# Evaluation of Habitat Expansion Outcomes on Upper Terra Nova River, 2020

Mollyguajeck Falls

Freshwater-Alexander Bays
Ecosystem Corporation (FABEC)
March 2021

# Evaluation of Habitat Expansion Outcomes on Upper Terra Nova River, 2020

Project Report
March 2021

Submitted by:
Freshwater- Alexander Bays Ecosystem Corporation (FABEC)
P.O. Box 153, Glovertown South, NL A0G 4K0
www.fabec.org

## Table of Contents

# 1.0 Introduction

Terra Nova River is the fourth largest river on the island of Newfoundland. Beginning in the early 1900's various initiatives have been undertaken to expand accessible habitat and increase the river's Atlantic salmon population. Permanent infrastructure now includes fishways at Grant Falls (11 km from the ocean), Terra Nova River Falls (22 km from the ocean) and Mollyguajeck Falls (56 km from the ocean).

Between 1985 and 2002 the Terra Nova-Alexander Bay Development Association in partnership with the Department of Fisheries and Oceans undertook a salmon enhancement program to establish a salmon population in the watershed above Mollyguajeck Falls, which until 1985 had been largely inaccessible for salmon migration. This section of river contains approximately sixty percent of the river's spawning capacity above Grant Falls (Bourgeois, 2002). Initially the enhancement program involved the construction of a fishway around Mollyguajeck Falls, then the transfer of 1,412 spawners from the lower river to locations above Mollyguajeck, and finally between 1995 and 2002, the release of 2.5 million salmon fry incubated at a hatchery in Terra Nova in various locations of the upper watershed.

The 2020 Mollyguajeck project was the fifth year since 2015 that the Freshwater-Alexander Bays Ecosystem Corporation has conducted a salmon count to evaluate the extent to which the 1985-2002 salmon enhancement program was successful in establishing a base population in the upper Terra Nova River. The project had two main goals:

(1) To assess the effectiveness of the Mollyguajeck fishway in accommodating the passage of salmon around Mollyguajeck falls.

(2) To determine the extent to which the upper Terra Nova River has been colonized with a natural spawning population relative to its habitat capacity.

Previous projects were undertaken in 2015, 2016, 2018, and 2019. The following is a summary of the findings from those projects.

- The 2015 project counted only 297 salmon through the Mollyguajeck fishway as compared to 329 in 2001 - 14 years earlier. However a positive outcome of this project was the identification of a serious deficiency with the fishway during low river conditions. For six weeks after mid-August, there was not enough water in the fishway to allow salmon passage. The project report for that year recommended remedial action be taken by DFO to correct the problem.

- Planning for the 2016 project included the transport of 200 bags of sand to the site as a mitigation measure in case the low water conditions experienced in 2015 were repeated. When low water again became a problem, the sandbags were used to

build a makeshift dam to divert more water from the main river flow into the fishway. This was successful in maintaining adequate water levels in the fishway for the remainder of the season. By project end 965 salmon were counted through the fishway – more than triple the 2015 count.

- In 2016 DFO conducted an assessment of the fishway and designed a permanent diversion dam to divert more flow into the fishway during periods of low water. The dam was constructed in 2017.

## Exhibit 1 – Fishway Diversion Dam

- The third Mollyguajeck project took place in 2018 and dry conditions similar to 2015 were experienced. The new dam proved effective and water flow in the fishway remained more than sufficient for the entire season. Whereas the trap had dried up completely for weeks in 2015, it never dropped below 35 cm in 2018. The 2018 salmon count was 1,148, almost four times the 2015 count.

- In 2019 there was a record run of 6,607 salmon through the Grant Falls fishway and 1,570 through the Mollyguajeck fishway. This corresponded to relatively high streamflow flow rates with an average 17.4 m3/second over the 13-week season compared to 11.9 in 2015, 18.8 in 2016, 11.7 in 2017 and 11.4 in 2018.

- The conservation requirement for the entire section of Terra Nova River above the Grant Falls is 8,937 salmon returns. Between 2015 and 2019, the conservation level achieved for this watershed ranged from a low of 36.0% (i.e. 3,215/8,937) in 2017 to a high of 73.9% (6,607/8,937) in 2019. While the 2019 run was the highest ever recorded, its conservation level of 73.9% level was well within the Critical zone (<100%) of population health based on DFO criteria. The Cautious zone is classified as 100-150% while the Healthy zone is anything above 150%.

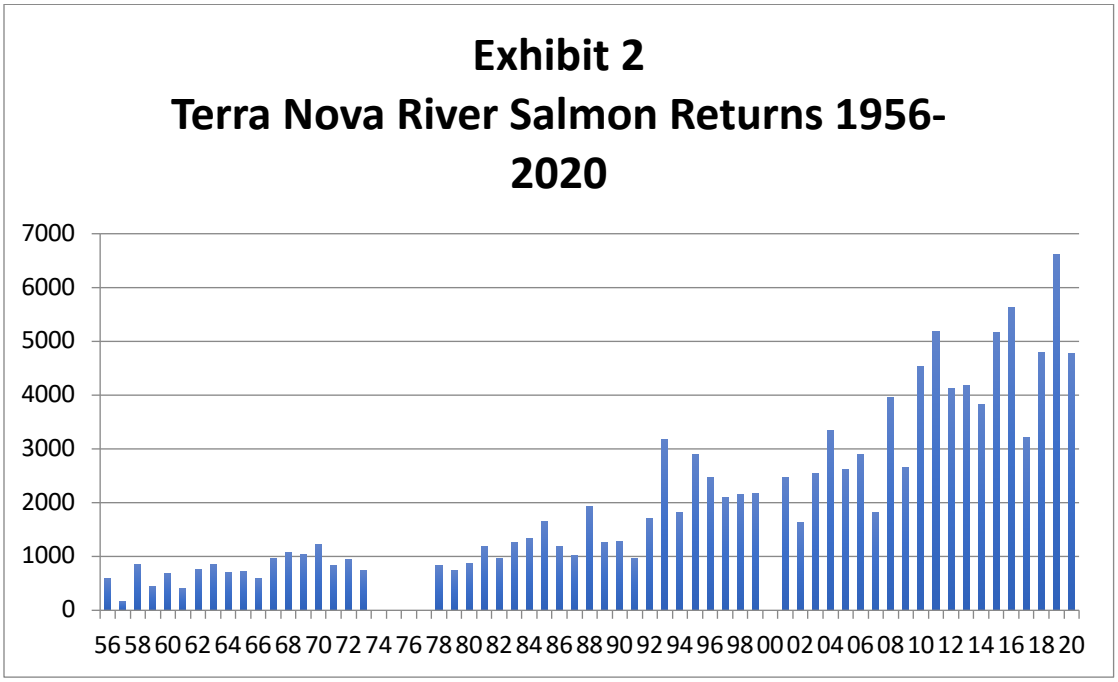
- While spawning escapement to Terra Nova River has improved over time, even 2019's record recruitment fell far short of the river's spawning capacity of 8,937 adult returns. The previous project reports emphasized this point and recommended a continuation of strong salmon conservation measures for the river.

## 2.0 Project Partners

FABEC would like to thank our partners who made this project possible. Once again our partners included the Atlantic Salmon Conservation Foundation, Terra Nova National Park, DFO Salmonids Section, DFO Regional Headquarters, and Traytown Builders Ltd.

## 3.0 Terra Nova River Salmon Returns - 1956-2020

Exhibit 2 shows the progression of Atlantic salmon returns to the Terra Nova River since 1956. The count takes place at the Grant Falls fishway located 11 kilometres upstream from the ocean, therefore does not account for salmon that spawn in the lowest section of the main river and in the Maccle's Brook tributary. As the graph shows, the stock has improved severalfold over the period. In 1992 after the moratorium on commercial fishery came into effect, the count was 1,713. The 2020 count of 4,777 was almost three times higher than 1992 while the record 2019 count of 6,607 salmon was four times higher.




In the first ten years of counting operations at Grant Falls (1956-65), the average return was 632 salmon. The first significant increase in returns began after the commercial salmon fishery was closed in 1992, which coincided with the early years of the Terra Nova River salmon enhancement program. In the ten years after the moratorium, the average count was 2,265 – 3.5 times higher than the 1956-65 period. The average count of 4,751 from 2011 to 2020 was 7.5 times higher than the first ten years and more than double the post-moratorium period.

The highest recorded return occurred in 2019 when the count at Grant Falls was 6,607. While the 2020 return of 4,777 was much lower, it was on par with the 2010-19 average of 4,727.

## 4.0 Counting Operations – 2020

Mollyguajeck is a rustic fishway, which unlike the river's two other fishways, was originally constructed without built infrastructure. Explosives were used to blast a channel through bedrock. Water flowing through the fishway comes from a side flow off the river's main channel. It then follows the artificial portion of the fishway into a natural channel lying below the falls, thus creating a bypass route around the falls for salmon to navigate.

The photo in Exhibit 3 shows the location and flow direction of the fishway. The inflow channel receives water from the main river and then turns 90º towards the bottom of the falls. The square in the photo shows where the fish trap was installed. The other channel,

which flows toward the bottom of the photo, previously contained water only when river levels were relatively high. However since the new diversion dam was constructed in 2017, water now flows in this channel throughout the summer. The installation includes a fish fence across this stream to prevent salmon from bypassing the trap.

The photo in Exhibit 4 shows the fishway and Mollyguajeck Falls during high water. The arrows show the flow direction toward the trap and back to the main river flow at the base of Mollyguajeck Falls.

## Exhibit 3 – Fishway Location and Water Flow Direction

## Exhibit 4 – Water Flow Through the Fishway

The 2020 counting ran from July 11 (two weeks earlier than previous projects) to October 14. Two interruptions resulted in 15 days of downtime over this period. Two days were lost on July 14-15 due to the illness of an employee. Another 13 days were lost from September 21 to October 3 when high waters caused by a rainstorm created unsafe working conditions. The trap was closed to salmon passage during both downtime periods. In total counting took place for 81 days out of the total 96 days from project start to finish.

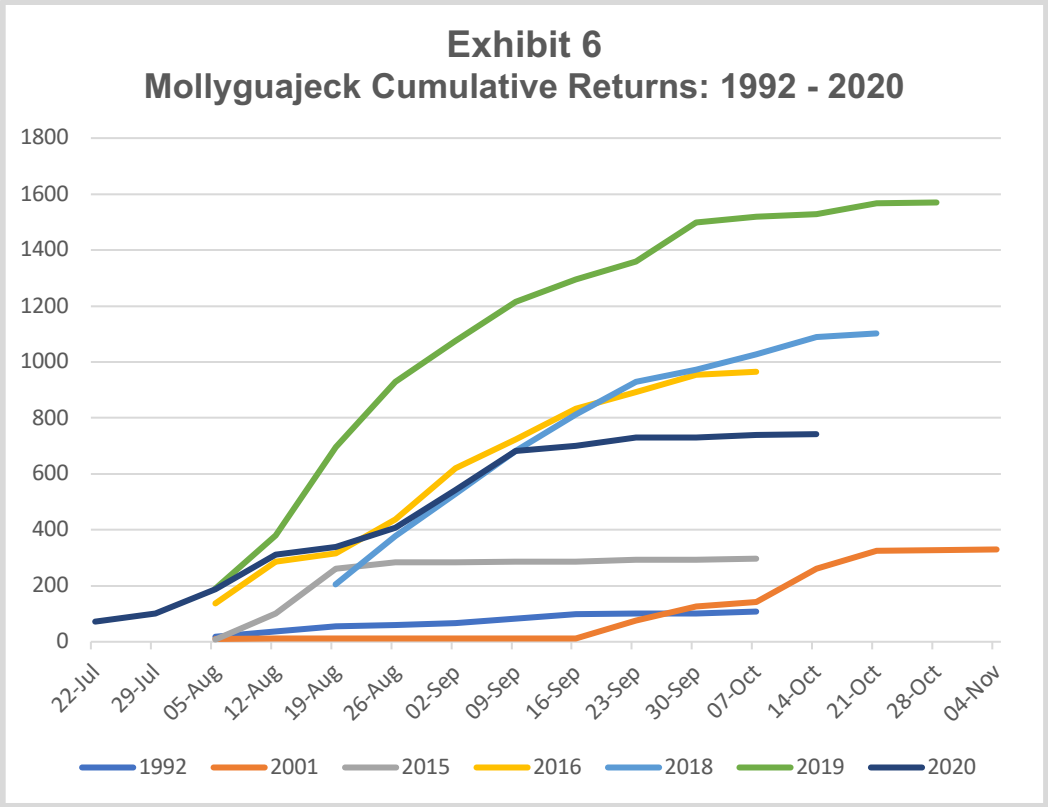
As shown in the project log sheet (Appendix A), the average low water depth in the salmon trap over the 81 operating days was 41.7 cm. The lowest recorded depth - 36.5 cm on August 23 – was more than adequate for salmon passage. This corresponds with the findings from 2018 and 2019 that water flow in the fishway is no longer an impediment to salmon passage. The new diversion dam has been proven effective in maintaining adequate water in the fishway during low river conditions.

## 5.0 Salmon Returns

Exhibit 5 provides 2020 total and weekly salmon returns at Mollyguajeck Falls compared to previous years in which a count took place. Exhibit 6 provides a graphical comparison of cumulative returns in each of these years.

**Exhibit 5**
**Mollyguajeck Salmon Returns: 1992 - 2020**

| Week Ending | 1992 | 2001 | 2015 | 2016 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| 22-Jul | | | | | | | 72 |
| 29-Jul | | | | | | | 28 |
| 05-Aug | 18 | 10 | 8 | 137 | | 190 | 88 |
| 12-Aug | 20 | 2 | 93 | 150 | | 190 | 123 |
| 19-Aug | 17 | 0 | 160 | 29 | 205 | 315 | 29 |
| 26-Aug | 5 | 0 | 22 | 121 | 173 | 235 | 68 |
| 02-Sep | 6 | 0 | 0 | 183 | 150 | 146 | 135 |
| 09-Sep | 16 | 0 | 3 | 103 | 155 | 139 | 138 |
| 16-Sep | 17 | 0 | 0 | 109 | 129 | 79 | 20 |
| 23-Sep | 2 | 63 | 7 | 60 | 117 | 65 | 29 |
| 30-Sep | 1 | 51 | 0 | 62 | 44 | 139 | 0 |
| 07-Oct | 6 | 16 | 4 | 11 | 55 | 22 | 8 |
| 14-Oct | | 118 | | | 60 | 8 | 4 |
| 21-Oct | | 66 | | | 14 | 38 | |
| 28-Oct | | 2 | | | 46 | 4 | |
| 04-Nov | | 2 | | | | | |
| Total | 108 | 330 | 297 | 965 | 1148 | 1570 | 742 |
| Weekly Average (2001 adjusted) | 10.8 | 23.6 (31.1) | 29.7 | 96.5 | 104.4 | 120.8 | 57.1 |




In 2020 the Mollyguajeck daily counts were taken on 81 days out of the total 96 days from project start to finish. As the trap remained closed to passage over the downtime periods, it is assumed that the 15 days of downtime had no effect on the final count for the year. As shown in Exhibits 5 and 6, the count of 742 salmon was the lowest since 2015.

Water conditions in 2020 were favourable with an average streamflow at the Glovertown water station of 19.8 $m^3$/second during active counting days. That compares to 11.9$m^3$, 18.7$m^3$, 11.4$m^3$ and 17.4 $m^3$/second in 2015, 2016, 2018, and 2019 respectively. As shown in Appendix A, streamflow fell below 15 $m^3$/second for only 16 days in 2020 as compared to 67 days in 2018 and 49 days in 2019. The results confirm the conclusion from the 2018 and 2019 projects that the new water diversion dam has solved the problem of low water flow as a constraint to salmon passage in the fishway.

The 2020 Mollyguajeck count of 742 salmon represents a reversal of the upwards trend experienced from 2016 to 2019. The count was 35% lower than 2018 and 53% lower than 2019. Relative to the lower fishway, only 15.5% of the salmon that migrated past Grant Falls were counted at Mollyguajeck, which compares to 23.0% in 2018 and 23.8% in 2019.

The overall Mollyguajeck results since 2016 provide compelling evidence that a spawning population of Atlantic salmon is gradually becoming established in the upper watershed.

While 2020 saw a lower number than the previous three counts, it must be remembered that prior to 1985 no salmon at all, except perhaps the odd stray, were able to navigate past Mollyguajeck Falls. Along with the Terra Nova River's strong conservation program, FABEC feels that the enhancement program was a significant factor in the river's population growth since 1985.

This growth was achieved despite the obvious ineffectiveness of Mollyguajeck fishway during years of extended low water conditions. Based on our correlation of streamflow data with fishway water levels, there were a number of years when many - probably most - of the salmon destined for the upper watershed remained stranded below Mollyguajeck Falls due to a lack of water in the fishway.

Based on the three years of operations (2018, 2019 and 2020) since the diversion dam was constructed, FABEC is confident that the fishway itself will no longer be a constraint to salmon migration for as long as the dam remains in place.

## 6.0 Stock Conditions Versus Conservation Requirements

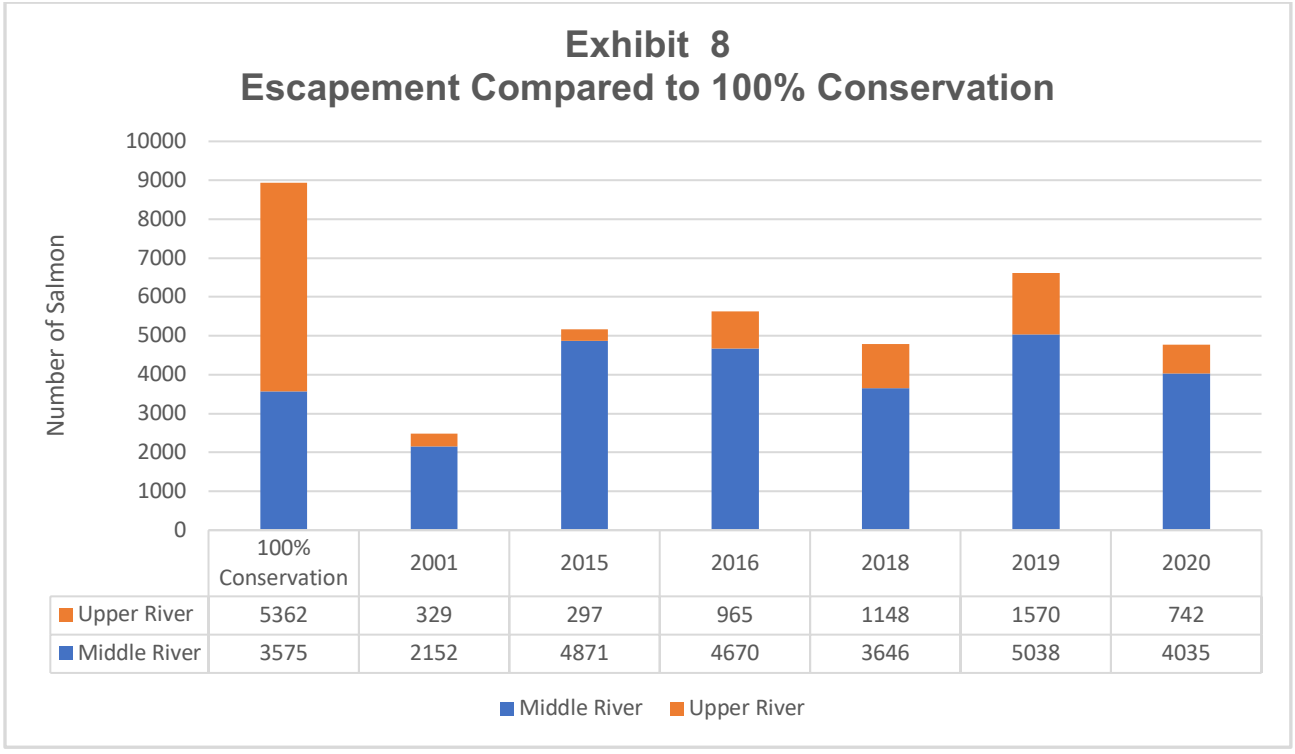
Exhibits 7 and 8 compare escapement to the 100% conservation baseline for the years 2001 and 2015 to 2020. There was a count at Mollyguajeck Falls in all of those years except 2017. In 2020 salmon escapement on Terra Nova River above Grant Falls achieved 53.5% of conservation with 112.9% being achieved in the middle watershed and 13.9% achieved in the watershed above Mollyguajeck Falls.

The 53.5% achievement rate for both sections of river compares to a low of 27.8% in 2001 and a high of 73.9% in 2019. While these rates show considerable variation from year to year, average returns in the past decade represent a major increase over previous decades.

In 2015, when a healthy 5,168 fish passed through the lower fishway, only 297 or 5.7% migrated past Mollyguajeck. Whereas 136.3% of conservation was achieved in the middle watershed, only 5.5% was realized in the upper watershed. This imbalance in distribution improved in subsequent years with the conservation level in the upper watershed rising to 18.0% in 2016, 21.4% in 2018, and 29.3% in 2019. However with the lower Mollyguajeck count in 2020, the conservation level fell to 13.9%.

| Exhibit 7<br>Salmon Escapement Compared to Conservation Requirements | | | | |
|---|---|---|---|---|
| | | Grant Falls to Mollyguajeck | Above Mollyguajeck | Entire River above Grant Falls |
| | Conservation Requirement* | 3,575 | 5,362 | 8,937 |
| 2001 | Spawning Escapement | 2,152 | 329 | 2,481 |
| | Conservation Level Achieved | 60.2% | 6.1% | 27.8% |
| 2015 | Spawning Escapement | 4,871 | 297 | 5,168 |
| | Conservation Level Achieved | 136.3% | 5.5% | 57.8% |
| 2016 | Spawning Escapement | 4,670 | 965 | 5,636 |
| | Conservation Level Achieved | 130.6% | 18.0% | 63.1% |
| 2017 | Spawning Escapement | No data collected | No data collected | 3,215 |
| | Conservation Level Achieved | | | 36.0% |
| 2018 | Spawning Escapement | 3,646 | 1,148 | 4,794 |
| | Conservation Level Achieved | 102.0% | 21.4% | 53.6% |
| 2019 | Spawning Escapement | 5,038 | 1,570 | 6,607 |
| | Conservation Level Achieved | 140.9% | 29.3% | 73.9% |
| 2020 | Spawning Escapement | 4,035 | 742 | 4,777 |
| | Conservation Level Achieved | 112.9% | 13.9% | 53.5% |

* (Bourgeois, 2002)



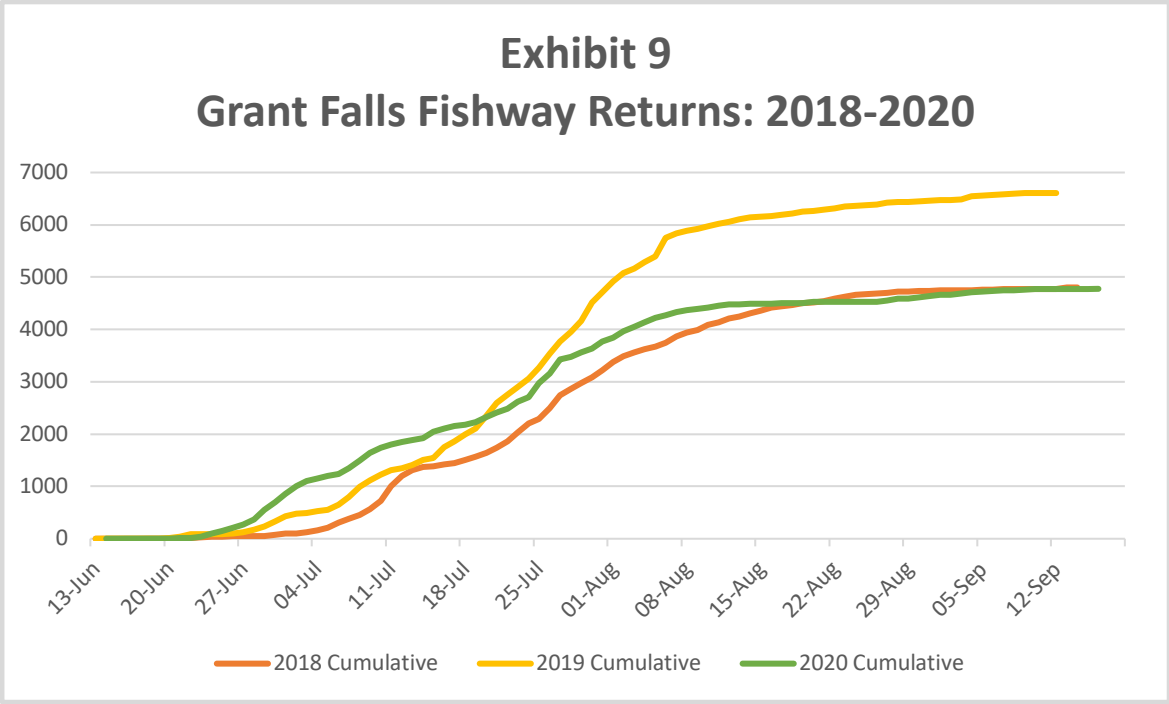
After 2015, when the low Mollyguajeck count was attributed to insufficient water in the fishway for most of the season, returns to the upper watershed continued upward until 2019 but dropped off in 2020. Whereas the conservation achieved above Mollyguajeck was 5.5% in 2015, it climbed progressively to 18.0% in 2016, 21.4% in 2018, and 29.3% in 2019 but fell to 13.9% in 2020.

The reason(s) for the lower 2020 Mollyguajeck count can only be speculated. A comparison of 2020 with 2018 is worthwhile given that the lower fishway counts in both years were almost identical in (4,794 in 2018 versus 4,777 in 2020).

A comparison of water conditions shows that average streamflow during the counting period was 11.43 m3/second in 2018 versus 23.12 m3/second in 2020. Streamflow was lower than 16 m3/second for 66 days during the 2018 count versus 17 days in 2020. A review of water temperature data taken at Mollyguajeck showed insignificant difference during the same periods in both years. Hence, given the more favourable water conditions in 2020, the lower salmon run relative to the lower fishway is likely a consequence of other factors.

One suggested reason for the lower 2020 count at Mollyguajeck was that some number of salmon may have already migrated through the fishway before the count began on July 11. The basis of this argument is that the 2020 salmon run occurred earlier than normal.

Exhibit 9 shows the extent of the early run in 2020. By July 11, the first day of the Mollyguajeck count, 1,800 salmon had passed Grant Falls compared to 1,007 on the same date in 2018 and 1,316 in 2019. Eight days earlier on July 3, the 2020 count was 1,105 compared to 127 in 2018 and 487 in 2019. If some portion this number had also passed Mollyguajeck before July 11, then the actual escapement to the upper watershed would have been higher than the final count of 742. Of course this argument is purely circumstantial and has no way of being verified.




While the Mollyguajeck count was lower in 2020, the overall picture for salmon recruitment to the upper watershed since 2015 is a positive one. After mitigative action was taken to overcome the low water problems in Mollyguajeck fishway, the count increased from 297 in 2015 to 965 in 2016, 1,148 in 2018, 1,570 in 2019, and 742 in 2020.

With a permanent diversion dam now in place, Mollyguajeck fishway is no longer a constraint to salmon migration that it was prior to 2016. All else being equal there is room for optimism that the population will continue to grow.

Despite this encouraging outlook, the river still has a way to go to emerge from Critical zone status (i.e. <100% conservation) and much further to achieve Healthy zone status (i.e. >150% conservation).

According to DFO current estimates, the entire river above Grant Falls achieved 75% of conservation requirements in 2020 (Nick Kelly, *Technical Briefing*, March 12, 2021). This differs from the picture portrayed in Exhibit 7, which relies on the assessment method used by Bourgeois et al in their 2002 study of Terra Nova River. Based on that method, the conservation level achieved was 53.5% for the entire river above Grant Falls and 13.9% in the upper watershed. Thus there remains a significant imbalance in spawning recruitment relative to capacity between the two sections of river.

## 7.0 Conclusion and Recommendation

While the 2020 Mollyguajeck count was considerably lower than the previous three counts, FABEC does not regard this as a significant setback to the goal of populating the upper Terra Nova River to its spawning capacity. Until 2017 Mollyguajeck fishway was a weak link in the Terra Nova salmon enhancement initiative. With the installation of the new diversion dam, we are confident that low water in the fishway will no longer be an impediment to salmon passage.

**Recommendation**

Terra Nova River is classified as Class 2 for a small portion of the river and Class 0 (catch and release only) for all of the remainder. While there is reason to hope that the population will gradually improve with increasing escapement to the upper watershed, this is tempered by the fact that even with the record return in 2019, the upper watershed was less than 30% seeded while the river as a whole achieved only 74% of conservation.

FABEC recommends no change to the current management plan for the river. It is our opinion that the status quo should be maintained for all areas of the river that are designated as Class 2 and Class 0.

## References

Bourgeois, C. E., J. Murray and G. Clarke. *A review of Atlantic salmon enhancement activities on the Terra Nova River (SFA 5), Newfoundland.* DFO, St. John's, 2002.

Environment Canada. *Hydrometric Data for TERRA NOVA RIVER AT GLOVERTOWN (02YS005).* (www.wateroffice.ec.gc.ca)

Environment Canada. Historical Weather for Terra Nova National Park (https://weather.gc.ca/city/pages/nl-15_metric_e.html)

Fisheries and Oceans Canada, Daily salmon count for Terra Nova River collected by FABEC for DFO.

Kelly, Nick. *Technical Briefing*, DFO, March 12, 2021

# APPENDIX A

# MOLLYGUAJECK FISHWAY LOG SHEET - 2020

## JULY 11 to OCTOBER 14

# 2020 Mollyguajeck Fishway Log Sheet

| Day | Date | Air Temp (°C) | | Water Temp (°C) | | Water Depth in Trap (cm) | | Rain TN | Glovertown Water | | Salmon Count | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Streamflow | Temp | <63 | >63 | | Cumu- |
| | | Hi | Lo | Hi | Lo | Hi | Lo | (mm) | (m3/sec) | (°C) | cm | cm | Total | lative |
| 1 | 11-Jul | 28.0 | 11.0 | 21.5 | 21.4 | 42.5 | 42.5 | 0.0 | 18.2 | 18.5 | 9 | 2 | 11 | 11 |
| 2 | 12-Jul | 20.5 | 17.1 | 20.1 | 19.6 | 43.0 | 42.0 | 0.0 | 18.8 | 19.0 | 13 | 1 | 14 | 25 |
| 3 | 13-Jul | 27.5 | 19.1 | 25.0 | 19.1 | 41.0 | 41.0 | 0.0 | 18.9 | 18.9 | 6 | 0 | 6 | 31 |
| 4 | 14-Jul | N/A | N/A | N/A | N/A | N/A | N/A | 12.9 | 16.4 | 20.5 | N/A | N/A | 0 | 31 |
| 5 | 15-Jul | N/A | N/A | N/A | N/A | N/A | N/A | 23.9 | 16.7 | 17.6 | N/A | N/A | 0 | 31 |
| 6 | 16-Jul | 18.1 | 14.0 | 20.7 | 18.8 | 44.0 | 43.0 | 0.0 | 18.6 | 15.4 | 8 | 1 | 9 | 40 |
| 7 | 17-Jul | 23.6 | 13.6 | 17.7 | 16.3 | 43.0 | 43.0 | 0.0 | 18.2 | 15.7 | 4 | 0 | 4 | 44 |
| 8 | 18-Jul | 25.0 | 20.0 | 19.0 | 18.0 | 43.0 | 41.0 | 0.0 | 18.0 | 16.2 | 6 | 0 | 6 | 50 |
| 9 | 19-Jul | 25.0 | 11.0 | 22.0 | 18.2 | 41.5 | 41.0 | 0.0 | 18.2 | 18.1 | 19 | 3 | 22 | 72 |
| 10 | 20-Jul | 25.0 | 19.5 | 21.1 | 19.5 | 43.0 | 42.0 | 0.0 | 18.4 | 19.8 | 12 | 3 | 15 | 87 |
| 11 | 21-Jul | 24.2 | 20.0 | 20.1 | 18.1 | 43.5 | 43.5 | 3.7 | 19.1 | 21.3 | 9 | 1 | 10 | 97 |
| 12 | 22-Jul | 24.0 | 22.0 | 21.2 | 21.0 | 44.0 | 44.0 | 0.0 | 18.4 | 22.1 | 0 | 0 | 0 | 97 |
| 13 | 23-Jul | 25.0 | 20.0 | 22.8 | 20.4 | 43.5 | 42.0 | 0.0 | 17.2 | 22.2 | 1 | 0 | 1 | 98 |
| 14 | 24-Jul | 20.0 | 19.0 | 20.6 | 20.6 | 43.5 | 43.0 | 15.3 | 17.0 | 21.9 | 0 | 0 | 0 | 98 |
| 15 | 25-Jul | 21.0 | 18.0 | 20.6 | 20.0 | 44.0 | 44.0 | 0.9 | 17.5 | 20.5 | 0 | 0 | 0 | 98 |
| 16 | 26-Jul | 16.7 | 16.4 | 24.0 | 23.0 | 45.0 | 43.0 | 22.8 | 18.7 | 20.3 | 2 | 0 | 2 | 100 |
| 17 | 27-Jul | 16.0 | 11.0 | 24.0 | 17.7 | 45.0 | 44.5 | 0.6 | 22.8 | 18.6 | 23 | 0 | 23 | 123 |
| 18 | 28-Jul | 22.4 | 9.0 | 20.0 | 19.2 | 44.5 | 43.5 | 0.0 | 21.1 | 18.3 | 13 | 0 | 13 | 136 |
| 19 | 29-Jul | 18.3 | 14.4 | 19.3 | 18.3 | 44.5 | 44.5 | 3.2 | 19.7 | 18.8 | 6 | 0 | 6 | 142 |
| 20 | 30-Jul | 18.6 | 15.0 | 19.6 | 19.1 | 45.0 | 44.5 | 6.2 | 19.4 | 19.2 | 6 | 2 | 8 | 150 |
| 21 | 31-Jul | 20.0 | 15.0 | 19.8 | 19.1 | 46.0 | 45.5 | 1.2 | 19.6 | 18.9 | 8 | 2 | 10 | 160 |
| 22 | 01-Aug | 22.0 | 17.5 | 21.6 | 19.2 | 47.0 | 47.0 | 6.8 | 19.6 | 18.9 | 14 | 4 | 18 | 178 |
| 23 | 02-Aug | 15.0 | 12.0 | 19.0 | 18.1 | 46.5 | 46.0 | 0.0 | 22.1 | 18.6 | 9 | 1 | 10 | 188 |
| 24 | 03-Aug | 28.0 | 28.0 | 22.6 | 21.7 | 45.0 | 45.0 | 0.6 | 24.7 | 19.0 | 11 | 0 | 11 | 199 |
| 25 | 04-Aug | 25.0 | 16.0 | 21.7 | 21.0 | 45.0 | 45.0 | 4.0 | 26.3 | 20.3 | 22 | 3 | 25 | 224 |
| 26 | 05-Aug | 23.4 | 6.0 | 22.7 | 19.6 | 47.0 | 45.0 | 0.0 | 24.9 | 20.1 | 29 | 6 | 35 | 259 |

# 2020 Mollyguajeck Fishway Log Sheet

| Day | Date | Air Temp (°C) | | Water Temp (°C) | | Water Depth in Trap (cm) | | Rain TN | Glovertown Water | | Salmon Count | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Streamflow | Temp | <63 | >63 | | Cumu- |
| | | Hi | Lo | Hi | Lo | Hi | Lo | (mm) | (m3/sec) | (°C) | cm | cm | Total | lative |
| 27 | 06-Aug | 25.0 | 12.0 | 20.3 | 18.0 | 45.0 | 44.0 | 0.0 | 25.9 | 20.8 | 4 | 0 | 4 | 263 |
| 28 | 07-Aug | 23.0 | 23.0 | 21.6 | 21.0 | 44.0 | 44.0 | 0.0 | 25.0 | 21.4 | 18 | 0 | 18 | 281 |
| 29 | 08-Aug | 25.0 | 14.0 | 22.5 | 20.4 | 44.0 | 44.0 | 0.0 | 22.1 | 21.5 | 15 | 3 | 18 | 299 |
| 30 | 09-Aug | 27.0 | 13.0 | 22.2 | 21.0 | 42.5 | 42.0 | 0.0 | 21.0 | 21.8 | 12 | 0 | 12 | 311 |
| 32 | 10-Aug | 25.0 | 15.0 | 21.6 | 21.2 | 43.0 | 42.5 | 0.0 | 20.0 | 22.2 | 8 | 0 | 8 | 319 |
| 32 | 11-Aug | 28.0 | 28.0 | 24.4 | 23.7 | 41.5 | 41.5 | 0.0 | 18.7 | 22.9 | 2 | 0 | 2 | 321 |
| 33 | 12-Aug | 24.0 | 16.0 | 23.0 | 22.6 | 41.5 | 41.5 | 0.0 | 18.3 | 23.3 | 6 | 0 | 6 | 327 |
| 34 | 13-Aug | 26.0 | 16.0 | 23.6 | 22.8 | 41.0 | 40.0 | 0.0 | 17.3 | 23.6 | 4 | 0 | 4 | 331 |
| 35 | 14-Aug | 22.0 | 14.0 | 22.6 | 20.4 | 40.5 | 40.5 | 0.6 | 15.4 | 22.8 | 1 | 0 | 1 | 332 |
| 36 | 15-Aug | 23.0 | 22.3 | 22.3 | 22.1 | 40.0 | 40.0 | 0.0 | 14.1 | 20.7 | 0 | 0 | 0 | 332 |
| 37 | 16-Aug | 28.0 | 13.0 | 24.3 | 20.0 | 39.5 | 39.5 | 0.0 | 13.7 | 20.7 | 8 | 0 | 8 | 340 |
| 38 | 17-Aug | 28.0 | 13.0 | 23.9 | 23.0 | 39.5 | 39.0 | 0.0 | 13.4 | 20.6 | 5 | 0 | 5 | 345 |
| 39 | 18-Aug | 18.0 | 10.0 | 21.1 | 20.6 | 39.0 | 39.0 | 0.0 | 12.3 | 20.0 | 5 | 0 | 5 | 350 |
| 40 | 19-Aug | 21.4 | 15.0 | 23.6 | 20.0 | 40.0 | 39.0 | 9.3 | 12.2 | 19.1 | 12 | 4 | 16 | 366 |
| 41 | 20-Aug | 20.0 | 17.0 | 21.5 | 20.6 | 38.5 | 38.0 | 0.0 | 13.3 | 19.1 | 9 | 0 | 9 | 375 |
| 42 | 21-Aug | 21.0 | 10.0 | 20.6 | 18.0 | 38.5 | 38.0 | 0.0 | 14.0 | 19.4 | 7 | 0 | 7 | 382 |
| 43 | 22-Aug | 18.0 | 15.1 | 19.2 | 19.2 | 37.0 | 37.0 | 0.0 | 12.8 | 19.7 | 11 | 0 | 11 | 393 |
| 44 | 23-Aug | 25.0 | 17.0 | 21.4 | 21.3 | 36.5 | 36.5 | 1.0 | 11.3 | 19.8 | 14 | 1 | 15 | 408 |
| 45 | 24-Aug | 19.0 | 9.0 | 21.6 | 19.5 | 38.0 | 37.5 | 3.1 | 11.1 | 19.3 | 14 | 0 | 14 | 422 |
| 46 | 25-Aug | 22.0 | 7.0 | 21.5 | 19.0 | 37.5 | 37.5 | 0.6 | 10.8 | 19.0 | 10 | 2 | 12 | 434 |
| 47 | 26-Aug | 12.0 | 11.0 | 19.1 | 19.1 | 38.0 | 38.0 | 19.3 | 11.5 | 19.3 | 2 | 0 | 2 | 436 |
| 48 | 27-Aug | 24.0 | 12.0 | 19.4 | 19.1 | 39.0 | 39.0 | 0.0 | 13.5 | 17.6 | 29 | 7 | 36 | 472 |
| 49 | 28-Aug | 18.1 | 6.0 | 18.0 | 17.1 | 40.0 | 39.5 | 0.0 | 14.7 | 16.7 | 35 | 4 | 39 | 511 |
| 50 | 29-Aug | 14.0 | 6.0 | 16.2 | 14.0 | 40.0 | 40.0 | 0.0 | 14.6 | 16.4 | 25 | 1 | 26 | 537 |
| 51 | 30-Aug | 12.0 | 8.0 | 17.1 | 16.3 | 40.0 | 40.0 | 26.0 | 14.7 | 15.6 | 6 | 0 | 6 | 543 |
| 52 | 31-Aug | 12.0 | 9.0 | 17.5 | 16.6 | 43.0 | 42.0 | 1.2 | 19.2 | 14.8 | 30 | 4 | 34 | 577 |

# 2020 Mollyguajeck Fishway Log Sheet

| Day | Date | Air Temp (°C) | | Water Temp (°C) | | Water Depth in Trap (cm) | | Rain TN | Glovertown Water | | Salmon Count | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Streamflow | Temp | <63 | >63 | | Cumu- |
| | | Hi | Lo | Hi | Lo | Hi | Lo | (mm) | (m3/sec) | (°C) | cm | cm | Total | lative |
| 53 | 01-Sep | 13.0 | 5.0 | 17.4 | 16.6 | 45.0 | 44.5 | 0.0 | 20.0 | 15.2 | 20 | 2 | 22 | 599 |
| 54 | 02-Sep | 18.0 | 7.0 | 17.4 | 16.7 | 45.0 | 45.0 | 0.0 | 20.4 | 15.2 | 16 | 3 | 19 | 618 |
| 55 | 03-Sep | 15.0 | 10.0 | 16.1 | 16.0 | 45.0 | 45.0 | 0.0 | 21.9 | 15.9 | 3 | 0 | 3 | 621 |
| 56 | 04-Sep | 24.0 | 22.5 | 18.2 | 17.7 | 46.0 | 45.0 | 2.5 | 22.4 | 17.3 | 18 | 1 | 19 | 640 |
| 57 | 05-Sep | 21.0 | 15.0 | 18.3 | 17.1 | 48.0 | 48.0 | 8.9 | 22.7 | 18.5 | 25 | 3 | 28 | 668 |
| 58 | 06-Sep | 22.0 | 14.6 | 19.0 | 17.1 | 49.0 | 48.0 | 0.0 | 23.6 | 18.5 | 11 | 2 | 13 | 681 |
| 59 | 07-Sep | 18.0 | 13.8 | 18.6 | 17.6 | 48.0 | 48.0 | 0.0 | 24.0 | 18.4 | 1 | 0 | 1 | 682 |
| 60 | 08-Sep | 21.0 | 15.0 | 18.8 | 18.8 | 46.0 | 45.5 | 0.0 | 23.9 | 17.9 | 5 | 0 | 5 | 687 |
| 61 | 09-Sep | 25.0 | 12.0 | 19.7 | 19.2 | 48.0 | 46.0 | 0.0 | 24.5 | 18.4 | 5 | 0 | 5 | 692 |
| 62 | 10-Sep | 17.0 | 10.0 | 19.4 | 18.5 | 46.5 | 46.0 | 0.0 | 23.4 | 18.6 | 4 | 0 | 4 | 696 |
| 63 | 11-Sep | 7.0 | 7.0 | 18.1 | 18.0 | 46.0 | 46.0 | 9.4 | 24.0 | 17.7 | 0 | 0 | 0 | 696 |
| 64 | 12-Sep | 14.0 | 10.2 | 18.1 | 17.3 | 48.0 | 48.0 | 0.6 | 25.3 | 15.8 | 1 | 0 | 1 | 697 |
| 65 | 13-Sep | 15.2 | 7.3 | 19.8 | 16.7 | 48.5 | 47.0 | 0.0 | 25.3 | 14.8 | 4 | 0 | 4 | 701 |
| 66 | 14-Sep | 19.0 | 9.0 | 17.6 | 16.0 | 47.0 | 47.0 | 4.6 | 25.1 | 14.5 | 1 | 0 | 1 | 702 |
| 67 | 15-Sep | 11.0 | 6.0 | 15.2 | 14.2 | 47.0 | 47.0 | 0.0 | 25.7 | 14.4 | 0 | 0 | 0 | 702 |
| 68 | 16-Sep | 16.0 | 15.0 | 16.4 | 16.1 | 45.0 | 45.0 | 0.0 | 22.7 | 13.9 | 9 | 2 | 11 | 713 |
| 69 | 17-Sep | 16.0 | 8.0 | 16.4 | 15.1 | 45.5 | 45.0 | 1.1 | 24.7 | 13.9 | 8 | 2 | 10 | 723 |
| 70 | 18-Sep | 7.0 | 5.0 | 15.6 | 15.2 | 46.0 | 45.0 | 69.7 | 23.5 | 14.1 | 4 | 0 | 4 | 727 |
| 71 | 19-Sep | 4.0 | 3.0 | 14.2 | 14.1 | 50.0 | 50.0 | 5.6 | 58.2 | 12.7 | 2 | 0 | 2 | 729 |
| 72 | 20-Sep | 11.1 | 8.0 | 14.2 | 14.2 | 61.5 | 60.0 | 0.6 | 54.7 | 12.7 | 1 | 0 | 1 | 730 |
| 73 | 21-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 61.1 | 13.2 | N/A | N/A | 0 | 730 |
| 74 | 22-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 1.7 | 66.7 | 13.8 | N/A | N/A | 0 | 730 |
| 75 | 23-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 8.3 | 72.3 | 14.3 | N/A | N/A | 0 | 730 |
| 76 | 24-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 82.1 | 15.4 | N/A | N/A | 0 | 730 |
| 77 | 25-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 80.1 | 14.4 | N/A | N/A | 0 | 730 |
| 78 | 26-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 79.1 | 13.0 | N/A | N/A | 0 | 730 |

# 2020 Mollyguajeck Fishway Log Sheet

| Day | Date | Air Temp (°C) | | Water Temp (°C) | | Water Depth in Trap (cm) | | Rain TN | Glovertown Water | | Salmon Count | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Streamflow | Temp | <63 | >63 | | Cumu- |
| | | Hi | Lo | Hi | Lo | Hi | Lo | (mm) | (m3/sec) | (°C) | cm | cm | Total | lative |
| 79 | 27-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 75.4 | 12.8 | N/A | N/A | 0 | 730 |
| 80 | 28-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 73.2 | 14.3 | N/A | N/A | 0 | 730 |
| 81 | 29-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 69.8 | 16.0 | N/A | N/A | 0 | 730 |
| 82 | 30-Sep | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | 65.6 | 17.3 | N/A | N/A | 0 | 730 |
| 83 | 01-Oct | N/A | N/A | N/A | N/A | N/A | N/A | 1.6 | 61.9 | 18.1 | N/A | N/A | 0 | 730 |
| 84 | 02-Oct | N/A | N/A | N/A | N/A | N/A | N/A | 2.5 | 55.4 | 17.1 | N/A | N/A | 0 | 730 |
| 85 | 03-Oct | N/A | N/A | N/A | N/A | N/A | N/A | 2.3 | 52.9 | 16.4 | N/A | N/A | 0 | 730 |
| 86 | 04-Oct | 10.0 | 8.0 | 16.3 | 16.2 | 56.0 | 56.0 | 0.0 | 48.7 | 15.5 | 7 | 1 | 8 | 738 |
| 87 | 05-Oct | 5.0 | 2.0 | 15.8 | 15.2 | 56.0 | 55.0 | 0.0 | 45.2 | 13.7 | 1 | 0 | 1 | 739 |
| 88 | 06-Oct | 10.0 | -3.0 | 15.4 | 15.4 | 54.0 | 54.0 | 0.0 | 42.5 | 12.1 | 2 | 0 | 2 | 741 |
| 89 | 07-Oct | 7.0 | 4.0 | 14.2 | 14.2 | 54.0 | 54.0 | 3.9 | 40.4 | 11.9 | 1 | 0 | 1 | 742 |
| 90 | 08-Oct | 14.4 | 14.1 | 14.2 | 13.3 | 55.0 | 55.0 | 16.2 | 39.5 | 12.4 | 0 | 0 | 0 | 742 |
| 91 | 09-Oct | 6.0 | 1.0 | 13.5 | 12.0 | 55.0 | 55.0 | 0.7 | 46.6 | 11.9 | 0 | 0 | 0 | 742 |
| 92 | 10-Oct | 11.5 | 0.2 | 11.5 | 11.4 | 56.0 | 56.0 | 0.6 | 41.8 | 9.7 | 0 | 0 | 0 | 742 |
| 93 | 11-Oct | 12.0 | 10.0 | 11.5 | 11.3 | 56.0 | 56.0 | 6.4 | 38.0 | 9.6 | 0 | 0 | 0 | 742 |
| 94 | 12-Oct | 9.0 | 5.0 | 11.3 | 11.2 | 53.0 | 53.0 | 0.0 | 36.6 | 9.7 | 0 | 0 | 0 | 742 |
| 95 | 13-Oct | 4.0 | 2.0 | 11.2 | 11.0 | 54.0 | 54.0 | 0.0 | 35.2 | 9.1 | 0 | 0 | 0 | 742 |
| 96 | 14-Oct | -2.0 | -2.0 | 11.0 | 11.0 | 54.0 | 54.0 | 0.0 | 35.9 | 9.0 | 0 | 0 | 0 | 742 |
| Total | | | | | | | | 310.4 | | | 671 | 71 | 742 | |
| Avg per Day | | 18.7 | 12.3 | 19.4 | 18.2 | 42.0 | 41.7 | 3.2 | 29.2 | 17.2 | 8.3 | 0.9 | 9.2 | |

Notes: July 14-15 – No counts due to employee illness.

September 21-October 3 - No counts due to high water conditions and related safety hazards.

# APPENDIX B

# GRANT FALLS FISHWAY COUNT

# 2018, 2019 & 2020

# Daily Salmon Count – Grant Falls Fishway

| Date | 2020 | | | | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative |
| 13-Jun | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14-Jun | 1 | 0 | 1 | 1 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| 15-Jun | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 16-Jun | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 17-Jun | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 |
| 18-Jun | 1 | 0 | 1 | 3 | 1 | 0 | 1 | 5 | 0 | 1 | 1 | 1 |
| 19-Jun | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 5 | 2 | 0 | 2 | 3 |
| 20-Jun | 2 | 0 | 2 | 5 | 12 | 0 | 12 | 17 | 1 | 0 | 1 | 4 |
| 21-Jun | 4 | 1 | 5 | 10 | 21 | 2 | 23 | 40 | 2 | 1 | 3 | 7 |
| 22-Jun | 3 | 0 | 3 | 13 | 37 | 9 | 46 | 86 | 8 | 2 | 10 | 17 |
| 23-Jun | 21 | 6 | 27 | 40 | 2 | 0 | 2 | 88 | 4 | 0 | 4 | 21 |
| 24-Jun | 52 | 2 | 54 | 94 | 1 | 0 | 1 | 89 | 11 | 7 | 18 | 39 |
| 25-Jun | 52 | 3 | 55 | 149 | 2 | 1 | 3 | 92 | 3 | 1 | 4 | 43 |
| 26-Jun | 54 | 1 | 55 | 204 | 7 | 1 | 8 | 100 | 3 | 0 | 3 | 46 |
| 27-Jun | 61 | 4 | 65 | 269 | 19 | 3 | 22 | 122 | 0 | 0 | 0 | 46 |
| 28-Jun | 92 | 3 | 98 | 364 | 48 | 3 | 51 | 173 | 3 | 0 | 3 | 49 |
| 29-Jun | 178 | 12 | 190 | 554 | 52 | 5 | 57 | 230 | 1 | 0 | 1 | 50 |
| 30-Jun | 140 | 9 | 149 | 703 | 93 | 6 | 99 | 329 | 18 | 4 | 22 | 72 |
| 01-Jul | 146 | 12 | 158 | 861 | 101 | 5 | 106 | 435 | 24 | 2 | 26 | 98 |
| 02-Jul | 135 | 9 | 144 | 1005 | 43 | 7 | 50 | 485 | 7 | 0 | 7 | 105 |
| 03-Jul | 91 | 9 | 100 | 1105 | 2 | 0 | 2 | 487 | 21 | 1 | 22 | 127 |
| 04-Jul | 49 | 2 | 51 | 1156 | 33 | 3 | 36 | 523 | 33 | 3 | 36 | 163 |
| 05-Jul | 44 | 1 | 45 | 1201 | 23 | 4 | 27 | 550 | 45 | 1 | 46 | 209 |
| 06-Jul | 37 | 1 | 38 | 1239 | 97 | 6 | 103 | 653 | 88 | 7 | 95 | 304 |
| 07-Jul | 95 | 19 | 114 | 1353 | 136 | 13 | 149 | 802 | 73 | 6 | 79 | 383 |
| 08-Jul | 127 | 14 | 141 | 1494 | 184 | 8 | 192 | 994 | 62 | 8 | 70 | 453 |
| 09-Jul | 133 | 11 | 144 | 1638 | 116 | 4 | 120 | 1114 | 114 | 3 | 117 | 570 |
| 10-Jul | 94 | 6 | 100 | 1738 | 102 | 4 | 106 | 1220 | 148 | 5 | 153 | 723 |
| 11-Jul | 60 | 2 | 62 | 1800 | 93 | 3 | 96 | 1316 | 261 | 23 | 284 | 1007 |
| 12-Jul | 49 | 1 | 50 | | 33 | 1 | 34 | 1350 | 190 | 8 | 198 | 1205 |

# Daily Salmon Count – Grant Falls Fishway

| | 2020 | | | | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative |
| 13-Jul | 28 | 2 | 30 | 1880 | 61 | 2 | 63 | 1413 | 104 | 5 | 109 | 1314 |
| 14-Jul | 47 | 1 | 48 | 1928 | 88 | 5 | 93 | 1506 | 55 | 2 | 57 | 1371 |
| 15-Jul | 100 | 13 | 113 | 2041 | 41 | 2 | 43 | 1549 | 14 | 0 | 14 | 1385 |
| 16-Jul | 62 | 8 | 38 | 2149 | 191 | 13 | 204 | 1753 | 35 | 1 | 36 | 1421 |
| 17-Jul | 30 | 8 | 38 | 2149 | 96 | 8 | 104 | 1857 | 24 | 4 | 28 | 1449 |
| 18-Jul | 20 | 13 | 33 | 2182 | 135 | 7 | 142 | 1999 | 47 | 6 | 53 | 1502 |
| 19-Jul | 42 | 4 | 46 | 2228 | 93 | 13 | 106 | 2105 | 61 | 6 | 67 | 1569 |
| 20-Jul | 82 | 11 | 93 | 2321 | 224 | 20 | 244 | 2349 | 61 | 6 | 67 | 1636 |
| 21-Jul | 81 | 15 | 96 | 2417 | 230 | 19 | 249 | 2598 | 94 | 12 | 106 | 1742 |
| 22-Jul | 55 | 15 | 70 | 2487 | 144 | 16 | 160 | 2758 | 114 | 9 | 123 | 1865 |
| 23-Jul | 103 | 31 | 134 | 2621 | 136 | 12 | 148 | 2906 | 145 | 19 | 164 | 2029 |
| 24-Jul | 68 | 18 | 86 | 2707 | 137 | 12 | 149 | 3055 | 158 | 16 | 174 | 2203 |
| 25-Jul | 218 | 50 | 268 | 2975 | 197 | 17 | 214 | 3269 | 77 | 8 | 85 | 2288 |
| 26-Jul | 145 | 42 | 187 | 3162 | 241 | 29 | 270 | 3539 | 195 | 17 | 212 | 2500 |
| 27-Jul | 238 | 28 | 266 | 3428 | 218 | 18 | 236 | 3775 | 221 | 22 | 243 | 2743 |
| 28-Jul | 45 | 8 | 53 | 3481 | 163 | 20 | 183 | 3958 | 117 | 10 | 127 | 2870 |
| 29-Jul | 79 | 4 | 83 | 3564 | 186 | 16 | 202 | 4160 | 96 | 11 | 107 | 2977 |
| 30-Jul | 59 | 9 | 68 | 3632 | 314 | 37 | 351 | 4511 | 100 | 8 | 108 | 3085 |
| 31-Jul | 116 | 22 | 138 | 3770 | 192 | 13 | 205 | 4716 | 129 | 8 | 137 | 3222 |
| 01-Aug | 68 | 10 | 78 | 3848 | 202 | 5 | 207 | 4923 | 141 | 15 | 156 | 3378 |
| 02-Aug | 99 | 14 | 113 | 3961 | 152 | 6 | 158 | 5081 | 94 | 10 | 104 | 3482 |
| 03-Aug | 76 | 12 | 88 | 4049 | 75 | 3 | 78 | 5159 | 78 | 5 | 83 | 3565 |
| 04-Aug | 76 | 10 | 86 | 4135 | 112 | 11 | 123 | 5282 | 54 | 5 | 59 | 3624 |
| 05-Aug | 71 | 11 | 82 | 4217 | 110 | 8 | 118 | 5400 | 46 | 5 | 51 | 3675 |
| 06-Aug | 59 | 0 | 59 | 4276 | 326 | 21 | 347 | 5747 | 67 | 6 | 73 | 3748 |
| 07-Aug | 53 | 3 | 56 | 4332 | 92 | 2 | 94 | 5841 | 102 | 8 | 110 | 3858 |
| 08-Aug | 40 | 2 | 42 | 4374 | 35 | 5 | 40 | 5881 | 64 | 11 | 75 | 3933 |
| 09-Aug | 16 | 3 | 19 | 4393 | 42 | 3 | 45 | 5926 | 53 | 4 | 57 | 3990 |
| 10-Aug | 26 | 1 | 27 | 4420 | 45 | 2 | 47 | 5973 | 81 | 5 | 86 | 4076 |
| 11-Aug | 35 | 2 | 37 | 4457 | 41 | 1 | 42 | 6015 | 49 | 6 | 55 | 4131 |

# Daily Salmon Count – Grant Falls Fishway

| Date | 2020 | | | | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative |
| 12-Aug | 20 | 0 | 20 | 4477 | 40 | 1 | 41 | 6056 | 56 | 9 | 65 | 4196 |
| 13-Aug | 5 | 0 | 5 | 4482 | 51 | 1 | 52 | 6108 | 39 | 3 | 42 | 4238 |
| 14-Aug | 4 | 0 | 4 | 4486 | 30 | 3 | 33 | 6141 | 52 | 4 | 56 | 4294 |
| 15-Aug | 10 | 0 | 10 | 4496 | 12 | 0 | 12 | 6153 | 50 | 2 | 52 | 4346 |
| 16-Aug | 1 | 0 | 1 | 4497 | 13 | 1 | 14 | 6167 | 55 | 6 | 61 | 4407 |
| 17-Aug | 7 | 1 | 8 | 4505 | 18 | 4 | 22 | 6189 | 23 | 1 | 24 | 4431 |
| 18-Aug | 2 | 0 | 2 | 4507 | 22 | 2 | 24 | 6213 | 31 | 2 | 33 | 4464 |
| 19-Aug | 1 | 0 | 1 | 4508 | 32 | 1 | 33 | 6246 | 25 | 1 | 26 | 4490 |
| 20-Aug | 13 | 3 | 16 | 4524 | 18 | 2 | 20 | 6266 | 15 | 1 | 16 | 4506 |
| 21-Aug | 4 | 1 | 5 | 4529 | 21 | 2 | 23 | 6289 | 28 | 2 | 30 | 4536 |
| 22-Aug | 3 | 0 | 3 | 4532 | 21 | 2 | 23 | 6312 | 43 | 1 | 44 | 4580 |
| 23-Aug | 0 | 0 | 0 | 4532 | 31 | 2 | 33 | 6345 | 33 | 4 | 37 | 4617 |
| 24-Aug | 0 | 0 | 0 | 4532 | 21 | 2 | 23 | 6368 | 28 | 3 | 31 | 4648 |
| 25-Aug | 0 | 0 | 0 | 4532 | 8 | 1 | 9 | 6377 | 14 | 0 | 14 | 4662 |
| 26-Aug | 0 | 0 | 0 | 4532 | 12 | 0 | 12 | 6389 | 17 | 1 | 18 | 4680 |
| 27-Aug | 19 | 0 | 19 | 4551 | 29 | 4 | 33 | 6422 | 10 | 3 | 13 | 4693 |
| 28-Aug | 32 | 5 | 37 | 4588 | 12 | 2 | 14 | 6436 | 15 | 1 | 16 | 4709 |
| 29-Aug | 3 | 2 | 5 | 4593 | 3 | 0 | 3 | 6439 | 8 | 0 | 8 | 4717 |
| 30-Aug | 17 | 2 | 19 | 4612 | 11 | 0 | 11 | 6450 | 10 | 0 | 10 | 4727 |
| 31-Aug | 21 | 10 | 31 | 4643 | 16 | 0 | 16 | 6466 | 5 | 1 | 6 | 4733 |
| 01-Sep | 12 | 6 | 18 | 4661 | 7 | 1 | 8 | 6474 | 10 | 0 | 10 | 4743 |
| 02-Sep | 5 | 1 | 6 | 4667 | 2 | 0 | 2 | 6476 | 0 | 0 | 0 | 4743 |
| 03-Sep | 20 | 6 | 26 | 4693 | 11 | 0 | 11 | 6487 | 0 | 0 | 0 | 4743 |
| 04-Sep | 14 | 1 | 15 | 4708 | 55 | 5 | 60 | 6547 | 0 | 0 | 0 | 4743 |
| 05-Sep | 10 | 0 | 10 | 4718 | 10 | 0 | 10 | 6557 | 4 | 0 | 4 | 4747 |
| 06-Sep | 20 | 0 | 20 | 4738 | 13 | 0 | 13 | 6570 | 6 | 0 | 6 | 4753 |
| 07-Sep | 5 | 3 | 8 | 4746 | 14 | 1 | 15 | 6585 | 9 | 0 | 9 | 4762 |
| 08-Sep | 4 | 1 | 5 | 4751 | 10 | 0 | 10 | 6595 | 1 | 0 | 1 | 4763 |
| 09-Sep | 8 | 3 | 11 | 4762 | 10 | 1 | 11 | 6606 | 0 | 0 | 0 | 4763 |
| 10-Sep | 8 | 1 | 9 | 4771 | 1 | 0 | 1 | 6607 | 0 | 0 | 0 | 4763 |

# Daily Salmon Count – Grant Falls Fishway

| | 2020 | | | | 2019 | | | | 2018 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative | ≤ 63 cm | > 63 cm | Total | Cumu-lative |
| 11-Sep | 0 | 2 | 2 | 4773 | 0 | 0 | 0 | 6607 | 1 | 0 | 1 | 4764 |
| 12-Sep | 1 | 0 | 1 | 4774 | 0 | 0 | 0 | 6607 | 3 | 1 | 4 | 4768 |
| 13-Sep | 0 | 0 | 0 | 4774 | | | | | 26 | 0 | 26 | 4794 |
| 14-Sep | 0 | 0 | 0 | 4774 | | | | | | | | |
| 15-Sep | 0 | 0 | 0 | 4774 | | | | | | | | |
| 16-Sep | 3 | 0 | 3 | 4777 | | | | | | | | |
| Total | 4231 | 546 | 4777 | | 6136 | 471 | 6607 | | 4415 | 379 | 4794 | |

## References


Bourgeois, C. E., J. Murray and G. Clarke. *A review of Atlantic salmon enhancement activities on the Terra Nova River (SFA 5), Newfoundland.* DFO, St. John's, 2002.

Environment Canada. *Hydrometric Data for TERRA NOVA RIVER AT GLOVERTOWN (02YS005).* (www.wateroffice.ec.gc.ca)

Environment Canada. Historical Weather for Terra Nova National Park (https://weather.gc.ca/city/pages/nl-15_metric_e.html)

Fisheries and Oceans Canada, Daily salmon count for Terra Nova River collected by FABEC for DFO.

Kelly, Nick. *Technical Briefing*, DFO, March 12, 2021