



Keeyask Generation Project
Fisheries Offsetting and Mitigation Plan

Lake Sturgeon Production and Stocking Report
FOMP-2021-01



KEEYASK GENERATION PROJECT

FISHERIES OFF-SETTING AND MITIGATION PLAN

REPORT #FOMP-2021-01

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

NOVEMBER 2019 TO OCTOBER 2020: YEAR 7 CONSTRUCTION

Prepared for

Manitoba Hydro

By

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June 2021

This report should be cited as follows:

Klassen, C, Y. Michaluk, S. Kirchmann, L. Groening and L. Boudreau, 2021. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, November 2019 to October 2020: Year 7 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2021-01. A report prepared by Manitoba Hydro, June 2021.

SUMMARY

BACKGROUND

Construction of the Keeyask Generation Project at Gull Rapids began in July 2014. Before government allowed construction to begin the 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 in the Nelson River (the Fisheries Offsetting and Mitigation Plan, FOMP). The plan also explained how the proposed activities would be completed and monitored.

Activities directed at Lake Sturgeon (*Namoo* 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 used for spawning and early life stages both upstream and downstream.

In 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., Keeyask reservoir and Stephens Lake) and the Burntwood River until there are self-sustaining populations. These two areas are stocked in alternate years using the offspring from adults captured at Birthday Rapids on the Nelson River and First Rapids on the Burntwood River.

This report describes the hatchery production and stocking activities of Lake Sturgeon from November 2019 to October 2020.



Lake Sturgeon feeding on bloodworm at the Grand Rapids Fish Hatchery

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 are released as yearlings (12 months old) after spending their first winter in the hatchery. However, due to limited tank space, it is often necessary to release some of the sturgeon as fingerlings (3 to 4 months old) prior to winter. In the past, the hatchery also stocked larvae (less than 1 month old) but are no longer able to do that due to current virus testing criteria which require that the sturgeon be at least 9 weeks old. Virus testing before stocking is necessary to ensure hatchery fish do not increase the amount of Namao Virus present in wild populations. The virus does not appear to effect adults but can cause mortality among young sturgeon.

Prior to release, yearlings are marked with uniquely numbered Passive Integrated Transponder (PIT) tags, 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. Fish released as fingerlings are not large enough to be PIT tagged. Instead, tissue samples from individuals representing all family groups are preserved to provide a genetic 'fingerprint', allowing future identification of stocked individuals.



PIT tagging activities at the Grand Rapids Fish Hatchery

Since 2013, when the KHLP began producing Lake Sturgeon, a large number of larvae, fingerlings and yearlings have been stocked (see table below).

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
2019	0	3,681	0	0	0	398	0	0	390
2020	0	0	574	0	0	0	0	0	0
Total	71,740	7,446	1,931	345,093	6,369	1,284	184,134	1,808	1,528

BURNTWOOD RIVER POPULATION (2019 YEAR-CLASS)

Hatchery Production

Eggs and milt were collected in spring 2019 from spawning adults captured near First Rapids. A total of 774 Burntwood River fingerlings were kept at the hatchery for the 2019/20 winter. Survival from the beginning of November 2019 until the spring stocking in June 2020 was over 99%.

Due to the cancellation of spring field activities as a result of Covid-19, a total of 382 yearlings were kept at the hatchery over summer. There were no mortalities prior to the fall stocking in September 2020.

A total of 192 Burntwood River yearlings remained at the hatchery for the 2020/21 winter.

Stocking

In spring 2020, a total of 384 Lake Sturgeon yearlings were transported by truck to the Orr Creek boat launch and released from shore into the Burntwood River (see map below) on June 20 (192 yearlings) and June 22 (192 yearlings). On average, yearlings were 24 cm long and weighed 49 g.

In fall 2020, another 190 Lake Sturgeon yearlings were transported by truck to the same location (see map below) and released on September 24. On average, yearlings were 26 cm long and weighed 67 g.



Release site for Burntwood River sturgeon (2019 year-class) stocked into the Burntwood River in spring and fall 2020 (Site 1). Yearlings were the offspring of spawning adults collected near First Rapids (Site A).

BIRTHDAY RAPIDS POPULATION (2020 YEAR-CLASS)

Spawn Camp

Field activities that support spawn collection were cancelled due to Covid-19. As a result, there was no 2020 year-class produced.

STOCKING RESULTS

Since the stocking program began in 2013 a total of 600,967 larvae, 15,623 fingerlings and 4,743 yearlings have been released by the GRFH for the KHLP. Annual monitoring programs being conducted by the KHLP in the Keeyask and Upper Split Lake areas have captured a total of 423 hatchery-reared sturgeon released as yearlings. Annual survival of stocked yearlings in Stephens Lake, Keeyask reservoir and Upper Split Lake area has been estimated to be 76%, 84% and 91%, respectively.

FUTURE ACTIVITIES

Hatchery-reared sturgeon from the Burntwood River population (2019 year-class) will be released in spring 2021, pending provincial approval. Egg and milt collection from wild adults will take place at Birthday Rapids in spring 2021, if field activities can resume.

Renovations to the buildings and infrastructure at the GRFH are expected to be completed by fall 2021.

PRODUCTION AND STOCKING TEAM

Grand Rapids Fish Hatchery

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- Shaun Kirchmann, Senior Fish Culturist
- Laura Groening, Senior Fish Culturist
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- Jerry Cook, Fish Culturist
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- Cory Ferland, Fish Culturist
- Jesse Scott, Assistant Fish Culturist
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- Shelley Matkowski, Department Manager
- Warren Coughlin, Senior Environmental Specialist
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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 alteration and destruction of Lake Sturgeon habitat, thereby potentially affecting regional populations.

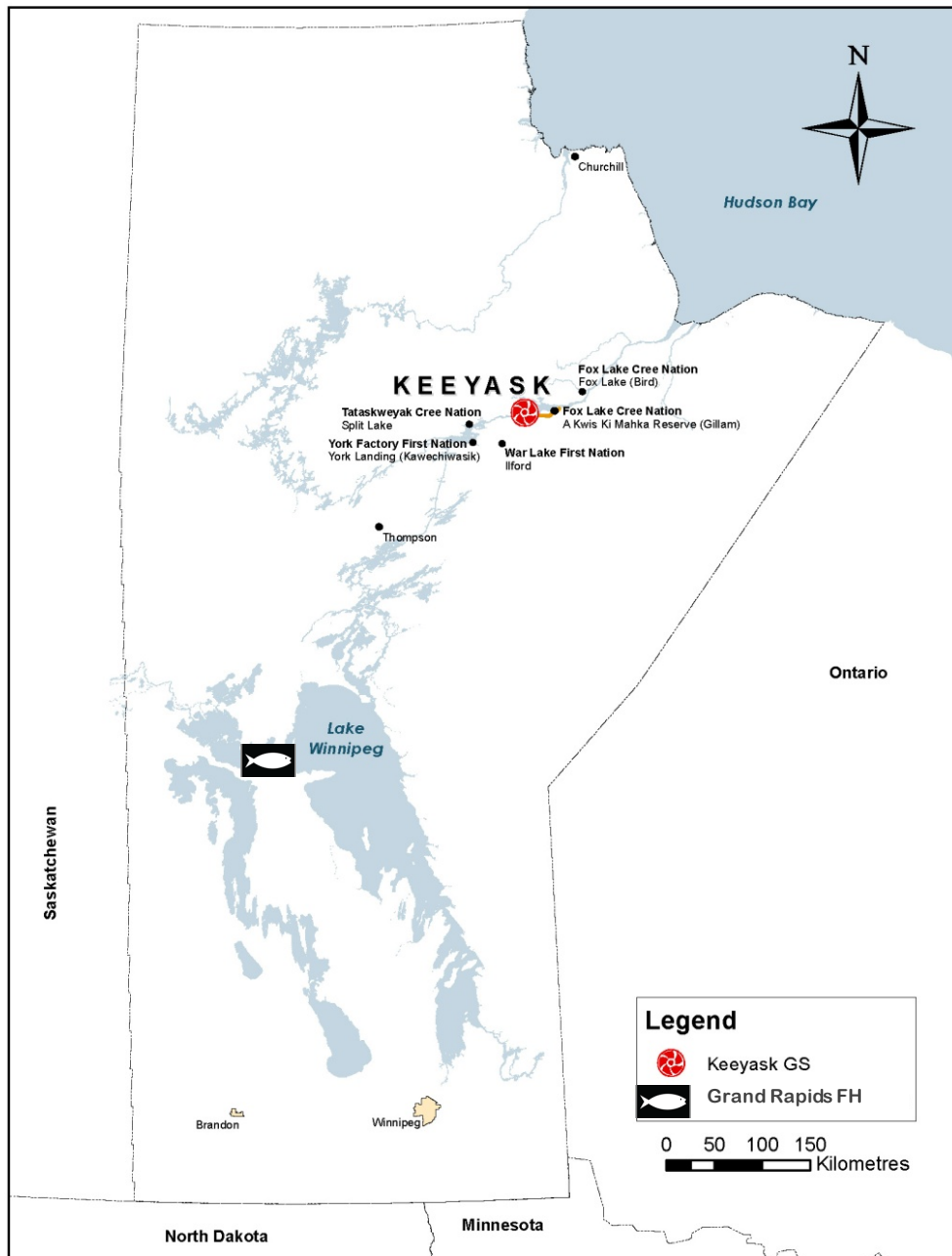
To mitigate impacts of the Project, the KHLP has developed a strategy that involves several components, including:

- 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;
- 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			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
2019	0	3,681	0	0	0	398	0	0	390
2020	0	0	574	0	0	0	0	0	0
Total	71,740	7,446	1,931	345,093	6,369	1,284	184,134	1,808	1,528

^apreviously referred to as Gull Lake and the future Keeyask Reservoir

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.

Manitoba Hydro purchased GRFH in 2007 and the facility was operated in partnership with Manitoba Conservation and Water Stewardship (now Agriculture & Resource 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. Since 2012, GRFH has focused its production efforts exclusively on Lake Sturgeon and Walleye.

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. Well water temperature (approximately 5°C) is warmed using ambient room temperature and submersible water heaters.



Photo 1: Rearing troughs used for Lake Sturgeon production at GRFH

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 attain national and provincial biosecurity standards and recommendations 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 was completed by SNC Lavalin in spring 2019 and a contract was awarded to Newton Mechanical and Electrical for construction in fall 2019. The project is expected to be completed by fall 2021.

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 2019/20.

2.0 BURNTWOOD RIVER POPULATION (2019 YEAR-CLASS)

2.1 PAST PRODUCTION AND STOCKING

Wild Lake Sturgeon adults from the Burntwood River were captured downstream of First Rapids (Map 2) in early June 2019. On June 6 the milt (sperm) from six males (M1, M2, M3, M4, M5, M6) was mixed with the eggs from one female (F2). The total number of eggs brought to GRFH was estimated to be 211,865. The overall percentage of viable eggs was estimated to be 76%. To reduce issues associated with overcrowding, one jar of eggs from each family was removed from the system. Some of the eggs went to the University of Manitoba to support on-going research. As a result, the estimated number of hatched larvae was 80,895.

Survival during the spring and summer months was at or greater than 80%. Due to space constraints and virus testing criteria which require fish to be at least 9-weeks old, some larvae had to be culled. Survival during the months of September and October was close to 100%.

On September 26, a total of 1,664 fingerlings were released into the Burntwood River with assistance from Manitoba Hydro's boat patrol crews. On the same day, 50 fingerlings were released from shore into the Burntwood River at the Orr Creek boat launch as part of a Kischipi Namaan Committee stocking event.

On October 3, another 1,967 fingerlings were stocked into the Burntwood River with assistance from Manitoba Hydro's boat patrol crews.

At the end of September fingerlings had an average total length of 106 mm (range: 87 to 125 mm) and average body weight of 4.9 g (range: 2.9 to 8.5 g).

Klassen et al. (2020) provides additional detail on past production and stocking activities for the Burntwood River sturgeon (2019 year-class).

2.2 PRODUCTION

2.2.1 WINTER

A total of 774 Lake Sturgeon fingerlings were held at GRFH over the 2019/20 winter season for further grow-out (M1M2 = 257, M3M4 = 258, M5M6 = 259). Offspring from the different family groups were held in separate rearing troughs; however, all 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 in the morning and afternoon.

Overwinter survival for the 2019 year-class was close to 100% (Figure 1). There were five natural mortalities and one fish was euthanized as a precaution following observations of unusual swimming behaviour. Two fish were unaccounted for at the time of spring stocking. This may have been due to an initial miscount at the start of winter or missed data entry of mortalities over the winter (Table A1-1).

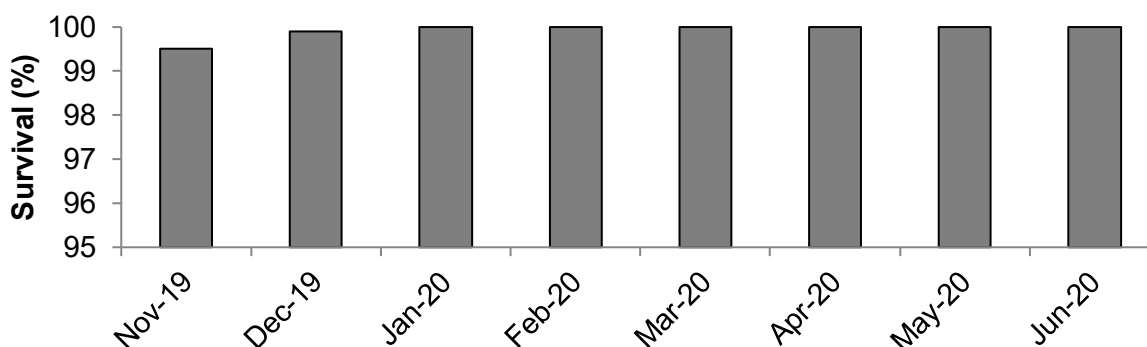


Figure 1: Monthly survival (%) of Burntwood River sturgeon (2019 year-class) at GRFH from November 1, 2019 to June 30, 2020

Average water temperature was 12.9°C (range: 9.2°C to 17.0°C) from November 1, 2019 to the end of June, 2020 (Figure 2). Temperatures were kept above 12°C until the end of March to ensure sturgeon would be large enough to mark with a Passive Integrated Transponder (PIT) tag. After this time temperatures were kept below 12°C 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 release, water temperatures were adjusted in the hatchery to match ambient river temperatures in the Burntwood River.

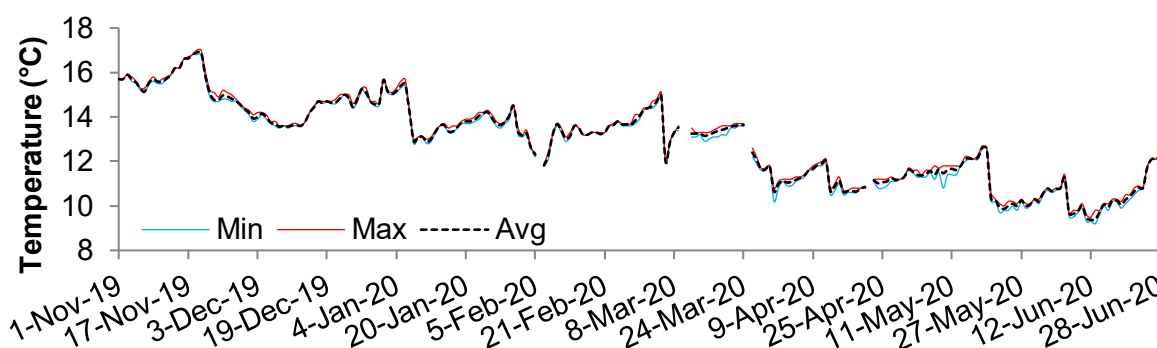


Figure 2: Average, minimum and maximum daily water temperature (°C) in rearing troughs holding Burntwood River (2019 year-class) at GRFH from November 1, 2019 to June 30, 2020

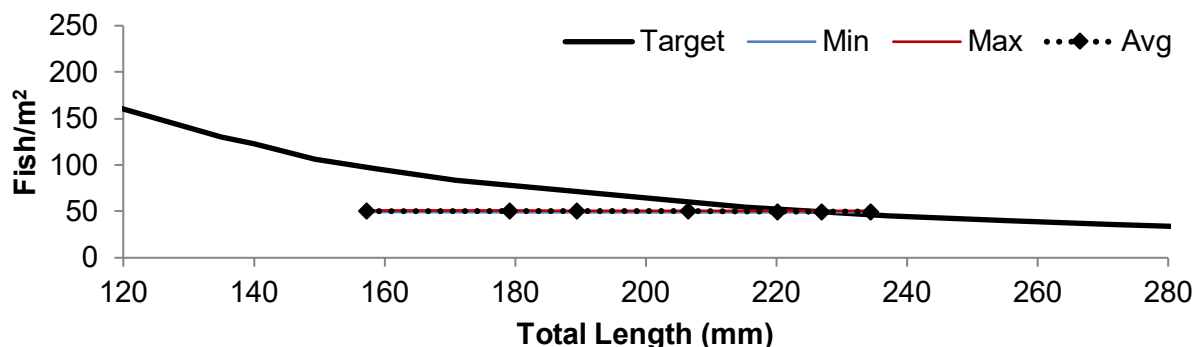


Figure 3: Average, minimum and maximum rearing density (fish per m²) of Burntwood River sturgeon (2019 year-class) at GRFH from November 1, 2019 to June 22, 2020

Rearing densities remained at or below target levels until the spring release at the end of June 2020 (Figure 3). Prior to release, the number of fish in rearing troughs ranged from 126 to 131 individuals.

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).

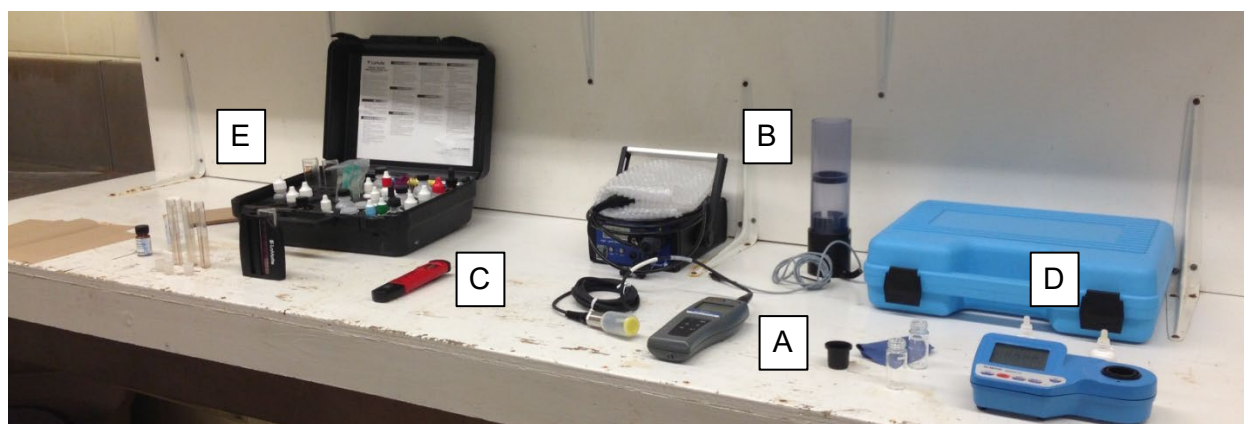


Photo 2: Equipment used to test dissolved oxygen (A), dissolved carbon dioxide (B), pH (C), total ammonia nitrogen (D) and nitrite-nitrogen (E) at GRFH

Average, minimum and maximum monthly water quality values, with the exception of TAN, are plotted in Figure 4. A detailed summary of monthly values is presented in Table A1-2. Recommended threshold values for sturgeon production are listed in Table A2-1.

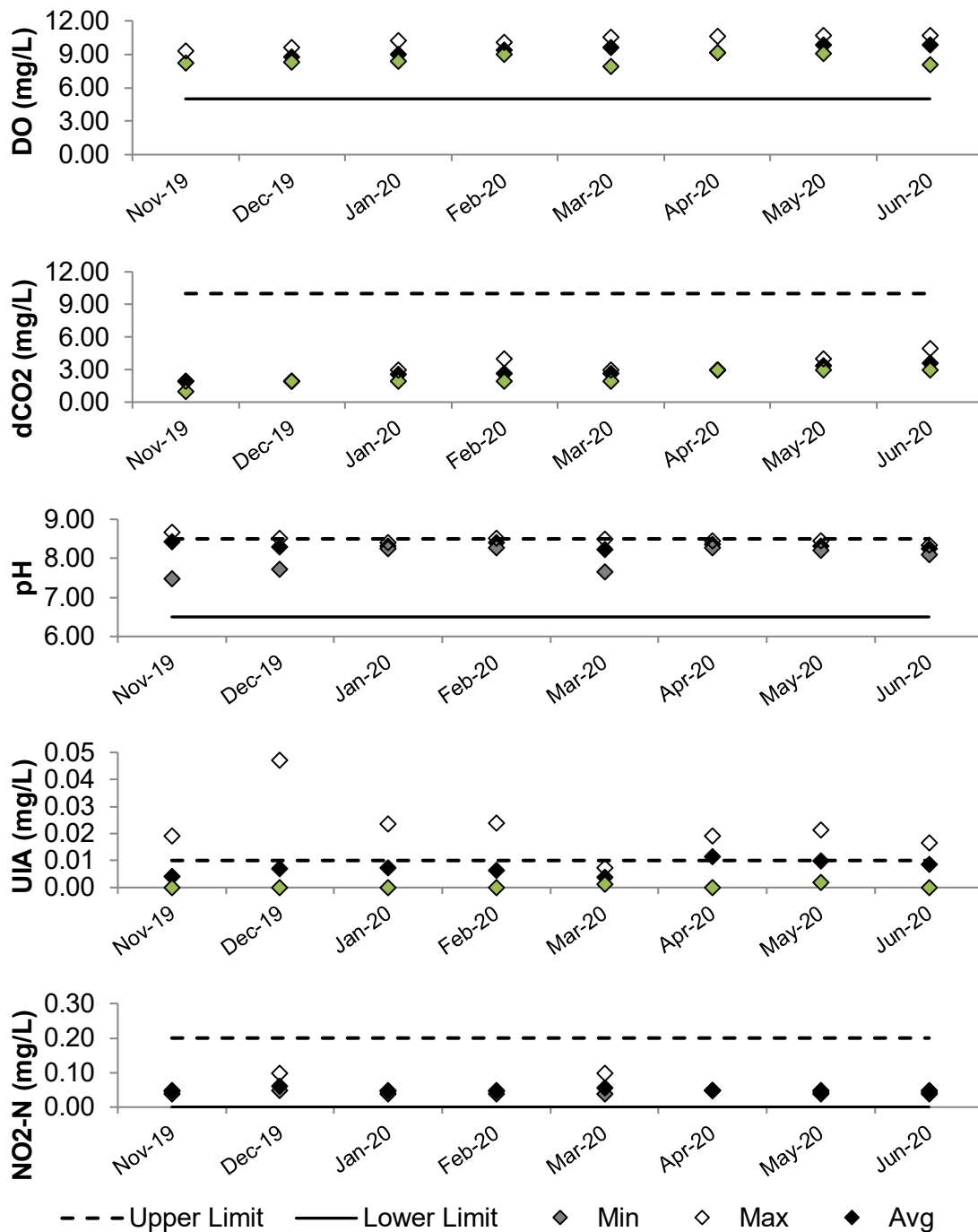


Figure 4: Average, minimum and maximum monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO₂-N) values in rearing troughs holding Burntwood River sturgeon (2019 year-class) at GRFH from November 1, 2019 to June 30, 2020

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 at or within acceptable limits during winter production. However, maximum values recorded for UIA exceeded the recommended threshold throughout winter production. Despite this, survival remained high (>99%; Figure 1). Installation of new water treatment equipment as part of the hatchery's upgrade and expansion project is expected to address these issues.

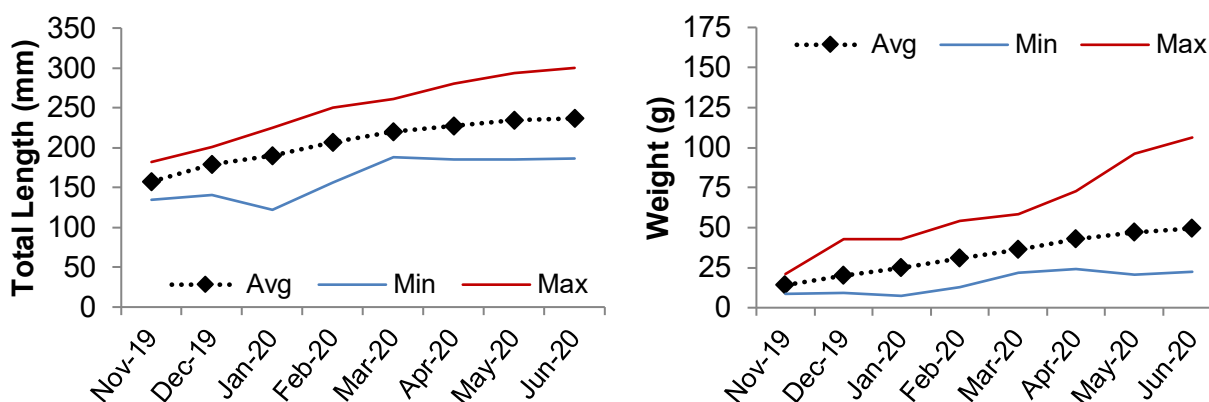


Figure 5: Average, minimum and maximum total length (mm) and weight (g) for Burntwood River sturgeon (2019 year-class) at GRFH from November 2019 to the end of June 2020

At the end of each month, 15 Burntwood River sturgeon were randomly selected and measured from each rearing tank. There was a gradual but steady increase in growth among fish over winter (Figure 5). As is typically observed, there was a noticeable size range within the 2019 year-class (Figure 5). Due to space constraints, fish are not currently size sorted at GRFH.

At the time of the spring stocking yearlings had reached an overall average fork length of 201 mm (range: 160 to 260 mm), average total length of 237 mm (range: 186 to 300 mm) and average weight of 49 g (range: 22 to 106 g; Figure 5; Table A1-3).

2.2.2 SUMMER

A total of 382 Burntwood River yearlings were kept at the hatchery over summer for further grow-out (M1M2 = 127, M3M4 = 125, M5M6 = 130). Fish remained within the same rearing troughs and continued to be fed frozen bloodworm twice daily to satiation in the morning and afternoon. There were no mortalities over the summer (Figure 6; Table A1-1).

Well water was used exclusively. Average water temperature was 11.0°C (range: 9.8°C to 13.5°C) from July 1 to the end of September, 2020 (Figure 7). Temperatures were kept cool to 1) maintain low ammonia levels, 2) avoid overcrowding in tanks due to rapid growth, and 3) reduce operational

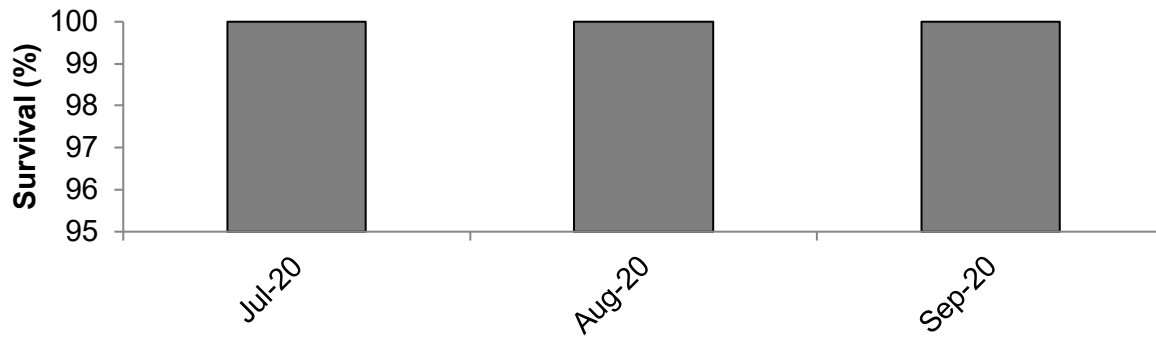


Figure 6: Monthly survival (%) of Burntwood River sturgeon (2019 year-class) at GRFH from July 1 to September 30, 2020

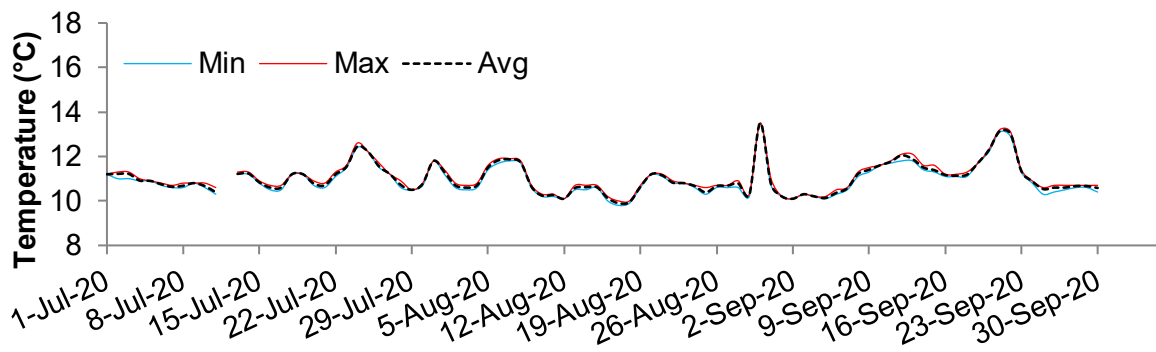


Figure 7: Average, minimum and maximum daily water temperature (°C) in rearing troughs holding Burntwood River sturgeon (2019 year-class) at GRFH from July 1 to September 30, 2020

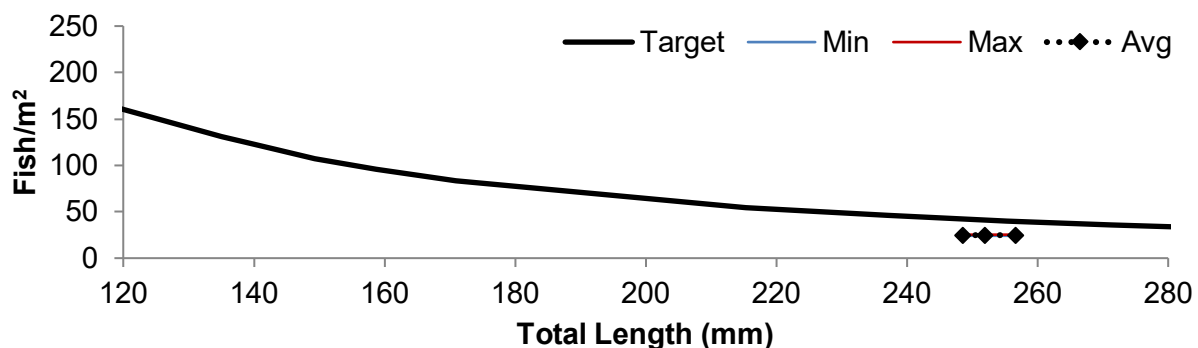


Figure 8: Average, minimum and maximum rearing density (fish per m²) of Burntwood River sturgeon (2019 year-class) at GRFH from July 1 to September 30, 2020

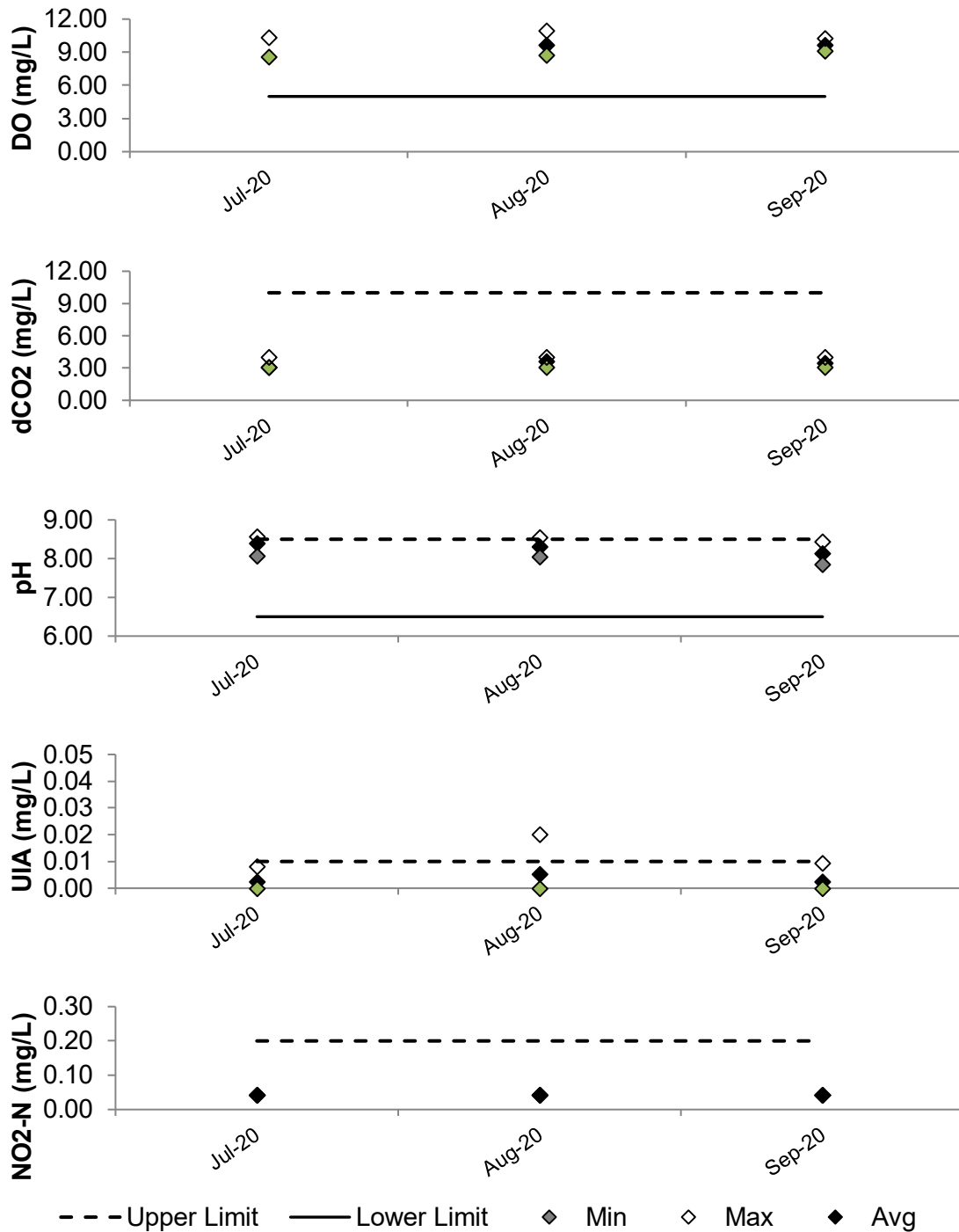


Figure 9: Average, minimum and maximum monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO₂), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO₂-N) values in rearing troughs holding Burntwood River sturgeon (2019 year-class) at GRFH from July to the end of September 2020. Solid and dashed lines indicate lower and upper thresholds, respectively.

costs by feeding less bloodworm. Prior to the fall yearling release, water temperatures were adjusted in the hatchery to match ambient river temperatures in the Burntwood River.

Rearing densities remained below target levels until the fall release at the end of September 2020 (Figure 8). Prior to release, the number of fish in rearing troughs ranged from 62 to 65 individuals.

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).

Average monthly water quality values, with the exception of TAN, are plotted in Figure 9. A detailed summary of monthly values is presented in Table A1-2. Recommended threshold values for sturgeon production are listed in Table A2-1. 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 at or within acceptable limits during summer production. However, maximum values recorded for UIA did exceed the recommended threshold in August. Although this did not impact survival (100%; Figure 6), new water treatment equipment as part of the hatchery's upgrade and expansion project is expected to address this issue and improve rearing conditions.

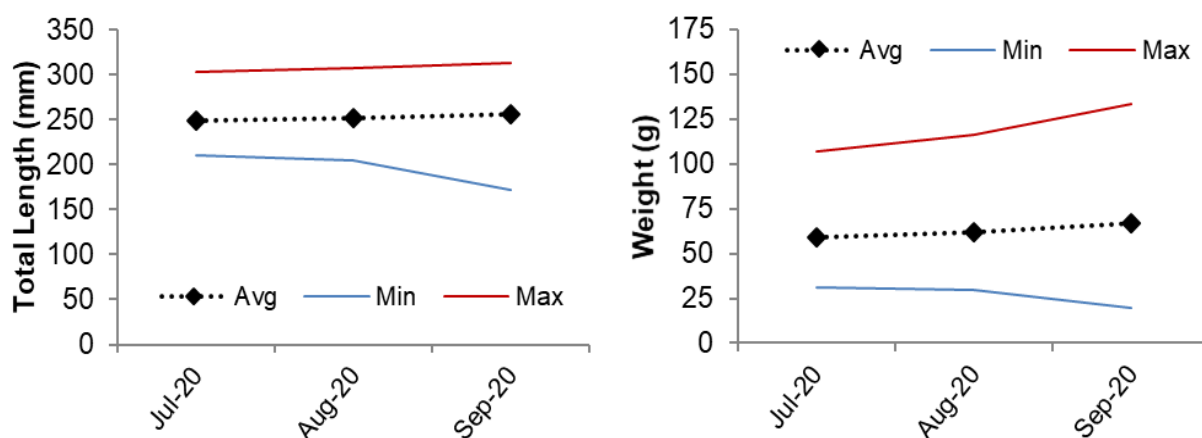


Figure 10: Average, minimum and maximum total length (mm) and weight (g) for Burntwood River sturgeon (2019 year-class) at GRFH from July to the end of September, 2020

At the end of each month, 15 Burntwood River sturgeon were randomly selected and measured from each rearing tank. Growth was minimal over the summer (Figure 10) due to the cooler rearing temperatures (Figure 7). Variation in size persisted throughout the summer.

At the time of the fall stocking yearlings had reached an overall average fork length of 217 mm (range: 149 to 270 mm), average total length of 257 mm (range: 172 to 313 mm) and average weight of 67 g (range: 20 to 133 g; Figure 10; 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 9-11, 2020 when fish were large enough to undergo the procedure. A PIT tag scanner held over the fish detects the tag and displays the unique 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.

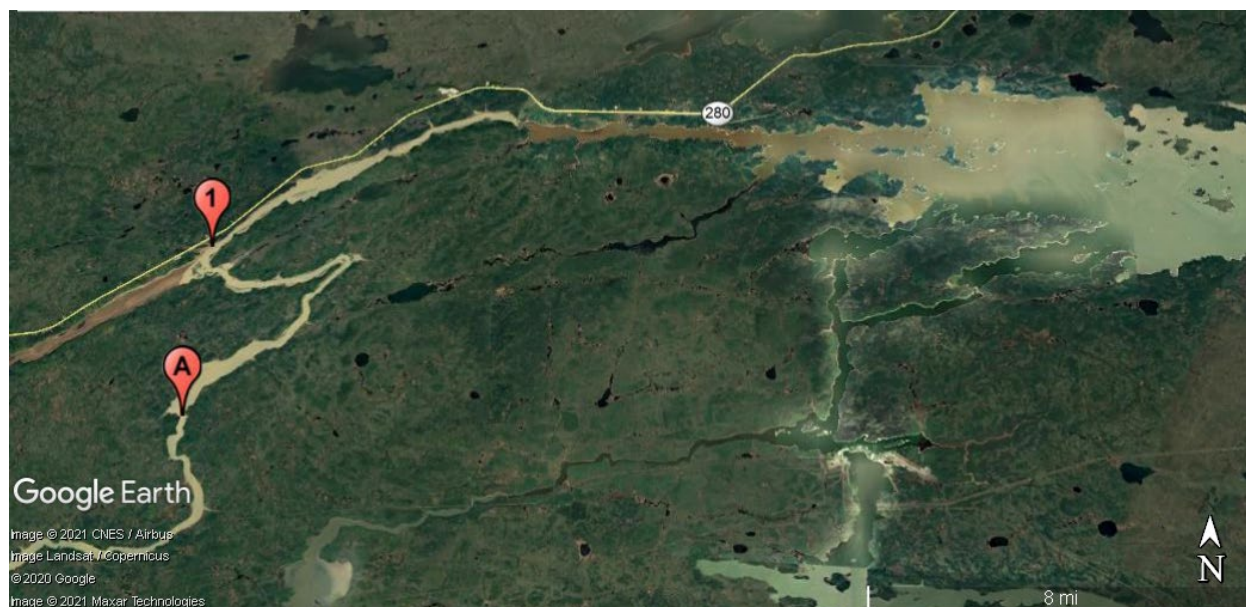
Tissue samples (pectoral fin) were collected from 30 Burntwood River sturgeon on March 22, 2020 and sent to RPC Science & Engineering in Fredericton, New Brunswick. All samples tested negative for Namao Virus using a virus specific qPCR test. Yearlings were cleared by the provincial fish health officer for stocking.

Table 2: Number of Burntwood River sturgeon (2019 year-class) released into the Burntwood River in 2020

Family	Stocking				
	Date	Number	Age (Mth)	Waterbody	Site ID
F2xM1M2	20-Jun-20	64	12	Burntwood River	1
F2xM3M4	20-Jun-20	65	12	Burntwood River	1
F2xM5M6	20-Jun-20	63	12	Burntwood River	1
F2xM1M2	22-Jun-20	64	12	Burntwood River	1
F2xM3M4	22-Jun-20	65	12	Burntwood River	1
F2xM5M6	22-Jun-20	63	12	Burntwood River	1
Total (Spring)		384			
F2xM1M2	24-Sep-19	63	15	Burntwood River	1
F2xM3M4	24-Sep-19	62	15	Burntwood River	1
F2xM5M6	24-Sep-19	65	15	Burntwood River	1
Total (Fall)		190			

On June 20, a total of 192 yearlings were transported by truck to the Orr Creek boat launch. Following a period of acclimation, the sturgeon were released from shore into the Burntwood River at site 1 (Map 2; Table 2; Table A1-4). The river temperature was 10.5°C.

On June 22, another 192 yearlings were transported by truck to the Orr Creek boat launch. The sturgeon were released from shore into the Burntwood River, following a period of acclimation, at Site 1 (Map 2; Table 2; Table A1-4). The river temperature was 11.4°C.



Map 2: Stocking location for Burntwood River sturgeon (2019 year-class) released into the Burntwood River in spring and fall 2020. First Rapids is marked 'A'

2.3.2 FALL

Tissue samples (pectoral fin) were collected from 30 Burntwood River sturgeon on August 16, 2020 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.

On September 24, a total of 190 yearlings were transported by truck to the Orr Creek boat launch and released from shore into the Burntwood River at site 1, following a period of acclimation (Map 2; Table 2; Table A1-4). The river temperature was 10.3°C.

3.0 BIRTHDAY RAPIDS POPULATION (2020 YEAR-CLASS)

3.1 SPAWN CAMP

Field activities that support spawn collection were cancelled due to Covid-19. As a result, there was no 2020 year-class produced.

4.0 POST-STOCKING RECAPTURES

A total of 4,743 Lake Sturgeon yearlings have been stocked into the lower Nelson and Burntwood rivers since 2014 (Burntwood River = 1,931; Keeyask Reservoir = 1,284; Stephens Lake = 1,528). PIT tags injected into the sturgeon prior to release has allowed identification of 423 hatchery-reared fish from post-stocking monitoring in the Keeyask Study Area since 2014 (Table 5).

Table 3: Number of Lake Sturgeon yearlings stocked into the lower Nelson and Burntwood rivers and number recaptured between 2014 and 2019

Sample Year	Location	Number Stocked	Number Recaptured							TOTAL
			Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	
2020	Stephens Lake	0	0	25	1	5	0	18	0	49
	Keeyask Reservoir	0	0	17	0	12	0	6	1	36
	Burntwood River/Split Lake	574	1	0	12	0	2	0	6	21
2019	Stephens Lake	390	84	0	13	0	20	1	n/a	118
	Future Keeyask Reservoir	398	27	1	16	0	12	1	n/a	57
	Burntwood River/Split Lake	0	0	8	0	0	0	2	n/a	10
2018	Stephens Lake	0	0	7	0	10	0	n/a	n/a	17
	Future Keeyask Reservoir	0	1	8	0	8	1	n/a	n/a	18
	Burntwood River	739	0	0	0	0	1	n/a	n/a	1
2017	Stephens Lake	720	33	0	18	0	n/a	n/a	n/a	51
	Future Keeyask Reservoir	463	9	0	11	1	n/a	n/a	n/a	21
	Burntwood River/Split Lake	0	0	0	0	3	n/a	n/a	n/a	3
2016	Stephens Lake	0	0	5	0	n/a	n/a	n/a	n/a	5
	Future Keeyask Reservoir	0	0	7	0	n/a	n/a	n/a	n/a	7
	Burntwood River/Split Lake	23	0	0	1	n/a	n/a	n/a	n/a	1
2015	Stephens Lake	418	4	0	n/a	n/a	n/a	n/a	n/a	4
	Future Keeyask Reservoir	423	2	1	n/a	n/a	n/a	n/a	n/a	3
	Burntwood River/Split Lake	0	0	0	n/a	n/a	n/a	n/a	n/a	0
2014	Stephens Lake	0	0	n/a	n/a	n/a	n/a	n/a	n/a	0
	Future Keeyask Reservoir	0	1	n/a	n/a	n/a	n/a	n/a	n/a	1
	Burntwood River/Split Lake	595	1	n/a	n/a	n/a	n/a	n/a	n/a	1
TOTAL		4,743	163	79	72	39	35	28	7	423

The majority of hatchery-reared sturgeon have been recaptured in Stephens Lake (58%, n = 244). Most of these fish were originally stocked into Stephens Lake (2015 = 62; 2017 = 47, 2019 = 100), with the exception of 34 individuals. Of these 34 fish, 32 sturgeon were stocked into the future Keeyask reservoir (2015 = 13; 2017 = 11; 2019 = 8) and 2 sturgeon were stocked into the Burntwood River (2014 = 1; 2018 = 1). The stocking location of one hatchery-reared fish

recaptured in Stephens Lake during the 2019 monitoring program is unknown and was either stocked into Stephens Lake or the future Keeyask reservoir in 2019. Annual survival of hatchery-reared sturgeon stocked as yearlings in Stephens Lake is currently estimated to be 76% (Burnett et al. 2021).

The second most hatchery-reared fish have been recaptured in the Keeyask reservoir (34%, $n = 142$). Of these fish, 135 sturgeon were originally stocked into the future Keeyask reservoir (2015 = 46; 2017 = 45; 2019 = 44) with 8 having been stocked upstream in the Burntwood River (2014 = 6; 2018 = 2). Annual survival of hatchery-reared sturgeon stocked as yearlings in the Keeyask reservoir is currently estimated to be 84% (Burnett et al. 2021).

The least number of hatchery-reared fish recaptured to date has been in the Upper Split Lake area (9%, $n = 37$). All were stocked into the Burntwood River (2014 = 14; 2016 = 2; 2018 = 20; 2020 = 1). Annual survival of hatchery-reared sturgeon stocked as yearlings in the Upper Split Lake area is currently estimated to be 91% (Burnett et al. 2021).

Individuals from all year-classes produced at the Grand Rapids Fish Hatchery have been recaptured. Over the course of the monitoring program, 5% ($n = 20$) were from the 2013 year-class, 29% ($n = 121$) from the 2014 year-class, <1% ($n = 2$) from the 2015 year-class, 24% ($n = 103$) from the 2016 year-class, 5% ($n = 23$) from the 2017 year-class, 36% ($n = 153$) from the 2018 year class, and <1% ($n = 1$) from the 2019 year-class.

At the time of recapture, 39% ($n = 163$) were age-1, 19% ($n = 79$) were age-2, 17% ($n = 72$) were age-3, 9% ($n = 39$) were age-4, 8% ($n = 35$) were age-5, 7% ($n = 28$) were age-6, and 2% ($n = 7$) were age-7.

Additional information about recaptured hatchery-reared sturgeon can be found in Henderson et al. (2015), Burnett et al. (2016; 2017; 2018, 2021), and Burnett and Hrenchuk (2019; 2020).

5.0 PRODUCTION AND STOCKING ACTIVITIES IN 2020/21

A total of 192 Burntwood River yearlings were kept at the hatchery for the 2020/21 winter grow-out period. Fish will be released at age-2 in spring 2021, pending provincial approval. Specific stocking locations will be determined at that time.

Construction activities for the hatchery's upgrade and expansion project began in spring 2020 and is expected to be completed by fall 2021. 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 attain national and provincial biosecurity standards and recommendations developed to reduce the risk of pathogens from entering and spreading within the facility.

6.0 SUMMARY AND CONCLUSIONS

The Grand Rapids Fish Hatchery did not produce a 2020 year-class for the Keeyask Hydropower Limited Partnership due to the cancellation of spring field activities as a result of Covid-19. A total of 384 yearlings from the 2019 year-class were released into the Burntwood River in spring with the remaining 382 kept at the hatchery for further growth. In fall another 190 yearlings were released into the Burntwood River. A total of 192 individuals were retained to be stocked in spring 2021 at age-2.

Stocking activities for the construction and operation of the Keeyask Generating Station will continue until self-sustaining populations are present in the Keeyask and upper Split Lake areas. Assessment of the program is on-going in order to meet this objective. Results from juvenile monitoring programs indicate high survival of the hatchery-reared sturgeon stocked as yearlings but there is little evidence to support survival of the released fingerlings. As such the program will continue to focus on the production and release of yearlings. Upgrades to the Grand Rapids Fish Hatchery will allow for greater numbers of yearling sturgeon to be produced for stocking.

7.0 LITERATURE CITED

- Burnett, D.C., L.M. Henderson, C.C. Barth and C.L. Hrenchuk. 2016. Juvenile Lake Sturgeon population monitoring, fall 2015: Year 2 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2016-02. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2016, 84 pp.
- Burnett, D.C., L.M. Henderson, C.C. Barth and C.L. Hrenchuk. 2017. Juvenile Lake Sturgeon population monitoring, fall 2016: Year 3 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2017-06. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2017, 86 pp.
- Burnett, D.C., C.L. Hrenchuk, and C.C. Barth. 2018. Juvenile Lake Sturgeon population monitoring, fall 2017: Year 4 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2018-02. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2018, 117 pp.
- Burnett, D.C., and C.L. Hrenchuk. 2019. Juvenile Lake Sturgeon population monitoring, fall 2018: Year 5 Construction. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2019-06. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2019. xvii + 117 pp.
- Burnett, D.C., and C.L. Hrenchuk. 2020. Juvenile Lake Sturgeon population monitoring, fall 2019: Year 6 Construction. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2020-06. A report prepared for Manitoba Hydro by North/South Consultants Inc.
- Burnett, D.C., C.L. Hrenchuk, and P. Nelson. 2021. Juvenile Lake Sturgeon population monitoring, fall 2020: Year 7 Construction. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2021-05. A report prepared for Manitoba Hydro by North/South Consultants Inc.
- Clouthier, S.C., E. VanWalleghem, and E.D. Anderson. 2015. Sturgeon nucleo-cytoplasmic large DNA virus phylogeny and PCR tests. *Diseases of Aquatic Organisms* 117, 93-106.
- Emerson, K., R.C. Russo, R.E. Lund, and R.V. Thurston. 1975. Aqueous ammonia equilibrium calculations: effect of pH and temperature. *Journal of the Fisheries Research Board of Canada*. 32: 2379-2382.
- Genz, J., C.A. McDougall, D. Burnett, L. Arcinas, S. Khetoo, and W.G. Anderson. 2014. Induced spawning of wild-caught adult Lake Sturgeon: assessment of hormonal and stress responses, gamete quality, and survival. *Journal of Applied Ichthyology* 30, 1565-1577.
- Gosselin, T., P.A. Nelson, C.A. McDougall, L. Bernatchez. 2014. Population genomics of Lake Sturgeon (*Acipenser fulvescens*) in the Nelson and Hayes Rivers. A report prepared for Manitoba Hydro by Université Laval and North/South Consultants Inc., 69 pp.

- Henderson, L.M., C.C. Barth, and C.L. Hrenchuk. 2015. Juvenile Lake Sturgeon population monitoring, fall 2014: Year 1 Construction. Keeyask Generation Project Aquatic Effects Monitoring Report #AEMP-2015-03. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2015, 66 pp.
- Hrenchuk, C.L. and C.D. Lacho. 2019. Adult Lake Sturgeon movement monitoring in the Nelson River between Clark Lake and the Limestone Generating Station, October 2017 to October 2018: Year 5 Construction. Keeyask Generation Project Aquatic Effects Monitoring Plan Report #AEMP-2019-01. A report prepared for Manitoba Hydro by North/South Consultants Inc., June 2019. xvii + 149 pp.
- Klassen, C. 2015. Production and stocking summary for Burntwood River and Birthday Rapids Lake Sturgeon populations, June 2013 to September 2014: Year 1 Construction. A report prepared by Manitoba Hydro. January 2015, 56 pp.
- Klassen, C., Y. Michaluk, M. Alexander. 2016. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River Populations, September 2014 to September 2015: Year 2 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2016-01. A report prepared by Manitoba Hydro, June 2016, 55 pp.
- Klassen, C., Y. Michaluk, L. Groening and M. Alexander. 2017. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River Populations, October 2015 to September 2016: Year 3 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2017-01. A report prepared by Manitoba Hydro, June 2017, 70 pp.
- Klassen, C., Y. Michaluk, S. Kirchmann and N. Clarke. 2018. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2018-01: Lake Sturgeon Production and Stocking Summary for Birthday Rapids and Burntwood River Populations, October 2016 to October 2017: Year 4 Construction. A report prepared by Manitoba Hydro, June 2018
- Klassen, C., Y. Michaluk, S. Kirchmann and L. Groening. 2019. Lake Sturgeon production and stocking summary for Birthday Rapids and Burntwood River populations, November 2017 to October 2018: Year 5 Construction. Keeyask Generation Project Fisheries Off-Setting and Mitigation Report #FOMP-2019-01. A report prepared by Manitoba Hydro, June 2019. Xi + 65 pp.

APPENDIX 1: BURNTWOOD RIVER (2019 YEAR-CLASS)

Table A1-1: Survival (%) of Burntwood River sturgeon (2019 year-class) at GRFH from Nov 1, 2019 to Sept 30, 2020

LOT	Tanks ^a	Month-Year	Start of Month Total	Mortality			Transfer		Recount Adjustment	End of Month Total	Monthly Survival (%) ^b
				Natural	Accidental	Euthanized	Stocking	Other			
LKST-BWR-19	6	Nov-19	774	4	0	0	0	0	0	770	99.5
LKST-BWR-19	6	Dec-19	770	1	0	0	0	0	0	769	99.9
LKST-BWR-19	6	Jan-20	769	0	0	0	0	0	0	769	100.0
LKST-BWR-19	6	Feb-20	769	0	0	0	0	0	2(-)	767	100.0
LKST-BWR-19	6	Mar-20	767	0	0	0	0	0	0	767	100.0
LKST-BWR-19	6	Apr-20	767	0	0	0	0	0	0	767	100.0
LKST-BWR-19	6	May-20	767	0	0	0	0	0	0	767	100.0
LKST-BWR-19	6	Jun-20	767	0	0	1 ^c	384 ^d	0	0	382	100.0
LKST-BWR-19	6	Jul-20	382	0	0	0	0	0	0	382	100.0
LKST-BWR-19	6	Aug-20	382	0	0	0	0	0	0	382	100.0
LKST-BWR-19	6	Sep-20	382	0	0	0	190 ^d	0	0	192	100.0
Total			774	5	0	1	574	0	2(-)	192	99.4

a. 10A (F2xM1M2), 10B (F2xM1M2), 11A (F2xM3M4), 11B (F2xM3M4), 12A (F2xM5M6), 12B (F2xM5M6)

b. Monthly survival rates do not include euthanized fish or recount adjustments

c. Swimming in circles

d. Stocked into Burntwood River

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 (2019 year-class) reared at Grand Rapids Fish Hatchery

Parameter	Mth-Yr	N ^a	Mean	\pm SD	Min	Max
Dissolved O₂ (mg/L)	Nov-19	24	8.71	0.30	8.22	9.26
	Dec-19	24	9.00	0.35	8.26	9.58
	Jan-20	24	9.33	0.56	8.32	10.23
	Feb-20	24	9.59	0.25	8.94	10.02
	Mar-20	21	9.09	0.70	7.90	10.55
	Apr-20	21	9.85	0.44	9.12	10.57
	May-20	27	9.80	0.50	9.06	10.71
	Jun-20	12	9.59	0.79	8.08	10.67
	Jul-20	12	9.63	0.56	8.55	10.28
	Aug-20	24	9.64	0.58	8.70	10.91
	Sep-20	12	9.78	0.36	9.11	10.22
Dissolved CO₂ (mg/L)	Nov-19	24	1.96	0.20	1.00	2.00
	Dec-19	24	2.00	0.00	2.00	2.00
	Jan-20	24	2.58	0.50	2.00	3.00
	Feb-20	24	2.71	0.55	2.00	4.00
	Mar-20	21	2.71	0.46	2.00	3.00
	Apr-20	21	3.00	0.00	3.00	3.00
	May-20	27	3.37	0.49	3.00	4.00
	Jun-20	12	3.67	0.78	3.00	5.00
	Jul-20	18	3.06	0.24	3.00	4.00
	Aug-20	24	3.54	0.51	3.00	4.00

Parameter	Mth-Yr	N ^a	Mean	±SD	Min	Max
pH	Sep-20	24	3.42	0.50	3.00	4.00
	Nov-19	24	8.43	0.34	7.47	8.66
	Dec-19	24	8.30	0.20	7.72	8.51
	Jan-20	24	8.32	0.05	8.24	8.40
	Feb-20	24	8.41	0.08	8.28	8.52
	Mar-20	15	8.23	0.27	7.66	8.49
	Apr-20	21	8.37	0.04	8.28	8.44
	May-20	27	8.32	0.06	8.21	8.44
	Jun-20	12	8.25	0.08	8.10	8.34
	Jul-20	18	8.40	0.15	8.06	8.57
	Aug-20	24	8.31	0.13	8.05	8.54
	Sep-20	24	8.13	0.19	7.84	8.44
Total Ammonia (mg/L)	Nov-19	24	0.04	0.06	0.00	0.18
	Dec-19	24	0.11	0.17	0.00	0.79
	Jan-20	24	0.12	0.12	0.00	0.34
	Feb-20	24	0.10	0.12	0.00	0.40
	Mar-20	15	0.12	0.09	0.03	0.32
	Apr-20	12	0.25	0.10	0.00	0.37
	May-20	18	0.22	0.12	0.03	0.41
	Jun-20	9	0.20	0.13	0.00	0.37
	Jul-20	18	0.05	0.06	0.00	0.25
	Aug-20	24	0.12	0.11	0.00	0.33
	Sep-20	24	0.06	0.08	0.00	0.21

Parameter	Mth-Yr	N ^a	Mean	±SD	Min	Max
UIA (mg/L)	Nov-19	24	0.00	0.01	0.00	0.02
	Dec-19	24	0.01	0.01	0.00	0.05
	Jan-20	24	0.01	0.01	0.00	0.02
	Feb-20	24	0.01	0.01	0.00	0.02
	Mar-20	9	0.00	0.00	0.00	0.01
	Apr-20	12	0.01	0.01	0.00	0.02
	May-20	18	0.01	0.01	0.00	0.02
	Jun-20	9	0.01	0.01	0.00	0.02
	Jul-20	18	0.00	0.00	0.00	0.01
	Aug-20	24	0.01	0.01	0.00	0.02
	Sep-20	24	0.00	0.00	0.00	0.01
Nitrite Nitrogen (mg/L)	Nov-19	24	0.05	0.00	0.04	0.05
	Dec-19	24	0.06	0.02	0.05	0.10
	Jan-20	24	0.05	0.00	0.04	0.05
	Feb-20	24	0.05	0.00	0.04	0.05
	Mar-20	21	0.06	0.02	0.04	0.10
	Apr-20	21	0.05	0.00	0.05	0.05
	May-20	27	0.04	0.01	0.04	0.05
	Jun-20	12	0.05	0.01	0.04	0.05
	Jul-20	18	0.04	0.00	0.04	0.04
	Aug-20	24	0.04	0.00	0.04	0.04
	Sep-20	24	0.04	0.00	0.04	0.04

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 (2019 year-class) reared at Grand Rapids Fish Hatchery

Measurement	Mth-Yr	n	Avg	\pm SD	Min	Max
Fork Length (mm)	Nov-19	90	131	9	111	155
	Dec-19	90	152	11	122	184
	Jan-20	90	161	12	106	192
	Feb-20	90	175	15	134	215
	Mar-20	90	184	14	158	220
	Apr-20	90	192	15	155	238
	May-20	90	200	20	155	254
	Jun-20	90	201	19	160	260
	Jul-20	90	212	18	178	257
	Aug-20	90	214	19	168	260
	Sep-19	192	217	20	149	270
Total Length (mm)	Nov-19	90	157	10	134	182
	Dec-19	90	179	13	141	201
	Jan-20	90	189	14	122	225
	Feb-20	90	206	17	156	250
	Mar-20	90	220	17	188	261
	Apr-20	90	227	17	185	280
	May-20	90	235	23	185	294
	Jun-20	90	237	22	186	300
	Jul-20	90	249	21	210	303
	Aug-20	90	252	22	205	307
	Sep-20	192	257	24	172	313

Weight (g)	Nov-19	90	14.1	2.9	8.6	21.1
	Dec-19	90	19.8	5.3	9.2	42.6
	Jan-20	90	24.7	5.7	7.4	42.9
	Feb-20	90	30.5	8.1	13.1	54.1
	Mar-20	90	36.1	8.7	21.6	58.4
	Apr-20	90	42.6	9.8	24.1	72.7
	May-20	90	47.0	14.3	20.9	96.3
	Jun-20	90	49.9	14.9	22.3	106.3
	Jul-20	90	58.7	16.5	31.1	107.1
	Aug-20	90	62.1	17.7	29.7	116.3
	Sep-20	192	66.6	19.7	19.5	133.2

Table A1-4: Biological and PIT tag information for hatchery-reared Lake Sturgeon yearlings released into the Burntwood River in 2020

Lake Sturgeon				Final Hatchery Measurement			Stocking Activity			
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000107988	BWR_19	F2xM3M4	11A	05.22.2020	185	203	30.66	20-Jun-20	Burntwood River	1
900.067000107990	BWR_19	F2xM3M4	11A	05.22.2020	190	226	39.82	22-Jun-20	Burntwood River	1
900.067000108008	BWR_19	F2xM3M4	11A	05.22.2020	190	226	40.79	22-Jun-20	Burntwood River	1
900.067000108012	BWR_19	F2xM3M4	11A	05.22.2020	195	233	39.97	22-Jun-20	Burntwood River	1
900.067000108013	BWR_19	F2xM3M4	11A	05.22.2020	202	234	51.65	22-Jun-20	Burntwood River	1
900.067000108045	BWR_19	F2xM1M2	10A	05.21.2020	208	245	25.25	22-Jun-20	Burntwood River	1
900.067000108046	BWR_19	F2xM3M4	11A	05.22.2020	180	212	34.94	22-Jun-20	Burntwood River	1
900.067000108054	BWR_19	F2xM3M4	11A	05.22.2020	195	222	42.10	22-Jun-20	Burntwood River	1
900.067000108055	BWR_19	F2xM3M4	11A	05.22.2020	195	230	45.39	22-Jun-20	Burntwood River	1
900.067000108056	BWR_19	F2xM3M4	11A	05.22.2020	183	217	26.06	22-Jun-20	Burntwood River	1
900.067000108059	BWR_19	F2xM3M4	11A	05.22.2020	198	234	48.60	22-Jun-20	Burntwood River	1
900.067000108060	BWR_19	F2xM3M4	11A	05.22.2020	190	235	38.95	22-Jun-20	Burntwood River	1
900.067000108062	BWR_19	F2xM3M4	11A	05.22.2020	180	217	37.14	22-Jun-20	Burntwood River	1
900.067000108064	BWR_19	F2xM3M4	11A	05.22.2020	178	212	53.30	22-Jun-20	Burntwood River	1
900.067000108066	BWR_19	F2xM3M4	11A	05.22.2020	188	224	41.30	20-Jun-20	Burntwood River	1
900.067000108067	BWR_19	F2xM3M4	11A	05.22.2020	183	217	33.02	22-Jun-20	Burntwood River	1
900.067000108070	BWR_19	F2xM3M4	11A	05.22.2020	190	224	40.70	20-Jun-20	Burntwood River	1
900.067000108073	BWR_19	F2xM3M4	11A	05.22.2020	204	246	45.74	20-Jun-20	Burntwood River	1
900.067000108080	BWR_19	F2xM3M4	11A	05.22.2020	215	249	50.98	20-Jun-20	Burntwood River	1
900.067000108082	BWR_19	F2xM5M6	12A	05.23.2020	175	205	29.80	22-Jun-20	Burntwood River	1
900.067000108085	BWR_19	F2xM3M4	11A	05.22.2020	220	265	69.74	20-Jun-20	Burntwood River	1
900.067000108086	BWR_19	F2xM3M4	11A	05.22.2020	188	220	39.60	22-Jun-20	Burntwood River	1
900.067000108087	BWR_19	F2xM3M4	11A	05.22.2020	218	256	58.76	22-Jun-20	Burntwood River	1
900.067000108088	BWR_19	F2xM5M6	12A	05.23.2020	150	167	21.77	22-Jun-20	Burntwood River	1
900.067000108090	BWR_19	F2xM3M4	11A	05.22.2020	235	275	75.13	22-Jun-20	Burntwood River	1
900.067000108092	BWR_19	F2xM5M6	12A	05.23.2020	205	243	57.64	20-Jun-20	Burntwood River	1
900.067000108093	BWR_19	F2xM3M4	11A	05.22.2020	200	238	46.10	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000108094	BWR_19	F2xM5M6	12A	05.23.2020	172	204	27.50	22-Jun-20	Burntwood River	1
900.067000108096	BWR_19	F2xM3M4	11A	05.22.2020	170	198	53.17	22-Jun-20	Burntwood River	1
900.067000108097	BWR_19	F2xM5M6	12A	05.23.2020	173	204	32.24	22-Jun-20	Burntwood River	1
900.067000108099	BWR_19	F2xM3M4	11A	05.22.2020	208	250	50.33	20-Jun-20	Burntwood River	1
900.067000108100	BWR_19	F2xM3M4	11A	05.22.2020	197	227	43.65	22-Jun-20	Burntwood River	1
900.067000108101	BWR_19	F2xM5M6	12A	05.23.2020	180	215	21.35	20-Jun-20	Burntwood River	1
900.067000108102	BWR_19	F2xM5M6	12A	05.23.2020	175	205	32.08	20-Jun-20	Burntwood River	1
900.067000108103	BWR_19	F2xM5M6	12A	05.23.2020	195	232	49.34	20-Jun-20	Burntwood River	1
900.067000108104	BWR_19	F2xM3M4	11A	05.22.2020	210	247	57.64	20-Jun-20	Burntwood River	1
900.067000108106	BWR_19	F2xM3M4	11A	05.22.2020	170	198	28.57	20-Jun-20	Burntwood River	1
900.067000108107	BWR_19	F2xM5M6	12A	05.23.2020	177	210	36.55	20-Jun-20	Burntwood River	1
900.067000108108	BWR_19	F2xM5M6	12A	05.23.2020	195	232	47.55	20-Jun-20	Burntwood River	1
900.067000108109	BWR_19	F2xM5M6	12A	05.23.2020	195	230	51.32	20-Jun-20	Burntwood River	1
900.067000108110	BWR_19	F2xM5M6	12A	05.23.2020	220	256	67.01	20-Jun-20	Burntwood River	1
900.067000108111	BWR_19	F2xM5M6	12A	05.23.2020	175	217	32.60	22-Jun-20	Burntwood River	1
900.067000108112	BWR_19	F2xM3M4	11A	05.22.2020	200	229	51.83	20-Jun-20	Burntwood River	1
900.067000108113	BWR_19	F2xM5M6	12A	05.23.2020	185	218	39.73	22-Jun-20	Burntwood River	1
900.067000108114	BWR_19	F2xM5M6	12A	05.23.2020	208	248	60.75	20-Jun-20	Burntwood River	1
900.067000108115	BWR_19	F2xM3M4	11A	05.22.2020	204	240	52.10	20-Jun-20	Burntwood River	1
900.067000108116	BWR_19	F2xM5M6	12A	05.23.2020	183	213	38.88	22-Jun-20	Burntwood River	1
900.067000108117	BWR_19	F2xM5M6	12A	05.23.2020	190	226	46.29	22-Jun-20	Burntwood River	1
900.067000108120	BWR_19	F2xM5M6	12A	05.23.2020	170	204	33.38	20-Jun-20	Burntwood River	1
900.067000108121	BWR_19	F2xM5M6	12A	05.23.2020	170	205	28.50	20-Jun-20	Burntwood River	1
900.067000108122	BWR_19	F2xM3M4	11A	05.22.2020	170	198	29.26	22-Jun-20	Burntwood River	1
900.067000108124	BWR_19	F2xM5M6	12A	05.23.2020	180	212	35.85	20-Jun-20	Burntwood River	1
900.067000108125	BWR_19	F2xM5M6	12A	05.23.2020	195	232	49.18	22-Jun-20	Burntwood River	1
900.067000108126	BWR_19	F2xM5M6	12A	05.23.2020	188	220	41.22	22-Jun-20	Burntwood River	1
900.067000108127	BWR_19	F2xM3M4	11A	05.22.2020	185	205	31.17	22-Jun-20	Burntwood River	1
900.067000108128	BWR_19	F2xM5M6	12A	05.23.2020	187	220	43.01	20-Jun-20	Burntwood River	1
900.067000108130	BWR_19	F2xM3M4	11A	05.22.2020	177	204	24.28	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000108132	BWR_19	F2xM5M6	12A	05.23.2020	183	216	39.79	20-Jun-20	Burntwood River	1
900.067000108133	BWR_19	F2xM5M6	12A	05.23.2020	175	204	30.62	20-Jun-20	Burntwood River	1
900.067000108134	BWR_19	F2xM3M4	11A	05.22.2020	185	232	31.32	22-Jun-20	Burntwood River	1
900.067000108135	BWR_19	F2xM3M4	11A	05.22.2020	188	220	41.53	20-Jun-20	Burntwood River	1
900.067000108136	BWR_19	F2xM3M4	11A	05.22.2020	208	244	51.25	22-Jun-20	Burntwood River	1
900.067000108137	BWR_19	F2xM3M4	11A	05.22.2020	176	206	29.69	22-Jun-20	Burntwood River	1
900.067000108138	BWR_19	F2xM5M6	12A	05.23.2020	180	212	36.09	20-Jun-20	Burntwood River	1
900.067000108139	BWR_19	F2xM3M4	11A	05.22.2020	188	225	41.34	22-Jun-20	Burntwood River	1
900.067000108142	BWR_19	F2xM3M4	11A	05.22.2020	192	222	37.60	22-Jun-20	Burntwood River	1
900.067000108143	BWR_19	F2xM5M6	12A	05.23.2020	188	219	41.29	22-Jun-20	Burntwood River	1
900.067000108144	BWR_19	F2xM3M4	11A	05.22.2020	210	252	54.98	20-Jun-20	Burntwood River	1
900.067000108145	BWR_19	F2xM5M6	12A	05.23.2020	173	203	33.27	22-Jun-20	Burntwood River	1
900.067000108146	BWR_19	F2xM5M6	12A	05.23.2020	185	220	39.80	20-Jun-20	Burntwood River	1
900.067000108148	BWR_19	F2xM5M6	12A	05.23.2020	173	205	34.98	20-Jun-20	Burntwood River	1
900.067000108149	BWR_19	F2xM3M4	11A	05.22.2020	193	231	43.87	20-Jun-20	Burntwood River	1
900.067000108152	BWR_19	F2xM5M6	12A	05.23.2020	196	230	47.67	22-Jun-20	Burntwood River	1
900.067000108153	BWR_19	F2xM3M4	11A	05.22.2020	185	221	43.76	20-Jun-20	Burntwood River	1
900.067000108154	BWR_19	F2xM3M4	11A	05.22.2020	194	226	39.08	20-Jun-20	Burntwood River	1
900.067000108155	BWR_19	F2xM5M6	12A	05.23.2020	220	253	70.56	20-Jun-20	Burntwood River	1
900.067000108156	BWR_19	F2xM3M4	11A	05.22.2020	190	225	29.88	22-Jun-20	Burntwood River	1
900.067000108158	BWR_19	F2xM3M4	11A	05.22.2020	196	233	46.44	20-Jun-20	Burntwood River	1
900.067000108160	BWR_19	F2xM5M6	12A	05.23.2020	192	223	47.62	20-Jun-20	Burntwood River	1
900.067000108161	BWR_19	F2xM3M4	11A	05.22.2020	185	224	41.69	20-Jun-20	Burntwood River	1
900.067000108162	BWR_19	F2xM5M6	12A	05.23.2020	173	202	29.10	20-Jun-20	Burntwood River	1
900.067000108163	BWR_19	F2xM5M6	12A	05.23.2020	198	233	47.03	22-Jun-20	Burntwood River	1
900.067000108164	BWR_19	F2xM5M6	12A	05.23.2020	175	206	34.21	20-Jun-20	Burntwood River	1
900.067000108165	BWR_19	F2xM3M4	11A	05.22.2020	214	250	53.88	22-Jun-20	Burntwood River	1
900.067000108166	BWR_19	F2xM3M4	11A	05.22.2020	200	236	45.22	22-Jun-20	Burntwood River	1
900.067000108167	BWR_19	F2xM3M4	11A	05.22.2020	204	243	51.73	20-Jun-20	Burntwood River	1
900.067000108168	BWR_19	F2xM3M4	11A	05.22.2020	177	210	32.27	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000108170	BWR_19	F2xM3M4	11A	05.22.2020	222	264	60.59	20-Jun-20	Burntwood River	1
900.067000108172	BWR_19	F2xM5M6	12A	05.23.2020	182	218	37.00	22-Jun-20	Burntwood River	1
900.067000108173	BWR_19	F2xM5M6	12A	05.23.2020	195	225	42.78	20-Jun-20	Burntwood River	1
900.067000108174	BWR_19	F2xM5M6	12A	05.23.2020	210	242	61.64	22-Jun-20	Burntwood River	1
900.067000108175	BWR_19	F2xM3M4	11A	05.22.2020	185	217	37.82	22-Jun-20	Burntwood River	1
900.067000108176	BWR_19	F2xM5M6	12A	05.23.2020	190	222	42.53	22-Jun-20	Burntwood River	1
900.067000108177	BWR_19	F2xM5M6	12A	05.23.2020	187	220	41.82	20-Jun-20	Burntwood River	1
900.067000108178	BWR_19	F2xM3M4	11A	05.22.2020	194	220	40.06	20-Jun-20	Burntwood River	1
900.067000108383	BWR_19	F2xM1M2	10A	05.21.2020	183	218	26.55	20-Jun-20	Burntwood River	1
900.067000108384	BWR_19	F2xM1M2	10A	05.21.2020	212	250	55.77	20-Jun-20	Burntwood River	1
900.067000108385	BWR_19	F2xM1M2	10A	05.21.2020	201	236	47.44	20-Jun-20	Burntwood River	1
900.067000108386	BWR_19	F2xM1M2	10A	05.21.2020	204	238	47.69	20-Jun-20	Burntwood River	1
900.067000108388	BWR_19	F2xM1M2	10A	05.21.2020	196	236	48.60	20-Jun-20	Burntwood River	1
900.067000108391	BWR_19	F2xM1M2	10A	05.21.2020	175	207	34.15	20-Jun-20	Burntwood River	1
900.067000108392	BWR_19	F2xM1M2	10A	05.21.2020	215	256	57.16	22-Jun-20	Burntwood River	1
900.067000108393	BWR_19	F2xM1M2	10A	05.21.2020	190	226	49.65	22-Jun-20	Burntwood River	1
900.067000108396	BWR_19	F2xM1M2	10A	05.21.2020	190	225	45.22	20-Jun-20	Burntwood River	1
900.067000108397	BWR_19	F2xM1M2	10A	05.21.2020	213	248	56.01	22-Jun-20	Burntwood River	1
900.067000108398	BWR_19	F2xM1M2	10A	05.21.2020	178	211	30.04	22-Jun-20	Burntwood River	1
900.067000108399	BWR_19	F2xM1M2	10A	05.21.2020	215	256	50.76	20-Jun-20	Burntwood River	1
900.067000108400	BWR_19	F2xM1M2	10A	05.21.2020	188	230	40.97	22-Jun-20	Burntwood River	1
900.067000108402	BWR_19	F2xM1M2	10A	05.21.2020	214	252	57.32	22-Jun-20	Burntwood River	1
900.067000108404	BWR_19	F2xM1M2	10A	05.21.2020	215	254	59.75	22-Jun-20	Burntwood River	1
900.067000108405	BWR_19	F2xM1M2	10A	05.21.2020	194	234	46.50	20-Jun-20	Burntwood River	1
900.067000108406	BWR_19	F2xM1M2	10A	05.21.2020	194	228	44.57	22-Jun-20	Burntwood River	1
900.067000108408	BWR_19	F2xM1M2	10A	05.21.2020	190	226	41.98	20-Jun-20	Burntwood River	1
900.067000108409	BWR_19	F2xM1M2	10A	05.21.2020	202	232	39.01	20-Jun-20	Burntwood River	1
900.067000108410	BWR_19	F2xM1M2	10A	05.21.2020	210	248	56.43	20-Jun-20	Burntwood River	1
900.067000108412	BWR_19	F2xM1M2	10A	05.21.2020	191	227	44.97	22-Jun-20	Burntwood River	1
900.067000108413	BWR_19	F2xM1M2	10A	05.21.2020	208	246	54.80	22-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000108414	BWR_19	F2xM1M2	10A	05.21.2020	203	237	50.70	22-Jun-20	Burntwood River	1
900.067000108415	BWR_19	F2xM1M2	10A	05.21.2020	196	231	43.92	20-Jun-20	Burntwood River	1
900.067000108416	BWR_19	F2xM1M2	10A	05.21.2020	191	220	41.95	22-Jun-20	Burntwood River	1
900.067000108417	BWR_19	F2xM1M2	10A	05.21.2020	186	217	43.33	20-Jun-20	Burntwood River	1
900.067000108419	BWR_19	F2xM1M2	10A	05.21.2020	213	255	58.65	22-Jun-20	Burntwood River	1
900.067000108420	BWR_19	F2xM1M2	10A	05.21.2020	198	234	47.85	20-Jun-20	Burntwood River	1
900.067000108421	BWR_19	F2xM1M2	10A	05.21.2020	170	200	32.84	20-Jun-20	Burntwood River	1
900.067000108424	BWR_19	F2xM1M2	10A	05.21.2020	211	246	54.41	20-Jun-20	Burntwood River	1
900.067000108425	BWR_19	F2xM1M2	10A	05.21.2020	185	221	41.15	22-Jun-20	Burntwood River	1
900.067000108426	BWR_19	F2xM1M2	10A	05.21.2020	213	253	56.90	22-Jun-20	Burntwood River	1
900.067000108427	BWR_19	F2xM1M2	10A	05.21.2020	175	210	31.70	20-Jun-20	Burntwood River	1
900.067000108428	BWR_19	F2xM1M2	10A	05.21.2020	185	217	37.88	22-Jun-20	Burntwood River	1
900.067000108429	BWR_19	F2xM1M2	10A	05.21.2020	208	249	56.11	20-Jun-20	Burntwood River	1
900.067000108431	BWR_19	F2xM1M2	10A	05.21.2020	189	226	39.16	20-Jun-20	Burntwood River	1
900.067000108432	BWR_19	F2xM1M2	10A	05.21.2020	206	243	51.74	22-Jun-20	Burntwood River	1
900.067000108433	BWR_19	F2xM1M2	10A	05.21.2020	215	254	53.64	20-Jun-20	Burntwood River	1
900.067000108434	BWR_19	F2xM1M2	10A	05.21.2020	192	228	44.63	22-Jun-20	Burntwood River	1
900.067000108435	BWR_19	F2xM1M2	10A	05.21.2020	175	209	34.80	22-Jun-20	Burntwood River	1
900.067000108436	BWR_19	F2xM1M2	10A	05.21.2020	213	245	34.42	20-Jun-20	Burntwood River	1
900.067000108438	BWR_19	F2xM1M2	10A	05.21.2020	188	222	35.94	22-Jun-20	Burntwood River	1
900.067000108439	BWR_19	F2xM1M2	10A	05.21.2020	221	263	64.79	20-Jun-20	Burntwood River	1
900.067000108441	BWR_19	F2xM1M2	10A	05.21.2020	205	245	58.64	22-Jun-20	Burntwood River	1
900.067000108442	BWR_19	F2xM1M2	10A	05.21.2020	190	223	41.73	20-Jun-20	Burntwood River	1
900.067000108443	BWR_19	F2xM1M2	10A	05.21.2020	204	242	53.33	22-Jun-20	Burntwood River	1
900.067000108444	BWR_19	F2xM1M2	10A	05.21.2020	194	230	50.18	20-Jun-20	Burntwood River	1
900.067000108445	BWR_19	F2xM1M2	10A	05.21.2020	215	258	57.66	20-Jun-20	Burntwood River	1
900.067000108446	BWR_19	F2xM1M2	10A	05.21.2020	168	200	25.49	20-Jun-20	Burntwood River	1
900.067000108447	BWR_19	F2xM1M2	10A	05.21.2020	202	236	52.54	22-Jun-20	Burntwood River	1
900.067000108449	BWR_19	F2xM1M2	10A	05.21.2020	196	231	47.78	22-Jun-20	Burntwood River	1
900.067000108451	BWR_19	F2xM1M2	10A	05.21.2020	186	226	47.50	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000108452	BWR_19	F2xM1M2	10A	05.21.2020	168	202	27.64	20-Jun-20	Burntwood River	1
900.067000108453	BWR_19	F2xM1M2	10A	05.21.2020	193	233	45.65	22-Jun-20	Burntwood River	1
900.067000108454	BWR_19	F2xM1M2	10A	05.21.2020	198	240	49.54	20-Jun-20	Burntwood River	1
900.067000108455	BWR_19	F2xM1M2	10A	05.21.2020	200	238	53.47	22-Jun-20	Burntwood River	1
900.067000108456	BWR_19	F2xM1M2	10A	05.21.2020	190	224	44.56	22-Jun-20	Burntwood River	1
900.067000108457	BWR_19	F2xM1M2	10A	05.21.2020	165	195	27.54	20-Jun-20	Burntwood River	1
900.067000108458	BWR_19	F2xM1M2	10A	05.21.2020	194	224	44.78	22-Jun-20	Burntwood River	1
900.067000108460	BWR_19	F2xM1M2	10A	05.21.2020	210	245	51.42	20-Jun-20	Burntwood River	1
900.067000108461	BWR_19	F2xM1M2	10A	05.21.2020	196	233	43.80	22-Jun-20	Burntwood River	1
900.067000108462	BWR_19	F2xM1M2	10A	05.21.2020	203	242	54.43	20-Jun-20	Burntwood River	1
900.067000108463	BWR_19	F2xM1M2	10A	05.21.2020	187	225	37.85	22-Jun-20	Burntwood River	1
900.067000108464	BWR_19	F2xM1M2	10A	05.21.2020	187	222	40.01	22-Jun-20	Burntwood River	1
900.067000108465	BWR_19	F2xM1M2	10A	05.21.2020	220	262	66.69	20-Jun-20	Burntwood River	1
900.067000108466	BWR_19	F2xM1M2	10A	05.21.2020	215	260	60.01	20-Jun-20	Burntwood River	1
900.067000108467	BWR_19	F2xM1M2	10A	05.21.2020	187	222	36.69	20-Jun-20	Burntwood River	1
900.067000108469	BWR_19	F2xM1M2	10A	05.21.2020	209	251	54.27	20-Jun-20	Burntwood River	1
900.067000108470	BWR_19	F2xM1M2	10A	05.21.2020	196	231	44.72	22-Jun-20	Burntwood River	1
900.067000108471	BWR_19	F2xM1M2	10A	05.21.2020	160	188	26.77	22-Jun-20	Burntwood River	1
900.067000108472	BWR_19	F2xM1M2	10A	05.21.2020	213	250	55.72	20-Jun-20	Burntwood River	1
900.067000108473	BWR_19	F2xM1M2	10A	05.21.2020	180	216	32.25	20-Jun-20	Burntwood River	1
900.067000108474	BWR_19	F2xM1M2	10A	05.21.2020	218	257	54.99	20-Jun-20	Burntwood River	1
900.067000108475	BWR_19	F2xM1M2	10A	05.21.2020	195	234	49.72	20-Jun-20	Burntwood River	1
900.067000108476	BWR_19	F2xM1M2	10A	05.21.2020	215	253	59.60	22-Jun-20	Burntwood River	1
900.067000108477	BWR_19	F2xM1M2	10A	05.21.2020	196	233	44.22	22-Jun-20	Burntwood River	1
900.067000108478	BWR_19	F2xM1M2	10A	05.21.2020	181	214	38.42	20-Jun-20	Burntwood River	1
900.067000108479	BWR_19	F2xM1M2	10A	05.21.2020	193	223	40.44	20-Jun-20	Burntwood River	1
900.067000108480	BWR_19	F2xM1M2	10A	05.21.2020	184	216	38.24	22-Jun-20	Burntwood River	1
900.067000109084	BWR_19	F2xM5M6	12A	05.23.2020	150	175	19.29	22-Jun-20	Burntwood River	1
900.067000109092	BWR_19	F2xM5M6	12A	05.23.2020	170	195	30.76	20-Jun-20	Burntwood River	1
900.067000109097	BWR_19	F2xM5M6	12A	05.23.2020	200	233	48.41	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000109098	BWR_19	F2xM5M6	12A	05.23.2020	190	220	49.21	22-Jun-20	Burntwood River	1
900.067000109110	BWR_19	F2xM5M6	12A	05.23.2020	165	193	25.60	20-Jun-20	Burntwood River	1
900.067000109114	BWR_19	F2xM5M6	12A	05.23.2020	170	200	28.28	20-Jun-20	Burntwood River	1
900.067000109116	BWR_19	F2xM5M6	12A	05.23.2020	165	197	26.20	22-Jun-20	Burntwood River	1
900.067000109127	BWR_19	F2xM5M6	12A	05.23.2020	167	200	29.81	22-Jun-20	Burntwood River	1
900.067000109144	BWR_19	F2xM5M6	12A	05.23.2020	160	184	22.24	22-Jun-20	Burntwood River	1
900.067000109147	BWR_19	F2xM5M6	12A	05.23.2020	196	228	50.51	20-Jun-20	Burntwood River	1
900.067000109151	BWR_19	F2xM5M6	12A	05.23.2020	165	202	26.32	22-Jun-20	Burntwood River	1
900.067000109161	BWR_19	F2xM5M6	12A	05.23.2020	177	210	38.13	22-Jun-20	Burntwood River	1
900.067000109171	BWR_19	F2xM5M6	12A	05.23.2020	196	232	35.32	22-Jun-20	Burntwood River	1
900.067000109172	BWR_19	F2xM5M6	12A	05.23.2020	186	222	39.93	22-Jun-20	Burntwood River	1
900.067000109178	BWR_19	F2xM5M6	12A	05.23.2020	190	223	44.43	22-Jun-20	Burntwood River	1
900.067000109383	BWR_19	F2xM1M2	10A	05.21.2020	183	215	35.82	20-Jun-20	Burntwood River	1
900.067000109384	BWR_19	F2xM1M2	10A	05.21.2020	216	257	58.54	22-Jun-20	Burntwood River	1
900.067000109385	BWR_19	F2xM1M2	10A	05.21.2020	184	218	27.97	20-Jun-20	Burntwood River	1
900.067000109386	BWR_19	F2xM1M2	10A	05.21.2020	200	241	53.14	22-Jun-20	Burntwood River	1
900.067000109387	BWR_19	F2xM1M2	10A	05.21.2020	216	250	60.07	20-Jun-20	Burntwood River	1
900.067000109388	BWR_19	F2xM1M2	10A	05.21.2020	200	236	46.56	20-Jun-20	Burntwood River	1
900.067000109390	BWR_19	F2xM1M2	10A	05.21.2020	183	220	37.47	20-Jun-20	Burntwood River	1
900.067000109392	BWR_19	F2xM1M2	10A	05.21.2020	197	228	40.66	22-Jun-20	Burntwood River	1
900.067000109395	BWR_19	F2xM1M2	10A	05.21.2020	200	240	42.92	22-Jun-20	Burntwood River	1
900.067000109396	BWR_19	F2xM1M2	10A	05.21.2020	170	198	27.76	22-Jun-20	Burntwood River	1
900.067000109399	BWR_19	F2xM1M2	10A	05.21.2020	192	230	41.22	22-Jun-20	Burntwood River	1
900.067000109401	BWR_19	F2xM1M2	10A	05.21.2020	194	233	47.11	20-Jun-20	Burntwood River	1
900.067000109403	BWR_19	F2xM1M2	10A	05.21.2020	193	223	42.51	20-Jun-20	Burntwood River	1
900.067000109404	BWR_19	F2xM1M2	10A	05.21.2020	180	215	35.70	22-Jun-20	Burntwood River	1
900.067000109405	BWR_19	F2xM1M2	10A	05.21.2020	183	216	38.66	22-Jun-20	Burntwood River	1
900.067000109409	BWR_19	F2xM1M2	10A	05.21.2020	203	244	50.37	20-Jun-20	Burntwood River	1
900.067000109410	BWR_19	F2xM1M2	10A	05.21.2020	190	223	38.02	20-Jun-20	Burntwood River	1
900.067000109412	BWR_19	F2xM1M2	10A	05.21.2020	183	216	35.69	22-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000109413	BWR_19	F2xM1M2	10A	05.21.2020	198	236	45.90	20-Jun-20	Burntwood River	1
900.067000109414	BWR_19	F2xM1M2	10A	05.21.2020	186	218	39.12	20-Jun-20	Burntwood River	1
900.067000109415	BWR_19	F2xM1M2	10A	05.21.2020	205	245	48.20	22-Jun-20	Burntwood River	1
900.067000109416	BWR_19	F2xM1M2	10A	05.21.2020	179	210	34.15	22-Jun-20	Burntwood River	1
900.067000109417	BWR_19	F2xM1M2	10A	05.21.2020	180	213	37.55	22-Jun-20	Burntwood River	1
900.067000109420	BWR_19	F2xM1M2	10A	05.21.2020	200	238	53.60	20-Jun-20	Burntwood River	1
900.067000109421	BWR_19	F2xM1M2	10A	05.21.2020	195	237	45.23	22-Jun-20	Burntwood River	1
900.067000109422	BWR_19	F2xM1M2	10A	05.21.2020	204	246	50.45	20-Jun-20	Burntwood River	1
900.067000109424	BWR_19	F2xM1M2	10A	05.21.2020	215	252	57.24	20-Jun-20	Burntwood River	1
900.067000109427	BWR_19	F2xM1M2	10A	05.21.2020	182	217	34.61	22-Jun-20	Burntwood River	1
900.067000109430	BWR_19	F2xM1M2	10A	05.21.2020	212	254	58.55	22-Jun-20	Burntwood River	1
900.067000109431	BWR_19	F2xM1M2	10A	05.21.2020	200	233	48.73	20-Jun-20	Burntwood River	1
900.067000109438	BWR_19	F2xM1M2	10A	05.21.2020	195	223	43.42	20-Jun-20	Burntwood River	1
900.067000109441	BWR_19	F2xM1M2	10A	05.21.2020	184	218	34.20	20-Jun-20	Burntwood River	1
900.067000109442	BWR_19	F2xM1M2	10A	05.21.2020	215	246	63.15	22-Jun-20	Burntwood River	1
900.067000109446	BWR_19	F2xM1M2	10A	05.21.2020	177	212	30.06	22-Jun-20	Burntwood River	1
900.067000109449	BWR_19	F2xM1M2	10A	05.21.2020	186	220	39.16	20-Jun-20	Burntwood River	1
900.067000109450	BWR_19	F2xM1M2	10A	05.21.2020	178	206	31.02	22-Jun-20	Burntwood River	1
900.067000109457	BWR_19	F2xM1M2	10A	05.21.2020	180	213	36.70	20-Jun-20	Burntwood River	1
900.067000109458	BWR_19	F2xM1M2	10A	05.21.2020	176	212	37.02	22-Jun-20	Burntwood River	1
900.067000109459	BWR_19	F2xM1M2	10A	05.21.2020	203	239	56.17	22-Jun-20	Burntwood River	1
900.067000109460	BWR_19	F2xM1M2	10A	05.21.2020	193	232	42.80	22-Jun-20	Burntwood River	1
900.067000109461	BWR_19	F2xM1M2	10A	05.21.2020	163	196	28.35	22-Jun-20	Burntwood River	1
900.067000109463	BWR_19	F2xM1M2	10A	05.21.2020	210	247	58.04	22-Jun-20	Burntwood River	1
900.067000109464	BWR_19	F2xM1M2	10A	05.21.2020	193	228	47.70	22-Jun-20	Burntwood River	1
900.067000109468	BWR_19	F2xM1M2	10A	05.21.2020	182	214	30.34	20-Jun-20	Burntwood River	1
900.067000109469	BWR_19	F2xM1M2	10A	05.21.2020	183	221	39.36	20-Jun-20	Burntwood River	1
900.067000109472	BWR_19	F2xM1M2	10A	05.21.2020	186	221	36.22	22-Jun-20	Burntwood River	1
900.067000109473	BWR_19	F2xM1M2	10A	05.21.2020	190	239	47.54	22-Jun-20	Burntwood River	1
900.067000109474	BWR_19	F2xM1M2	10A	05.21.2020	182	214	32.31	22-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000110781	BWR_19	F2xM5M6	12A	05.23.2020	190	226	50.14	20-Jun-20	Burntwood River	1
900.067000110782	BWR_19	F2xM5M6	12A	05.23.2020	210	248	62.54	22-Jun-20	Burntwood River	1
900.067000110783	BWR_19	F2xM5M6	12A	05.23.2020	164	193	23.88	22-Jun-20	Burntwood River	1
900.067000110784	BWR_19	F2xM5M6	12A	05.23.2020	190	225	43.50	20-Jun-20	Burntwood River	1
900.067000110786	BWR_19	F2xM5M6	12A	05.23.2020	165	193	25.91	22-Jun-20	Burntwood River	1
900.067000110787	BWR_19	F2xM5M6	12A	05.23.2020	175	207	36.54	22-Jun-20	Burntwood River	1
900.067000110789	BWR_19	F2xM5M6	12A	05.23.2020	185	220	37.15	20-Jun-20	Burntwood River	1
900.067000110790	BWR_19	F2xM5M6	12A	05.23.2020	176	212	38.75	22-Jun-20	Burntwood River	1
900.067000110791	BWR_19	F2xM5M6	12A	05.23.2020	192	222	41.94	20-Jun-20	Burntwood River	1
900.067000110792	BWR_19	F2xM5M6	12A	05.23.2020	148	178	19.60	20-Jun-20	Burntwood River	1
900.067000110793	BWR_19	F2xM5M6	12A	05.23.2020	185	210	38.34	22-Jun-20	Burntwood River	1
900.067000110795	BWR_19	F2xM5M6	12A	05.23.2020	165	195	29.13	20-Jun-20	Burntwood River	1
900.067000110798	BWR_19	F2xM5M6	12A	05.23.2020	180	212	32.05	20-Jun-20	Burntwood River	1
900.067000110800	BWR_19	F2xM5M6	12A	05.23.2020	160	187	23.66	20-Jun-20	Burntwood River	1
900.067000110801	BWR_19	F2xM5M6	12A	05.23.2020	185	215	44.76	20-Jun-20	Burntwood River	1
900.067000110802	BWR_19	F2xM5M6	12A	05.23.2020	162	192	20.56	22-Jun-20	Burntwood River	1
900.067000110804	BWR_19	F2xM5M6	12A	05.23.2020	160	194	24.77	20-Jun-20	Burntwood River	1
900.067000110807	BWR_19	F2xM5M6	12A	05.23.2020	176	212	36.00	22-Jun-20	Burntwood River	1
900.067000110810	BWR_19	F2xM5M6	12A	05.23.2020	180	214	43.73	22-Jun-20	Burntwood River	1
900.067000110811	BWR_19	F2xM5M6	12A	05.23.2020	183	213	43.70	20-Jun-20	Burntwood River	1
900.067000110812	BWR_19	F2xM5M6	12A	05.23.2020	180	215	34.73	22-Jun-20	Burntwood River	1
900.067000110813	BWR_19	F2xM5M6	12A	05.23.2020	190	217	39.44	22-Jun-20	Burntwood River	1
900.067000110815	BWR_19	F2xM5M6	12A	05.23.2020	190	220	39.45	20-Jun-20	Burntwood River	1
900.067000110816	BWR_19	F2xM5M6	12A	05.23.2020	177	207	32.94	20-Jun-20	Burntwood River	1
900.067000110817	BWR_19	F2xM5M6	12A	05.23.2020	167	202	27.96	22-Jun-20	Burntwood River	1
900.067000110819	BWR_19	F2xM5M6	12A	05.23.2020	158	184	23.39	22-Jun-20	Burntwood River	1
900.067000110820	BWR_19	F2xM5M6	12A	05.23.2020	185	213	37.88	22-Jun-20	Burntwood River	1
900.067000110821	BWR_19	F2xM5M6	12A	05.23.2020	173	212	37.35	22-Jun-20	Burntwood River	1
900.067000110823	BWR_19	F2xM5M6	12A	05.23.2020	184	218	34.07	22-Jun-20	Burntwood River	1
900.067000110824	BWR_19	F2xM5M6	12A	05.23.2020	196	228	46.99	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000110827	BWR_19	F2xM5M6	12A	05.23.2020	193	223	40.78	20-Jun-20	Burntwood River	1
900.067000110829	BWR_19	F2xM5M6	12A	05.23.2020	185	214	36.89	22-Jun-20	Burntwood River	1
900.067000110830	BWR_19	F2xM5M6	12A	05.23.2020	180	205	37.46	22-Jun-20	Burntwood River	1
900.067000110832	BWR_19	F2xM5M6	12A	05.23.2020	160	190	29.69	20-Jun-20	Burntwood River	1
900.067000110833	BWR_19	F2xM5M6	12A	05.23.2020	178	210	32.29	20-Jun-20	Burntwood River	1
900.067000110834	BWR_19	F2xM5M6	12A	05.23.2020	178	204	33.98	20-Jun-20	Burntwood River	1
900.067000110835	BWR_19	F2xM5M6	12A	05.23.2020	186	198	33.21	22-Jun-20	Burntwood River	1
900.067000110836	BWR_19	F2xM5M6	12A	05.23.2020	160	190	24.71	22-Jun-20	Burntwood River	1
900.067000110837	BWR_19	F2xM5M6	12A	05.23.2020	184	215	37.73	22-Jun-20	Burntwood River	1
900.067000110839	BWR_19	F2xM5M6	12A	05.23.2020	176	207	35.36	22-Jun-20	Burntwood River	1
900.067000110840	BWR_19	F2xM5M6	12A	05.23.2020	186	220	41.22	22-Jun-20	Burntwood River	1
900.067000110843	BWR_19	F2xM5M6	12A	05.23.2020	178	213	30.63	20-Jun-20	Burntwood River	1
900.067000110844	BWR_19	F2xM5M6	12A	05.23.2020	160	187	23.20	22-Jun-20	Burntwood River	1
900.067000110845	BWR_19	F2xM5M6	12A	05.23.2020	210	246	61.80	20-Jun-20	Burntwood River	1
900.067000110846	BWR_19	F2xM5M6	12A	05.23.2020	180	215	32.28	22-Jun-20	Burntwood River	1
900.067000110848	BWR_19	F2xM5M6	12A	05.23.2020	170	205	30.92	20-Jun-20	Burntwood River	1
900.067000110849	BWR_19	F2xM5M6	12A	05.23.2020	168	197	25.50	20-Jun-20	Burntwood River	1
900.067000110850	BWR_19	F2xM5M6	12A	05.23.2020	180	215	36.73	22-Jun-20	Burntwood River	1
900.067000110851	BWR_19	F2xM5M6	12A	05.23.2020	162	193	28.62	20-Jun-20	Burntwood River	1
900.067000110852	BWR_19	F2xM5M6	12A	05.23.2020	178	213	37.20	20-Jun-20	Burntwood River	1
900.067000110853	BWR_19	F2xM5M6	12A	05.23.2020	185	220	40.54	20-Jun-20	Burntwood River	1
900.067000110854	BWR_19	F2xM5M6	12A	05.23.2020	194	230	46.21	22-Jun-20	Burntwood River	1
900.067000110857	BWR_19	F2xM5M6	12A	05.23.2020	169	199	25.36	20-Jun-20	Burntwood River	1
900.067000110859	BWR_19	F2xM5M6	12A	05.23.2020	185	215	42.06	22-Jun-20	Burntwood River	1
900.067000110863	BWR_19	F2xM5M6	12A	05.23.2020	158	186	23.66	20-Jun-20	Burntwood River	1
900.067000110864	BWR_19	F2xM5M6	12A	05.23.2020	185	217	38.64	22-Jun-20	Burntwood River	1
900.067000110865	BWR_19	F2xM5M6	12A	05.23.2020	185	218	34.65	20-Jun-20	Burntwood River	1
900.067000110866	BWR_19	F2xM5M6	12A	05.23.2020	175	218	32.28	20-Jun-20	Burntwood River	1
900.067000110867	BWR_19	F2xM5M6	12A	05.23.2020	188	222	46.09	20-Jun-20	Burntwood River	1
900.067000110868	BWR_19	F2xM5M6	12A	05.23.2020	168	203	31.41	22-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000110870	BWR_19	F2xM5M6	12A	05.23.2020	195	227	46.61	20-Jun-20	Burntwood River	1
900.067000110871	BWR_19	F2xM5M6	12A	05.23.2020	180	213	32.41	20-Jun-20	Burntwood River	1
900.067000110872	BWR_19	F2xM5M6	12A	05.23.2020	182	213	37.01	20-Jun-20	Burntwood River	1
900.067000110873	BWR_19	F2xM5M6	12A	05.23.2020	150	177	21.58	22-Jun-20	Burntwood River	1
900.067000110874	BWR_19	F2xM5M6	12A	05.23.2020	182	215	36.72	22-Jun-20	Burntwood River	1
900.067000110875	BWR_19	F2xM5M6	12A	05.23.2020	167	196	27.40	22-Jun-20	Burntwood River	1
900.067000110876	BWR_19	F2xM5M6	12A	05.23.2020	190	222	42.28	20-Jun-20	Burntwood River	1
900.067000110878	BWR_19	F2xM5M6	12A	05.23.2020	170	200	26.78	22-Jun-20	Burntwood River	1
900.067000110879	BWR_19	F2xM5M6	12A	05.23.2020	175	207	33.84	22-Jun-20	Burntwood River	1
900.067000110880	BWR_19	F2xM5M6	12A	05.23.2020	193	224	44.00	22-Jun-20	Burntwood River	1
900.067000111382	BWR_19	F2xM3M4	11A	05.22.2020	210	246	52.77	20-Jun-20	Burntwood River	1
900.067000111383	BWR_19	F2xM3M4	11A	05.22.2020	200	232	40.33	22-Jun-20	Burntwood River	1
900.067000111384	BWR_19	F2xM3M4	11A	05.22.2020	215	260	75.11	20-Jun-20	Burntwood River	1
900.067000111385	BWR_19	F2xM3M4	11A	05.22.2020	200	231	49.85	20-Jun-20	Burntwood River	1
900.067000111386	BWR_19	F2xM3M4	11A	05.22.2020	204	244	50.53	22-Jun-20	Burntwood River	1
900.067000111387	BWR_19	F2xM3M4	11A	05.22.2020	210	246	54.45	20-Jun-20	Burntwood River	1
900.067000111391	BWR_19	F2xM3M4	11A	05.22.2020	208	244	50.28	20-Jun-20	Burntwood River	1
900.067000111393	BWR_19	F2xM3M4	11A	05.22.2020	215	260	60.93	20-Jun-20	Burntwood River	1
900.067000111394	BWR_19	F2xM3M4	11A	05.22.2020	197	236	45.43	22-Jun-20	Burntwood River	1
900.067000111395	BWR_19	F2xM3M4	11A	05.22.2020	188	220	39.11	22-Jun-20	Burntwood River	1
900.067000111396	BWR_19	F2xM3M4	11A	05.22.2020	175	213	31.82	22-Jun-20	Burntwood River	1
900.067000111398	BWR_19	F2xM3M4	11A	05.22.2020	190	230	38.17	22-Jun-20	Burntwood River	1
900.067000111401	BWR_19	F2xM3M4	11A	05.22.2020	195	230	45.21	22-Jun-20	Burntwood River	1
900.067000111402	BWR_19	F2xM3M4	11A	05.22.2020	195	236	14.22	22-Jun-20	Burntwood River	1
900.067000111403	BWR_19	F2xM3M4	11A	05.22.2020	197	237	44.15	22-Jun-20	Burntwood River	1
900.067000111405	BWR_19	F2xM3M4	11A	05.22.2020	220	254	55.19	20-Jun-20	Burntwood River	1
900.067000111407	BWR_19	F2xM3M4	11A	05.22.2020	200	210	53.30	22-Jun-20	Burntwood River	1
900.067000111408	BWR_19	F2xM3M4	11A	05.22.2020	195	234	45.52	22-Jun-20	Burntwood River	1
900.067000111409	BWR_19	F2xM3M4	11A	05.22.2020	195	233	40.62	20-Jun-20	Burntwood River	1
900.067000111410	BWR_19	F2xM3M4	11A	05.22.2020	190	224	38.32	20-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000111411	BWR_19	F2xM3M4	11A	05.22.2020	210	250	49.34	20-Jun-20	Burntwood River	1
900.067000111412	BWR_19	F2xM3M4	11A	05.22.2020	188	228	40.55	22-Jun-20	Burntwood River	1
900.067000111414	BWR_19	F2xM3M4	11A	05.22.2020	208	240	58.70	22-Jun-20	Burntwood River	1
900.067000111415	BWR_19	F2xM3M4	11A	05.22.2020	210	251	56.69	20-Jun-20	Burntwood River	1
900.067000111416	BWR_19	F2xM3M4	11A	05.22.2020	190	222	40.57	22-Jun-20	Burntwood River	1
900.067000111417	BWR_19	F2xM3M4	11A	05.22.2020	186	217	37.52	22-Jun-20	Burntwood River	1
900.067000111418	BWR_19	F2xM3M4	11A	05.22.2020	208	241	53.02	20-Jun-20	Burntwood River	1
900.067000111419	BWR_19	F2xM3M4	11A	05.22.2020	180	212	24.61	22-Jun-20	Burntwood River	1
900.067000111421	BWR_19	F2xM3M4	11A	05.22.2020	194	230	43.08	22-Jun-20	Burntwood River	1
900.067000111422	BWR_19	F2xM3M4	11A	05.22.2020	203	236	47.22	22-Jun-20	Burntwood River	1
900.067000111423	BWR_19	F2xM3M4	11A	05.22.2020	195	232	46.34	20-Jun-20	Burntwood River	1
900.067000111424	BWR_19	F2xM3M4	11A	05.22.2020	235	274	79.62	20-Jun-20	Burntwood River	1
900.067000111425	BWR_19	F2xM3M4	11A	05.22.2020	197	237	48.39	20-Jun-20	Burntwood River	1
900.067000111426	BWR_19	F2xM3M4	11A	05.22.2020	190	227	40.62	20-Jun-20	Burntwood River	1
900.067000111428	BWR_19	F2xM3M4	11A	05.22.2020	188	222	44.31	20-Jun-20	Burntwood River	1
900.067000111429	BWR_19	F2xM3M4	11A	05.22.2020	195	223	44.52	20-Jun-20	Burntwood River	1
900.067000111432	BWR_19	F2xM3M4	11A	05.22.2020	205	228	27.89	20-Jun-20	Burntwood River	1
900.067000111433	BWR_19	F2xM3M4	11A	05.22.2020	212	246	58.78	20-Jun-20	Burntwood River	1
900.067000111434	BWR_19	F2xM3M4	11A	05.22.2020	200	237	44.59	20-Jun-20	Burntwood River	1
900.067000111435	BWR_19	F2xM3M4	11A	05.22.2020	208	247	49.75	22-Jun-20	Burntwood River	1
900.067000111436	BWR_19	F2xM3M4	11A	05.22.2020	195	230	41.02	22-Jun-20	Burntwood River	1
900.067000111437	BWR_19	F2xM3M4	11A	05.22.2020	213	248	50.81	22-Jun-20	Burntwood River	1
900.067000111438	BWR_19	F2xM3M4	11A	05.22.2020	200	233	47.50	20-Jun-20	Burntwood River	1
900.067000111439	BWR_19	F2xM3M4	11A	05.22.2020	197	235	35.03	20-Jun-20	Burntwood River	1
900.067000111440	BWR_19	F2xM3M4	11A	05.22.2020	195	225	42.45	20-Jun-20	Burntwood River	1
900.067000111443	BWR_19	F2xM3M4	11A	05.22.2020	192	227	43.62	20-Jun-20	Burntwood River	1
900.067000111444	BWR_19	F2xM3M4	11A	05.22.2020	190	221	38.25	20-Jun-20	Burntwood River	1
900.067000111446	BWR_19	F2xM3M4	11A	05.22.2020	170	201	29.78	22-Jun-20	Burntwood River	1
900.067000111447	BWR_19	F2xM3M4	11A	05.22.2020	197	235	42.84	20-Jun-20	Burntwood River	1
900.067000111453	BWR_19	F2xM3M4	11A	05.22.2020	185	218	36.23	22-Jun-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
900.067000111454	BWR_19	F2xM3M4	11A	05.22.2020	200	224	48.42	20-Jun-20	Burntwood River	1
900.067000111456	BWR_19	F2xM3M4	11A	05.22.2020	205	239	46.95	22-Jun-20	Burntwood River	1
900.067000111457	BWR_19	F2xM3M4	11A	05.22.2020	185	220	35.61	22-Jun-20	Burntwood River	1
900.067000111458	BWR_19	F2xM3M4	11A	05.22.2020	202	239	44.57	20-Jun-20	Burntwood River	1
900.067000111459	BWR_19	F2xM3M4	11A	05.22.2020	154	182	21.80	22-Jun-20	Burntwood River	1
900.067000111460	BWR_19	F2xM3M4	11A	05.22.2020	223	263	65.21	22-Jun-20	Burntwood River	1
900.067000111461	BWR_19	F2xM3M4	11A	05.22.2020	198	236	45.23	20-Jun-20	Burntwood River	1
900.067000111463	BWR_19	F2xM3M4	11A	05.22.2020	216	258	60.13	20-Jun-20	Burntwood River	1
900.067000111464	BWR_19	F2xM3M4	11A	05.22.2020	195	230	42.60	22-Jun-20	Burntwood River	1
900.067000111465	BWR_19	F2xM3M4	11A	05.22.2020	210	247	51.68	22-Jun-20	Burntwood River	1
900.067000111467	BWR_19	F2xM3M4	11A	05.22.2020	200	226	48.08	20-Jun-20	Burntwood River	1
900.067000111469	BWR_19	F2xM3M4	11A	05.22.2020	213	252	54.50	20-Jun-20	Burntwood River	1
900.067000111470	BWR_19	F2xM3M4	11A	05.22.2020	205	242	46.85	20-Jun-20	Burntwood River	1
900.067000111471	BWR_19	F2xM3M4	11A	05.22.2020	200	235	43.54	22-Jun-20	Burntwood River	1
900.067000111473	BWR_19	F2xM3M4	11A	05.22.2020	152	177	18.72	22-Jun-20	Burntwood River	1
900.067000111474	BWR_19	F2xM3M4	11A	05.22.2020	130	152	16.01	22-Jun-20	Burntwood River	1
900.067000111475	BWR_19	F2xM3M4	11A	05.22.2020	215	253	56.88	20-Jun-20	Burntwood River	1
900.067000111477	BWR_19	F2xM3M4	11A	05.22.2020	197	234	43.43	22-Jun-20	Burntwood River	1
900.067000111478	BWR_19	F2xM3M4	11A	05.22.2020	200	236	47.02	22-Jun-20	Burntwood River	1
900.067000111479	BWR_19	F2xM3M4	11A	05.22.2020	220	258	58.70	20-Jun-20	Burntwood River	1
900.067000111480	BWR_19	F2xM3M4	11A	05.22.2020	193	235	48.22	20-Jun-20	Burntwood River	1
900.067000113388	BWR_19	F2xM3M4	11A	05.22.2020	186	220	27.67	20-Jun-20	Burntwood River	1
900.067000113396	BWR_19	F2xM3M4	11A	05.22.2020	214	252	57.87	22-Jun-20	Burntwood River	1
900.067000113403	BWR_19	F2xM3M4	11A	05.22.2020	205	237	47.38	20-Jun-20	Burntwood River	1
900.067000113425	BWR_19	F2xM3M4	11A	05.22.2020	148	175	21.59	20-Jun-20	Burntwood River	1
900.067000113456	BWR_19	F2xM3M4	11A	05.22.2020	183	211	38.20	20-Jun-20	Burntwood River	1
900.067000113467	BWR_19	F2xM3M4	11A	05.22.2020	198	234	42.11	22-Jun-20	Burntwood River	1
'900.067000107983	BWR_19	F2xM3M4	11A	09.13.2020	205	244	67.33	24-Sep-20	Burntwood River	1
'900.067000107985	BWR_19	F2xM1M2	10A	09.13.2020	209	242	50.45	24-Sep-20	Burntwood River	1
'900.067000107986	BWR_19	F2xM1M2	10A	09.13.2020	242	286	85.63	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000107987	BWR_19	F2xM1M2	10A	09.13.2020	227	271	75.49	24-Sep-20	Burntwood River	1
'900.067000107989	BWR_19	F2xM1M2	10A	09.13.2020	204	245	56.18	24-Sep-20	Burntwood River	1
'900.067000107991	BWR_19	F2xM1M2	10A	09.13.2020	189	225	40.61	24-Sep-20	Burntwood River	1
'900.067000107992	BWR_19	F2xM1M2	10A	09.13.2020	228	267	76.01	24-Sep-20	Burntwood River	1
'900.067000107993	BWR_19	F2xM1M2	10A	09.13.2020	221	253	60.82	24-Sep-20	Burntwood River	1
'900.067000107996	BWR_19	F2xM1M2	10A	09.13.2020	190	222	42.44	24-Sep-20	Burntwood River	1
'900.067000107997	BWR_19	F2xM3M4	11A	09.13.2020	230	269	75.56	24-Sep-20	Burntwood River	1
'900.067000107998	BWR_19	F2xM1M2	10A	09.13.2020	211	249	57.43	24-Sep-20	Burntwood River	1
'900.067000107999	BWR_19	F2xM1M2	10A	09.13.2020	229	265	68.25	24-Sep-20	Burntwood River	1
'900.067000108002	BWR_19	F2xM1M2	10A	09.13.2020	224	260	69.47	24-Sep-20	Burntwood River	1
'900.067000108003	BWR_19	F2xM1M2	10A	09.13.2020	208	250	58.92	24-Sep-20	Burntwood River	1
'900.067000108004	BWR_19	F2xM1M2	10A	09.13.2020	210	247	53.06	24-Sep-20	Burntwood River	1
'900.067000108006	BWR_19	F2xM1M2	10A	09.13.2020	169	196	28.59	24-Sep-20	Burntwood River	1
'900.067000108009	BWR_19	F2xM1M2	10A	09.13.2020	245	286	96.07	24-Sep-20	Burntwood River	1
'900.067000108016	BWR_19	F2xM1M2	10A	09.13.2020	228	270	70.51	24-Sep-20	Burntwood River	1
'900.067000108017	BWR_19	F2xM1M2	10A	09.13.2020	223	268	66.43	24-Sep-20	Burntwood River	1
'900.067000108018	BWR_19	F2xM1M2	10A	09.13.2020	199	231	42.72	24-Sep-20	Burntwood River	1
'900.067000108020	BWR_19	F2xM1M2	10A	09.13.2020	214	248	62.93	24-Sep-20	Burntwood River	1
'900.067000108021	BWR_19	F2xM1M2	10A	09.13.2020	226	261	71.10	24-Sep-20	Burntwood River	1
'900.067000108024	BWR_19	F2xM1M2	10A	09.13.2020	219	256	60.95	24-Sep-20	Burntwood River	1
'900.067000108027	BWR_19	F2xM1M2	10A	09.13.2020	206	245	53.83	24-Sep-20	Burntwood River	1
'900.067000108030	BWR_19	F2xM1M2	10A	09.13.2020	212	251	52.89	24-Sep-20	Burntwood River	1
'900.067000108034	BWR_19	F2xM1M2	10A	09.13.2020	265	307	109.53	24-Sep-20	Burntwood River	1
'900.067000108035	BWR_19	F2xM1M2	10A	09.13.2020	232	275	77.09	24-Sep-20	Burntwood River	1
'900.067000108038	BWR_19	F2xM1M2	10A	09.13.2020	221	259	67.09	24-Sep-20	Burntwood River	1
'900.067000108040	BWR_19	F2xM1M2	10A	09.13.2020	227	270	70.90	24-Sep-20	Burntwood River	1
'900.067000108041	BWR_19	F2xM1M2	10A	09.13.2020	251	294	98.40	24-Sep-20	Burntwood River	1
'900.067000108042	BWR_19	F2xM1M2	10A	09.13.2020	221	265	67.04	24-Sep-20	Burntwood River	1
'900.067000108044	BWR_19	F2xM1M2	10A	09.13.2020	200	235	58.09	24-Sep-20	Burntwood River	1
'900.067000108050	BWR_19	F2xM1M2	10A	09.13.2020	215	257	55.24	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000108051	BWR_19	F2xM1M2	10A	09.13.2020	243	291	86.25	24-Sep-20	Burntwood River	1
'900.067000108057	BWR_19	F2xM1M2	10A	09.13.2020	216	256	56.06	24-Sep-20	Burntwood River	1
'900.067000108058	BWR_19	F2xM3M4	11A	09.13.2020	229	267	81.15	24-Sep-20	Burntwood River	1
'900.067000108061	BWR_19	F2xM1M2	10A	09.13.2020	206	245	51.65	24-Sep-20	Burntwood River	1
'900.067000108063	BWR_19	F2xM1M2	10A	09.13.2020	227	264	64.32	24-Sep-20	Burntwood River	1
'900.067000108071	BWR_19	F2xM1M2	10A	09.13.2020	231	276	81.81	24-Sep-20	Burntwood River	1
'900.067000108074	BWR_19	F2xM1M2	10A	09.13.2020	235	279	82.12	24-Sep-20	Burntwood River	1
'900.067000108079	BWR_19	F2xM1M2	10A	09.13.2020	199	238	52.81	24-Sep-20	Burntwood River	1
'900.067000108141	BWR_19	F2xM3M4	11A	09.13.2020	238	281	80.98	24-Sep-20	Burntwood River	1
'900.067000108150	BWR_19	F2xM3M4	11A	09.13.2020	265	301	105.20	24-Sep-20	Burntwood River	1
'900.067000108180	BWR_19	F2xM3M4	11A	09.13.2020	240	261	74.96	24-Sep-20	Burntwood River	1
'900.067000108681	BWR_19	F2xM5M6	12A	09.13.2020	203	231	48.43	24-Sep-20	Burntwood River	1
'900.067000108683	BWR_19	F2xM5M6	12A	09.13.2020	184	216	39.32	24-Sep-20	Burntwood River	1
'900.067000108686	BWR_19	F2xM5M6	12A	09.13.2020	207	245	61.66	24-Sep-20	Burntwood River	1
'900.067000108690	BWR_19	F2xM5M6	12A	09.13.2020	175	206	38.48	24-Sep-20	Burntwood River	1
'900.067000108691	BWR_19	F2xM5M6	12A	09.13.2020	179	206	34.93	24-Sep-20	Burntwood River	1
'900.067000108692	BWR_19	F2xM5M6	12A	09.13.2020	211	243	58.26	24-Sep-20	Burntwood River	1
'900.067000108693	BWR_19	F2xM5M6	12A	09.13.2020	202	234	52.02	24-Sep-20	Burntwood River	1
'900.067000108694	BWR_19	F2xM5M6	12A	09.13.2020	204	235	52.01	24-Sep-20	Burntwood River	1
'900.067000108698	BWR_19	F2xM5M6	12A	09.13.2020	220	261	67.56	24-Sep-20	Burntwood River	1
'900.067000108701	BWR_19	F2xM5M6	12A	09.13.2020	205	240	56.51	24-Sep-20	Burntwood River	1
'900.067000108708	BWR_19	F2xM5M6	12A	09.13.2020	116	197	24.87	24-Sep-20	Burntwood River	1
'900.067000108711	BWR_19	F2xM5M6	12A	09.13.2020	203	235	50.66	24-Sep-20	Burntwood River	1
'900.067000108713	BWR_19	F2xM5M6	12A	09.13.2020	231	273	58.45	24-Sep-20	Burntwood River	1
'900.067000108714	BWR_19	F2xM5M6	12A	09.13.2020	229	270	73.15	24-Sep-20	Burntwood River	1
'900.067000108716	BWR_19	F2xM5M6	12A	09.13.2020	225	263	69.41	24-Sep-20	Burntwood River	1
'900.067000108717	BWR_19	F2xM5M6	12A	09.13.2020	193	222	47.00	24-Sep-20	Burntwood River	1
'900.067000108725	BWR_19	F2xM5M6	12A	09.13.2020	178	211	33.49	24-Sep-20	Burntwood River	1
'900.067000108728	BWR_19	F2xM5M6	12A	09.13.2020	207	242	53.10	24-Sep-20	Burntwood River	1
'900.067000108731	BWR_19	F2xM5M6	12A	09.13.2020	165	192	28.51	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000108732	BWR_19	F2xM5M6	12A	09.13.2020	192	230	43.58	24-Sep-20	Burntwood River	1
'900.067000108734	BWR_19	F2xM5M6	12A	09.13.2020	204	246	51.15	24-Sep-20	Burntwood River	1
'900.067000108735	BWR_19	F2xM5M6	12A	09.13.2020	195	226	46.31	24-Sep-20	Burntwood River	1
'900.067000108736	BWR_19	F2xM5M6	12A	09.13.2020	188	220	39.80	24-Sep-20	Burntwood River	1
'900.067000108739	BWR_19	F2xM5M6	12A	09.13.2020	187	225	41.30	24-Sep-20	Burntwood River	1
'900.067000108746	BWR_19	F2xM5M6	12A	09.13.2020	204	239	58.06	24-Sep-20	Burntwood River	1
'900.067000108747	BWR_19	F2xM5M6	12A	09.13.2020	193	223	38.77	24-Sep-20	Burntwood River	1
'900.067000108749	BWR_19	F2xM5M6	12A	09.13.2020	182	211	33.43	24-Sep-20	Burntwood River	1
'900.067000108750	BWR_19	F2xM5M6	12A	09.13.2020	208	253	58.49	24-Sep-20	Burntwood River	1
'900.067000108753	BWR_19	F2xM5M6	12A	09.13.2020	184	216	39.83	24-Sep-20	Burntwood River	1
'900.067000108755	BWR_19	F2xM5M6	12A	09.13.2020	202	238	52.09	24-Sep-20	Burntwood River	1
'900.067000108757	BWR_19	F2xM5M6	12A	09.13.2020	209	245	57.23	24-Sep-20	Burntwood River	1
'900.067000108759	BWR_19	F2xM5M6	12A	09.13.2020	194	230	44.99	24-Sep-20	Burntwood River	1
'900.067000108760	BWR_19	F2xM5M6	12A	09.13.2020	213	252	57.73	24-Sep-20	Burntwood River	1
'900.067000108761	BWR_19	F2xM5M6	12A	09.13.2020	190	226	42.76	24-Sep-20	Burntwood River	1
'900.067000108762	BWR_19	F2xM5M6	12A	09.13.2020	218	255	71.03	24-Sep-20	Burntwood River	1
'900.067000108763	BWR_19	F2xM5M6	12A	09.13.2020	206	236	56.62	24-Sep-20	Burntwood River	1
'900.067000108764	BWR_19	F2xM5M6	12A	09.13.2020	194	231	48.94	24-Sep-20	Burntwood River	1
'900.067000108766	BWR_19	F2xM5M6	12A	09.13.2020	198	240	55.13	24-Sep-20	Burntwood River	1
'900.067000108767	BWR_19	F2xM5M6	12A	09.13.2020	207	244	59.35	24-Sep-20	Burntwood River	1
'900.067000108768	BWR_19	F2xM5M6	12A	09.13.2020	197	226	43.75	24-Sep-20	Burntwood River	1
'900.067000108772	BWR_19	F2xM5M6	12A	09.13.2020	211	240	57.80	24-Sep-20	Burntwood River	1
'900.067000108773	BWR_19	F2xM5M6	12A	09.13.2020	217	252	61.76	24-Sep-20	Burntwood River	1
'900.067000108774	BWR_19	F2xM5M6	12A	09.13.2020	223	261	68.53	24-Sep-20	Burntwood River	1
'900.067000108779	BWR_19	F2xM5M6	12A	09.13.2020	194	232	45.52	24-Sep-20	Burntwood River	1
'900.067000108780	BWR_19	F2xM5M6	12A	09.13.2020	218	256	63.88	24-Sep-20	Burntwood River	1
'900.067000109090	BWR_19	F2xM3M4	11A	09.13.2020	224	271	83.14	24-Sep-20	Burntwood River	1
'900.067000109091	BWR_19	F2xM3M4	11A	09.13.2020	200	239	49.32	24-Sep-20	Burntwood River	1
'900.067000109093	BWR_19	F2xM3M4	11A	09.13.2020	189	225	38.96	24-Sep-20	Burntwood River	1
'900.067000109095	BWR_19	F2xM3M4	11A	09.13.2020	223	270	67.95	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000109102	BWR_19	F2xM3M4	11A	09.13.2020	220	256	53.91	24-Sep-20	Burntwood River	1
'900.067000109105	BWR_19	F2xM3M4	11A	09.13.2020	201	235	50.34	24-Sep-20	Burntwood River	1
'900.067000109107	BWR_19	F2xM3M4	11A	09.13.2020	217	255	64.77	24-Sep-20	Burntwood River	1
'900.067000109117	BWR_19	F2xM3M4	11A	09.13.2020	211	255	62.04	24-Sep-20	Burntwood River	1
'900.067000109119	BWR_19	F2xM3M4	11A	09.13.2020	192	229	45.22	24-Sep-20	Burntwood River	1
'900.067000109120	BWR_19	F2xM3M4	11A	09.13.2020	231	278	65.54	24-Sep-20	Burntwood River	1
'900.067000109121	BWR_19	F2xM3M4	11A	09.13.2020	220	255	60.24	24-Sep-20	Burntwood River	1
'900.067000109122	BWR_19	F2xM3M4	11A	09.13.2020	211	244	57.49	24-Sep-20	Burntwood River	1
'900.067000109123	BWR_19	F2xM3M4	11A	09.13.2020	210	246	60.97	24-Sep-20	Burntwood River	1
'900.067000109126	BWR_19	F2xM3M4	11A	09.13.2020	245	291	91.96	24-Sep-20	Burntwood River	1
'900.067000109131	BWR_19	F2xM3M4	11A	09.13.2020	249	291	94.88	24-Sep-20	Burntwood River	1
'900.067000109132	BWR_19	F2xM3M4	11A	09.13.2020	221	265	66.37	24-Sep-20	Burntwood River	1
'900.067000109134	BWR_19	F2xM3M4	11A	09.13.2020	245	283	64.02	24-Sep-20	Burntwood River	1
'900.067000109135	BWR_19	F2xM3M4	11A	09.13.2020	215	250	56.41	24-Sep-20	Burntwood River	1
'900.067000109136	BWR_19	F2xM3M4	11A	09.13.2020	208	245	56.67	24-Sep-20	Burntwood River	1
'900.067000109137	BWR_19	F2xM3M4	11A	09.13.2020	185	216	45.19	24-Sep-20	Burntwood River	1
'900.067000109138	BWR_19	F2xM3M4	11A	09.13.2020	209	245	52.42	24-Sep-20	Burntwood River	1
'900.067000109139	BWR_19	F2xM3M4	11A	09.13.2020	188	221	40.75	24-Sep-20	Burntwood River	1
'900.067000109141	BWR_19	F2xM3M4	11A	09.13.2020	199	233	55.28	24-Sep-20	Burntwood River	1
'900.067000109142	BWR_19	F2xM3M4	11A	09.13.2020	212	259	67.77	24-Sep-20	Burntwood River	1
'900.067000109143	BWR_19	F2xM3M4	11A	09.13.2020	205	255	58.33	24-Sep-20	Burntwood River	1
'900.067000109149	BWR_19	F2xM3M4	11A	09.13.2020	218	259	58.95	24-Sep-20	Burntwood River	1
'900.067000109152	BWR_19	F2xM3M4	11A	09.13.2020	199	242	55.23	24-Sep-20	Burntwood River	1
'900.067000109153	BWR_19	F2xM3M4	11A	09.13.2020	204	243	51.45	24-Sep-20	Burntwood River	1
'900.067000109155	BWR_19	F2xM3M4	11A	09.13.2020	240	281	88.72	24-Sep-20	Burntwood River	1
'900.067000109158	BWR_19	F2xM3M4	11A	09.13.2020	214	255	62.37	24-Sep-20	Burntwood River	1
'900.067000109159	BWR_19	F2xM3M4	11A	09.13.2020	210	248	62.55	24-Sep-20	Burntwood River	1
'900.067000109162	BWR_19	F2xM3M4	11A	09.13.2020	198	230	46.97	24-Sep-20	Burntwood River	1
'900.067000109164	BWR_19	F2xM3M4	11A	09.13.2020	218	267	67.24	24-Sep-20	Burntwood River	1
'900.067000109167	BWR_19	F2xM3M4	11A	09.13.2020	230	268	69.47	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000109173	BWR_19	F2xM3M4	11A	09.13.2020	216	250	55.37	24-Sep-20	Burntwood River	1
'900.067000109174	BWR_19	F2xM3M4	11A	09.13.2020	228	265	69.54	24-Sep-20	Burntwood River	1
'900.067000109175	BWR_19	F2xM3M4	11A	09.13.2020	202	235	51.64	24-Sep-20	Burntwood River	1
'900.067000109176	BWR_19	F2xM3M4	11A	09.13.2020	188	225	44.20	24-Sep-20	Burntwood River	1
'900.067000109177	BWR_19	F2xM3M4	11A	09.13.2020	226	270	72.27	24-Sep-20	Burntwood River	1
'900.067000109179	BWR_19	F2xM3M4	11A	09.13.2020	195	235	50.45	24-Sep-20	Burntwood River	1
'900.067000109381	BWR_19	F2xM1M2	10A	09.13.2020	221	260	58.91	24-Sep-20	Burntwood River	1
'900.067000109382	BWR_19	F2xM1M2	10A	09.13.2020	246	291	89.79	24-Sep-20	Burntwood River	1
'900.067000109389	BWR_19	F2xM1M2	10A	09.13.2020	224	270	81.20	24-Sep-20	Burntwood River	1
'900.067000109391	BWR_19	F2xM1M2	10A	09.13.2020	211	253	60.43	24-Sep-20	Burntwood River	1
'900.067000109394	BWR_19	F2xM1M2	10A	09.13.2020	203	235	51.12	24-Sep-20	Burntwood River	1
'900.067000109397	BWR_19	F2xM1M2	10A	09.13.2020	243	280	89.50	24-Sep-20	Burntwood River	1
'900.067000109400	BWR_19	F2xM1M2	10A	09.13.2020	247	289	90.92	24-Sep-20	Burntwood River	1
'900.067000109407	BWR_19	F2xM1M2	10A	09.13.2020	195	223	28.73	24-Sep-20	Burntwood River	1
'900.067000109419	BWR_19	F2xM1M2	10A	09.13.2020	195	232	46.00	24-Sep-20	Burntwood River	1
'900.067000109423	BWR_19	F2xM1M2	10A	09.13.2020	238	281	85.15	24-Sep-20	Burntwood River	1
'900.067000109425	BWR_19	F2xM1M2	10A	09.13.2020	217	252	57.23	24-Sep-20	Burntwood River	1
'900.067000109426	BWR_19	F2xM1M2	10A	09.13.2020	219	254	58.52	24-Sep-20	Burntwood River	1
'900.067000109428	BWR_19	F2xM1M2	10A	09.13.2020	236	275	79.44	24-Sep-20	Burntwood River	1
'900.067000109435	BWR_19	F2xM1M2	10A	09.13.2020	214	252	61.29	24-Sep-20	Burntwood River	1
'900.067000109443	BWR_19	F2xM1M2	10A	09.13.2020	214	253	57.01	24-Sep-20	Burntwood River	1
'900.067000109448	BWR_19	F2xM1M2	10A	09.13.2020	212	252	57.85	24-Sep-20	Burntwood River	1
'900.067000109451	BWR_19	F2xM1M2	10A	09.13.2020	199	245	48.89	24-Sep-20	Burntwood River	1
'900.067000109452	BWR_19	F2xM1M2	10A	09.13.2020	213	246	60.25	24-Sep-20	Burntwood River	1
'900.067000109455	BWR_19	F2xM1M2	10A	09.13.2020	248	293	95.99	24-Sep-20	Burntwood River	1
'900.067000109466	BWR_19	F2xM1M2	10A	09.13.2020	249	291	89.91	24-Sep-20	Burntwood River	1
'900.067000109471	BWR_19	F2xM1M2	10A	09.13.2020	212	246	59.97	24-Sep-20	Burntwood River	1
'900.067000109475	BWR_19	F2xM1M2	10A	09.13.2020	213	249	59.33	24-Sep-20	Burntwood River	1
'900.067000109476	BWR_19	F2xM1M2	10A	09.13.2020	239	275	81.96	24-Sep-20	Burntwood River	1
'900.067000109477	BWR_19	F2xM1M2	10A	09.13.2020	213	250	62.18	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000109480	BWR_19	F2xM1M2	10A	09.13.2020	224	265	80.60	24-Sep-20	Burntwood River	1
'900.067000110785	BWR_19	F2xM5M6	12A	09.13.2020	188	222	50.11	24-Sep-20	Burntwood River	1
'900.067000110796	BWR_19	F2xM5M6	12A	09.13.2020	213	249	60.36	24-Sep-20	Burntwood River	1
'900.067000110805	BWR_19	F2xM5M6	12A	09.13.2020	196	229	45.09	24-Sep-20	Burntwood River	1
'900.067000110809	BWR_19	F2xM5M6	12A	09.13.2020	213	252	64.22	24-Sep-20	Burntwood River	1
'900.067000110814	BWR_19	F2xM5M6	12A	09.13.2020	212	250	57.00	24-Sep-20	Burntwood River	1
'900.067000110818	BWR_19	F2xM5M6	12A	09.13.2020	182	209	36.43	24-Sep-20	Burntwood River	1
'900.067000110828	BWR_19	F2xM5M6	12A	09.13.2020	204	235	51.04	24-Sep-20	Burntwood River	1
'900.067000110838	BWR_19	F2xM5M6	12A	09.13.2020	205	243	51.55	24-Sep-20	Burntwood River	1
'900.067000110842	BWR_19	F2xM5M6	12A	09.13.2020	211	250	56.98	24-Sep-20	Burntwood River	1
'900.067000110847	BWR_19	F2xM5M6	12A	09.13.2020	198	231	45.78	24-Sep-20	Burntwood River	1
'900.067000110869	BWR_19	F2xM5M6	12A	09.13.2020	183	215	39.70	24-Sep-20	Burntwood River	1
'900.067000110877	BWR_19	F2xM5M6	12A	09.13.2020	172	202	30.08	24-Sep-20	Burntwood River	1
'900.067000111381	BWR_19	F2xM3M4	11A	09.13.2020	233	270	70.58	24-Sep-20	Burntwood River	1
'900.067000111388	BWR_19	F2xM3M4	11A	09.13.2020	196	224	46.16	24-Sep-20	Burntwood River	1
'900.067000111392	BWR_19	F2xM3M4	11A	09.13.2020	239	290	92.82	24-Sep-20	Burntwood River	1
'900.067000111427	BWR_19	F2xM3M4	11A	09.13.2020	221	262	68.83	24-Sep-20	Burntwood River	1
'900.067000111430	BWR_19	F2xM3M4	11A	09.13.2020	248	295	101.88	24-Sep-20	Burntwood River	1
'900.067000111431	BWR_19	F2xM3M4	11A	09.13.2020	236	284	90.51	24-Sep-20	Burntwood River	1
'900.067000111441	BWR_19	F2xM3M4	11A	09.13.2020	227	267	83.22	24-Sep-20	Burntwood River	1
'900.067000111445	BWR_19	F2xM3M4	11A	09.13.2020	245	282	90.40	24-Sep-20	Burntwood River	1
'900.067000111448	BWR_19	F2xM3M4	11A	09.13.2020	231	269	74.57	24-Sep-20	Burntwood River	1
'900.067000111450	BWR_19	F2xM3M4	11A	09.13.2020	220	257	62.66	24-Sep-20	Burntwood River	1
'900.067000111451	BWR_19	F2xM3M4	11A	09.13.2020	244	295	97.80	24-Sep-20	Burntwood River	1
'900.067000111462	BWR_19	F2xM3M4	11A	09.13.2020	262	305	109.33	24-Sep-20	Burntwood River	1
'900.067000111472	BWR_19	F2xM3M4	11A	09.13.2020	240	281	84.08	24-Sep-20	Burntwood River	1
'900.067000113289	BWR_19	F2xM5M6	12A	09.13.2020	211	253	62.42	24-Sep-20	Burntwood River	1
'900.067000113304	BWR_19	F2xM5M6	12A	09.13.2020	172	203	28.55	24-Sep-20	Burntwood River	1
'900.067000113330	BWR_19	F2xM5M6	12A	09.13.2020	208	251	59.03	24-Sep-20	Burntwood River	1
'900.067000113353	BWR_19	F2xM5M6	12A	09.13.2020	190	221	42.41	24-Sep-20	Burntwood River	1

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	FL (mm)	TL (mm)	Wt (g)	Date	Waterbody	Site ID
'900.067000113356	BWR_19	F2xM5M6	12A	09.13.2020	174	210	34.94	24-Sep-20	Burntwood River	1
'900.067000113360	BWR_19	F2xM5M6	12A	09.13.2020	170	208	32.88	24-Sep-20	Burntwood River	1
'900.067000113363	BWR_19	F2xM5M6	12A	09.13.2020	198	235	43.88	24-Sep-20	Burntwood River	1
'900.067000113426	BWR_19	F2xM3M4	11A	09.13.2020	203	234	53.26	24-Sep-20	Burntwood River	1
'900.067000113781	BWR_19	F2xM5M6	12A	09.13.2020	178	204	34.18	24-Sep-20	Burntwood River	1
'900.067000113861	BWR_19	F2xM3M4	11A	09.13.2020	276	318	139.03	24-Sep-20	Burntwood River	1
'900.067000113875	BWR_19	F2xM3M4	11A	09.13.2020	214	252	58.99	24-Sep-20	Burntwood River	1

APPENDIX 2: WATER QUALITY THRESHOLDS

Table A2-1: 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
	> 6.0	Dettlaff et al 1993
Dissolved CO₂ (mg/L)	< 10.0	Hochleithner and Gessner 2012
	< 10.0	Chebanov and Galich 2011
pH	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
	6.5 to 8.0	Dettlaff et al 1993
Ammonia NH₃-N (mg/L)	< 0.010	Hochleithner and Gessner 2012
	< 0.003	Chebanov and Galich 2011
	< 0.010	Mims et al 2002
Nitrite Nitrogen (mg/L)	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.

Chebanov, M.S.C. and Galich, E.V. Sturgeon hatchery manual. 2011. FAO Fisheries and Aquaculture Technical Paper. No. 558. Ankara, FAO, 303 p.

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.