



CONSEIL DE GESTION DU BASSIN-VERSANT DE LA  
RIVIÈRE RESTIGOUCHE INC.



RESTIGOUCHE RIVER  
WATERSHED MANAGEMENT COUNCIL INC.

## Science Committee Report

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### 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 January 29 and 30, 2020 in Campbellton, NB, to assess the status of Atlantic salmon in the rivers of the Restigouche River watershed in 2019.

#### Environmental conditions in 2019

The Environment Canada station on the Upsalquitch River serves as a reference site for the Restigouche River. In 2019, the Upsalquitch River showed excessive flows in April and continuous deficient flows from June through October. The lowest daily flow was recorded on August 29<sup>th</sup> (4.97 m<sup>3</sup>/s), where normally the average flow is 26.7 m<sup>3</sup>/s. On the other hand, the highest flow was recorded on April 22<sup>nd</sup> at 520m<sup>3</sup>/s, a value beyond the 20-year flood recurrence.

The maximum water temperature was reached on the mainstem on July 31<sup>st</sup> with 26.2°C (79.2°F). Weather data confirms that climate change is affecting our region, and average air temperatures in the summer of 2018 was the highest in the entire time series at the nearest reference station (Bathurst, NB). Successive heat waves did not occur in 2019. For a few mornings, the critical threshold of 23°C were reached, this temperature being the threshold used to close fishing activities in the afternoon and in the evening. The real-time monitoring stations installed located at Brandy Brook (Restigouche) and Tobique Camp (Matapédia) provided accurate data 2019. These stations will be monitoring in 2020 as well. Real-time water and air temperature data can be found at [www.gmrc.ca/rivtemp](http://www.gmrc.ca/rivtemp) for the Matapédia and Restigouche at Brandy Brook and on Environment Canada sites (hydrographic stations) for the Upsalquitch and Restigouche at Kedgwick River for water levels and water temperature.

#### Trends in Atlantic salmon populations in 2019

Compared to 2018, fishing effort (rod-days) decreased in fishing camps from 6119 to 5800 in 2019. On Quebec rivers, the fishing effort for the Matapédia increased slightly from 7992 to 8430 rod days, remained stable on the Patapédia and Causapschal and decreased slightly on the Kedgwick to 146. For New Brunswick Crown reserved waters, the fishing effort increased by 6% after a five-year steady decline, representing a utilization rate of 33% in 2019.

Catch per unit effort (CPUE) on Crown Reserve waters was 7% less than 2018 but was 11% above the 5-year mean. For the Matapédia River, grilse retention slightly decreased from 590 to 537 grilse in 2019. The retention of large salmon was not authorized on the Matapédia River in 2019. Large salmon was retained on the Causapschal River (84 in total). On the Patapédia 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. In 2019, the number of spawners contributing to the recruitment of the Restigouche River was determined by visual snorkel count surveys between September 16<sup>th</sup> and 26<sup>th</sup>. From these counts, it was determined that the number of spawners required for conservation requirements was below the LRP for all sections of the Restigouche River with the following rates: Kedgwick: 35.1%, Little Main Restigouche: 46.5%, Upsalquitch: 79.9% and Restigouche mainstem: 75.1%. For the New Brunswick portion of the watershed, the Restigouche River has seen the biggest decline in large salmon (-46%) over the last 12 years compared to all other rivers in the Gulf region which includes the Miramichi River watershed.

For Quebec, the estimated conservation thresholds are 99%, 87% and 67% for the Matapédia, Causapschal and Patapédia rivers respectively. Note that this is the first year since 1993 that the Causapschal River has not reached its conservation thresholds. In addition, for a second consecutive year, the return of spawners to the Matapédia was determined from the mid-season counts, given the inadequate conditions for the count in October. 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 15



electrofishing sites. 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. Over the past 12 years, the abundances of juvenile salmon have increased by 17% for fry and small parr, and by 28% for large parr.

Four rotary screw traps (smolt wheels) operated in 2018 on the Kedgwick, Upsalquitch and Restigouche rivers (2). Smolt population estimates for Kedgwick were 57,000 (vs. 5-year average of 82,000) and 310,000 for the overall Restigouche system (vs. 5-year average of 290,000). The lowest ever recorded smolt outmigration was in 2018.

The Atlantic Salmon Federation (ASF) continued their acoustic smolt telemetry work in 2019 locally led by the Gespe'gewaq Mi'gmaq Resource Council. We tagged eighty (80) smolts with acoustic transmitters at the Kedgwick River rotary screw trap. For Kedgwick river smolts, survival rates were excellent in 2019 and similar to 2018 survival estimates. It is estimated that about 90% of smolts survived to the head of the tide; approximately 80% survived the Estuary (Chaleur Bay) and the survival rate to the Strait of Belle Isle is approximately 50%.

### **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. Recently, the Gespe'gewaq Mi'gmaq Resource Council was able to secure funding to carry out habitat restoration work over the next 3 years to address stream fragmentation and siltation issues in the New Brunswick portion of the watershed.

Scientific permits were granted to allow the retention of striped bass in freshwater. 68 were reported by guides and anglers in 2019 compared to 30 in 2018. A total of 54 striped bass were sampled for gut content analyses. Samples are being processed at the MFFP Québec laboratories. Preliminary findings show that prey samples vary: Slimy sculpin, gaspereau, crayfish, lamprey, dace, Atlantic salmon parr and brook trout.

Thermal refuges are also being further investigated on the Matapedia River. This project is led by the Gespe'gewaq Mi'gmaq Resource Council in collaboration with the Matapedia-Restigouche Watershed Organization. This project focuses on 10 priority streams providing persistent cold water to the mainstem thus supporting Atlantic salmon thermoregulation during hot water events. We are currently working with landowners to map and detail land use and landscape features of these sub-catchments to better protect them. In addition, we've partnered with Mount Allison University to test daily water temperature fluctuations of Atlantic salmon physiology. Parr were collected from the Chain of Rock, Matapedia River and Milnikek River. Analyses are currently underway.

A project to evaluate the efficiency of egg-planting in fragmented salmon habitat using "scotty box" incubators was continued in 2019. In 2018, we deployed 17,500 eggs on the North Branch Gounamitz and Cyr Brook. Survival estimates are 57%. In 2019, we significantly improved the process and we deployed 16,000 eggs on the North Branch Gounamitz. We will measure the success of our cumulative efforts late June 2020.

A collaboration between UNB and DFO to test sonar camera efficiency to detect and measure adult Atlantic salmon was carried out on the Upsalquitch River in 2018 and in the Kedgwick River in 2019.

Listuguj Fisheries mentioned that they have continued their involvement with the operations of the Restigouche River rotary screw traps and have continued to lead data collection on biological and population level characteristics of adult salmon and striped bass and these efforts will continue in 2020. Results from virus testing through tissue and organ sampling are now available and the results have been published in a peer-review journal in close collaboration with ASF and DFO.

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