 4:	Broodstock holding tanks at the lower Nelson River spawn camp, June 2018	13

LIST OF APPENDICES

Appendix 1: Burntwood River (2017 Year-Class)	27
Appendix 2: Birthday Rapids (2018 Year-Class)	60
Appendix 3: Water Quality Thresholds	64

1.0 INTRODUCTION

In June 2012, the Keeyask Hydropower Limited Partnership (KHLP) filed an Environmental Impact Statement (EIS) in support of the Keeyask Generation Project (the Project), a 695 megawatt hydroelectric generating station (GS) to be built at Gull Rapids on the Nelson River (Map 1). Construction of the Project began in July 2014 following regulatory approval.

As discussed in the EIS, construction and operation of the Project will result in the alternation and destruction of Lake Sturgeon habitat, thereby potentially affecting regional populations.

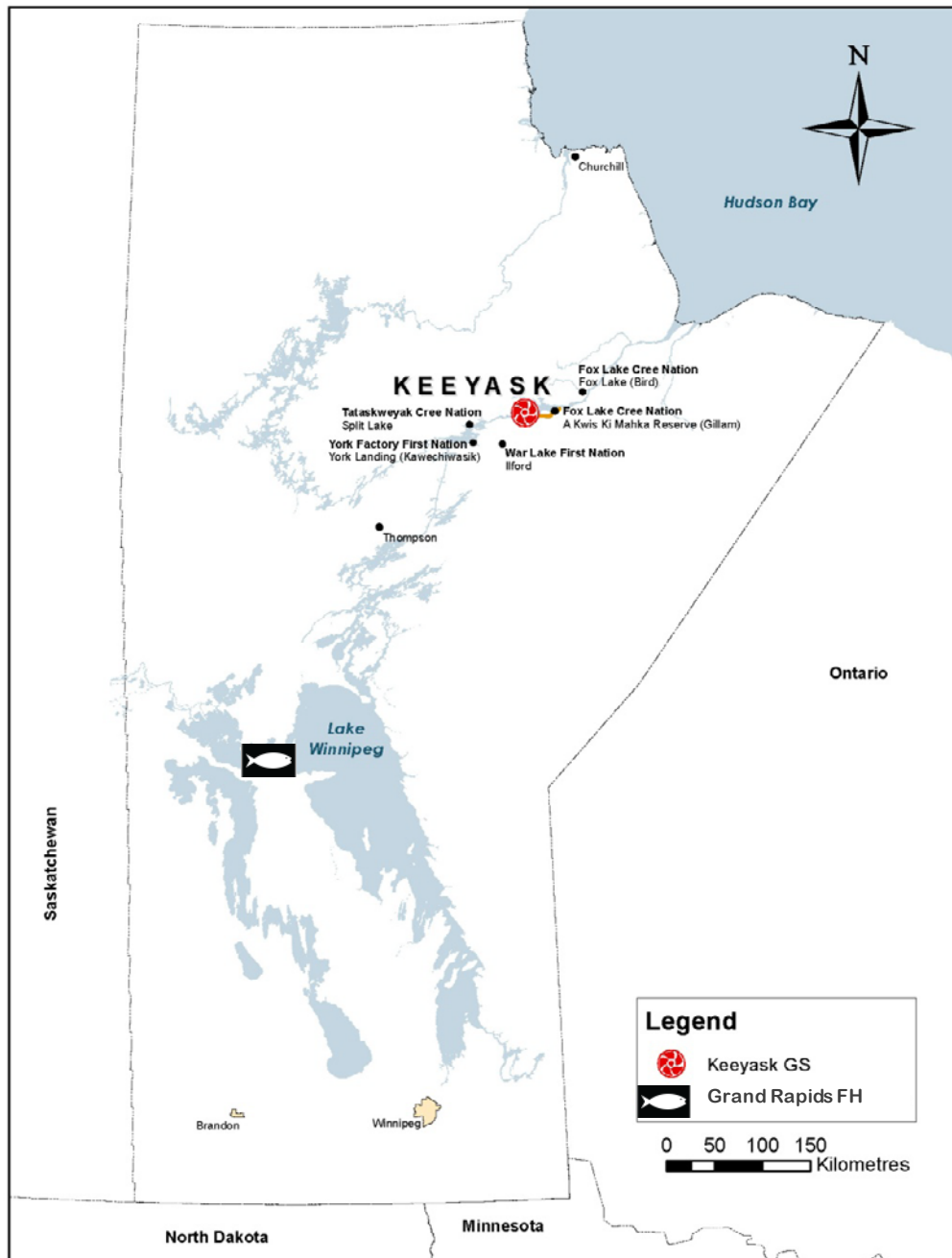
To mitigate impacts of the Project, the KHLP has developed a strategy that involves several components, including:

- management measures during construction to avoid mortality of sturgeon;
- stocking of sturgeon into Stephens Lake during construction to offset potential effects of the loss of spawning habitat in Gull Rapids;
- spawning habitat creation in the tailrace of the GS;
- alternations to habitat upstream of Birthday Rapids, if post-Project monitoring demonstrates that this area is no longer suitable for spawning sturgeon;
- creation of young-of-the-year rearing habitat at the upper end of Gull Lake following impoundment, if post-Project monitoring demonstrates that suitable habitat is not available;
- on-going studies to determine requirements (if any) for upstream fish passage;
- the use of monitoring of downstream movements and mortality to determine the need for any additional fish protection measures related to downstream passage at the GS;
- a conservation stocking program, with the objective of re-establishing a self-sustaining Lake Sturgeon population; and
- a conservation awareness program, highlighting the vulnerability of Lake Sturgeon.

Stocking was identified as being critically important because Stephens Lake may be able to support more Lake Sturgeon than are currently present. Therefore, a conservation stocking plan for the lower Nelson and Burntwood rivers was designed to address:

- existing low population numbers due to historic effects, in particular a commercial fishery that closed in 1992;
- potential effects of creation of the Keeyask reservoir, including possible emigration of adult Lake Sturgeon in response to water level changes at impoundment, and reduced year-class strength in the initial years of impoundment due to changes in spawning and young-of-the-year habitat. These effects are predicted to be restricted to the first years of impoundment, if they occur at all; and

- potential decrease in year-class strength of sturgeon in Stephens Lake, due to the alteration and ultimate loss of spawning habitat in Gull Rapids during construction of the GS. This effect is offset during the operation phase by the constructed spawning habitat.



Map 1: Location of Keeyask Generation Project and Grand Rapids Fish Hatchery

An initial 10-year stocking plan was developed and described in the Fisheries Offsetting and Mitigation Plan (FOMP). During the initial 10-year plan, the number of sturgeon released at each developmental stage (larval, fingerling and yearling) will be dependent upon:

- the number of Lake Sturgeon available at each developmental stage;
- the amount of hatchery space available to enable 'normal' growth of fish; and
- the end goal of maintaining 2,000 fingerlings annually through the winter to be released as yearlings the following spring.

Lake Sturgeon stocking in the lower Nelson and Burntwood rivers began in 2014 and has included the release of multiple stages over the years (Table 1).

Table 1: Summary of Lake Sturgeon stocking in the lower Nelson and Burntwood rivers since 2014

Year	Burntwood River			Future Keeyask Reservoir ^a			Stephens Lake		
	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1
2014	0	0	595	152,926	4,656	0	0	0	0
2015	0	0	0	0	0	423	0	0	418
2016	0	0	23	192,167	780	0	184,134	799	0
2017	71,740	3,765	0	0	0	463	0	0	720
2018	0	0	739	0	933	0	0	1,009	0
Total	71,740	3,765	1,357	345,093	6,369	886	184,134	1,808	1,138

^a from Birthday Rapids to Gull Rapids

The Keeyask Fisheries Regulatory Review Committee (which also undertakes the role of Lake Sturgeon Advisory Committee as described in the *Environment Act* licence) may decide to modify the stocking plan based on annual monitoring activities.

Lake Sturgeon stocking in the lower Nelson and Burntwood rivers will continue until self-sustaining populations are established. At present, it is anticipated that stocking will occur for at least one full generation (25 years) to restore the historically depleted population.

To meet the goals outlined in the FOMP, the KHLP is stocking Lake Sturgeon hatched at the Grand Rapids Fish Hatchery (GRFH). The hatchery, located in the community of Grand Rapids, MB (Map 1), was constructed in the early 1970's by the province of Manitoba. The building was originally configured for production of Walleye, Whitefish and a variety of trout species. In 1994, GRFH began producing Lake Sturgeon for the Nelson River Sturgeon Board, in support of efforts to conserve populations in the upper Nelson River. Since 2012, GRFH has focused its production efforts exclusively on Lake Sturgeon and Walleye.

Manitoba Hydro purchased GRFH in 2007 and the facility was operated in partnership with Manitoba Conservation and Water Stewardship (now Manitoba Sustainable Development) through a Joint Management Committee. At the end of 2012, Manitoba Hydro assumed full operation of the hatchery and currently employs 7 permanent and 2 seasonal staff. Operations and regulatory matters are overseen by Manitoba Hydro's Environmental Licensing and Protection Department. Building and equipment maintenance is conducted in partnership with the Grand Rapids Generating Station.

The facility currently houses 18 gray fiberglass rearing troughs measuring 4.6 x 0.55 x 0.25 m (L x W x H; Photo 1). The troughs have been configured to permit the use of both well water and surface water (Cedar Lake). However, current operations are restricted to well water use only due to the potential presence of pathogens (e.g., viruses) within the surface water. Large concrete floor tanks, originally used for fish production, now serve as water reservoirs in a simple sump pump operated water re-circulation system. Water temperature is managed using ambient room temperature and submersible water heaters.



Photo 1: GRFH rearing troughs used for Lake Sturgeon production

Total usable rearing area for Lake Sturgeon is approximately 46 m². Rearing space is currently shared between the two stocking programs: Keeyask Generation Project and the Nelson River Sturgeon Board.

To meet future annual stocking targets, Manitoba Hydro is in the process of upgrading and expanding GRFH. In March 2014, a facility assessment was completed by HDR Inc. which confirmed that the existing infrastructure could not meet projected Lake Sturgeon production commitments. Upgrades are also necessary to reach national and provincial biosecurity standards which have been developed to reduce the risk of pathogens from entering and spreading within the facility. Planning for infrastructure upgrades and expansion of GRFH began at the end of 2014 and is being managed by Manitoba Hydro's Generation Project Management Department. A final design for the Grand Rapids Fish Hatchery upgrade and expansion project is expected to be completed in early 2019 with construction anticipated to begin in fall 2019.

The purpose of this report is to provide a summary of Lake Sturgeon production at Grand Rapids Fish Hatchery and stocking activities for the Keeyask Generation Project in 2017/18.

2.0 BURNTWOOD RIVER POPULATION (2017 YEAR-CLASS)

2.1 PAST PRODUCTION AND STOCKING

Wild Lake Sturgeon adults from the Burntwood River were captured below First Rapids (Map 2) in early June 2017. On June 7 the milt from four males (M1, M2, M4, M5) was mixed with the eggs from two females (F1, F2). The total number of eggs collected was estimated to be 234,100 (F1 = 143,950; F2 = 90,150). The overall percentage of viable eggs was estimated to be 44% (F1 = 71%; F2 < 0.5%) resulting in a total of 102,765 hatched larvae (F1xM1/M2 = 55,809; F1xM4/M5 = 46,956). Due to a low number of viable eggs, all eggs from F2 were discarded to avoid fouling of the system. At the time, unusual looking eggs (large and white) were observed from F2. It has since been determined that these eggs contained *Polypodium hydriforme*, a parasite of sturgeon and paddlefish (Raikova 2002), and this may have been a contributing factor.

Survival during the months of June and July was greater than 80%. Due to space constraints at GRFH, an estimated 71,740 yolk-sac larvae were released at First Rapids on July 20, 2017. At the time of release fish had an average total length of 45 mm (range: 29 to 59 mm) and an average body weight of 0.32 g (range: 0.07 to 0.68 g).

Approximately 4,750 sturgeon were kept at GRFH for further growth. Survival during the months of August, September and October was greater than 95%. On October 12, 2017 a total of 1,836 fingerlings were released into the Burntwood River by boat. On October 18, 2017 a total of 1,929 fingerlings were released into the Burntwood River from shore. At the time of release fingerlings had an average total length of 122 mm (range: 100 to 143 mm) and an average body weight of 7.5 g (range: 4.8 to 12.5 g).

Following the fall stocking event, a total of 745 fingerlings were kept at the hatchery to be released as yearlings.

Klassen et al. (2018) provides additional detail on the past production and stocking events for the Burntwood River sturgeon (2017 year-class).

2.2 PRODUCTION

2.2.1 WINTER

A total of 745 Lake Sturgeon fingerlings were held at GRFH over the 2017/18 winter season for further grow-out (M1/M2 = 370, M4/M5 = 375). Offspring from the M1/M2 and M4/M5 families

were held in separate rearing troughs; however, both groups were contained within the same water recirculation system. Well water was used exclusively to avoid potential contact with pathogens (e.g., viruses) that could be present in surface water. During the winter grow-out, sturgeon were fed frozen bloodworm twice daily to satiation at roughly 08:00 and 13:00.

Overwinter survival of the 2017 year-class was greater than 95% (Figure 1). There were 12 natural mortalities (M1/M2 = 6; M4/M5 = 6) and 6 fish that had to be euthanized due to fish health concerns (M1/M2 = 1; M4/M5 = 5; Table A1-1).

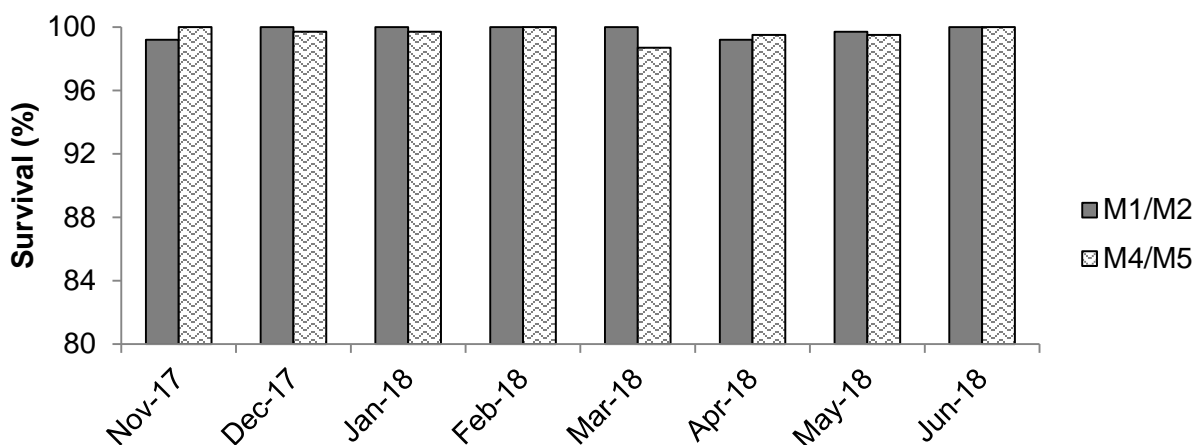


Figure 1: Monthly survival (%) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018

Average water temperature was 13.6°C (range: 8.4°C to 16.6°C) from November 1, 2017 to the final yearling release on June 7, 2018 (Figure 2). Temperatures were kept below 16°C for the majority of winter to 1) maintain low ammonia levels, 2) avoid overcrowding in tanks due to rapid growth, and 3) reduce operational costs by feeding less bloodworm. Prior to the spring yearling stocking, water temperatures were adjusted in the hatchery to match ambient river temperatures in the Burntwood River.

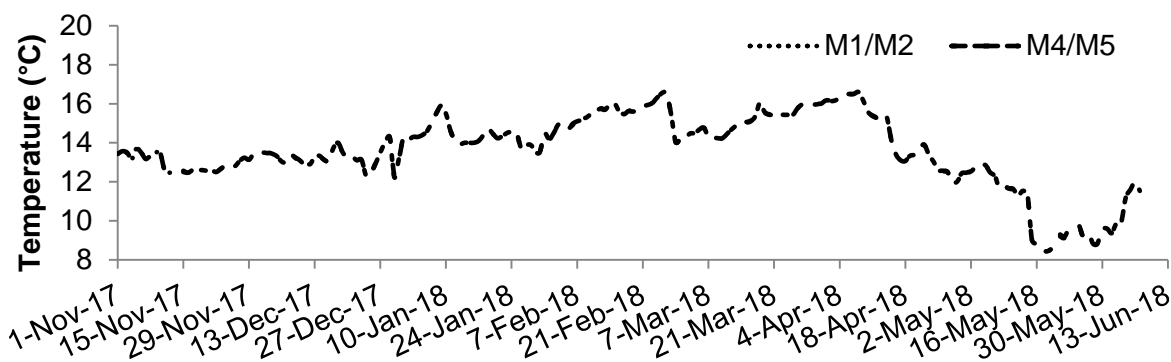


Figure 2: Average daily water temperature (°C) in rearing troughs holding Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018

Rearing densities remained below or at target levels prior to the spring stocking in June (Figure 3). Prior to release, the number of fish in each rearing trough ranged from 120 to 137.

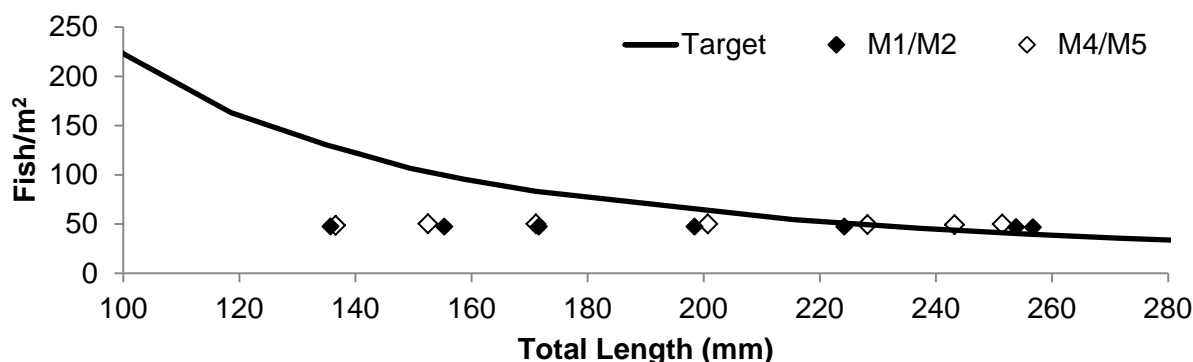


Figure 3: Average rearing density (fish per m²) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018

Water quality samples were tested weekly from rearing troughs throughout winter. Measurements included dissolved oxygen (DO; EcoSense DO 200A, Pentair), dissolved carbon dioxide (dCO₂; GO2P, Oxygaord International), pH (EcoSense pH 100A, YSI Environmental), total ammonia nitrogen (TAN; HI96700C Low Range Photometer, Hanna Instruments), un-ionized ammonia (UIA; Calculated by multiplying TAN with a multiplication factor based on temperature and pH, Emerson et al. 1975) and nitrite-nitrogen (NO₂-N; test kit, LaMotte; Photo 2).

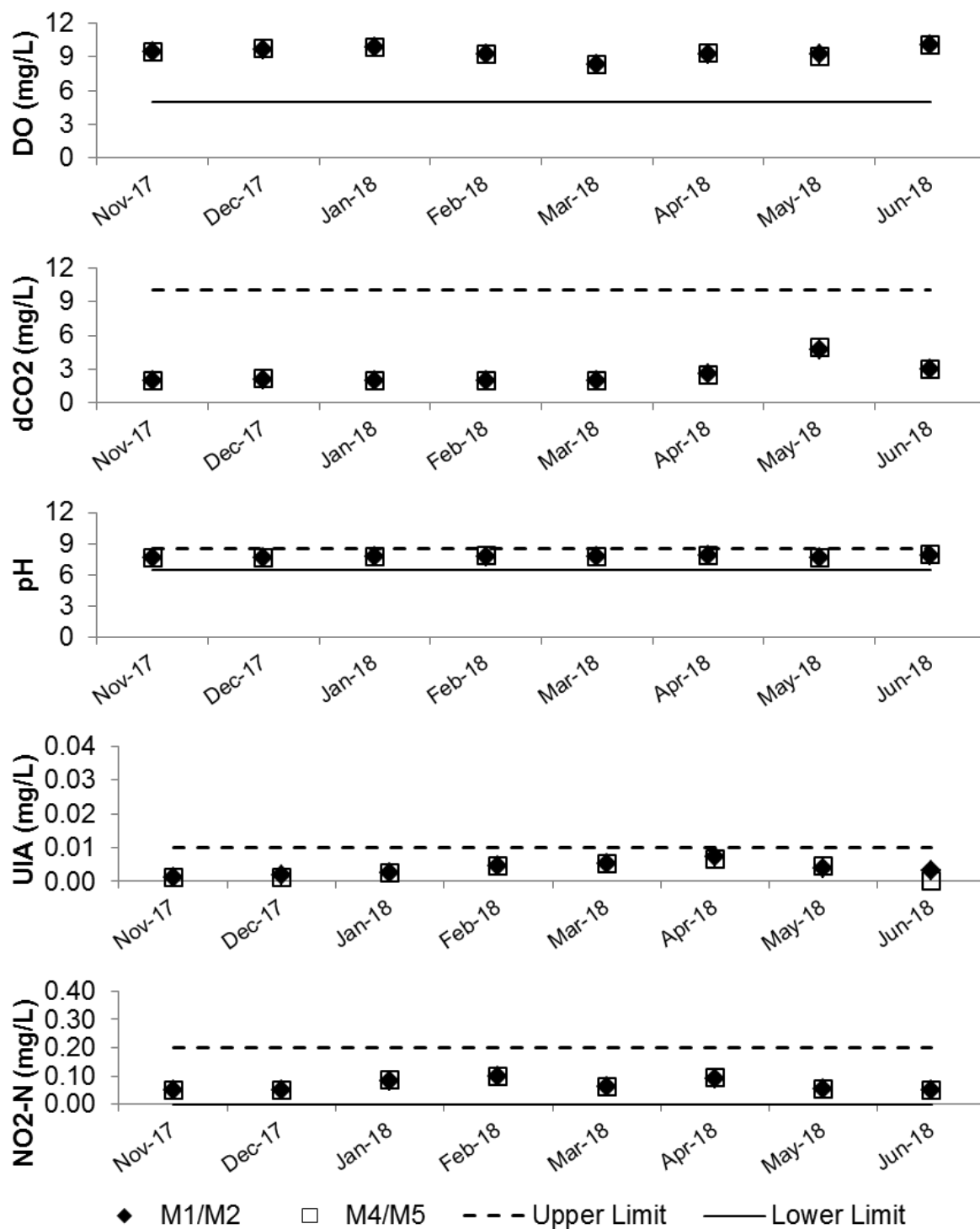


Figure 4: Average monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO₂-N) values in rearing troughs holding Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018

Average monthly water quality values, with the exception of TAN, are plotted in Figure 4. A detailed summary of monthly values are presented in Table A1-2. Recommended threshold values for sturgeon production are listed in Table A3-1. Average monthly values for DO (>4 mg/L), dCO₂ (<10 mg/L), pH (6.5 to 8.5), UA (<0.01 mg/L) and NO₂-N (<0.2 mg/L) were within acceptable limits during winter production.

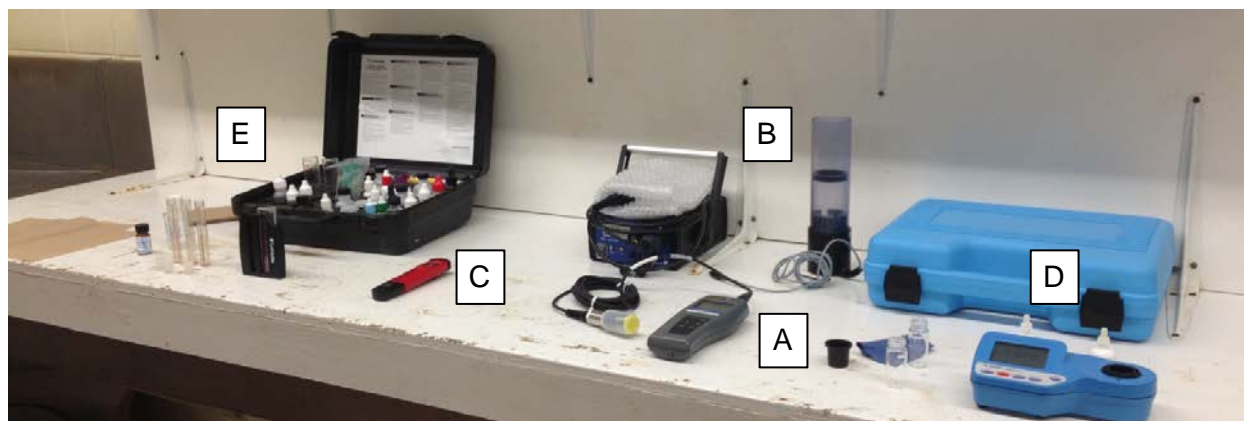


Photo 2: Equipment used to test dissolved oxygen (A), dissolved carbon dioxide (B), pH (C), total ammonia nitrogen (D) and nitrite-nitrogen (E) at GRFH

At the end of each month, 15 Burntwood River sturgeon were randomly selected and measured from each rearing tank. Growth increased slowly among fish from both families in November and December due to the cooler rearing temperatures. However, following a temperature increase in January, growth rates, and particularly fish weight, began to increase rapidly until water temperatures were reduced in preparation for stocking (Figure 2; Figure 5).

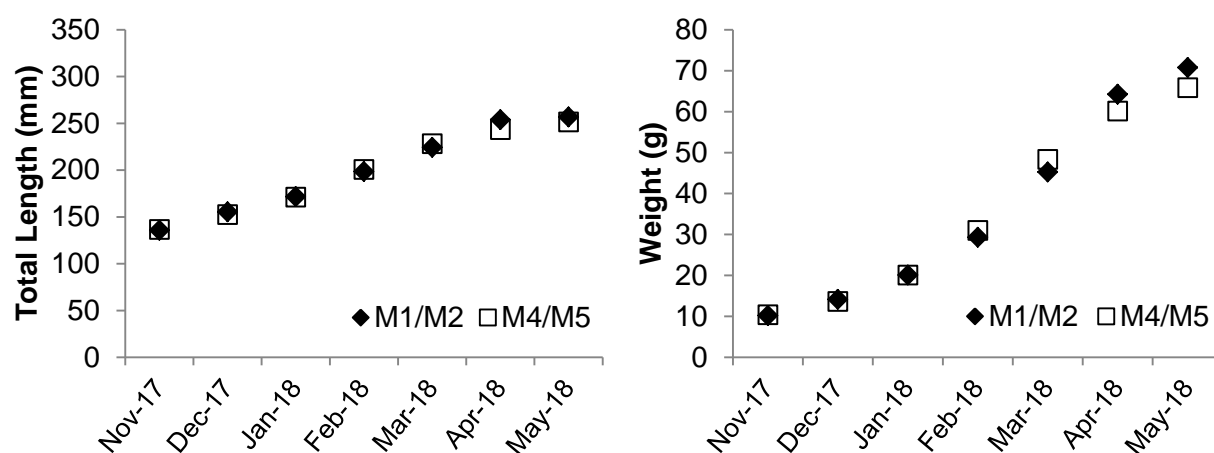


Figure 5: Average total length (mm) and weight (g) for Burntwood River sturgeon (2017 year-class) at GRFH from November 2017 to the end of May 2018

At the time of the spring stocking fish had reached an overall average fork length of 216 mm (range: 135 to 278 mm), average total length of 254 mm (range: 155 to 341 mm) and average weight of 68 g (range: 15 to 145 g; Figure 5; Table A1-3).

2.3 STOCKING

2.3.1 SPRING

All Burntwood River sturgeon were marked with uniquely numbered Passive Integrated Transponder (PIT) tags (8 mm long x 1.4 mm diameter) by inserting the tag into the muscle along the fish's back. This was completed by GRFH staff between March 6 and April 8, 2018 when fish were large enough to undergo the procedure. PIT tag scanners held over the fish can detect the tag and display the number on a screen. This marking technique helps to identify hatchery-reared fish caught in the river and can be used to assess the movement and growth of individual fish following stocking.

Tissue samples (pectoral fin) were collected from 60 Burntwood River sturgeon on March 18, 2018 and sent to RPC Science & Engineering in Fredericton, New Brunswick. All samples tested negative for Namao Virus using a virus specific qPCR test. Yearlings were cleared by the provincial fish health officer for stocking.

Table 2: Number of Burntwood River sturgeon (2017 year-class) released into the Burntwood River in spring 2018

Family	Stocking				
	Date	Number	Age	Waterbody	Site ID
F1xM1/M2	31-May-18	241	11 months	Burntwood River	1
F1xM4/M5	31-May-18	121	11 months	Burntwood River	1
F1xM1/M2	07-Jun-18	13	11 months	Burntwood River	1
F1xM4/M5	07-Jun-18	7	11 months	Burntwood River	1
F1xM1/M2	07-Jun-18	107	11 months	Burntwood River	2
F1xM4/M5	07-Jun-18	250	11 months	Burntwood River	2

On May 31, a total of 362 yearlings were transported by truck to Orr Creek boat launch located on the Burntwood River. Following a period of acclimation, the sturgeon were released from shore at Site 1 (Map 2; Table 2; Table A1-4). This was due to poor weather conditions that prevented Manitoba Hydro's boat patrol crews from being able to participate in the stocking. The river temperature (near shore) was 14.1°C at the time of release.

On June 7, a total of 377 yearlings were transported by truck to the Orr Creek boat launch. Of those, 20 yearlings were released from shore at Site 1 as part of a Kischi Sipi Namao Committee release event (Photo 3; Map 2; Table 2; Table A1-4). With assistance from Manitoba Hydro's boat patrol crews, the remaining 357 yearlings were released downstream of First

Rapids at Site 2 (Map 2; Table 2; Table A1-4). The water temperature was 14.2°C and 12.7°C at Sites 1 and 2, respectively.



Map 2: Stocking locations for Burntwood River sturgeon (2017 year-class) released into the Burntwood River in spring 2018. First Rapids is marked as 'A'



Photo 3: Kischi Sipi Namao Committee stocking event at the Orr Creek boat launch (Burntwood River) on June 7, 2018

3.0 BIRTHDAY RAPIDS POPULATION (2018 YEAR-CLASS)

3.1 SPAWN CAMP

3.1.1 BROODSTOCK COLLECTION

Lake Sturgeon adults were collected from the Nelson River downstream of Birthday Rapids (Map 3) with assistance from North South Consultants. One female was injected with a primer dose (20%) of Gonadotropin Releasing Hormone (GnRH; Product No. H-4070, Bachem Americas, Inc., Torrance, CA, USA) on June 4. The remaining dose (80%) was administered 12 hours later on June 5. Five males were injected with the same product using a similar protocol; however, the amount of hormone used per kg was half that used for the females (Table 3). There was one exception. M5 did not receive a primer dose because this fish was captured and brought to the spawn camp on the morning of June 5 (Table 3).

Table 3: Broodstock tag numbers, weight and GnRH dose used during gamete collection in the Nelson River at Birthday Rapids, June 2018

Floy Tag ID	Hatchery ID	Body Mass (Kg)	Injection Date	Injection Time	GnRH (µg/Kg)	Solution		
						GnRH (µl) ¹	Ringer's (µl) ²	Total (µl)
<i>Females</i>								
111765	F1	20.5	June 4	19:09	4.0	8.2	409.0	417.2
			June 5	07:23	16.0	32.7	409.0	441.7
<i>Males</i>								
105409	M1	8.2	June 4	19:03	1.5	1.2	163.6	164.8
			June 5	07:18	6.0	4.9	163.6	168.5
111758	M2	9.6	June 4	19:04	1.5	1.4	191.0	192.4
			June 5	07:16	6.0	5.7	191.0	196.7
111770	M3	6.4	June 4	19:06	1.5	1.0	127.2	128.2
			June 5	07:21	6.0	3.8	127.2	131.0
75316	M4	7.7	June 4	19:05	1.5	1.2	154.6	155.8
			June 5	07:19	6.0	4.6	154.6	159.2
111957	M5	13.2	June 4	No primer dose				
			June 5	11:53		7.9	264.0	271.9

¹ GnRH solution = 10µg GnRH per µl

² Saline solution used to transport GnRH into fish muscle during injections

Administration of GnRH is useful for conservation aquaculture programs because it stimulates the production of sex steroids (estradiol and testosterone) necessary for maturation and production of eggs and milt. Research on the use of GnRH during Lake Sturgeon gamete

collection suggests no lasting negative effects on broodstock health or human consumption complications (Genz et al. 2014).

Males and females were held separately in two tanks set up on shore (photo 4). Average water temperature from the time adults were first injected with hormone to the time of egg/milt collection was 11.2°C (range: 9.1 to 14.0°C) for the females and 9.7°C (range: 8.8 to 11.0°C) for the males. The higher temperature within the female tank was the result of field staff manipulating the incoming water flow on June 6 to try and speed up the egg collection activities (see section 3.1.2).



Photo 4: Broodstock holding tanks at the lower Nelson River spawn camp, June 2018

3.1.2 EGG AND MILT COLLECTION

In 2018 eggs were not observed at the expected 36 hours following first hormone injection. Instead, they were first observed at 21:30 on June 6, approximately 50 hours following the first hormone injection. The dose administered (20 µg/kg; Table 3) was higher than previously used (7-17 µg/kg; Klassen 2015; Klassen et al. 2016; 2017; 2018) to try and counteract the cooler water temperatures; however, it appears that an even higher dose was required.

During the waiting period, field staff were concerned that the males would expel their milt prior to egg collection. Therefore, milt from all 5 males was collected around 13:00 and stored on ice in separate containers until fertilization.

Approximately 2.1 L of eggs (unfertilized) was collected from F1 around 23:00. Prior to egg collection, the female was placed in an anaesthetic bath for approximately 4 min to make

collection activities easier for the fish and field staff. To reduce the amount of time the female was out of water, a small incision was also made in the abdomen to allow the eggs to leave the body quickly. Damp towels were placed over the sturgeon's head to reduce stress. Egg collection took approximately 10 min at which point fresh water was run over the female's gills and the incision was sutured. The female was returned to the holding tank 20 min from when egg collection activities began.

Eggs were fertilized with the milt from 4 of the 5 males at approximately 23:45 to create four distinct family groups (F1xM1, F1xM2, F1xM3, F1xM4). Milt was mixed with the eggs for approximately 90 seconds at a volume of 20 ml per liter of eggs. To improve the rate of fertilization, the milt was first activated by mixing it with water. Eggs were then rinsed with clean water and mixed with bentonite clay for approximately 40 min to prevent egg clumping. They were then bagged and placed in coolers by 1:00 on June 7. Fresh water was added to the bags around 6:45 that morning and eggs were flown to Thompson, MB by float plane. From Thompson they were driven to GRFH, arriving at approximately 12:15 on June 7.

Due to space constraints at GRFH approximately 600 ml of unfertilized eggs were left at the spawn camp. These eggs were fertilized and released at Birthday Rapids on June 7.

3.1.3 BROODSTOCK HEALTH

Following the deaths of two females in 2016 (Klassen et al. 2017) and one female in 2017 (Klassen et al. 2018), a number of changes to field procedures were implemented. These included placing a greater emphasis on female recovery and monitoring. To achieve this, the field crew of 2018 discussed roles and responsibilities the day before the egg and milt collection activities. For instance, one individual timed how long the female was out of the water and called out to the other field staff every minute. A second individual was dedicated to female recovery efforts immediately following egg collection. In 2018, egg collection was kept to a maximum time of 10 min and a submersible pump was used to run water over the female's gills.

The female recovered following egg collection and was actively swimming in the holding tank. Given this positive observation, she was released back into the river on June 7 in the early afternoon. To confirm survival following release, an acoustic transmitter (VEMCO V13-1x, estimated 1,735-day battery life) was implanted into the female during egg collection activities. She was detected on numerous occasions throughout the summer and fall of 2018 (Hrenchuk and Lacho 2019).

Gametes (milt/sperm) and fin tissue from the broodstock were tested for Namao Virus. All samples tested negative for the virus, with the exception of the fin tissue from M2. The Namao Virus has been detected in sturgeon throughout the Nelson River and appears to be endemic (Clouthier et al. 2015). No offspring from the four family groups tested positive for the virus (see Section 3.3.1).

3.2 PRODUCTION

3.2.1 EGG INCUBATION AND HATCH

There were an estimated 144,335 eggs from the F1 crosses with an average of 39 eggs/ml (M1 = 40, M2 = 42, M3 = 37, M4 = 36). Eggs were placed into McDonald hatching jars for incubation. The four family groups were held in separate troughs, although water was shared among all groups. Average incubation temperature was 13.5°C (range: 12.5 to 14.5°C; Figure 6). Well water was used exclusively during this period and following hatch.

Five days after egg collection, egg viability was assessed. The proportion of viable eggs was calculated from three samples collected within each incubation jar. The average proportion of viable eggs from each jar was then multiplied by the total egg volume of that jar to estimate hatch success. The overall percentage of viable eggs was 86% (M1 = 86%, M2 = 86%, M3 = 83%, M4 = 91%).

The majority of eggs hatched on June 17 with the total number of larvae estimated to be 124,765.

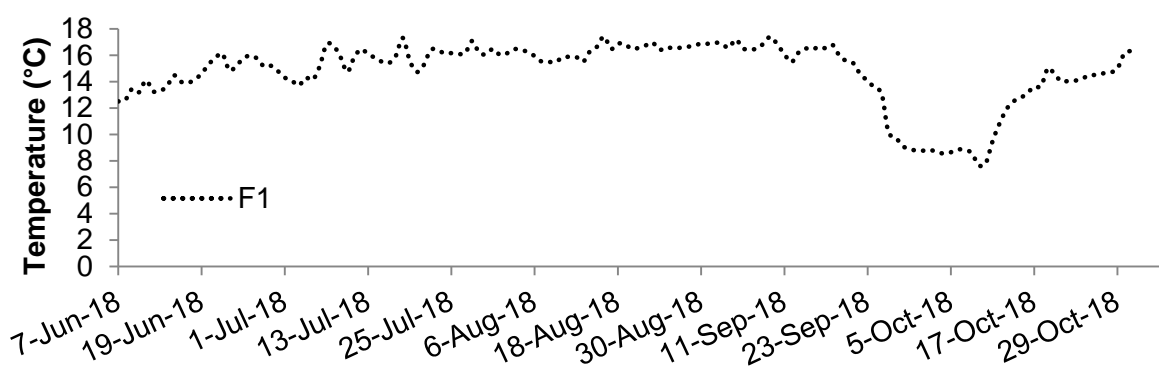


Figure 6: Average daily water temperature (°C) in rearing troughs holding Birthday Rapids (2018 year-class) at GRFH from June 7 to October 31, 2018

3.2.2 LARVAE AND FINGERLINGS

Monthly survival rates remained at or above 70% for all Birthday Rapids families throughout the summer (Figure 7; Table A2-1), with the exception of July. Mortalities are not uncommon during the months of June and July, a period when fish are started on a diet of brine shrimp and later transitioned onto bloodworm. However, the mortalities experienced by the M1, M3 and M4 families in late July are some of the highest observed since the program began in 2013 (Klassen 2015, Klassen et al. 2016; 2017; 2018). Water quality measurements were within acceptable thresholds (see below). Therefore, it may be that the mortalities occurred as a result

of fish failing to transition onto a bloodworm diet and/or experiencing stress following fish sorting activities.

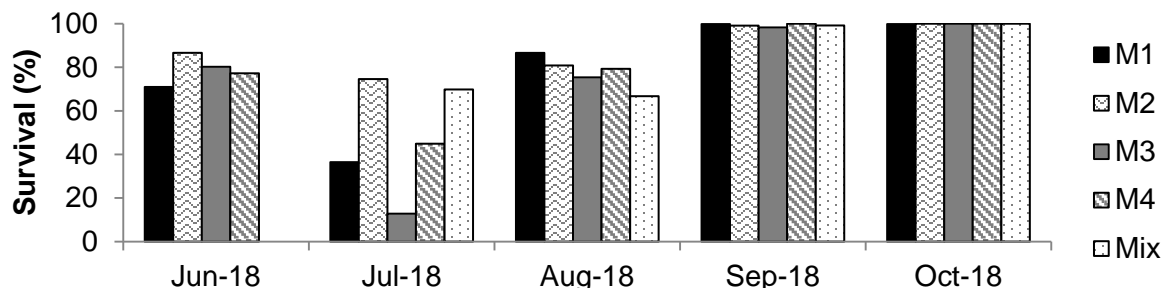


Figure 7: Monthly survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from June 7 to October 31, 2018. July survival is following the fish cull.

The average total length of larvae has typically been 40 mm or greater by the end of July (Klassen 2015; Klassen et al. 2016; 2017; 2018); however in 2018 the average total length of fish was 31 mm (Figure 8). The smaller sizes in 2018 are likely due to the combined effect of cooler rearing temperatures during early development (averaged 15.6°C from hatch to July 31; Figure 6) and high rearing densities prior to the fish cull in early July (see below). Staff also noted a high number of brine shrimp eggs mixed in with the hatched brine shrimp resulting in less quality feed being available to fish.

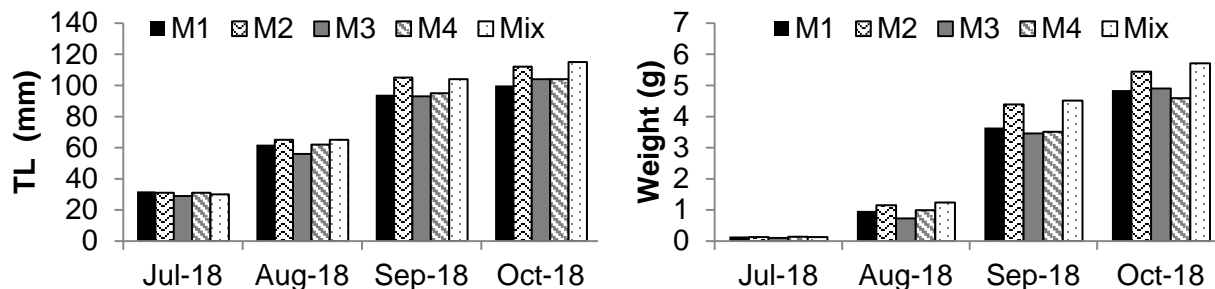


Figure 8: Average total length (mm) and weight (g) for Birthday Rapids sturgeon (2018 year-class) at GRFH from July to the end of October, 2018

Following the successful hatch, it became necessary to cull a large number of larvae (approximately 82,000) due to space constraints. New virus testing criteria requires sampling to occur at least 9 weeks post-hatch, therefore, GRFH was unable to stock the excess larvae. Prior to the cull in early July, a total of 10,000 individuals were sorted into new tanks for continued production. Effort is made to limit stress on fish by gently scooping individuals into transfer tubs and limiting the time fish are out of water. However, it may be that this activity contributed to the mortality event that occurred in late July.

Densities remained at or below target levels following the fish cull in July (Figure 9). Prior to this, fish densities were approximately 12,000 larvae/m² following hatch.

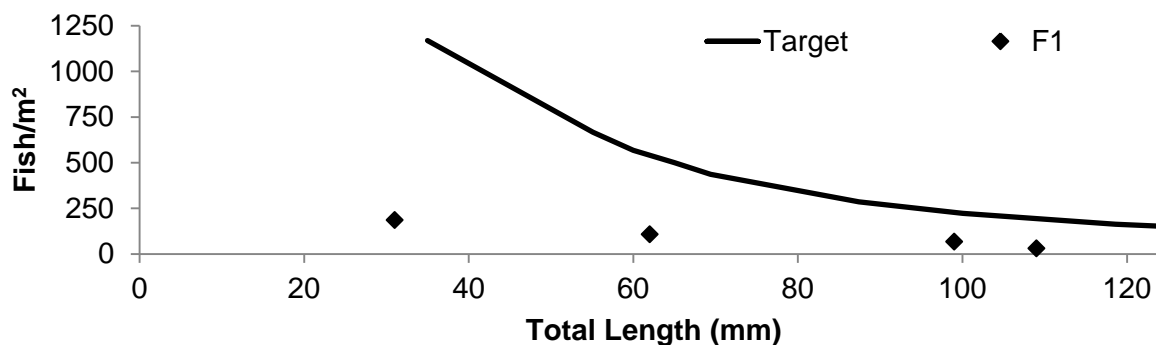


Figure 9: Average rearing density (fish per m²) of Birthday Rapids sturgeon (2018 year-class) at GRFH from July to the end of October 2018

Larvae were first introduced to brine shrimp on June 24 and chopped bloodworm was added on July 8. The majority of sturgeon were feeding on whole bloodworm by August 23, two weeks later than the 2016 Birthday Rapids year-class (Aug 9) which had an average total length of 39 mm at the end of July (Klassen et al. 2017) and one week earlier than the 2014 Birthday Rapids year-class (Aug 31) which also had an average total length of 31 mm at the end of July (Klassen 2015). Fish were fed to satiation three times daily at 8:00, 13:00 and 17:00 until August 23, at which time evening feedings were stopped.

The Birthday Rapids sturgeon were held in 100% well water throughout the summer grow-out period. Average water temperature was 16.0°C (range: 13.7°C to 17.8°C) from hatch until September 18, at which point temperatures were slowly reduced in preparation for the fall stocking activities (Figure 6).

Water quality samples were tested weekly from each rearing trough throughout summer. Parameters assessed included dissolved oxygen (DO), dissolved carbon dioxide (dCO₂), pH, total ammonia nitrogen (TAN), un-ionized ammonia (UIA) and nitrite-nitrogen (NO₂-N; see section 2.2.1 for methods).

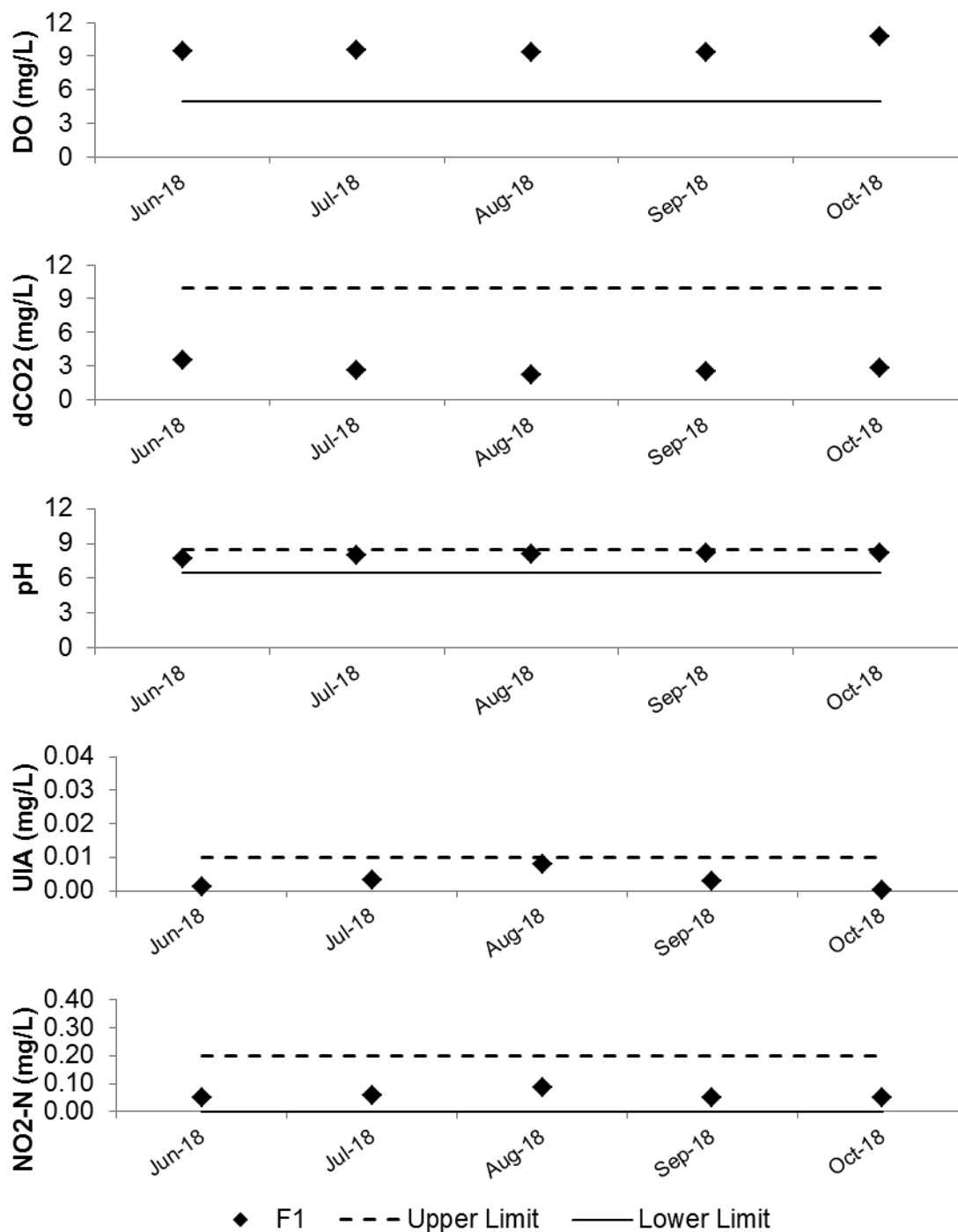


Figure 10: Average monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO₂-N) values in rearing troughs holding Birthday Rapids sturgeon (2018 year-class) at GRFH from June 7 to the end of October 2017. Solid and dashed lines indicate lower and upper thresholds, respectively.

Average monthly water quality values, with the exception of TAN, are plotted in Figure 10. A detailed summary of monthly values are presented in Table A2-2. Recommended threshold values for sturgeon production are listed in Table A3-1. Average monthly values for DO (>4 mg/L), dCO₂ (<10 mg/L), pH (6.5 to 8.5), UIA (<0.01 mg/L) and NO₂-N (<0.2 mg/L) were within acceptable limits during summer production. However, during a routine sampling event in early August, UIA and NO₂-N values exceeded acceptable thresholds within some of the rearing troughs (Table A2-2). In response, GRFH staff added large volumes of fresh water to the recirculation systems every other day for several weeks. This was achieved by filling a large tank with well water and allowing it to reach room temperature before adding it to the system.

At the end of each month, 15 Birthday Rapids sturgeon were randomly selected and measured from each rearing trough. By the end of October fingerlings had reached an overall average total length of 109 (range: 95 to 136 mm) and average weight of 5.20 g (range: 2.8 to 9.3 g; Figure 8; Table A2-3).

3.2.3 FINGERLING HEALTH

After the fall fingerling stocking, hatchery staff observed blisters on the abdomen of a number of the Birthday Rapids fingerlings. Other than the presence of these blisters, fish appeared healthy and continued to feed well. Survival rates also remained high during this period (Figure 7). Symptoms were similar to those observed among the Landing River and Burntwood River fingerlings in 2017 (Klassen et al. 2018).

Six symptomatic fish from the Birthday Rapids population were euthanized on October 17 and sent to the province's Veterinary Diagnostic Services laboratory in Winnipeg, MB for an overall assessment. Results from the provincial Vet Lab were received on October 25 and final diagnosis was dermatitis, suspected to be the result of unfavourable environmental conditions in the hatchery (although water quality and densities were at or within targets at the time). This was the same conclusion reached by the Vet Lab in 2017 (Klassen et al. 2018).

Results were shared with the provincial fish health officer and it was agreed that hatchery staff would continue to monitor the fish over winter. Monitoring is on-going but by December, 2018 only three individuals had blisters.

3.3 STOCKING

3.3.1 FALL

On August 26, sixty whole body samples representing all family groups were collected and sent to RPC Science and Engineering in Fredericton, New Brunswick. All samples tested negative for Namoi Virus using a virus specific qPCR test. Fingerlings were cleared by the provincial fish health officer for stocking.

On September 26, a total of 958 fingerlings were transported by truck to the Keeyask camp and released from shore into Stephens Lake at Site 1 following an acclimation period (Map 3; Table 4). Fingerlings were released from shore due to poor weather conditions that did not allow for release by boat. The river temperature near shore was 8°C.

On September 28, a total of 51 fingerlings were transported by plane to Gillam, MB for a Kischi Sipi Namao Committee public release event at the Butnau Marina. Fish were released from shore into Stephens Lake at Site 2 following an acclimation period (Map 3; Table 4). The river temperature near shore was 8°C.

On October 10, a total of 933 fingerlings were transported by truck to the Keeyask camp. Following acclimation, the fish were released into the future Keeyask reservoir with assistance from Manitoba Hydro's boat patrol crews at Site 3 (Map 3; Table 4). The river temperature was 4°C.

At the end of September fingerlings had an average total length of 99 mm (range: 75 to 121 mm) and average body weight of 4.0 g (range: 2.1 to 7.3 g).

Table 4: Number of Birthday Rapids sturgeon (2018 year-class) released into the Keeyask area in 2018

Family	Stocking				
	Date	Number	Age	Waterbody	Site ID
F1xM1	26-Sep-18	115	3	Stephens Lake	1
F1xM2	26-Sep-18	255	3	Stephens Lake	1
F1xM3	26-Sep-18	34	3	Stephens Lake	1
F1xM4	26-Sep-18	353	3	Stephens Lake	1
Mix	26-Sep-18	201	3	Stephens Lake	1
Mix	28-Sep-18	51	3	Stephens Lake	2
F1xM1	10-Oct-18	334	3	Future Keeyask Reservoir	3
F1xM2	10-Oct-18	381	3	Future Keeyask Reservoir	3
F1xM3	10-Oct-18	34	3	Future Keeyask Reservoir	3
F1xM4	10-Oct-18	184	3	Future Keeyask Reservoir	3



Map 3: Stocking locations for Birthday Rapids sturgeon (2018 year-class) released into the Future Keeyask Reservoir and Stephens Lake. Birthday Rapids is marked as 'A'

4.0 POST-STOCKING RECAPTURES

A total of 3,381 Lake Sturgeon yearlings have been stocked into the lower Nelson and Burntwood rivers since 2014 (Burntwood River = 1,357; Future Keeyask Reservoir = 886; Stephens Lake = 1,138). PIT tags injected into the sturgeon prior to release has allowed identification of 132 hatchery-reared fish from post-stocking monitoring in the Keeyask Study Area since 2014 (Table 5).

Table 5: Number of Lake Sturgeon yearlings stocked into the lower Nelson and Burntwood rivers and number recaptured between 2014 and 2018

Sample Year	Location	Number Stocked	Number Recaptured					Total
			Age-1	Age-2	Age-3	Age-4	Age-5	
2018	Stephens Lake	0	0	7	0	10	0	17
	Future Keeyask Reservoir	0	1	8	0	8	0	17
	Burntwood River/ Split Lake	739	0	0	0	0	1	1
2017	Stephens Lake	720	33	0	18	0	n/a	51
	Future Keeyask Reservoir	463	9	0	11	1	n/a	21
	Burntwood River/ Split Lake	0	0	0	0	3	n/a	3
2016	Stephens Lake	0	0	5	0	n/a	n/a	5
	Future Keeyask Reservoir	0	0	7	0	n/a	n/a	7
	Burntwood River/ Split Lake	23	0	0	1	n/a	n/a	1
2015	Stephens Lake	418	4	0	n/a	n/a	n/a	4
	Future Keeyask Reservoir	423	2	1	n/a	n/a	n/a	3
	Burntwood River/ Split Lake	0	0	0	n/a	n/a	n/a	0
2014	Stephens Lake	0	0	n/a	n/a	n/a	n/a	0
	Future Keeyask Reservoir	0	1	n/a	n/a	n/a	n/a	1
	Burntwood River/ Split Lake	595	1	n/a	n/a	n/a	n/a	1
TOTAL		3,381	51	28	30	22	1	132

The majority of hatchery-reared fish have been recaptured in Stephens Lake ($n = 77$). Most were originally stocked into Stephens Lake (2015 = 28; 2017 = 34), with the exception of 15 individuals that were stocked into the future Keeyask reservoir (2015 = 9; 2017 = 6). Of the fish recaptured in Stephens Lake to date, 52% ($n = 40$) represent yearlings stocked in 2017. Over the course of the monitoring program, 48% ($n = 37$) were recaptured at age-1, 16% ($n = 12$) at age-2, 23% ($n = 18$) at age-3 and 13% ($n = 10$) at age-4.

A total of 49 hatchery-reared fish have been recaptured in the future Keeyask reservoir. Of these fish, 45 were originally stocked into the future Keeyask reservoir (2015 = 28; 2017 = 17) with 4 having been stocked into the Burntwood River (2014 = 3; 2018 = 1). Of the fish captured in the future Keeyask reservoir to date, 57% ($n = 28$) were stocked in 2015. Over the course of the monitoring program, 27% ($n = 13$) were recaptured at age-1, 33% ($n = 16$) at age-2, 22% ($n = 11$) at age-3 and 18% ($n = 9$) at age-4.

A total of 6 hatchery-reared fish have been recaptured in the Burntwood River and upper Split Lake area. All were stocked into the Burntwood River in 2014. Over the course of the monitoring program, 17% (n = 1) were recaptured at age-1, 17% (n = 1) at age-3, 50% (n = 3) at age-4 and 17% (n = 1) at age-5.

Additional information about recaptured hatchery-reared sturgeon can be found in Henderson et al. (2015), Burnett et al. (2016; 2017; 2018) and Burnett and Hrenchuk (2019).

5.0 PRODUCTION AND STOCKING ACTIVITIES IN 2018/19

A total of 803 Birthday Rapids fingerlings were kept at the hatchery for the 2018/19 winter grow-out period. Fish will be released as yearlings into the Keeyask area during spring 2019, pending approval. Specific stocking locations will be determined at that time.

In collaboration with North South Consultants, Lake Sturgeon broodstock capture and egg/milt collection will take place in the Burntwood River during spring 2019.

A final design for the Grand Rapids Fish Hatchery upgrade and expansion project is expected to be completed in early 2019 with construction anticipated to begin in fall 2019. The project is being undertaken to increase the number of yearling Lake Sturgeon that can be produced at the hatchery and to improve the rearing conditions for the fish. Upgrades are also necessary to reach national and provincial biosecurity standards developed to reduce the risk of pathogens from entering and spreading within a facility.

Research activities being conducted at Grand Rapids Fish Hatchery for Dr. Gary Anderson's studies on Lake Sturgeon conservation aquaculture will be coming to an end in spring 2019. Collaboration on other Lake Sturgeon projects will be considered following the hatchery's upgrade and expansion project.

6.0 LITERATURE CITED

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APPENDIX 1: BURNTWOOD RIVER (2017 YEAR-CLASS)

Table A1-1: Survival (%) of Burntwood River sturgeon (2017 year-class) at GRFH from November 1, 2017 to June 7, 2018

LOT	Family	Month-Year	Start of Month Total	Mortality			Transfer		Recount Adjustment	End of Month Total	Monthly Survival (%) ^a
				Natural	Accidental	Euthanized	Stocking	Other			
LKST-BWR-17	F1xM1/M2	Nov-17	370	3	0	0	0	0	0	367	99.2
LKST-BWR-17	F1xM1/M2	Dec-17	367	0	0	0	0	0	2 (-)	365	100.0
LKST-BWR-17	F1xM1/M2	Jan-18	365	0	0	0	0	0	0	365	100.0
LKST-BWR-17	F1xM1/M2	Feb-18	365	0	0	0	0	0	0	365	100.0
LKST-BWR-17	F1xM1/M2	Mar-18	365	0	0	0	0	0	0	365	100.0
LKST-BWR-17	F1xM1/M2	Apr-18	365	2	0	1 ^b	0	0	0	362	99.2
LKST-BWR-17	F1xM1/M2	May-18	362	1	0	0	241 ^c	0	0	120	99.7
LKST-BWR-17	F1xM1/M2	Jun-18	120	0	0	0	120 ^d	0	0	0	100.0
F1xM1/M2 Total			370	6	0	1	361	0	2 (-)	0	98.1
LKST-BWR-17	F1xM4/M5	Nov-17	375	0	0	0	0	0	0	375	100.0
LKST-BWR-17	F1xM4/M5	Dec-17	375	0	0	1 ^e	0	0	14 (+)	388	100.0
LKST-BWR-17	F1xM4/M5	Jan-18	388	0	0	1 ^f	0	0	0	387	100.0
LKST-BWR-17	F1xM4/M5	Feb-18	387	0	0	0	0	0	0	387	100.0
LKST-BWR-17	F1xM4/M5	Mar-18	387	5	0	0	0	0	0	382	98.7
LKST-BWR-17	F1xM4/M5	Apr-18	382	0	0	2 ^g	0	0	0	380	99.5
LKST-BWR-17	F1xM4/M5	May-18	380	2	0	0	121 ^h	0	0	257	99.5
LKST-BWR-17	F1xM4/M5	Jun-18	257	0	0	0	257 ⁱ	0	0	0	100.0
F1xM4/M5 Total			375	7	0	4	378	0	14 (+)	0	97.1
Overall Total			745	13	0	5	739	0	12 (+)	0	97.6

a. Monthly survivals include fish euthanized due to fish health concerns, but do not include recount adjustments

b. 1 euthanized due to fish health concerns (fungus)

c. Stocked into Burntwood River at Orr Creek boat launch

d. Stocked into Burntwood River at Orr Creek boat launch (13) and downstream of First Rapids (107)

e. 1 euthanized due to fish health concerns (white spots)

f. 1 euthanized due to fish health concerns (fungus)

g. 2 euthanized due to fish health concerns (fungus; blocked intestine)

h. Stocked into Burntwood River at Orr Creek boat launch

i. Stocked into Burntwood River at Orr Creek boat launch (7) and downstream of First Rapids (250)

Table A1-2: Monthly average (\pm SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-Ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Burntwood River Sturgeon (2017 year-class) reared at Grand Rapids Fish Hatchery.

Parameter	Mth-Yr	M1/M2					M4/M5				
		N ^a	Mean	\pm SD	Min	Max	N ^a	Mean	\pm SD	Min	Max
Dissolved O ₂ (mg/L)	Nov-17	12	9.41	1.19	8.01	10.70	12	9.44	1.17	7.94	10.70
	Dec-17	9	9.60	0.98	8.19	10.44	9	9.68	0.98	8.31	10.42
	Jan-18	12	9.82	0.37	9.32	10.24	12	9.83	0.34	9.41	10.25
	Feb-18	12	9.18	0.38	8.57	9.63	12	9.19	0.33	8.66	10.42
	Mar-18	12	8.29	1.45	5.79	9.54	12	8.29	1.40	5.59	9.60
	Apr-18	15	9.25	0.79	7.70	10.25	15	9.37	0.60	8.47	10.20
	May-18	12	9.24	1.19	7.31	10.72	12	8.99	1.67	5.54	11.03
	Jun-18	1	10.02	0.00	10.02	10.02	2	10.07	0.04	10.04	10.09
Dissolved CO ₂ (mg/L)	Nov-17	12	2.00	0.00	2.00	2.00	12	2.00	0.00	2.00	2.00
	Dec-17	9	2.11	0.33	2.00	3.00	9	2.22	0.44	2.00	3.00
	Jan-18	12	2.00	0.00	2.00	2.00	12	2.00	0.00	2.00	2.00
	Feb-18	12	2.00	0.00	2.00	2.00	12	2.00	0.00	2.00	3.00
	Mar-18	12	2.00	0.00	2.00	2.00	12	2.00	0.00	2.00	2.00
	Apr-18	15	2.60	0.51	2.00	3.00	15	2.53	0.52	2.00	3.00
	May-18	9	4.78	0.83	3.00	6.00	9	4.89	0.78	3.00	6.00
	Jun-18	1	3.00	0.00	3.00	3.00	2	3.00	0.00	3.00	3.00
pH	Nov-17	12	7.64	0.22	7.26	7.92	12	7.67	0.20	7.42	7.92
	Dec-17	9	7.65	0.14	7.37	7.79	9	7.67	0.11	7.49	7.81
	Jan-18	12	7.76	0.22	7.28	7.96	12	7.78	0.18	7.36	7.95
	Feb-18	12	7.79	0.14	7.50	7.93	12	7.82	0.10	7.63	7.81
	Mar-18	12	7.75	0.19	7.30	7.96	12	7.77	0.13	7.50	7.91
	Apr-18	15	7.84	0.13	7.61	8.01	15	7.86	0.12	7.62	8.02
	May-18	12	7.63	0.10	7.45	7.78	12	7.66	0.10	7.53	7.81
	Jun-18	1	7.90	0.00	7.90	7.90	2	7.93	0.01	7.92	7.93
Total Ammonia (mg/L)	Nov-17	12	0.09	0.09	0.00	0.23	12	0.10	0.09	0.00	0.23
	Dec-17	9	0.08	0.07	0.00	0.18	9	0.08	0.10	0.00	0.28
	Jan-18	12	0.15	0.14	0.00	0.35	12	0.12	0.13	0.00	0.38
	Feb-18	12	0.21	0.21	0.00	0.63	12	0.22	0.22	0.00	0.28
	Mar-18	12	0.24	0.11	0.12	0.45	12	0.23	0.07	0.15	0.39
	Apr-18	15	0.34	0.18	0.07	0.58	15	0.31	0.19	0.05	0.65
	May-18	12	0.43	0.11	0.32	0.64	12	0.47	0.18	0.34	0.96
	Jun-18	1	0.15	0.00	0.15	0.15	2	0.00	0.00	0.00	0.00
UIA (mg/L)	Nov-17	12	0.00	0.00	0.00	0.00	12	0.00	0.00	0.00	0.00
	Dec-17	9	0.00	0.00	0.00	0.01	9	0.00	0.00	0.00	0.00
	Jan-18	11	0.00	0.00	0.00	0.01	12	0.00	0.00	0.00	0.01
	Feb-18	12	0.00	0.00	0.00	0.01	12	0.00	0.00	0.00	0.00

Parameter	Mth-Yr	M1/M2					M4/M5				
		N ^a	Mean	±SD	Min	Max	N ^a	Mean	±SD	Min	Max
Nitrite Nitrogen (mg/L)	Mar-18	12	0.01	0.00	0.00	0.01	12	0.01	0.00	0.00	0.01
	Apr-18	15	0.01	0.00	0.00	0.01	15	0.01	0.01	0.00	0.02
	May-18	12	0.00	0.00	0.00	0.01	12	0.00	0.00	0.00	0.01
	Jun-18	1	0.00	0.00	0.00	0.00	2	0.00	0.00	0.00	0.00
	Nov-17	12	0.05	0.00	0.05	0.05	12	0.05	0.00	0.05	0.05
	Dec-17	9	0.05	0.00	0.05	0.05	9	0.05	0.00	0.05	0.05
	Jan-18	12	0.08	0.07	0.01	0.20	12	0.09	0.07	0.05	0.20
	Feb-18	12	0.10	0.06	0.05	0.20	12	0.10	0.06	0.05	0.05
	Mar-18	12	0.06	0.02	0.05	0.10	12	0.06	0.02	0.05	0.10
	Apr-18	15	0.09	0.06	0.05	0.20	15	0.09	0.06	0.05	0.20
	May-18	12	0.05	0.01	0.05	0.10	12	0.05	0.01	0.05	0.10
	Jun-18	1	0.05	0.00	0.05	0.05	2	0.05	0.00	0.05	0.05

^a Number of water samples per month

Table A1-3: Monthly average (\pm SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Burntwood River Lake Sturgeon (2017 year-class) reared at Grand Rapids Fish Hatchery.

Measurement	Mth-Yr	M1/M2					M4/M5				
		n	Avg	\pm SD	Min	Max	n	Avg	\pm SD	Min	Max
Fork Length (mm)	Nov-17	45	119	11	95	141	45	119	9	96	140
	Dec-17	45	132	7	115	150	45	130	8	114	156
	Jan-18	45	148	8	133	165	45	148	9	130	183
	Feb-18	45	165	11	140	200	45	167	11	143	190
	Mar-18	45	193	15	151	222	45	196	16	164	242
	Apr-18	45	218	14	196	264	45	210	14	183	243
	May-18	361	217	17	157	278	378	215	16	135	266
Total Length (mm)	Nov-17	45	136	11	112	162	45	137	10	113	158
	Dec-17	45	155	9	133	177	45	152	9	135	181
	Jan-18	45	172	9	153	192	45	171	11	149	214
	Feb-18	45	198	12	165	240	45	201	13	173	226
	Mar-18	45	224	16	182	257	45	228	19	191	282
	Apr-18	45	254	22	228	364	45	243	16	212	280
	May-18	361	257	19	181	320	378	251	19	155	341
Weight (g)	Nov-17	45	10.2	2.5	4.7	16.1	45	10.4	2.1	6.2	15.4
	Dec-17	45	14.1	2.6	9.3	22.2	45	13.6	2.8	9.1	23.2
	Jan-18	45	20.1	3.3	13.7	27.0	45	20.1	4.5	13.3	39.9
	Feb-18	45	29.3	5.5	18.6	42.5	45	31.0	6.4	13.4	45.8
	Mar-18	45	45.3	10.3	21.9	68.2	45	48.3	13.1	27.3	93.8
	Apr-18	45	64.2	13.0	39.7	104.1	45	60.1	11.8	37.0	91.0
	May-18	361	70.8	18.1	25.3	145.0	378	65.8	15.2	14.7	126.8

Table A1-4: Biological and PIT tag information for hatchery-reared Lake Sturgeon yearlings released into the Burntwood River in 2018

Lake Sturgeon				Final Hatchery Measurement			Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
960 067 000 111 281	F1xM1/M2	10A	17-May-18	195	231	50.64	31-May-18	Burntwood River	1
960 067 000 111 282	F1xM1/M2	10A	17-May-18	177	205	37.90	31-May-18	Burntwood River	1
960 067 000 111 283	F1xM1/M2	10A	17-May-18	225	270	69.22	31-May-18	Burntwood River	1
960 067 000 111 284	F1xM1/M2	10A	17-May-18	234	276	90.27	31-May-18	Burntwood River	1
960 067 000 111 285	F1xM1/M2	10A	17-May-18	207	246	66.00	31-May-18	Burntwood River	1
960 067 000 111 286	F1xM1/M2	10A	17-May-18	205	247	58.13	31-May-18	Burntwood River	1
960 067 000 111 287	F1xM1/M2	10A	17-May-18	195	236	51.12	31-May-18	Burntwood River	1
960 067 000 111 288	F1xM1/M2	10A	17-May-18	201	235	50.94	31-May-18	Burntwood River	1
960 067 000 111 289	F1xM1/M2	10A	17-May-18	210	250	65.02	31-May-18	Burntwood River	1
960 067 000 111 290	F1xM1/M2	10A	17-May-18	198	240	49.22	31-May-18	Burntwood River	1
960 067 000 111 291	F1xM1/M2	10A	17-May-18	203	239	56.51	31-May-18	Burntwood River	1
960 067 000 111 292	F1xM1/M2	10A	17-May-18	210	250	60.64	31-May-18	Burntwood River	1
960 067 000 111 293	F1xM1/M2	10A	17-May-18	204	243	50.03	31-May-18	Burntwood River	1
960 067 000 111 294	F1xM1/M2	10A	17-May-18	230	271	85.45	31-May-18	Burntwood River	1
960 067 000 111 295	F1xM1/M2	10A	17-May-18	187	226	43.92	31-May-18	Burntwood River	1
960 067 000 111 296	F1xM1/M2	10A	17-May-18	214	249	59.45	31-May-18	Burntwood River	1
960 067 000 111 297	F1xM1/M2	10A	17-May-18	216	259	69.54	31-May-18	Burntwood River	1
960 067 000 111 298	F1xM1/M2	10A	17-May-18	269	310	119.00	31-May-18	Burntwood River	1
960 067 000 111 299	F1xM1/M2	10A	17-May-18	237	277	88.54	31-May-18	Burntwood River	1
960 067 000 111 300	F1xM1/M2	10A	17-May-18	235	272	101.24	31-May-18	Burntwood River	1
960 067 000 111 301	F1xM1/M2	10A	17-May-18	207	243	67.17	31-May-18	Burntwood River	1
960 067 000 111 302	F1xM1/M2	10A	17-May-18	186	224	45.80	31-May-18	Burntwood River	1
960 067 000 111 303	F1xM1/M2	10A	17-May-18	230	268	78.84	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
960 067 000 111 304	F1xM1/M2	10A	17-May-18	226	269	85.42	31-May-18	Burntwood River	1
960 067 000 111 305	F1xM1/M2	10A	17-May-18	195	235	56.00	31-May-18	Burntwood River	1
960 067 000 111 306	F1xM1/M2	10A	17-May-18	211	255	60.44	31-May-18	Burntwood River	1
960 067 000 111 307	F1xM1/M2	10A	17-May-18	192	232	49.70	31-May-18	Burntwood River	1
960 067 000 111 308	F1xM1/M2	10A	17-May-18	225	263	72.00	31-May-18	Burntwood River	1
960 067 000 111 309	F1xM1/M2	10A	17-May-18	194	230	45.00	31-May-18	Burntwood River	1
960 067 000 111 310	F1xM1/M2	10A	17-May-18	224	269	72.65	31-May-18	Burntwood River	1
960 067 000 111 311	F1xM1/M2	10A	17-May-18	190	226	43.13	31-May-18	Burntwood River	1
960 067 000 111 312	F1xM1/M2	10A	17-May-18	210	250	68.24	31-May-18	Burntwood River	1
960 067 000 111 313	F1xM1/M2	10A	17-May-18	215	254	70.49	31-May-18	Burntwood River	1
960 067 000 111 314	F1xM1/M2	10A	17-May-18	206	246	60.22	31-May-18	Burntwood River	1
960 067 000 111 315	F1xM1/M2	10A	17-May-18	234	283	95.85	31-May-18	Burntwood River	1
960 067 000 111 316	F1xM1/M2	10A	17-May-18	205	244	58.35	31-May-18	Burntwood River	1
960 067 000 111 318	F1xM1/M2	10A	17-May-18	229	274	82.44	31-May-18	Burntwood River	1
960 067 000 111 319	F1xM1/M2	10A	17-May-18	218	264	66.89	31-May-18	Burntwood River	1
960 067 000 111 320	F1xM1/M2	10A	17-May-18	215	253	72.77	31-May-18	Burntwood River	1
960 067 000 111 321	F1xM1/M2	10A	17-May-18	204	240	60.00	31-May-18	Burntwood River	1
960 067 000 111 322	F1xM1/M2	10A	17-May-18	235	273	95.64	31-May-18	Burntwood River	1
960 067 000 111 323	F1xM1/M2	10A	17-May-18	210	250	59.66	31-May-18	Burntwood River	1
960 067 000 111 324	F1xM1/M2	10A	17-May-18	200	239	60.00	31-May-18	Burntwood River	1
960 067 000 111 326	F1xM1/M2	10A	17-May-18	222	265	73.25	31-May-18	Burntwood River	1
960 067 000 111 328	F1xM1/M2	10A	17-May-18	200	240	55.55	31-May-18	Burntwood River	1
960 067 000 111 329	F1xM1/M2	10A	17-May-18	202	239	53.72	31-May-18	Burntwood River	1
960 067 000 111 330	F1xM1/M2	10A	17-May-18	235	279	91.83	31-May-18	Burntwood River	1
960 067 000 111 331	F1xM1/M2	10A	17-May-18	248	297	107.55	31-May-18	Burntwood River	1
960 067 000 111 332	F1xM1/M2	10A	17-May-18	220	260	61.60	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
960 067 000 111 334	F1xM1/M2	10A	17-May-18	231	273	86.33	31-May-18	Burntwood River	1
960 067 000 111 335	F1xM1/M2	10A	17-May-18	221	262	68.94	31-May-18	Burntwood River	1
960 067 000 111 336	F1xM1/M2	10A	17-May-18	278	320	145.00	31-May-18	Burntwood River	1
960 067 000 111 337	F1xM1/M2	10A	17-May-18	235	273	96.17	31-May-18	Burntwood River	1
960 067 000 111 338	F1xM1/M2	10A	17-May-18	225	265	81.56	31-May-18	Burntwood River	1
960 067 000 111 339	F1xM1/M2	10A	17-May-18	214	258	70.60	31-May-18	Burntwood River	1
960 067 000 111 340	F1xM1/M2	10A	17-May-18	220	261	69.50	31-May-18	Burntwood River	1
960 067 000 111 341	F1xM1/M2	10A	17-May-18	225	273	89.00	31-May-18	Burntwood River	1
960 067 000 111 342 ^a	F1xM1/M2	10A	17-May-18	211	258	62.46	31-May-18	Burntwood River	1
960 067 000 111 343	F1xM1/M2	10A	17-May-18	195	232	56.00	31-May-18	Burntwood River	1
960 067 000 111 344	F1xM1/M2	10A	17-May-18	205	242	60.33	31-May-18	Burntwood River	1
960 067 000 111 345	F1xM1/M2	10A	17-May-18	210	257	61.65	31-May-18	Burntwood River	1
960 067 000 111 346	F1xM1/M2	10A	17-May-18	230	265	87.88	31-May-18	Burntwood River	1
960 067 000 111 347	F1xM1/M2	10A	17-May-18	249	294	106.55	31-May-18	Burntwood River	1
960 067 000 111 348	F1xM1/M2	10A	17-May-18	267	310	118.28	31-May-18	Burntwood River	1
960 067 000 111 349	F1xM1/M2	10A	17-May-18	224	267	80.24	31-May-18	Burntwood River	1
960 067 000 111 350	F1xM1/M2	10A	17-May-18	207	245	54.78	31-May-18	Burntwood River	1
960 067 000 111 351	F1xM1/M2	10A	17-May-18	200	245	53.37	31-May-18	Burntwood River	1
960 067 000 111 352	F1xM1/M2	10A	17-May-18	209	250	58.51	31-May-18	Burntwood River	1
960 067 000 111 353	F1xM1/M2	10A	17-May-18	220	257	70.00	31-May-18	Burntwood River	1
960 067 000 111 354	F1xM1/M2	10A	17-May-18	219	266	69.99	31-May-18	Burntwood River	1
960 067 000 111 355	F1xM1/M2	10A	17-May-18	201	239	55.14	31-May-18	Burntwood River	1
960 067 000 111 356	F1xM1/M2	10A	17-May-18	260	302	129.00	31-May-18	Burntwood River	1
960 067 000 111 357	F1xM1/M2	10A	17-May-18	245	288	101.35	31-May-18	Burntwood River	1
960 067 000 111 358	F1xM1/M2	10A	17-May-18	205	250	55.54	31-May-18	Burntwood River	1
960 067 000 111 360	F1xM1/M2	10A	17-May-18	209	251	64.31	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
960 067 000 111 361	F1xM1/M2	10A	17-May-18	253	298	99.72	31-May-18	Burntwood River	1
960 067 000 111 362	F1xM1/M2	10A	17-May-18	220	261	70.18	31-May-18	Burntwood River	1
960 067 000 111 363	F1xM1/M2	10A	17-May-18	241	293	99.14	31-May-18	Burntwood River	1
960 067 000 111 364	F1xM1/M2	10A	17-May-18	225	267	71.85	31-May-18	Burntwood River	1
960 067 000 111 365	F1xM1/M2	10A	17-May-18	235	281	88.80	31-May-18	Burntwood River	1
960 067 000 111 366	F1xM1/M2	10A	17-May-18	210	250	68.00	31-May-18	Burntwood River	1
960 067 000 111 367	F1xM1/M2	10A	17-May-18	248	293	112.45	31-May-18	Burntwood River	1
960 067 000 111 368	F1xM1/M2	10A	17-May-18	225	269	70.55	31-May-18	Burntwood River	1
960 067 000 111 369	F1xM1/M2	10A	17-May-18	211	245	56.41	31-May-18	Burntwood River	1
960 067 000 111 370	F1xM1/M2	10A	17-May-18	200	239	53.13	31-May-18	Burntwood River	1
960 067 000 111 371	F1xM1/M2	10A	17-May-18	210	252	58.28	31-May-18	Burntwood River	1
960 067 000 111 372	F1xM1/M2	10A	17-May-18	194	229	43.73	31-May-18	Burntwood River	1
960 067 000 111 373	F1xM1/M2	10A	17-May-18	235	274	77.49	31-May-18	Burntwood River	1
960 067 000 111 374	F1xM1/M2	10A	17-May-18	207	246	65.81	31-May-18	Burntwood River	1
960 067 000 111 375	F1xM1/M2	10A	17-May-18	195	235	52.66	31-May-18	Burntwood River	1
960 067 000 111 376	F1xM1/M2	10A	17-May-18	218	258	62.95	31-May-18	Burntwood River	1
960 067 000 111 377	F1xM1/M2	10A	17-May-18	205	248	63.67	31-May-18	Burntwood River	1
960 067 000 111 378	F1xM1/M2	10A	17-May-18	196	234	49.69	31-May-18	Burntwood River	1
960 067 000 111 379	F1xM1/M2	10A	17-May-18	214	249	65.13	31-May-18	Burntwood River	1
960 067 000 111 380	F1xM1/M2	10A	17-May-18	230	272	71.74	31-May-18	Burntwood River	1
960 067 000 111 786	F1xM1/M2	10A	17-May-18	213	255	63.22	31-May-18	Burntwood River	1
960 067 000 111 787	F1xM1/M2	10A	17-May-18	209	255	65.00	31-May-18	Burntwood River	1
960 067 000 111 791	F1xM1/M2	10A	17-May-18	205	245	58.82	31-May-18	Burntwood River	1
960 067 000 111 795	F1xM1/M2	10A	17-May-18	214	253	60.81	31-May-18	Burntwood River	1
960 067 000 111 797	F1xM1/M2	10A	17-May-18	203	250	59.16	31-May-18	Burntwood River	1
960 067 000 111 804	F1xM1/M2	10A	17-May-18	197	234	47.95	31-May-18	Burntwood River	1
960 067 000 111 808	F1xM1/M2	10A	17-May-18	245	292	103.90	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
960 067 000 111 809	F1xM1/M2	10A	17-May-18	217	257	78.32	31-May-18	Burntwood River	1
960 067 000 111 811	F1xM1/M2	10A	17-May-18	205	245	61.58	31-May-18	Burntwood River	1
960 067 000 111 816	F1xM1/M2	10A	17-May-18	206	252	60.55	31-May-18	Burntwood River	1
960 067 000 111 817	F1xM1/M2	10A	17-May-18	230	278	93.14	31-May-18	Burntwood River	1
960 067 000 111 818	F1xM1/M2	10A	17-May-18	196	237	50.00	31-May-18	Burntwood River	1
960 067 000 111 821	F1xM1/M2	10A	17-May-18	210	254	61.29	31-May-18	Burntwood River	1
960 067 000 111 824	F1xM1/M2	10A	17-May-18	220	265	59.84	31-May-18	Burntwood River	1
960 067 000 111 830	F1xM1/M2	10A	17-May-18	203	240	51.66	31-May-18	Burntwood River	1
960 067 000 111 832	F1xM1/M2	10A	17-May-18	219	260	64.27	31-May-18	Burntwood River	1
960 067 000 111 840	F1xM1/M2	10A	17-May-18	247	289	95.03	31-May-18	Burntwood River	1
960 067 000 111 842 ^b	F1xM1/M2	10A	17-May-18	205	248	57.00	31-May-18	Burntwood River	1
960 067 000 111 849	F1xM1/M2	10A	17-May-18	225	268	84.95	31-May-18	Burntwood River	1
960 067 000 111 850	F1xM1/M2	10A	17-May-18	195	234	45.95	31-May-18	Burntwood River	1
960 067 000 111 851	F1xM1/M2	10A	17-May-18	215	257	65.76	31-May-18	Burntwood River	1
960 067 000 111 859	F1xM1/M2	10A	17-May-18	229	265	80.00	31-May-18	Burntwood River	1
960 067 000 111 861	F1xM1/M2	10A	17-May-18	204	244	56.54	31-May-18	Burntwood River	1
960 067 000 111 862	F1xM1/M2	10A	17-May-18	190	230	47.80	31-May-18	Burntwood River	1
960 067 000 111 865	F1xM1/M2	10A	17-May-18	225	264	71.68	31-May-18	Burntwood River	1
960 067 000 111 873	F1xM1/M2	10A	17-May-18	220	265	70.48	31-May-18	Burntwood River	1
900 067 000 110 284	F1xM4/M5	10B	17-May-18	227	260	69.95	31-May-18	Burntwood River	1
900 067 000 110 287	F1xM4/M5	10B	17-May-18	194	223	36.40	31-May-18	Burntwood River	1
900 067 000 110 288	F1xM4/M5	10B	17-May-18	214	250	69.45	31-May-18	Burntwood River	1
900 067 000 110 289	F1xM4/M5	10B	17-May-18	213	247	60.24	31-May-18	Burntwood River	1
900 067 000 110 293	F1xM4/M5	10B	17-May-18	224	258	69.90	31-May-18	Burntwood River	1
900 067 000 110 294	F1xM4/M5	10B	17-May-18	233	271	83.48	31-May-18	Burntwood River	1
900 067 000 110 295	F1xM4/M5	10B	17-May-18	205	230	49.16	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 297	F1xM4/M5	10B	17-May-18	196	228	45.64	31-May-18	Burntwood River	1
900 067 000 110 298	F1xM4/M5	10B	17-May-18	232	268	80.73	31-May-18	Burntwood River	1
900 067 000 110 302	F1xM4/M5	10B	17-May-18	215	253	64.11	31-May-18	Burntwood River	1
900 067 000 110 304	F1xM4/M5	10B	17-May-18	223	257	67.50	31-May-18	Burntwood River	1
900 067 000 110 305	F1xM4/M5	10B	17-May-18	217	252	56.16	31-May-18	Burntwood River	1
900 067 000 110 309	F1xM4/M5	10B	17-May-18	232	268	76.64	31-May-18	Burntwood River	1
900 067 000 110 313	F1xM4/M5	10B	17-May-18	219	258	67.60	31-May-18	Burntwood River	1
900 067 000 110 314	F1xM4/M5	10B	17-May-18	200	234	50.42	31-May-18	Burntwood River	1
900 067 000 110 315	F1xM4/M5	10B	17-May-18	189	217	28.24	31-May-18	Burntwood River	1
900 067 000 110 316	F1xM4/M5	10B	17-May-18	186	218	39.96	31-May-18	Burntwood River	1
900 067 000 110 319	F1xM4/M5	10B	17-May-18	230	263	70.89	31-May-18	Burntwood River	1
900 067 000 110 326	F1xM4/M5	10B	17-May-18	218	253	61.18	31-May-18	Burntwood River	1
900 067 000 110 329	F1xM4/M5	10B	17-May-18	217	254	60.71	31-May-18	Burntwood River	1
900 067 000 110 330	F1xM4/M5	10B	17-May-18	212	244	63.79	31-May-18	Burntwood River	1
900 067 000 110 332	F1xM4/M5	10B	17-May-18	218	257	68.63	31-May-18	Burntwood River	1
900 067 000 110 333	F1xM4/M5	10B	17-May-18	215	248	56.97	31-May-18	Burntwood River	1
900 067 000 110 334	F1xM4/M5	10B	17-May-18	221	255	63.85	31-May-18	Burntwood River	1
900 067 000 110 337	F1xM4/M5	10B	17-May-18	218	252	65.40	31-May-18	Burntwood River	1
900 067 000 110 338	F1xM4/M5	10B	17-May-18	220	255	65.03	31-May-18	Burntwood River	1
900 067 000 110 341	F1xM4/M5	10B	17-May-18	210	242	65.71	31-May-18	Burntwood River	1
900 067 000 110 342	F1xM4/M5	10B	17-May-18	220	254	73.85	31-May-18	Burntwood River	1
900 067 000 110 344	F1xM4/M5	10B	17-May-18	210	250	56.37	31-May-18	Burntwood River	1
900 067 000 110 347	F1xM4/M5	10B	17-May-18	225	256	65.30	31-May-18	Burntwood River	1
900 067 000 110 348	F1xM4/M5	10B	17-May-18	227	261	74.12	31-May-18	Burntwood River	1
900 067 000 110 350	F1xM4/M5	10B	17-May-18	242	278	91.27	31-May-18	Burntwood River	1
900 067 000 110 352	F1xM4/M5	10B	17-May-18	213	245	61.87	31-May-18	Burntwood River	1
900 067 000 110 353	F1xM4/M5	10B	17-May-18	224	256	63.94	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 354	F1xM4/M5	10B	17-May-18	220	252	66.75	31-May-18	Burntwood River	1
900 067 000 110 355	F1xM4/M5	10B	17-May-18	200	229	46.82	31-May-18	Burntwood River	1
900 067 000 110 359	F1xM4/M5	10B	17-May-18	207	242	59.62	31-May-18	Burntwood River	1
900 067 000 110 360	F1xM4/M5	10B	17-May-18	230	265	77.58	31-May-18	Burntwood River	1
900 067 000 110 362	F1xM4/M5	10B	17-May-18	215	246	64.12	31-May-18	Burntwood River	1
900 067 000 110 363	F1xM4/M5	10B	17-May-18	237	277	81.16	31-May-18	Burntwood River	1
900 067 000 110 364	F1xM4/M5	10B	17-May-18	215	250	69.38	31-May-18	Burntwood River	1
900 067 000 110 368	F1xM4/M5	10B	17-May-18	214	253	58.46	31-May-18	Burntwood River	1
900 067 000 110 369	F1xM4/M5	10B	17-May-18	200	236	51.16	31-May-18	Burntwood River	1
900 067 000 110 370	F1xM4/M5	10B	17-May-18	228	265	72.32	31-May-18	Burntwood River	1
900 067 000 110 371	F1xM4/M5	10B	17-May-18	236	275	81.96	31-May-18	Burntwood River	1
900 067 000 110 372	F1xM4/M5	10B	17-May-18	242	279	87.43	31-May-18	Burntwood River	1
900 067 000 110 373	F1xM4/M5	10B	17-May-18	204	233	50.62	31-May-18	Burntwood River	1
900 067 000 110 375	F1xM4/M5	10B	17-May-18	236	271	83.54	31-May-18	Burntwood River	1
900 067 000 110 379	F1xM4/M5	10B	17-May-18	227	263	76.95	31-May-18	Burntwood River	1
900 067 000 111 781	F1xM4/M5	10B	17-May-18	231	268	79.58	31-May-18	Burntwood River	1
900 067 000 111 782	F1xM4/M5	10B	17-May-18	215	250	64.83	31-May-18	Burntwood River	1
900 067 000 111 783	F1xM4/M5	10B	17-May-18	219	257	65.23	31-May-18	Burntwood River	1
900 067 000 111 784	F1xM4/M5	10B	17-May-18	227	262	69.40	31-May-18	Burntwood River	1
900 067 000 111 785	F1xM4/M5	10B	17-May-18	233	268	80.79	31-May-18	Burntwood River	1
900 067 000 111 789	F1xM4/M5	10B	17-May-18	175	200	40.09	31-May-18	Burntwood River	1
900 067 000 111 790	F1xM4/M5	10B	17-May-18	206	237	54.02	31-May-18	Burntwood River	1
900 067 000 111 792	F1xM4/M5	10B	17-May-18	240	270	90.14	31-May-18	Burntwood River	1
900 067 000 111 793	F1xM4/M5	10B	17-May-18	224	259	71.88	31-May-18	Burntwood River	1
900 067 000 111 794	F1xM4/M5	10B	17-May-18	218	252	63.03	31-May-18	Burntwood River	1
900 067 000 111 796	F1xM4/M5	10B	17-May-18	227	263	75.43	31-May-18	Burntwood River	1
900 067 000 111 798	F1xM4/M5	10B	17-May-18	234	272	76.25	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 111 799	F1xM4/M5	10B	17-May-18	235	275	84.15	31-May-18	Burntwood River	1
900 067 000 111 800	F1xM4/M5	10B	17-May-18	226	258	70.34	31-May-18	Burntwood River	1
900 067 000 111 801	F1xM4/M5	10B	17-May-18	209	237	56.24	31-May-18	Burntwood River	1
900 067 000 111 802	F1xM4/M5	10B	17-May-18	223	253	74.42	31-May-18	Burntwood River	1
900 067 000 111 803	F1xM4/M5	10B	17-May-18	190	224	49.74	31-May-18	Burntwood River	1
900 067 000 111 805	F1xM4/M5	10B	17-May-18	256	298	103.64	31-May-18	Burntwood River	1
900 067 000 111 806	F1xM4/M5	10B	17-May-18	201	235	45.60	31-May-18	Burntwood River	1
900 067 000 111 807	F1xM4/M5	10B	17-May-18	190	221	48.01	31-May-18	Burntwood River	1
900 067 000 111 810	F1xM4/M5	10B	17-May-18	232	272	83.50	31-May-18	Burntwood River	1
900 067 000 111 812	F1xM4/M5	10B	17-May-18	230	267	81.93	31-May-18	Burntwood River	1
900 067 000 111 813	F1xM4/M5	10B	17-May-18	212	242	54.82	31-May-18	Burntwood River	1
900 067 000 111 814	F1xM4/M5	10B	17-May-18	231	268	79.97	31-May-18	Burntwood River	1
900 067 000 111 815	F1xM4/M5	10B	17-May-18	225	265	70.47	31-May-18	Burntwood River	1
900 067 000 111 820	F1xM4/M5	10B	17-May-18	224	260	76.03	31-May-18	Burntwood River	1
900 067 000 111 822	F1xM4/M5	10B	17-May-18	227	266	72.44	31-May-18	Burntwood River	1
900 067 000 111 823	F1xM4/M5	10B	17-May-18	220	253	59.33	31-May-18	Burntwood River	1
900 067 000 111 825	F1xM4/M5	10B	17-May-18	233	268	77.04	31-May-18	Burntwood River	1
900 067 000 111 826	F1xM4/M5	10B	17-May-18	234	269	75.41	31-May-18	Burntwood River	1
900 067 000 111 827	F1xM4/M5	10B	17-May-18	227	260	70.51	31-May-18	Burntwood River	1
900 067 000 111 828	F1xM4/M5	10B	17-May-18	221	255	66.40	31-May-18	Burntwood River	1
900 067 000 111 829	F1xM4/M5	10B	17-May-18	221	256	68.57	31-May-18	Burntwood River	1
900 067 000 111 831	F1xM4/M5	10B	17-May-18	225	263	77.58	31-May-18	Burntwood River	1
900 067 000 111 833	F1xM4/M5	10B	17-May-18	222	257	64.20	31-May-18	Burntwood River	1
900 067 000 111 834	F1xM4/M5	10B	17-May-18	238	278	84.46	31-May-18	Burntwood River	1
900 067 000 111 835	F1xM4/M5	10B	17-May-18	223	262	61.59	31-May-18	Burntwood River	1
900 067 000 111 836	F1xM4/M5	10B	17-May-18	206	241	54.58	31-May-18	Burntwood River	1
900 067 000 111 837	F1xM4/M5	10B	17-May-18	230	265	75.77	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 111 838	F1xM4/M5	10B	17-May-18	225	261	72.24	31-May-18	Burntwood River	1
900 067 000 111 839	F1xM4/M5	10B	17-May-18	206	239	54.32	31-May-18	Burntwood River	1
900 067 000 111 841	F1xM4/M5	10B	17-May-18	210	239	59.57	31-May-18	Burntwood River	1
900 067 000 111 843	F1xM4/M5	10B	17-May-18	196	228	44.62	31-May-18	Burntwood River	1
900 067 000 111 844	F1xM4/M5	10B	17-May-18	220	252	58.34	31-May-18	Burntwood River	1
900 067 000 111 845	F1xM4/M5	10B	17-May-18	225	263	75.03	31-May-18	Burntwood River	1
900 067 000 111 846	F1xM4/M5	10B	17-May-18	223	261	67.23	31-May-18	Burntwood River	1
900 067 000 111 847	F1xM4/M5	10B	17-May-18	223	257	73.06	31-May-18	Burntwood River	1
900 067 000 111 848	F1xM4/M5	10B	17-May-18	229	259	79.19	31-May-18	Burntwood River	1
900 067 000 111 852	F1xM4/M5	10B	17-May-18	210	242	47.63	31-May-18	Burntwood River	1
900 067 000 111 853	F1xM4/M5	10B	17-May-18	235	274	88.74	31-May-18	Burntwood River	1
900 067 000 111 854	F1xM4/M5	10B	17-May-18	239	269	78.83	31-May-18	Burntwood River	1
900 067 000 111 855	F1xM4/M5	10B	17-May-18	205	240	54.51	31-May-18	Burntwood River	1
900 067 000 111 856	F1xM4/M5	10B	17-May-18	216	247	63.92	31-May-18	Burntwood River	1
900 067 000 111 857	F1xM4/M5	10B	17-May-18	218	249	56.75	31-May-18	Burntwood River	1
900 067 000 111 858	F1xM4/M5	10B	17-May-18	220	254	65.46	31-May-18	Burntwood River	1
900 067 000 111 860	F1xM4/M5	10B	17-May-18	233	267	79.83	31-May-18	Burntwood River	1
900 067 000 111 863	F1xM4/M5	10B	17-May-18	228	265	82.70	31-May-18	Burntwood River	1
900 067 000 111 864	F1xM4/M5	10B	17-May-18	219	253	65.40	31-May-18	Burntwood River	1
900 067 000 111 866	F1xM4/M5	10B	17-May-18	234	274	84.19	31-May-18	Burntwood River	1
900 067 000 111 867	F1xM4/M5	10B	17-May-18	215	247	60.70	31-May-18	Burntwood River	1
900 067 000 111 868	F1xM4/M5	10B	17-May-18	217	251	63.72	31-May-18	Burntwood River	1
900 067 000 111 869	F1xM4/M5	10B	17-May-18	212	242	57.53	31-May-18	Burntwood River	1
900 067 000 111 870	F1xM4/M5	10B	17-May-18	220	259	61.64	31-May-18	Burntwood River	1
900 067 000 111 871	F1xM4/M5	10B	17-May-18	210	240	57.64	31-May-18	Burntwood River	1
900 067 000 111 872	F1xM4/M5	10B	17-May-18	211	244	56.02	31-May-18	Burntwood River	1
900 067 000 111 874	F1xM4/M5	10B	17-May-18	215	251	55.46	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 111 875	F1xM4/M5	10B	17-May-18	230	269	84.05	31-May-18	Burntwood River	1
900 067 000 111 876	F1xM4/M5	10B	17-May-18	266	341	126.75	31-May-18	Burntwood River	1
900 067 000 111 877	F1xM4/M5	10B	17-May-18	239	277	79.75	31-May-18	Burntwood River	1
900 067 000 111 878	F1xM4/M5	10B	17-May-18	215	253	62.25	31-May-18	Burntwood River	1
900 067 000 111 879	F1xM4/M5	10B	17-May-18	198	233	48.34	31-May-18	Burntwood River	1
900 067 000 111 880	F1xM4/M5	10B	17-May-18	227	259	73.70	31-May-18	Burntwood River	1
900 067 000 110 281	F1xM1/M2	11A	17-May-18	211	252	72.85	7-Jun-18	Burntwood River	2
900 067 000 110 282	F1xM1/M2	11A	17-May-18	197	235	53.51	7-Jun-18	Burntwood River	2
900 067 000 110 283	F1xM1/M2	11A	17-May-18	240	283	103.68	7-Jun-18	Burntwood River	2
900 067 000 110 285	F1xM1/M2	11A	17-May-18	180	216	35.55	7-Jun-18	Burntwood River	2
900 067 000 110 286	F1xM1/M2	11A	17-May-18	198	230	52.71	7-Jun-18	Burntwood River	1
900 067 000 110 290	F1xM1/M2	11A	17-May-18	235	273	84.02	7-Jun-18	Burntwood River	2
900 067 000 110 291	F1xM1/M2	11A	17-May-18	215	255	77.45	7-Jun-18	Burntwood River	2
900 067 000 110 292	F1xM1/M2	11A	17-May-18	212	249	64.42	7-Jun-18	Burntwood River	2
900 067 000 110 296	F1xM1/M2	11A	17-May-18	218	260	73.04	7-Jun-18	Burntwood River	2
900 067 000 110 299	F1xM1/M2	11A	17-May-18	198	239	48.12	7-Jun-18	Burntwood River	2
900 067 000 110 300	F1xM1/M2	11A	17-May-18	205	245	68.45	7-Jun-18	Burntwood River	2
900 067 000 110 301	F1xM1/M2	11A	17-May-18	224	264	79	7-Jun-18	Burntwood River	2
900 067 000 110 303	F1xM1/M2	11A	17-May-18	220	260	63	7-Jun-18	Burntwood River	2
900 067 000 110 306	F1xM1/M2	11A	17-May-18	260	297	127.3	7-Jun-18	Burntwood River	2
900 067 000 110 307	F1xM1/M2	11A	17-May-18	193	225	46.72	7-Jun-18	Burntwood River	2
900 067 000 110 308	F1xM1/M2	11A	17-May-18	240	284	100.54	7-Jun-18	Burntwood River	1
900 067 000 110 310	F1xM1/M2	11A	17-May-18	206	250	56.97	7-Jun-18	Burntwood River	2
900 067 000 110 311	F1xM1/M2	11A	17-May-18	219	259	71.24	7-Jun-18	Burntwood River	2
900 067 000 110 312	F1xM1/M2	11A	17-May-18	225	269	84.86	7-Jun-18	Burntwood River	2
900 067 000 110 317	F1xM1/M2	11A	17-May-18	240	290	110.5	7-Jun-18	Burntwood River	2
900 067 000 110 318	F1xM1/M2	11A	17-May-18	215	257	75.85	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 320	F1xM1/M2	11A	17-May-18	229	269	93	7-Jun-18	Burntwood River	2
900 067 000 110 321	F1xM1/M2	11A	17-May-18	255	307	125.66	7-Jun-18	Burntwood River	2
900 067 000 110 322	F1xM1/M2	11A	17-May-18	263	310	132.3	7-Jun-18	Burntwood River	2
900 067 000 110 323	F1xM1/M2	11A	17-May-18	204	247	61.3	7-Jun-18	Burntwood River	1
900 067 000 110 324	F1xM1/M2	11A	17-May-18	219	259	70.33	7-Jun-18	Burntwood River	2
900 067 000 110 325	F1xM1/M2	11A	17-May-18	220	260	77.44	7-Jun-18	Burntwood River	2
900 067 000 110 327	F1xM1/M2	11A	17-May-18	231	267	80.4	7-Jun-18	Burntwood River	1
900 067 000 110 328	F1xM1/M2	11A	17-May-18	204	239	59.13	7-Jun-18	Burntwood River	2
900 067 000 110 331	F1xM1/M2	11A	17-May-18	235	279	90.24	7-Jun-18	Burntwood River	2
900 067 000 110 335	F1xM1/M2	11A	17-May-18	236	278	89.87	7-Jun-18	Burntwood River	1
900 067 000 110 336	F1xM1/M2	11A	17-May-18	215	259	76	7-Jun-18	Burntwood River	2
900 067 000 110 339	F1xM1/M2	11A	17-May-18	219	261	75.3	7-Jun-18	Burntwood River	2
900 067 000 110 340	F1xM1/M2	11A	17-May-18	225	262	76.8	7-Jun-18	Burntwood River	2
900 067 000 110 343	F1xM1/M2	11A	17-May-18	213	248	76	7-Jun-18	Burntwood River	2
900 067 000 110 345	F1xM1/M2	11A	17-May-18	230	269	82.94	7-Jun-18	Burntwood River	2
900 067 000 110 349	F1xM1/M2	11A	17-May-18	225	269	79.85	7-Jun-18	Burntwood River	2
900 067 000 110 351	F1xM1/M2	11A	17-May-18	244	284	99.38	7-Jun-18	Burntwood River	2
900 067 000 110 356	F1xM1/M2	11A	17-May-18	230	272	93.08	7-Jun-18	Burntwood River	2
900 067 000 110 357	F1xM1/M2	11A	17-May-18	205	245	68.3	7-Jun-18	Burntwood River	2
900 067 000 110 358	F1xM1/M2	11A	17-May-18	200	236	53.06	7-Jun-18	Burntwood River	1
900 067 000 110 361	F1xM1/M2	11A	17-May-18	214	255	68.53	7-Jun-18	Burntwood River	2
900 067 000 110 365	F1xM1/M2	11A	17-May-18	203	240	51.66	7-Jun-18	Burntwood River	2
900 067 000 110 366	F1xM1/M2	11A	17-May-18	223	262	81.64	7-Jun-18	Burntwood River	2
900 067 000 110 367	F1xM1/M2	11A	17-May-18	196	239	49.85	7-Jun-18	Burntwood River	2
900 067 000 110 374	F1xM1/M2	11A	17-May-18	198	235	57	7-Jun-18	Burntwood River	2
900 067 000 110 376	F1xM1/M2	11A	17-May-18	228	272	75.44	7-Jun-18	Burntwood River	2
900 067 000 110 377	F1xM1/M2	11A	17-May-18	195	233	51.94	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 378	F1xM1/M2	11A	17-May-18	225	271	81.91	7-Jun-18	Burntwood River	2
900 067 000 110 380	F1xM1/M2	11A	17-May-18	215	255	77.89	7-Jun-18	Burntwood River	2
900 067 000 110 381	F1xM1/M2	11A	17-May-18	218	265	67.81	7-Jun-18	Burntwood River	1
900 067 000 110 383	F1xM1/M2	11A	17-May-18	244	286	100.56	7-Jun-18	Burntwood River	2
900 067 000 110 384	F1xM1/M2	11A	17-May-18	219	256	81.31	7-Jun-18	Burntwood River	2
900 067 000 110 385	F1xM1/M2	11A	17-May-18	210	252	67.54	7-Jun-18	Burntwood River	2
900 067 000 110 386	F1xM1/M2	11A	17-May-18	208	244	53.06	7-Jun-18	Burntwood River	2
900 067 000 110 387	F1xM1/M2	11A	17-May-18	233	268	90.35	7-Jun-18	Burntwood River	2
900 067 000 110 390	F1xM1/M2	11A	17-May-18	235	275	97.91	7-Jun-18	Burntwood River	2
900 067 000 110 391	F1xM1/M2	11A	17-May-18	223	264	68.45	7-Jun-18	Burntwood River	2
900 067 000 110 392	F1xM1/M2	11A	17-May-18	218	258	72.99	7-Jun-18	Burntwood River	2
900 067 000 110 394	F1xM1/M2	11A	17-May-18	190	232	49.5	7-Jun-18	Burntwood River	2
900 067 000 110 395	F1xM1/M2	11A	17-May-18	227	264	82	7-Jun-18	Burntwood River	2
900 067 000 110 396	F1xM1/M2	11A	17-May-18	215	256	70.16	7-Jun-18	Burntwood River	2
900 067 000 110 398	F1xM1/M2	11A	17-May-18	209	251	60.71	7-Jun-18	Burntwood River	2
900 067 000 110 399	F1xM1/M2	11A	17-May-18	215	258	64.7	7-Jun-18	Burntwood River	1
900 067 000 110 400	F1xM1/M2	11A	17-May-18	201	242	58.46	7-Jun-18	Burntwood River	2
900 067 000 110 401	F1xM1/M2	11A	17-May-18	245	285	97.95	7-Jun-18	Burntwood River	2
900 067 000 110 402	F1xM1/M2	11A	17-May-18	215	258	74.01	7-Jun-18	Burntwood River	1
900 067 000 110 406	F1xM1/M2	11A	17-May-18	225	267	83.02	7-Jun-18	Burntwood River	2
900 067 000 110 407	F1xM1/M2	11A	17-May-18	205	245	58.7	7-Jun-18	Burntwood River	2
900 067 000 110 409	F1xM1/M2	11A	17-May-18	203	240	52.01	7-Jun-18	Burntwood River	2
900 067 000 110 410	F1xM1/M2	11A	17-May-18	205	246	57.29	7-Jun-18	Burntwood River	2
900 067 000 110 411	F1xM1/M2	11A	17-May-18	217	262	85	7-Jun-18	Burntwood River	2
900 067 000 110 412	F1xM1/M2	11A	17-May-18	215	256	75	7-Jun-18	Burntwood River	2
900 067 000 110 413	F1xM1/M2	11A	17-May-18	204	244	58.63	7-Jun-18	Burntwood River	2
900 067 000 110 414	F1xM1/M2	11A	17-May-18	230	271	96.68	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 417	F1xM1/M2	11A	17-May-18	233	275	92.4	7-Jun-18	Burntwood River	2
900 067 000 110 419	F1xM1/M2	11A	17-May-18	235	276	90.88	7-Jun-18	Burntwood River	2
900 067 000 110 420	F1xM1/M2	11A	17-May-18	210	252	60.45	7-Jun-18	Burntwood River	2
900 067 000 110 421	F1xM1/M2	11A	17-May-18	222	263	82.57	7-Jun-18	Burntwood River	1
900 067 000 110 422	F1xM1/M2	11A	17-May-18	230	272	85.54	7-Jun-18	Burntwood River	2
900 067 000 110 423	F1xM1/M2	11A	17-May-18	210	253	73.68	7-Jun-18	Burntwood River	2
900 067 000 110 424	F1xM1/M2	11A	17-May-18	209	249	64.09	7-Jun-18	Burntwood River	1
900 067 000 110 426	F1xM1/M2	11A	17-May-18	240	284	87.35	7-Jun-18	Burntwood River	2
900 067 000 110 427	F1xM1/M2	11A	17-May-18	193	228	47.31	7-Jun-18	Burntwood River	2
900 067 000 110 429	F1xM1/M2	11A	17-May-18	219	254	90.85	7-Jun-18	Burntwood River	2
900 067 000 110 431	F1xM1/M2	11A	17-May-18	233	285	83.82	7-Jun-18	Burntwood River	2
900 067 000 110 432	F1xM1/M2	11A	17-May-18	211	254	60.08	7-Jun-18	Burntwood River	2
900 067 000 110 435	F1xM1/M2	11A	17-May-18	209	248	60.94	7-Jun-18	Burntwood River	2
900 067 000 110 438	F1xM1/M2	11A	17-May-18	229	276	80.77	7-Jun-18	Burntwood River	2
900 067 000 110 440	F1xM1/M2	11A	17-May-18	207	246	59.02	7-Jun-18	Burntwood River	2
900 067 000 110 442	F1xM1/M2	11A	17-May-18	235	275	90.98	7-Jun-18	Burntwood River	2
900 067 000 110 443	F1xM1/M2	11A	17-May-18	219	257	71.22	7-Jun-18	Burntwood River	2
900 067 000 110 444	F1xM1/M2	11A	17-May-18	227	264	76.68	7-Jun-18	Burntwood River	2
900 067 000 110 445	F1xM1/M2	11A	17-May-18	218	261	77.7	7-Jun-18	Burntwood River	2
900 067 000 110 446	F1xM1/M2	11A	17-May-18	215	257	72.86	7-Jun-18	Burntwood River	2
900 067 000 110 447	F1xM1/M2	11A	17-May-18	209	250	62.78	7-Jun-18	Burntwood River	1
900 067 000 110 448	F1xM1/M2	11A	17-May-18	222	265	75.37	7-Jun-18	Burntwood River	2
900 067 000 110 449	F1xM1/M2	11A	17-May-18	224	264	75.13	7-Jun-18	Burntwood River	2
900 067 000 110 450	F1xM1/M2	11A	17-May-18	257	310	121.66	7-Jun-18	Burntwood River	2
900 067 000 110 451	F1xM1/M2	11A	17-May-18	212	256	61.37	7-Jun-18	Burntwood River	2
900 067 000 110 452	F1xM1/M2	11A	17-May-18	240	282	91	7-Jun-18	Burntwood River	2
900 067 000 110 453	F1xM1/M2	11A	17-May-18	227	272	91.69	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 454	F1xM1/M2	11A	17-May-18	200	238	53.79	7-Jun-18	Burntwood River	2
900 067 000 110 456	F1xM1/M2	11A	17-May-18	210	248	65.98	7-Jun-18	Burntwood River	2
900 067 000 110 457	F1xM1/M2	11A	17-May-18	215	263	57.67	7-Jun-18	Burntwood River	2
900 067 000 110 461	F1xM1/M2	11A	17-May-18	220	259	73.71	7-Jun-18	Burntwood River	2
900 067 000 110 463	F1xM1/M2	11A	17-May-18	215	260	65.1	7-Jun-18	Burntwood River	2
900 067 000 110 464	F1xM1/M2	11A	17-May-18	223	269	81.5	7-Jun-18	Burntwood River	2
900 067 000 110 465	F1xM1/M2	11A	17-May-18	220	261	71.99	7-Jun-18	Burntwood River	2
900 067 000 110 467	F1xM1/M2	11A	17-May-18	200	239	55.2	7-Jun-18	Burntwood River	2
900 067 000 110 469	F1xM1/M2	11A	17-May-18	200	237	51.53	7-Jun-18	Burntwood River	2
900 067 000 110 470	F1xM1/M2	11A	17-May-18	219	263	75	7-Jun-18	Burntwood River	2
900 067 000 110 471	F1xM1/M2	11A	17-May-18	202	236	57.88	7-Jun-18	Burntwood River	2
900 067 000 110 472	F1xM1/M2	11A	17-May-18	210	254	66.86	7-Jun-18	Burntwood River	2
900 067 000 110 473	F1xM1/M2	11A	17-May-18	211	251	63.7	7-Jun-18	Burntwood River	1
900 067 000 110 474	F1xM1/M2	11A	17-May-18	240	279	96.88	7-Jun-18	Burntwood River	2
900 067 000 110 475	F1xM1/M2	11A	17-May-18	226	261	64.44	7-Jun-18	Burntwood River	2
900 067 000 110 476	F1xM1/M2	11A	17-May-18	234	275	94.02	7-Jun-18	Burntwood River	2
900 067 000 110 477	F1xM1/M2	11A	17-May-18	205	242	58.72	7-Jun-18	Burntwood River	2
900 067 000 110 479	F1xM1/M2	11A	17-May-18	225	264	78	7-Jun-18	Burntwood River	2
900 067 000 110 382	F1xM4/M5	11B	17-May-18	210	252	66.23	7-Jun-18	Burntwood River	2
900 067 000 110 388	F1xM4/M5	11B	17-May-18	212	247	68.74	7-Jun-18	Burntwood River	2
900 067 000 110 389	F1xM4/M5	11B	17-May-18	200	235	56.48	7-Jun-18	Burntwood River	2
900 067 000 110 393	F1xM4/M5	11B	17-May-18	231	275	88.27	7-Jun-18	Burntwood River	2
900 067 000 110 397	F1xM4/M5	11B	17-May-18	235	283	80.96	7-Jun-18	Burntwood River	1
900 067 000 110 403	F1xM4/M5	11B	17-May-18	220	266	73.01	7-Jun-18	Burntwood River	2
900 067 000 110 404	F1xM4/M5	11B	17-May-18	220	261	70.06	7-Jun-18	Burntwood River	2
900 067 000 110 405	F1xM4/M5	11B	17-May-18	217	259	74.85	7-Jun-18	Burntwood River	2
900 067 000 110 408	F1xM4/M5	11B	17-May-18	214	255	66.58	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 415	F1xM4/M5	11B	17-May-18	229	274	89.52	7-Jun-18	Burntwood River	2
900 067 000 110 416	F1xM4/M5	11B	17-May-18	215	259	72.39	7-Jun-18	Burntwood River	2
900 067 000 110 418	F1xM4/M5	11B	17-May-18	230	271	78.51	7-Jun-18	Burntwood River	2
900 067 000 110 425	F1xM4/M5	11B	17-May-18	190	229	42.87	7-Jun-18	Burntwood River	2
900 067 000 110 428	F1xM4/M5	11B	17-May-18	255	299	105.63	7-Jun-18	Burntwood River	2
900 067 000 110 430	F1xM4/M5	11B	17-May-18	185	223	46.57	7-Jun-18	Burntwood River	2
900 067 000 110 433	F1xM4/M5	11B	17-May-18	215	260	83.39	7-Jun-18	Burntwood River	2
900 067 000 110 434	F1xM4/M5	11B	17-May-18	215	254	66.94	7-Jun-18	Burntwood River	2
900 067 000 110 436	F1xM4/M5	11B	17-May-18	215	259	73.04	7-Jun-18	Burntwood River	2
900 067 000 110 437	F1xM4/M5	11B	17-May-18	208	249	49.93	7-Jun-18	Burntwood River	2
900 067 000 110 439	F1xM4/M5	11B	17-May-18	199	230	52.94	7-Jun-18	Burntwood River	2
900 067 000 110 441	F1xM4/M5	11B	17-May-18	183	210	49.43	7-Jun-18	Burntwood River	2
900 067 000 110 455	F1xM4/M5	11B	17-May-18	217	258	71.83	7-Jun-18	Burntwood River	2
900 067 000 110 458	F1xM4/M5	11B	17-May-18	202	238	59.29	7-Jun-18	Burntwood River	2
900 067 000 110 459	F1xM4/M5	11B	17-May-18	250	300	123.84	7-Jun-18	Burntwood River	2
900 067 000 110 460	F1xM4/M5	11B	17-May-18	233	282	92.59	7-Jun-18	Burntwood River	2
900 067 000 110 462	F1xM4/M5	11B	17-May-18	230	270	83.79	7-Jun-18	Burntwood River	2
900 067 000 110 466	F1xM4/M5	11B	17-May-18	230	265	76.69	7-Jun-18	Burntwood River	2
900 067 000 110 468	F1xM4/M5	11B	17-May-18	207	253	67.32	7-Jun-18	Burntwood River	2
900 067 000 110 478	F1xM4/M5	11B	17-May-18	212	255	68.48	7-Jun-18	Burntwood River	2
900 067 000 110 480	F1xM4/M5	11B	17-May-18	224	265	72.24	7-Jun-18	Burntwood River	2
900 067 000 110 681	F1xM4/M5	11B	17-May-18	205	248	59.74	7-Jun-18	Burntwood River	2
900 067 000 110 682	F1xM4/M5	11B	17-May-18	222	266	74.19	7-Jun-18	Burntwood River	2
900 067 000 110 683	F1xM4/M5	11B	17-May-18	185	219	40.74	7-Jun-18	Burntwood River	2
900 067 000 110 684	F1xM4/M5	11B	17-May-18	218	259	73.33	7-Jun-18	Burntwood River	2
900 067 000 110 685	F1xM4/M5	11B	17-May-18	225	274	71.32	7-Jun-18	Burntwood River	2
900 067 000 110 686	F1xM4/M5	11B	17-May-18	223	270	79.45	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 687	F1xM4/M5	11B	17-May-18	195	230	50.28	7-Jun-18	Burntwood River	2
900 067 000 110 688	F1xM4/M5	11B	17-May-18	219	255	67.89	7-Jun-18	Burntwood River	2
900 067 000 110 689	F1xM4/M5	11B	17-May-18	228	276	89.39	7-Jun-18	Burntwood River	2
900 067 000 110 690	F1xM4/M5	11B	17-May-18	205	250	64.29	7-Jun-18	Burntwood River	2
900 067 000 110 691	F1xM4/M5	11B	17-May-18	230	276	88.87	7-Jun-18	Burntwood River	2
900 067 000 110 692	F1xM4/M5	11B	17-May-18	243	282	106.11	7-Jun-18	Burntwood River	2
900 067 000 110 693	F1xM4/M5	11B	17-May-18	230	275	80.43	7-Jun-18	Burntwood River	2
900 067 000 110 694	F1xM4/M5	11B	17-May-18	240	281	88.1	7-Jun-18	Burntwood River	1
900 067 000 110 696	F1xM4/M5	11B	17-May-18	210	248	64.75	7-Jun-18	Burntwood River	2
900 067 000 110 697	F1xM4/M5	11B	17-May-18	220	255	72.65	7-Jun-18	Burntwood River	2
900 067 000 110 699	F1xM4/M5	11B	17-May-18	230	267	73.44	7-Jun-18	Burntwood River	2
900 067 000 110 700	F1xM4/M5	11B	17-May-18	205	239	53.03	7-Jun-18	Burntwood River	2
900 067 000 110 701	F1xM4/M5	11B	17-May-18	215	266	66.06	7-Jun-18	Burntwood River	2
900 067 000 110 702	F1xM4/M5	11B	17-May-18	204	243	62.17	7-Jun-18	Burntwood River	2
900 067 000 110 703	F1xM4/M5	11B	17-May-18	210	249	59.23	7-Jun-18	Burntwood River	2
900 067 000 110 704	F1xM4/M5	11B	17-May-18	226	270	82.93	7-Jun-18	Burntwood River	2
900 067 000 110 705	F1xM4/M5	11B	17-May-18	212	253	65.68	7-Jun-18	Burntwood River	2
900 067 000 110 706	F1xM4/M5	11B	17-May-18	233	274	82.29	7-Jun-18	Burntwood River	2
900 067 000 110 707	F1xM4/M5	11B	17-May-18	185	219	42.94	7-Jun-18	Burntwood River	2
900 067 000 110 708	F1xM4/M5	11B	17-May-18	212	257	62.57	7-Jun-18	Burntwood River	2
900 067 000 110 709	F1xM4/M5	11B	17-May-18	215	256	75.05	7-Jun-18	Burntwood River	2
900 067 000 110 711	F1xM4/M5	11B	17-May-18	220	261	75.59	7-Jun-18	Burntwood River	2
900 067 000 110 712	F1xM4/M5	11B	17-May-18	210	254	64.54	7-Jun-18	Burntwood River	2
900 067 000 110 713	F1xM4/M5	11B	17-May-18	210	245	60.72	7-Jun-18	Burntwood River	2
900 067 000 110 714	F1xM4/M5	11B	17-May-18	210	250	54.93	7-Jun-18	Burntwood River	2
900 067 000 110 715	F1xM4/M5	11B	17-May-18	206	249	58.39	7-Jun-18	Burntwood River	2
900 067 000 110 716	F1xM4/M5	11B	17-May-18	210	251	61.78	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 719	F1xM4/M5	11B	17-May-18	220	264	78.08	7-Jun-18	Burntwood River	2
900 067 000 110 720	F1xM4/M5	11B	17-May-18	215	256	68.23	7-Jun-18	Burntwood River	2
900 067 000 110 721	F1xM4/M5	11B	17-May-18	242	289	102.19	7-Jun-18	Burntwood River	1
900 067 000 110 722	F1xM4/M5	11B	17-May-18	235	278	91.64	7-Jun-18	Burntwood River	2
900 067 000 110 723	F1xM4/M5	11B	17-May-18	189	225	45.49	7-Jun-18	Burntwood River	2
900 067 000 110 724	F1xM4/M5	11B	17-May-18	220	270	74.42	7-Jun-18	Burntwood River	2
900 067 000 110 725	F1xM4/M5	11B	17-May-18	175	209	36.39	7-Jun-18	Burntwood River	2
900 067 000 110 727	F1xM4/M5	11B	17-May-18	190	231	53.66	7-Jun-18	Burntwood River	2
900 067 000 110 728	F1xM4/M5	11B	17-May-18	205	243	56.54	7-Jun-18	Burntwood River	2
900 067 000 110 729	F1xM4/M5	11B	17-May-18	220	261	66.09	7-Jun-18	Burntwood River	2
900 067 000 110 730	F1xM4/M5	11B	17-May-18	223	265	87.61	7-Jun-18	Burntwood River	2
900 067 000 110 731	F1xM4/M5	11B	17-May-18	187	224	44.64	7-Jun-18	Burntwood River	2
900 067 000 110 733	F1xM4/M5	11B	17-May-18	210	250	60.98	7-Jun-18	Burntwood River	2
900 067 000 110 734	F1xM4/M5	11B	17-May-18	195	236	47.19	7-Jun-18	Burntwood River	2
900 067 000 110 735	F1xM4/M5	11B	17-May-18	202	242	54.43	7-Jun-18	Burntwood River	2
900 067 000 110 736	F1xM4/M5	11B	17-May-18	222	266	56.53	7-Jun-18	Burntwood River	2
900 067 000 110 737	F1xM4/M5	11B	17-May-18	201	245	52.58	7-Jun-18	Burntwood River	2
900 067 000 110 738	F1xM4/M5	11B	17-May-18	215	261	66.79	7-Jun-18	Burntwood River	2
900 067 000 110 739	F1xM4/M5	11B	17-May-18	233	281	89.16	7-Jun-18	Burntwood River	2
900 067 000 110 740	F1xM4/M5	11B	17-May-18	185	221	44.25	7-Jun-18	Burntwood River	2
900 067 000 110 741	F1xM4/M5	11B	17-May-18	209	250	58.34	7-Jun-18	Burntwood River	2
900 067 000 110 742	F1xM4/M5	11B	17-May-18	215	257	67.78	7-Jun-18	Burntwood River	2
900 067 000 110 743	F1xM4/M5	11B	17-May-18	220	269	73.33	7-Jun-18	Burntwood River	2
900 067 000 110 744	F1xM4/M5	11B	17-May-18	215	256	67.32	7-Jun-18	Burntwood River	2
900 067 000 110 745	F1xM4/M5	11B	17-May-18	229	275	82.83	7-Jun-18	Burntwood River	2
900 067 000 110 746	F1xM4/M5	11B	17-May-18	183	221	38.74	7-Jun-18	Burntwood River	2
900 067 000 110 748	F1xM4/M5	11B	17-May-18	241	286	96.25	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 749	F1xM4/M5	11B	17-May-18	210	250	63.39	7-Jun-18	Burntwood River	2
900 067 000 110 750	F1xM4/M5	11B	17-May-18	215	260	65.04	7-Jun-18	Burntwood River	1
900 067 000 110 751	F1xM4/M5	11B	17-May-18	222	265	75.34	7-Jun-18	Burntwood River	2
900 067 000 110 752	F1xM4/M5	11B	17-May-18	188	225	42.67	7-Jun-18	Burntwood River	2
900 067 000 110 753	F1xM4/M5	11B	17-May-18	207	246	62.2	7-Jun-18	Burntwood River	2
900 067 000 110 754	F1xM4/M5	11B	17-May-18	220	265	67.94	7-Jun-18	Burntwood River	2
900 067 000 110 755	F1xM4/M5	11B	17-May-18	195	225	49.08	7-Jun-18	Burntwood River	2
900 067 000 110 756	F1xM4/M5	11B	17-May-18	225	271	74.03	7-Jun-18	Burntwood River	2
900 067 000 110 757	F1xM4/M5	11B	17-May-18	213	252	65.54	7-Jun-18	Burntwood River	2
900 067 000 110 758	F1xM4/M5	11B	17-May-18	205	236	53.7	7-Jun-18	Burntwood River	2
900 067 000 110 759	F1xM4/M5	11B	17-May-18	244	295	97.02	7-Jun-18	Burntwood River	1
900 067 000 110 760	F1xM4/M5	11B	17-May-18	200	239	47.92	7-Jun-18	Burntwood River	2
900 067 000 110 761	F1xM4/M5	11B	17-May-18	210	249	58.44	7-Jun-18	Burntwood River	2
900 067 000 110 762	F1xM4/M5	11B	17-May-18	222	265	77.06	7-Jun-18	Burntwood River	2
900 067 000 110 764	F1xM4/M5	11B	17-May-18	206	251	59.83	7-Jun-18	Burntwood River	2
900 067 000 110 765	F1xM4/M5	11B	17-May-18	222	266	70.16	7-Jun-18	Burntwood River	2
900 067 000 110 766	F1xM4/M5	11B	17-May-18	225	266	78.92	7-Jun-18	Burntwood River	1
900 067 000 110 767	F1xM4/M5	11B	17-May-18	220	264	67.22	7-Jun-18	Burntwood River	2
900 067 000 110 768	F1xM4/M5	11B	17-May-18	222	259	69.13	7-Jun-18	Burntwood River	2
900 067 000 110 770	F1xM4/M5	11B	17-May-18	222	264	77.84	7-Jun-18	Burntwood River	2
900 067 000 110 771	F1xM4/M5	11B	17-May-18	220	269	75.34	7-Jun-18	Burntwood River	1
900 067 000 110 772	F1xM4/M5	11B	17-May-18	225	266	77.24	7-Jun-18	Burntwood River	2
900 067 000 110 773	F1xM4/M5	11B	17-May-18	227	268	85.32	7-Jun-18	Burntwood River	2
900 067 000 110 774	F1xM4/M5	11B	17-May-18	226	270	77.02	7-Jun-18	Burntwood River	2
900 067 000 110 775	F1xM4/M5	11B	17-May-18	220	256	69.39	7-Jun-18	Burntwood River	2
900 067 000 110 776	F1xM4/M5	11B	17-May-18	230	273	87.69	7-Jun-18	Burntwood River	2
900 067 000 110 777	F1xM4/M5	11B	17-May-18	206	248	68.49	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 778	F1xM4/M5	11B	17-May-18	225	267	78.77	7-Jun-18	Burntwood River	2
900 067 000 110 779	F1xM4/M5	11B	17-May-18	209	246	60.19	7-Jun-18	Burntwood River	2
900 067 000 110 780	F1xM4/M5	11B	17-May-18	240	285	78.51	7-Jun-18	Burntwood River	2
900 067 000 109 891	F1xM1/M2	12A	18-May-18	232	266	80.33	31-May-18	Burntwood River	1
900 067 000 109 896	F1xM1/M2	12A	18-May-18	220	259	78.05	31-May-18	Burntwood River	1
900 067 000 109 898	F1xM1/M2	12A	18-May-18	208	242	62.88	31-May-18	Burntwood River	1
900 067 000 109 901	F1xM1/M2	12A	18-May-18	238	278	92.86	31-May-18	Burntwood River	1
900 067 000 109 921	F1xM1/M2	12A	18-May-18	220	253	69.66	31-May-18	Burntwood River	1
900 067 000 109 926	F1xM1/M2	12A	18-May-18	210	245	62.31	31-May-18	Burntwood River	1
900 067 000 109 928	F1xM1/M2	12A	18-May-18	236	274	93.83	31-May-18	Burntwood River	1
900 067 000 109 931	F1xM1/M2	12A	18-May-18	227	264	79.64	31-May-18	Burntwood River	1
900 067 000 109 941	F1xM1/M2	12A	18-May-18	245	287	90.33	31-May-18	Burntwood River	1
900 067 000 109 944	F1xM1/M2	12A	18-May-18	221	256	73.88	31-May-18	Burntwood River	1
900 067 000 109 951	F1xM1/M2	12A	18-May-18	223	269	67.89	31-May-18	Burntwood River	1
900 067 000 109 954	F1xM1/M2	12A	18-May-18	206	239	62.24	31-May-18	Burntwood River	1
900 067 000 109 956	F1xM1/M2	12A	18-May-18	230	265	89.94	31-May-18	Burntwood River	1
900 067 000 109 960	F1xM1/M2	12A	18-May-18	223	255	82.99	31-May-18	Burntwood River	1
900 067 000 109 961	F1xM1/M2	12A	18-May-18	233	271	85.77	31-May-18	Burntwood River	1
900 067 000 109 999	F1xM1/M2	12A	18-May-18	203	242	54.30	31-May-18	Burntwood River	1
900 067 000 110 012	F1xM1/M2	12A	18-May-18	203	239	50.53	31-May-18	Burntwood River	1
900 067 000 110 036	F1xM1/M2	12A	18-May-18	204	235	51.22	31-May-18	Burntwood River	1
900 067 000 110 039	F1xM1/M2	12A	18-May-18	203	240	53.85	31-May-18	Burntwood River	1
900 067 000 110 052	F1xM1/M2	12A	18-May-18	211	248	65.22	31-May-18	Burntwood River	1
900 067 000 110 081	F1xM1/M2	12A	18-May-18	208	245	58.50	31-May-18	Burntwood River	1
900 067 000 110 082	F1xM1/M2	12A	18-May-18	218	252	64.39	31-May-18	Burntwood River	1
900 067 000 110 083	F1xM1/M2	12A	18-May-18	220	259	62.74	31-May-18	Burntwood River	1
900 067 000 110 084	F1xM1/M2	12A	18-May-18	205	235	61.77	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 085	F1xM1/M2	12A	18-May-18	216	252	58.44	31-May-18	Burntwood River	1
900 067 000 110 086	F1xM1/M2	12A	18-May-18	227	261	77.09	31-May-18	Burntwood River	1
900 067 000 110 087	F1xM1/M2	12A	18-May-18	211	250	57.78	31-May-18	Burntwood River	1
900 067 000 110 088	F1xM1/M2	12A	18-May-18	194	233	46.03	31-May-18	Burntwood River	1
900 067 000 110 089	F1xM1/M2	12A	18-May-18	186	217	39.14	31-May-18	Burntwood River	1
900 067 000 110 090	F1xM1/M2	12A	18-May-18	207	244	53.10	31-May-18	Burntwood River	1
900 067 000 110 091	F1xM1/M2	12A	18-May-18	205	243	56.06	31-May-18	Burntwood River	1
900 067 000 110 092	F1xM1/M2	12A	18-May-18	235	271	75.60	31-May-18	Burntwood River	1
900 067 000 110 093	F1xM1/M2	12A	18-May-18	220	267	63.62	31-May-18	Burntwood River	1
900 067 000 110 094	F1xM1/M2	12A	18-May-18	194	221	49.56	31-May-18	Burntwood River	1
900 067 000 110 095	F1xM1/M2	12A	18-May-18	201	233	51.74	31-May-18	Burntwood River	1
900 067 000 110 096	F1xM1/M2	12A	18-May-18	203	238	48.56	31-May-18	Burntwood River	1
900 067 000 110 097	F1xM1/M2	12A	18-May-18	202	235	56.23	31-May-18	Burntwood River	1
900 067 000 110 098	F1xM1/M2	12A	18-May-18	233	263	79.46	31-May-18	Burntwood River	1
900 067 000 110 099	F1xM1/M2	12A	18-May-18	230	270	68.63	31-May-18	Burntwood River	1
900 067 000 110 100	F1xM1/M2	12A	18-May-18	205	245	52.76	31-May-18	Burntwood River	1
900 067 000 110 101	F1xM1/M2	12A	18-May-18	210	240	67.14	31-May-18	Burntwood River	1
900 067 000 110 102	F1xM1/M2	12A	18-May-18	203	245	56.98	31-May-18	Burntwood River	1
900 067 000 110 103	F1xM1/M2	12A	18-May-18	203	240	58.80	31-May-18	Burntwood River	1
900 067 000 110 104	F1xM1/M2	12A	18-May-18	236	272	86.25	31-May-18	Burntwood River	1
900 067 000 110 105	F1xM1/M2	12A	18-May-18	245	282	98.07	31-May-18	Burntwood River	1
900 067 000 110 106	F1xM1/M2	12A	18-May-18	232	264	76.86	31-May-18	Burntwood River	1
900 067 000 110 107	F1xM1/M2	12A	18-May-18	238	276	88.45	31-May-18	Burntwood River	1
900 067 000 110 108	F1xM1/M2	12A	18-May-18	225	265	69.38	31-May-18	Burntwood River	1
900 067 000 110 109	F1xM1/M2	12A	18-May-18	203	242	54.56	31-May-18	Burntwood River	1
900 067 000 110 110	F1xM1/M2	12A	18-May-18	230	271	84.20	31-May-18	Burntwood River	1
900 067 000 110 111	F1xM1/M2	12A	18-May-18	218	258	61.68	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 112	F1xM1/M2	12A	18-May-18	230	267	69.89	31-May-18	Burntwood River	1
900 067 000 110 113	F1xM1/M2	12A	18-May-18	195	231	47.70	31-May-18	Burntwood River	1
900 067 000 110 114	F1xM1/M2	12A	18-May-18	217	253	66.61	31-May-18	Burntwood River	1
900 067 000 110 116	F1xM1/M2	12A	18-May-18	236	279	99.84	31-May-18	Burntwood River	1
900 067 000 110 117	F1xM1/M2	12A	18-May-18	197	227	50.58	31-May-18	Burntwood River	1
900 067 000 110 118	F1xM1/M2	12A	18-May-18	209	246	59.97	31-May-18	Burntwood River	1
900 067 000 110 119	F1xM1/M2	12A	18-May-18	230	269	74.23	31-May-18	Burntwood River	1
900 067 000 110 120	F1xM1/M2	12A	18-May-18	221	258	77.78	31-May-18	Burntwood River	1
900 067 000 110 121	F1xM1/M2	12A	18-May-18	246	286	100.23	31-May-18	Burntwood River	1
900 067 000 110 122	F1xM1/M2	12A	18-May-18	203	240	51.47	31-May-18	Burntwood River	1
900 067 000 110 123	F1xM1/M2	12A	18-May-18	205	245	52.79	31-May-18	Burntwood River	1
900 067 000 110 124	F1xM1/M2	12A	18-May-18	195	236	50.49	31-May-18	Burntwood River	1
900 067 000 110 125	F1xM1/M2	12A	18-May-18	216	250	70.17	31-May-18	Burntwood River	1
900 067 000 110 126	F1xM1/M2	12A	18-May-18	190	227	44.79	31-May-18	Burntwood River	1
900 067 000 110 127	F1xM1/M2	12A	18-May-18	200	231	53.05	31-May-18	Burntwood River	1
900 067 000 110 128	F1xM1/M2	12A	18-May-18	230	272	82.04	31-May-18	Burntwood River	1
900 067 000 110 129	F1xM1/M2	12A	18-May-18	236	271	90.57	31-May-18	Burntwood River	1
900 067 000 110 130	F1xM1/M2	12A	18-May-18	224	266	75.58	31-May-18	Burntwood River	1
900 067 000 110 131	F1xM1/M2	12A	18-May-18	235	271	81.89	31-May-18	Burntwood River	1
900 067 000 110 132	F1xM1/M2	12A	18-May-18	226	271	72.35	31-May-18	Burntwood River	1
900 067 000 110 133	F1xM1/M2	12A	18-May-18	227	267	85.01	31-May-18	Burntwood River	1
900 067 000 110 134	F1xM1/M2	12A	18-May-18	243	284	103.73	31-May-18	Burntwood River	1
900 067 000 110 135	F1xM1/M2	12A	18-May-18	235	276	81.08	31-May-18	Burntwood River	1
900 067 000 110 136	F1xM1/M2	12A	18-May-18	229	269	65.70	31-May-18	Burntwood River	1
900 067 000 110 137	F1xM1/M2	12A	18-May-18	196	231	41.35	31-May-18	Burntwood River	1
900 067 000 110 138	F1xM1/M2	12A	18-May-18	176	210	34.68	31-May-18	Burntwood River	1
900 067 000 110 139	F1xM1/M2	12A	18-May-18	213	248	61.61	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 140	F1xM1/M2	12A	18-May-18	206	237	72.75	31-May-18	Burntwood River	1
900 067 000 110 141	F1xM1/M2	12A	18-May-18	211	243	56.67	31-May-18	Burntwood River	1
900 067 000 110 142	F1xM1/M2	12A	18-May-18	211	249	58.84	31-May-18	Burntwood River	1
900 067 000 110 143	F1xM1/M2	12A	18-May-18	215	251	67.87	31-May-18	Burntwood River	1
900 067 000 110 144	F1xM1/M2	12A	18-May-18	212	247	57.92	31-May-18	Burntwood River	1
900 067 000 110 145	F1xM1/M2	12A	18-May-18	213	251	63.58	31-May-18	Burntwood River	1
900 067 000 110 146	F1xM1/M2	12A	18-May-18	223	262	84.66	31-May-18	Burntwood River	1
900 067 000 110 147	F1xM1/M2	12A	18-May-18	157	181	25.25	31-May-18	Burntwood River	1
900 067 000 110 148	F1xM1/M2	12A	18-May-18	213	253	62.17	31-May-18	Burntwood River	1
900 067 000 110 149	F1xM1/M2	12A	18-May-18	195	233	43.87	31-May-18	Burntwood River	1
900 067 000 110 150	F1xM1/M2	12A	18-May-18	242	278	100.53	31-May-18	Burntwood River	1
900 067 000 110 151	F1xM1/M2	12A	18-May-18	250	287	98.87	31-May-18	Burntwood River	1
900 067 000 110 152	F1xM1/M2	12A	18-May-18	212	251	58.04	31-May-18	Burntwood River	1
900 067 000 110 153	F1xM1/M2	12A	18-May-18	193	227	42.69	31-May-18	Burntwood River	1
900 067 000 110 154	F1xM1/M2	12A	18-May-18	215	255	66.36	31-May-18	Burntwood River	1
900 067 000 110 155	F1xM1/M2	12A	18-May-18	242	277	93.28	31-May-18	Burntwood River	1
900 067 000 110 156	F1xM1/M2	12A	18-May-18	207	244	50.33	31-May-18	Burntwood River	1
900 067 000 110 157	F1xM1/M2	12A	18-May-18	191	223	42.75	31-May-18	Burntwood River	1
900 067 000 110 158	F1xM1/M2	12A	18-May-18	217	253	66.37	31-May-18	Burntwood River	1
900 067 000 110 159	F1xM1/M2	12A	18-May-18	208	245	56.94	31-May-18	Burntwood River	1
900 067 000 110 160	F1xM1/M2	12A	18-May-18	198	227	45.29	31-May-18	Burntwood River	1
900 067 000 110 161	F1xM1/M2	12A	18-May-18	228	263	76.90	31-May-18	Burntwood River	1
900 067 000 110 162	F1xM1/M2	12A	18-May-18	230	269	79.14	31-May-18	Burntwood River	1
900 067 000 110 163	F1xM1/M2	12A	18-May-18	228	263	88.34	31-May-18	Burntwood River	1
900 067 000 110 164	F1xM1/M2	12A	18-May-18	232	273	86.08	31-May-18	Burntwood River	1
900 067 000 110 165	F1xM1/M2	12A	18-May-18	215	253	72.59	31-May-18	Burntwood River	1
900 067 000 110 166	F1xM1/M2	12A	18-May-18	230	270	77.20	31-May-18	Burntwood River	1

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 110 167	F1xM1/M2	12A	18-May-18	217	258	69.71	31-May-18	Burntwood River	1
900 067 000 110 168	F1xM1/M2	12A	18-May-18	186	222	38.30	31-May-18	Burntwood River	1
900 067 000 110 169	F1xM1/M2	12A	18-May-18	233	267	82.54	31-May-18	Burntwood River	1
900 067 000 110 170	F1xM1/M2	12A	18-May-18	230	268	79.42	31-May-18	Burntwood River	1
900 067 000 110 171	F1xM1/M2	12A	18-May-18	204	234	72.23	31-May-18	Burntwood River	1
900 067 000 110 172	F1xM1/M2	12A	18-May-18	233	264	85.29	31-May-18	Burntwood River	1
900 067 000 110 173	F1xM1/M2	12A	18-May-18	243	281	90.33	31-May-18	Burntwood River	1
900 067 000 110 174	F1xM1/M2	12A	18-May-18	213	247	59.02	31-May-18	Burntwood River	1
900 067 000 110 175	F1xM1/M2	12A	18-May-18	221	256	70.15	31-May-18	Burntwood River	1
900 067 000 110 176	F1xM1/M2	12A	18-May-18	190	220	42.80	31-May-18	Burntwood River	1
900 067 000 110 177	F1xM1/M2	12A	18-May-18	208	250	54.12	31-May-18	Burntwood River	1
900 067 000 110 178	F1xM1/M2	12A	18-May-18	253	295	98.19	31-May-18	Burntwood River	1
900 067 000 110 179	F1xM1/M2	12A	18-May-18	210	245	59.16	31-May-18	Burntwood River	1
900 067 000 110 180	F1xM1/M2	12A	18-May-18	225	261	70.05	31-May-18	Burntwood River	1
900 067 000 110 794	F1xM1/M2	12A	18-May-18	235	274	86.35	31-May-18	Burntwood River	1
900 067 000 056 808	F1xM4/M5	12B	18-May-18	185	208	38.18	7-Jun-18	Burntwood River	2
900 067 000 056 809	F1xM4/M5	12B	18-May-18	200	233	55.10	7-Jun-18	Burntwood River	2
900 067 000 056 819	F1xM4/M5	12B	18-May-18	212	246	67.71	7-Jun-18	Burntwood River	2
900 067 000 056 821	F1xM4/M5	12B	18-May-18	227	266	77.05	7-Jun-18	Burntwood River	2
900 067 000 056 823	F1xM4/M5	12B	18-May-18	203	240	53.51	7-Jun-18	Burntwood River	2
900 067 000 056 825	F1xM4/M5	12B	18-May-18	219	257	69.38	7-Jun-18	Burntwood River	2
900 067 000 056 828	F1xM4/M5	12B	18-May-18	193	223	50.14	7-Jun-18	Burntwood River	2
900 067 000 056 830	F1xM4/M5	12B	18-May-18	247	287	100.34	7-Jun-18	Burntwood River	2
900 067 000 056 835	F1xM4/M5	12B	18-May-18	217	252	65.66	7-Jun-18	Burntwood River	2
900 067 000 056 839	F1xM4/M5	12B	18-May-18	221	260	72.61	7-Jun-18	Burntwood River	2
900 067 000 056 842	F1xM4/M5	12B	18-May-18	221	253	74.76	7-Jun-18	Burntwood River	2
900 067 000 056 848	F1xM4/M5	12B	18-May-18	252	294	100.88	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 056 852	F1xM4/M5	12B	18-May-18	190	218	41.05	7-Jun-18	Burntwood River	2
900 067 000 056 853 ^c	F1xM4/M5	12B	18-May-18	233	273	83.89	7-Jun-18	Burntwood River	2
900 067 000 056 862	F1xM4/M5	12B	18-May-18	196	232	45.91	7-Jun-18	Burntwood River	2
900 067 000 056 864	F1xM4/M5	12B	18-May-18	203	234	52.41	7-Jun-18	Burntwood River	2
900 067 000 056 868	F1xM4/M5	12B	18-May-18	135	155	14.65	7-Jun-18	Burntwood River	2
900 067 000 056 872	F1xM4/M5	12B	18-May-18	227	266	84.14	7-Jun-18	Burntwood River	2
900 067 000 056 875	F1xM4/M5	12B	18-May-18	225	266	78.05	7-Jun-18	Burntwood River	2
900 067 000 056 877	F1xM4/M5	12B	18-May-18	246	282	103.76	7-Jun-18	Burntwood River	2
900 067 000 056 886	F1xM4/M5	12B	18-May-18	211	252	66.75	7-Jun-18	Burntwood River	2
900 067 000 056 890	F1xM4/M5	12B	18-May-18	223	260	75.27	7-Jun-18	Burntwood River	2
900 067 000 056 893	F1xM4/M5	12B	18-May-18	220	252	65.34	7-Jun-18	Burntwood River	2
900 067 000 056 896	F1xM4/M5	12B	18-May-18	238	281	82.42	7-Jun-18	Burntwood River	2
900 067 000 056 900	F1xM4/M5	12B	18-May-18	202	233	57.06	7-Jun-18	Burntwood River	2
900 067 000 056 901	F1xM4/M5	12B	18-May-18	218	251	65.38	7-Jun-18	Burntwood River	2
900 067 000 056 902	F1xM4/M5	12B	18-May-18	210	241	60.35	7-Jun-18	Burntwood River	2
900 067 000 056 906	F1xM4/M5	12B	18-May-18	231	267	78.14	7-Jun-18	Burntwood River	2
900 067 000 056 925	F1xM4/M5	12B	18-May-18	228	267	72.53	7-Jun-18	Burntwood River	2
900 067 000 056 928	F1xM4/M5	12B	18-May-18	191	217	50.32	7-Jun-18	Burntwood River	2
900 067 000 056 932	F1xM4/M5	12B	18-May-18	204	233	54.77	7-Jun-18	Burntwood River	2
900 067 000 056 933	F1xM4/M5	12B	18-May-18	208	240	60.21	7-Jun-18	Burntwood River	2
900 067 000 056 943	F1xM4/M5	12B	18-May-18	230	269	82.96	7-Jun-18	Burntwood River	2
900 067 000 056 944	F1xM4/M5	12B	18-May-18	206	241	62.60	7-Jun-18	Burntwood River	2
900 067 000 056 946	F1xM4/M5	12B	18-May-18	193	229	54.50	7-Jun-18	Burntwood River	2
900 067 000 056 947	F1xM4/M5	12B	18-May-18	206	239	58.49	7-Jun-18	Burntwood River	2
900 067 000 056 949	F1xM4/M5	12B	18-May-18	211	244	59.61	7-Jun-18	Burntwood River	2
900 067 000 056 951	F1xM4/M5	12B	18-May-18	186	218	40.62	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 056 965	F1xM4/M5	12B	18-May-18	206	244	58.83	7-Jun-18	Burntwood River	2
900 067 000 056 968	F1xM4/M5	12B	18-May-18	234	267	81.49	7-Jun-18	Burntwood River	2
900 067 000 056 972	F1xM4/M5	12B	18-May-18	242	283	108.44	7-Jun-18	Burntwood River	2
900 067 000 056 973	F1xM4/M5	12B	18-May-18	182	212	41.08	7-Jun-18	Burntwood River	2
900 067 000 056 975	F1xM4/M5	12B	18-May-18	218	258	69.40	7-Jun-18	Burntwood River	2
900 067 000 056 980	F1xM4/M5	12B	18-May-18	237	276	86.83	7-Jun-18	Burntwood River	2
900 067 000 056 985	F1xM4/M5	12B	18-May-18	235	276	81.59	7-Jun-18	Burntwood River	2
900 067 000 056 988	F1xM4/M5	12B	18-May-18	221	262	75.24	7-Jun-18	Burntwood River	2
900 067 000 056 989	F1xM4/M5	12B	18-May-18	210	238	26.15	7-Jun-18	Burntwood River	2
900 067 000 056 992	F1xM4/M5	12B	18-May-18	192	225	45.65	7-Jun-18	Burntwood River	2
900 067 000 056 995	F1xM4/M5	12B	18-May-18	220	254	76.50	7-Jun-18	Burntwood River	2
900 067 000 056 997	F1xM4/M5	12B	18-May-18	182	211	39.62	7-Jun-18	Burntwood River	2
900 067 000 056 998	F1xM4/M5	12B	18-May-18	230	267	85.77	7-Jun-18	Burntwood River	2
900 067 000 056 999	F1xM4/M5	12B	18-May-18	205	243	59.88	7-Jun-18	Burntwood River	2
900 067 000 109 881	F1xM4/M5	12B	18-May-18	222	264	75.49	7-Jun-18	Burntwood River	2
900 067 000 109 882	F1xM4/M5	12B	18-May-18	220	255	71.42	7-Jun-18	Burntwood River	2
900 067 000 109 883	F1xM4/M5	12B	18-May-18	241	280	86.53	7-Jun-18	Burntwood River	2
900 067 000 109 884	F1xM4/M5	12B	18-May-18	206	239	58.55	7-Jun-18	Burntwood River	2
900 067 000 109 885	F1xM4/M5	12B	18-May-18	220	253	73.42	7-Jun-18	Burntwood River	2
900 067 000 109 886	F1xM4/M5	12B	18-May-18	206	240	62.48	7-Jun-18	Burntwood River	2
900 067 000 109 888	F1xM4/M5	12B	18-May-18	193	221	45.66	7-Jun-18	Burntwood River	2
900 067 000 109 889	F1xM4/M5	12B	18-May-18	210	242	62.78	7-Jun-18	Burntwood River	2
900 067 000 109 890	F1xM4/M5	12B	18-May-18	217	253	56.72	7-Jun-18	Burntwood River	2
900 067 000 109 892	F1xM4/M5	12B	18-May-18	222	252	75.15	7-Jun-18	Burntwood River	2
900 067 000 109 894	F1xM4/M5	12B	18-May-18	213	244	65.40	7-Jun-18	Burntwood River	2
900 067 000 109 897	F1xM4/M5	12B	18-May-18	205	238	60.02	7-Jun-18	Burntwood River	2
900 067 000 109 899	F1xM4/M5	12B	18-May-18	208	239	57.43	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 109 900	F1xM4/M5	12B	18-May-18	220	249	68.35	7-Jun-18	Burntwood River	2
900 067 000 109 902	F1xM4/M5	12B	18-May-18	213	251	70.44	7-Jun-18	Burntwood River	2
900 067 000 109 903	F1xM4/M5	12B	18-May-18	194	224	45.34	7-Jun-18	Burntwood River	2
900 067 000 109 904	F1xM4/M5	12B	18-May-18	203	234	49.93	7-Jun-18	Burntwood River	2
900 067 000 109 905	F1xM4/M5	12B	18-May-18	214	247	61.66	7-Jun-18	Burntwood River	2
900 067 000 109 906	F1xM4/M5	12B	18-May-18	215	249	59.51	7-Jun-18	Burntwood River	2
900 067 000 109 907	F1xM4/M5	12B	18-May-18	197	233	47.90	7-Jun-18	Burntwood River	2
900 067 000 109 908	F1xM4/M5	12B	18-May-18	202	236	54.71	7-Jun-18	Burntwood River	2
900 067 000 109 909	F1xM4/M5	12B	18-May-18	202	235	57.32	7-Jun-18	Burntwood River	2
900 067 000 109 910	F1xM4/M5	12B	18-May-18	195	229	51.06	7-Jun-18	Burntwood River	2
900 067 000 109 911	F1xM4/M5	12B	18-May-18	215	249	71.22	7-Jun-18	Burntwood River	2
900 067 000 109 912	F1xM4/M5	12B	18-May-18	200	228	53.02	7-Jun-18	Burntwood River	2
900 067 000 109 913	F1xM4/M5	12B	18-May-18	218	257	67.57	7-Jun-18	Burntwood River	2
900 067 000 109 914	F1xM4/M5	12B	18-May-18	178	205	35.46	7-Jun-18	Burntwood River	2
900 067 000 109 915	F1xM4/M5	12B	18-May-18	214	249	73.47	7-Jun-18	Burntwood River	2
900 067 000 109 916	F1xM4/M5	12B	18-May-18	211	246	60.93	7-Jun-18	Burntwood River	2
900 067 000 109 917	F1xM4/M5	12B	18-May-18	205	235	60.08	7-Jun-18	Burntwood River	2
900 067 000 109 918	F1xM4/M5	12B	18-May-18	206	239	50.01	7-Jun-18	Burntwood River	2
900 067 000 109 919	F1xM4/M5	12B	18-May-18	198	225	48.01	7-Jun-18	Burntwood River	2
900 067 000 109 920	F1xM4/M5	12B	18-May-18	204	235	57.63	7-Jun-18	Burntwood River	2
900 067 000 109 922	F1xM4/M5	12B	18-May-18	225	265	77.83	7-Jun-18	Burntwood River	2
900 067 000 109 923	F1xM4/M5	12B	18-May-18	220	261	69.24	7-Jun-18	Burntwood River	2
900 067 000 109 924	F1xM4/M5	12B	18-May-18	196	225	55.48	7-Jun-18	Burntwood River	2
900 067 000 109 925	F1xM4/M5	12B	18-May-18	223	262	68.52	7-Jun-18	Burntwood River	2
900 067 000 109 927	F1xM4/M5	12B	18-May-18	223	258	69.30	7-Jun-18	Burntwood River	2
900 067 000 109 929	F1xM4/M5	12B	18-May-18	215	253	63.66	7-Jun-18	Burntwood River	2
900 067 000 109 930	F1xM4/M5	12B	18-May-18	224	259	76.03	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 109 932	F1xM4/M5	12B	18-May-18	213	248	62.27	7-Jun-18	Burntwood River	2
900 067 000 109 933	F1xM4/M5	12B	18-May-18	223	262	69.13	7-Jun-18	Burntwood River	2
900 067 000 109 934	F1xM4/M5	12B	18-May-18	223	260	73.78	7-Jun-18	Burntwood River	2
900 067 000 109 935	F1xM4/M5	12B	18-May-18	210	247	63.44	7-Jun-18	Burntwood River	2
900 067 000 109 936	F1xM4/M5	12B	18-May-18	216	245	61.04	7-Jun-18	Burntwood River	2
900 067 000 109 937	F1xM4/M5	12B	18-May-18	205	237	55.28	7-Jun-18	Burntwood River	2
900 067 000 109 938	F1xM4/M5	12B	18-May-18	210	242	71.53	7-Jun-18	Burntwood River	2
900 067 000 109 939	F1xM4/M5	12B	18-May-18	215	261	64.88	7-Jun-18	Burntwood River	2
900 067 000 109 940	F1xM4/M5	12B	18-May-18	188	221	47.35	7-Jun-18	Burntwood River	2
900 067 000 109 942	F1xM4/M5	12B	18-May-18	208	243	51.83	7-Jun-18	Burntwood River	2
900 067 000 109 943	F1xM4/M5	12B	18-May-18	233	270	88.43	7-Jun-18	Burntwood River	2
900 067 000 109 945	F1xM4/M5	12B	18-May-18	176	207	33.18	7-Jun-18	Burntwood River	2
900 067 000 109 946	F1xM4/M5	12B	18-May-18	207	241	57.70	7-Jun-18	Burntwood River	2
900 067 000 109 947	F1xM4/M5	12B	18-May-18	215	250	64.50	7-Jun-18	Burntwood River	2
900 067 000 109 948	F1xM4/M5	12B	18-May-18	195	227	43.01	7-Jun-18	Burntwood River	2
900 067 000 109 949	F1xM4/M5	12B	18-May-18	210	243	55.60	7-Jun-18	Burntwood River	2
900 067 000 109 950	F1xM4/M5	12B	18-May-18	205	243	56.54	7-Jun-18	Burntwood River	2
900 067 000 109 952	F1xM4/M5	12B	18-May-18	218	254	67.80	7-Jun-18	Burntwood River	2
900 067 000 109 953	F1xM4/M5	12B	18-May-18	225	250	74.46	7-Jun-18	Burntwood River	2
900 067 000 109 955	F1xM4/M5	12B	18-May-18	164	184	27.56	7-Jun-18	Burntwood River	2
900 067 000 109 957	F1xM4/M5	12B	18-May-18	211	253	65.53	7-Jun-18	Burntwood River	2
900 067 000 109 958	F1xM4/M5	12B	18-May-18	217	258	69.51	7-Jun-18	Burntwood River	2
900 067 000 109 959	F1xM4/M5	12B	18-May-18	210	246	63.19	7-Jun-18	Burntwood River	2
900 067 000 109 962	F1xM4/M5	12B	18-May-18	207	239	59.12	7-Jun-18	Burntwood River	2
900 067 000 109 963	F1xM4/M5	12B	18-May-18	210	246	58.46	7-Jun-18	Burntwood River	2
900 067 000 109 964	F1xM4/M5	12B	18-May-18	208	243	57.35	7-Jun-18	Burntwood River	2
900 067 000 109 965	F1xM4/M5	12B	18-May-18	208	237	62.60	7-Jun-18	Burntwood River	2

Lake Sturgeon			Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
900 067 000 109 966	F1xM4/M5	12B	18-May-18	187	218	43.42	7-Jun-18	Burntwood River	2
900 067 000 109 967	F1xM4/M5	12B	18-May-18	196	227	42.37	7-Jun-18	Burntwood River	2
900 067 000 109 968	F1xM4/M5	12B	18-May-18	200	230	52.46	7-Jun-18	Burntwood River	2
900 067 000 109 969	F1xM4/M5	12B	18-May-18	192	223	44.50	7-Jun-18	Burntwood River	2
900 067 000 109 970 ^d	F1xM4/M5	12B	18-May-18	212	240	53.65	7-Jun-18	Burntwood River	2
900 067 000 109 971	F1xM4/M5	12B	18-May-18	212	250	72.53	7-Jun-18	Burntwood River	2
900 067 000 109 972	F1xM4/M5	12B	18-May-18	170	193	32.47	7-Jun-18	Burntwood River	2
900 067 000 109 973	F1xM4/M5	12B	18-May-18	224	259	71.86	7-Jun-18	Burntwood River	2
900 067 000 109 974	F1xM4/M5	12B	18-May-18	212	243	62.17	7-Jun-18	Burntwood River	2
900 067 000 109 975	F1xM4/M5	12B	18-May-18	187	218	40.68	7-Jun-18	Burntwood River	2
900 067 000 109 976	F1xM4/M5	12B	18-May-18	197	227	50.59	7-Jun-18	Burntwood River	2
900 067 000 109 977	F1xM4/M5	12B	18-May-18	194	226	43.51	7-Jun-18	Burntwood River	2
900 067 000 109 978	F1xM4/M5	12B	18-May-18	209	243	59.73	7-Jun-18	Burntwood River	2
900 067 000 109 979	F1xM4/M5	12B	18-May-18	202	238	61.47	7-Jun-18	Burntwood River	2
900 067 000 109 980	F1xM4/M5	12B	18-May-18	216	248	66.70	7-Jun-18	Burntwood River	2
900 067 000 110 858	F1xM4/M5	12B	18-May-18	198	231	49.26	7-Jun-18	Burntwood River	2
900 067 000 111 128	F1xM4/M5	12B	18-May-18	202	234	51.36	7-Jun-18	Burntwood River	2
900 067 000 111 178	F1xM4/M5	12B	18-May-18	195	226	50.40	7-Jun-18	Burntwood River	2

a. Possibly 960 067 000 111 842

b. Possibly 960 067 000 111 342

c. Possibly 900 067 000 111 134

d. Possibly 900 067 000 111 174

APPENDIX 2: BIRTHDAY RAPIDS (2018 YEAR-CLASS)

Table A2-1: Survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from June 17 (hatch) to October 31, 2018

LOT	Families	Month-Year	Start of Month Total	Mortality			Transfer		Recount Adjustment	End of Month Total	Monthly Survival (%)
				Natural	Accidental	Euthanized	Stocking	Other			
LKST-BDR-18	4 (1Fx4M)	Jun-18	124,765 ^a	26,156	0	20 ^b	0	0	0	98,589	79.0
LKST-BDR-18	4 (1Fx4M)	Jul-18	98,589	11,393	0	82,426 ^c	0	0	0	4,770	88.4
LKST-BDR-18	4 (1Fx4M)	Aug-18	4,770	1,098	0	60 ^d	0	0	846 (-)	2,766	77.0
LKST-BDR-18	4 (1Fx4M)	Sep-18	2,766	15	0	0	1,009 ^e	0	0	1,742	99.5
LKST-BDR-18	4 (1Fx4M)	Oct-18	1,742	1	0	6 ^f	933 ^g	0	1 (+)	803	99.9
Total (BDR-18)			124,765	38,663	0	82,512	1,942	0	845	803	69.0

a. Estimated value based on egg counts and fertilization rates

b. 20 larvae (5 per family) euthanized for genetics

c. 80 euthanized (20 per family) and preserved; 82,346 culled

d. 60 euthanized for Numao Virus testing

e. 958 stocked into Stephens Lake at Keeyask on Sept 26, 2018; 51 stocked into Stephens Lake at Butnau Marina on Sept 28, 2018

f. 6 euthanized and sent to Vet Lab due to fish health concerns (blisters)

g. 933 stocked into Gull Lake on Oct 10, 2018

Table A2-2: Monthly average (\pm SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-Ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Birthday Rapids Sturgeon (2018 year-class) reared at Grand Rapids Fish Hatchery

Parameter	Mth-Yr	F1				
		N ^a	Mean	\pm SD	Min	Max
Dissolved O ₂ (mg/L)	Jun-18	10	9.44	0.65	8.34	10.18
	Jul-18	34	9.55	0.27	9.24	10.43
	Aug-18	40	9.39	0.34	8.32	9.97
	Sep-18	40	9.39	0.68	8.10	10.85
	Oct-18	34	10.76	1.01	9.46	12.36
Dissolved CO ₂ (mg/L)	Jun-18	10	3.50	0.53	3.00	4.00
	Jul-18	34	2.56	0.66	2.00	4.00
	Aug-18	40	2.20	0.41	2.00	3.00
	Sep-18	40	2.53	0.51	2.00	3.00
	Oct-18	34	2.76	0.96	2.00	5.00
pH	Jun-18	10	7.74	0.15	7.44	7.88
	Jul-18	34	8.03	0.24	7.49	8.27
	Aug-18	40	8.13	0.10	7.92	8.26
	Sep-18	30	8.19	0.06	8.11	8.30
	Oct-18	26	8.19	0.16	8.02	8.55
Total Ammonia (mg/L)	Jun-18	10	0.09	0.10	0.00	0.24
	Jul-18	34	0.09	0.11	0.00	0.35
	Aug-18	40	0.04	0.05	0.00	0.17
	Sep-18	40	0.08	0.08	0.00	0.24
	Oct-18	34	0.04	0.06	0.00	0.23
UIA (mg/L)	Jun-18	10	0.00	0.00	0.00	0.00
	Jul-18	34	0.00	0.00	0.00	0.02
	Aug-18	40	0.01	0.02	0.00	0.11
	Sep-18	30	0.00	0.00	0.00	0.01
	Oct-18	26	0.00	0.00	0.00	0.00
Nitrite Nitrogen (mg/L)	Jun-18	10	0.05	0.00	0.05	0.05
	Jul-18	34	0.06	0.02	0.05	0.10
	Aug-18	40	0.09	0.09	0.05	0.30
	Sep-18	40	0.05	0.00	0.05	0.05
	Oct-18	34	0.05	0.00	0.05	0.05

^a Number of water samples per month

Table A2-3: Monthly average (\pm SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Birthday Rapids Lake Sturgeon (2018 year-class) reared at Grand Rapids Fish Hatchery

Measurement	Mth-Yr	F1				
		n	Avg	\pm SD	Min	Max
Fork Length (mm)	Jul-18	n/a	n/a	n/a	n/a	n/a
	Aug-18	n/a	n/a	n/a	n/a	n/a
	Sep-18	120	85	9	64	108
	Oct-18	90	94	7	80	115
Total Length (mm)	Jul-18	n/a	31	4	22	40
	Aug-18	n/a	62	8	44	83
	Sep-18	120	99	10	75	121
	Oct-18	90	109	8	95	136
Weight (g)	Jul-18	n/a	0.13	0.06	0.05	0.33
	Aug-18	n/a	1.02	0.34	0.33	2.08
	Sep-18	120	4.01	1.03	2.08	7.29
	Oct-18	90	5.20	1.16	2.80	9.30

APPENDIX 3: WATER QUALITY THRESHOLDS

Table A3-1: Reported Lake Sturgeon threshold values for Dissolved Oxygen, Dissolved Carbon Dioxide, pH, Ammonia-Nitrogen and Nitrite Nitrogen

Parameter	Threshold Values	References
Dissolved O₂ (mg/L)	> 6.0	Hochleithner and Gessner 2012
	> 4.0	Chebanov and Galich 2011
	> 5.0	Mims et al 2002
Dissolved CO₂ (mg/L)	> 6.0	Dettlaff et al 1993
	< 10.0	Hochleithner and Gessner 2012
pH	< 10.0	Chebanov and Galich 2011
	6.5 to 8.0	Hochleithner and Gessner 2012
	6.5 to 7.5	Chebanov and Galich 2011
	6.5 to 8.5	Mims et al 2002
Ammonia NH₃-N (mg/L)	6.5 to 8.0	Dettlaff et al 1993
	< 0.010	Hochleithner and Gessner 2012
	< 0.003	Chebanov and Galich 2011
Nitrite Nitrogen (mg/L)	< 0.010	Mims et al 2002
	0.1 to 0.2	Chebanov and Galich 2011
	< 0.1	Mims et al 2002

Hochleithner, M. and Gessner, J. 2012. The sturgeons and paddlefishes of the world: biology and aquaculture 3rd edition. Aqua Tech Publications, Kitzbuehel, Austria, 248 pp.

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Mims, S.D., Lazur, A., Shelton, W.L., Gomelsky, B. and Chapman, F. 2002. Species profile: production of sturgeon. Southern Regional Aquaculture Centre Publication No. 7200. 8 pp.

Dettlaff, T.A., Ginsburg, A.S. and Schmalhausen, O.I. 1993. Sturgeon fishes: developmental biology and aquaculture. Springer-Verlag, New York, 300 pp.