

Science Committee Report

Report to the Council on the results presented to the Scientific Committee for the Review of the Status of the Restigouche River Atlantic salmon population

The Scientific Committee met on February 2 and 3, 2021 on the online platform “Zoom” due the ongoing pandemic. The committee assessed the status of Atlantic salmon in the rivers of the Restigouche River watershed in 2020.

Environmental conditions in 2020

The Environment Canada station on the Upsalquitch River serves as a reference site for the Restigouche River. In 2020, the Upsalquitch River showed excessive flows in May with peak on May 3rd with 405 m³/s and continuous deficient flows from June through September. The lowest daily flow was recorded on Sept.28th (3.57 m³/s) close to a 5 year event, where normally the average flow is 18.5 m³/s.

The maximum water temperature was reached on the mainstem (Butters Island) and Kedgwick 1 Mile on August 13th with 26.7°C (80.1°F). Data confirms that climate change is affecting our region with a significant long term trend water temperature increase from 1.5°C to 2.6°C per decade)

Water Temperatures 2020

Long-term summer (July and August) water temperatures and conditions in 2020

River	2003-2019	2020	2003-2020	2020
	Mean	Mean	Max	Max
Kedgwick River at Forks Pool	15.1	17.4	24.3	24.6
Kedgwick River at 1 Mile Bridge	16.6	19.6	26.2	26.7
Upsalquitch River at Crib Pool	17.7	19.6	25.7	25.9
Patapedia River at 2 Mile	15.9	18.3	25.4	25.1
Restigouche River at Two Brooks	17.6	20.1	26.1	25.9
Restigouche River at Butters Island	18.9	21.1	27.4	26.7
SE Upsalquitch River above Basket Rock	16.5	18.4	25.9	26.0
Upsalquitch River at Two Brook	17.5	19.7	25.3	25.6
Little Main Restigouche R at Boston Bk	15.6	19.0	25.9	26.1

Mean summer WT were higher than long-term in 2020 (+2.4°C)

Highest water temperatures in 2020 were around 26.7°C

The warm water protocol, developed with the Department of Fisheries and Oceans Canada and other stakeholders, describes monitoring, baseline data and gradation of management measures. Two real-time stations (Restigouche in Brandy Brook and Matapedia at Tobique) are operated by the Gespe'gewaq Mi'gmaq Resource Council and two more are operated by Environment Canada (Restigouche in Kedgwick River and Upsalquitch). Temperatures in 2020 triggered (morning above 20°C 48hrs in row) management measures which closed the fishing in the afternoon for the following periods. Restigouche main stem: June 26th-29th, July 31st-Aug. 18th .Upsalquitch main stem: June 26th-29th, Aug. 13th -18th

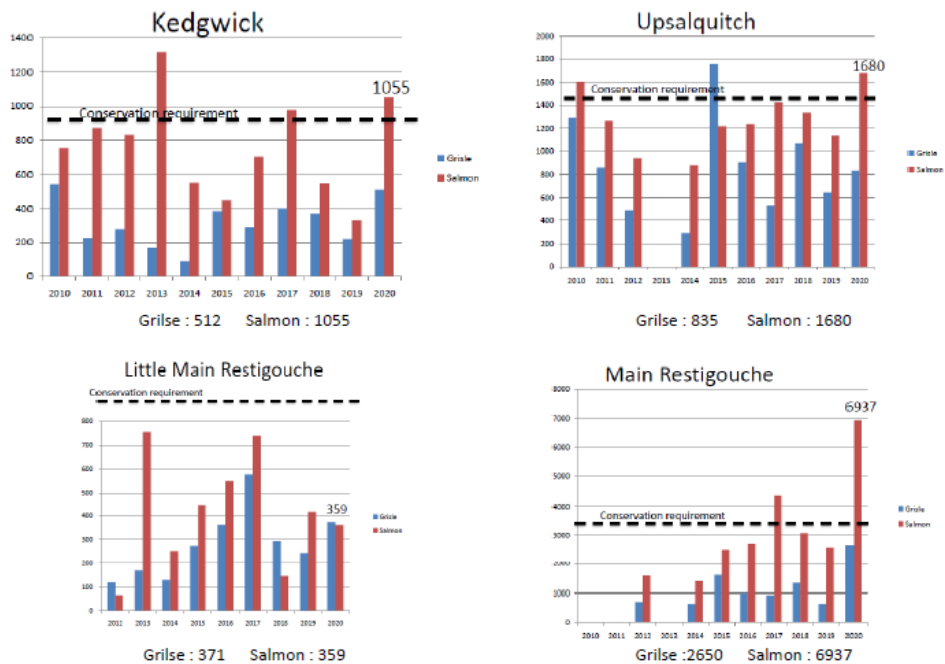
The real-time monitoring stations installed located at Brandy Brook and Tobique Camp provided accurate data 2020. These stations will be monitoring in 2021 as well. In the summer, real-time water and air temperature data can be found at www.gmrc.ca/rivtemp.

Trends in Atlantic salmon populations in 2020

For the 2020 fishing season, many of the camps did not have guests and some did not operate due the closure of the Canadian border to international fly fishers. Fishing effort (rod-days) was not reported by fishing camps. On Quebec rivers, the fishing effort decreased on the Matapedia from 8430 to 7989 rod days as well as on the Patapedia from 595 to 424 rod days. The effort remained stable on the Causapschal and Kedgwick. For New Brunswick Crown reserved waters, the fishing effort decreased by 15% from 2019 to 2020 with 1047 rod days. The 2020 effort was 24% lower than the previous 5-year (2015-2019) utilization average of 1376 used rod days.

Angling quality in 2020, measured in terms of catch per unit of effort (CPUE), equated to 0.98 grilse or salmon captured per rod day on Crown Reserved waters. This is 25% more than 2019's CPUE of 0.73, and 37% more than the 2015-2019 five-year average (CPUE = 0.72). For the Matapedia River, grilse retention was similar in 2020 (529) compared to 2019 (537). The retention of large salmon was authorized on the Matapedia River in 2020 due to a successful mid-season count and sufficient spawner abundance to allow retention. Overall, anglers retained 190 large salmon on the Matapedia River and 68 on the Causapschal in 2020. On the Patapedia River, no large salmon were retained by sport fishermen, as retention has not been permitted since 2018. Catch and release reporting is on the rise even though it is not yet mandatory. On the Matapedia alone, over 1000 salmon were caught, released and reported to the CGRMP in 2020.

In 2020, the number of spawners contributing to the recruitment of the Restigouche River was determined by visual snorkel count surveys between September 14th and 25th. From these counts, it was determined that the number of large salmon required for conservation requirements was above the LRP for the Restigouche system (excluding Quebec). Large salmon abundance was the highest in 2020 compared to the last 20 years of snorkel count survey timeseries.





Spawner counts in Quebec revealed a slight increase in grilse abundance in the Matapedia and Patapedia rivers compared to 2019. Large salmon in the Matapedia were estimated to be double the previous 5-year average of 1530 compared to the 2020 estimate of 3184. The estimated conservation thresholds are 205%, 100% and 92% for the Matapedia, Causapsal and Patapédia rivers respectively.

Juvenile Atlantic salmon are broadly distributed in the river with the exception of some small streams which are prone to periodic blockages to spawners by beaver dams. Young of the year salmon (0+) were absent from 8 of 66 electrofishing sites sampled in 2020. Densities of Atlantic salmon fry, small parr (mostly one-year old), and large parr (mostly two-year and older) all increased post-1984 and remain at moderate levels. Large parr abundances have been increasing over the past decade. Electrofishing surveys were not conducted in the Quebec portion of the watershed in 2020 due to regional travel restrictions.

Due to Covid-19 restrictions, rotary screw traps (smolt wheels) were not operated during the 2020 spring outmigration. Smolt population estimates were therefore not calculated. All telemetry efforts were also postponed. The Gespe'gewa'q Mi'gmaq Resource Council is happy to announce that they will resume smolt and kelt tagging in spring 2021 in close collaboration with the Atlantic Salmon Federation (ASF), DFO, fishing camps and local Mi'gmaq communities.

Other scientific research programs

The geomatics analysis of habitat connectivity, initiated in 2017 with UNB, continued in 2018 and 2019 with the development of a model of Atlantic salmon habitat fragmentation in the watershed using LiDAR imagery. The Gespe'gewa'q Mi'gmaq Resource Council secured funding to carry out habitat restoration work in 2020, 2021 and 2022 to address stream fragmentation and siltation issues in the New Brunswick portion of the watershed. In collaboration with the RRWMC, we built 9 silt traps in the Fiver Fingers watershed in 2020. Prioritization of fish passage restoration is underway and multiple sites will be restored in 2021.

Thermal refuges were also being further investigated on the Matapedia River. This project is led by the Gespe'gewa'q Mi'gmaq Resource Council in collaboration with the Matapedia-Restigouche Watershed Organization. This project focused on 10 priority streams providing persistent cold water to the mainstem thus supporting Atlantic salmon thermoregulation during hot water events. Land use mapping was conducted with landowners to map and detail land use and landscape features of these sub-catchments to better protect them.

A project to evaluate the efficacy of egg-planting in fragmented salmon habitat using "scotty box" incubators was continued in 2020. In 2018, we deployed 17,500 eggs on the North Branch Gounamitz and Cyr Brook. Survival estimates were 48.5%. In 2019, we significantly improved the process and we deployed 16,000 eggs on the North Branch Gounamitz. In late June 2020, we measured an overall survival rate to emergence of 83%. A drastic improvement in our process enabled us to almost double our survival rates.

Listuguj Fisheries have continued to lead data collection on biological and population level characteristics of adult salmon and striped bass and these efforts will continue in 2021.

Finally, representatives of the organizations present summarized their provisional work activities for the next field season.

Dr. Carole-Anne Gillis, Chair of the Scientific Advisory Committee