

Science Advisory Committee Report

Science Advisory Committee meeting report showcasing results presented to and by the Science Chair to assess the status review of salmon populations in the Restigouche.

The Science Advisory Committee met on January 30th and 31st 2018 in Campbellton (NB) to assess the status of Restigouche Atlantic salmon in 2017.

Environmental conditions in 2017

The Environment Canada flow station on the Upsalquitch River is used as a representative indicator of the Restigouche River flow conditions. In 2017, the Upsalquitch River demonstrated excessive flows in March, April and May. The lowest flow was recorded on September 1st (4.98 m³/s) and was also below the 2-year low flow occurrence. On the other hand, the highest flow was 449 m³/s and was recorded on May 7th and it was beyond 2-year flood occurrence.

The average water temperatures in summer were slightly higher (+1°C) than average conditions. Maximum water temperatures occurred on July 18th, August 3rd and August 23rd and ranged from 22.2°C to 24.4°C. These results were obtained from data recorded by thermographs distributed in over 20 sites across the system placed and recorded throughout the year. In addition, the RRWMC has been involved for four years with the RivTemp program to monitor water temperature in salmon rivers at various spatial and temporal scales to create an adaptive response management for water temperature increases in relation to recreational angling. Since 2014, 30 additional thermographs to those already deployed by DFO are installed every year. Monitoring of these sites will be continued in 2018 in collaboration with Listuguj Fisheries. In fall 2017, we also installed 2 new real-time water temperature monitoring stations located at Brandy Brook and Tobique Camp. These stations can be equipped with multiple meters. The expected results of the research will give us a better ability to forecast temperatures in sub-catchments of the Restigouche River.

Trends in Atlantic salmon populations in 2017

Compared to 2016, the fishing effort (rods per day) slightly decreased at the fishing lodges notably in August due to excessive low flow conditions. The effort for the Matapedia increased by 11% whereas it decreased by 23% on the Patapédia, both rivers are managed by the CGRMP. For the Crown Reserved waters, a 4% decline was estimated.

Overall, catches of grilse decreased in 2017 compared to 2016. The catch per unit effort (CPUE) or fishing success, for large and small salmon also decreased in New Brunswick. Large salmon retention was authorized on the Matapédia River following a mid-season count.

In 2017, the number of spawners contributing to the stock recruitment in the Restigouche River was determined by visual snorkel counts conducted in late September. From these observations, stocks were above the conservation requirements except for the Little Main Restigouche. As for Quebec rivers, the estimated conservation thresholds are 119%, 147% and 101%, for the Matapédia, Causapschal and Patapédia respectively. The RRWMC also conducted a visual count later in the season, when the spawners would be located on their spawning grounds. The visual count generated contrasting estimates of spawners compared to the snorkel count method. This later count yielded



lower numbers in the main stem Restigouche River which is mostly attributed to spawners migrating to tributaries to spawn between the counts.

Compared to 2016, the density of fry and large parr (2+) is up for 2017 for all the tributaries whereas small parr densities is down. Overall, there is a good distribution of juvenile salmon throughout the sampling sites and there were two to three cohorts of juveniles in most sites in 2017.

The rotary screw traps (smolt wheels) installation on the Kedgwick, Matapedia and Restigouche rivers in 2017, took place on May 19, 21 and 24, respectively. The Upsalquitch River smolt wheel was not installed in 2016 due to logistical issues. Total productivity and smolt outmigration estimates will be available in Spring 2018.

The Atlantic Salmon Federation (ASF) continued its acoustic telemetry monitoring work to track migrating smolts and kelts in 2017. Thirty-seven (37) smolts were tagged with acoustic transmitters at the Kedgwick River smolt wheel. During migration, some receiver lines may not detect tagged fish; therefore, a corrective detection model is applied to the data to have more accurate survival rates. For the Kedgwick River, an estimated 75% of tagged smolts survived until the head of the tide; about 50% survived till the end of the estuary (Chaleur Bay) whereas those that survived the migration to the Strait of Belle Isle (SOBI) was approximately 25%. A low sample size may explain the lower estimated survival rates. It was the fifth year that kelts were tagged in Restigouche. Seventeen (17) kelts were acoustically tagged. The average return rate for alternate or consecutive repeat spawners for the Restigouche kelts is 20%.

Other research programs

In 2017, the RRWMC was involved with regular science programs, the water temperature monitoring network and spawner counts. New initiatives launched in 2017 include: Watershed-wide connectivity analysis for in-stream barriers to Atlantic salmon migration, real-time monitoring of water temperature, use of thermal regimes by juvenile salmon and daily growth of fry in contrasting thermal regimes, striped bass prevalence in freshwater. New projects that have been submitted and are awaiting confirmation for funding include: salmon habitat review, development of a mobile app, Five finger runoff mitigation, colonization of habitats above fragmentation with the use of egg incubators.

Listuguj Fisheries mentioned that they were once again involved with the smolt wheel operations in the Restigouche River and they pursued their salmon health monitoring research in 2017 as well as sample striped bass biological data and intend to carry out similar monitoring in 2018. Virus testing was also carried out in 2017 and results will be available in Spring 2018. New 2018 scientific programs plan to update the biological data regarding sex ratio and fecundity of adult salmon.

Two master's projects and one postdoctoral project were carried out in the watershed in 2017. The first master's project was led by INRS and they conducted electrofishing surveys in thermal refuges to assess habitat use and quality. The second master's project is in collaboration with UNB and the student is building a GIS model to locate habitat fragmentations such as culverts and beaver dams. The postdoctoral project, in collaboration with INRS, is looking at growth indices of juvenile salmon in relation to water temperature.



A round table regarding the research proposal for the upcoming work on vacant habitat colonization with egg incubators was discussed. Following the project design review, the committee unanimously approved the RRWMC to pursue scientific permitting.

Finally, the representatives of all present organizations summarized their planned and tentative work activities for the next field season.

Carole-Anne Gillis, Scientific Research Chair