# LETTING RIVERS RUN WILD: MONITORING OF IBOF ATLANTIC SALMON IN IRISH RIVER

ACAP SAINT JOHN

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## Introduction

The inner Bay of Fundy (iBoF) Salmon is a population of Atlantic Salmon (Salmo salar) that do not migrate outside of the Bay of Fundy. This population is listed as endangered by the Species at Risk Act and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). There are 50 iBoF rivers located from Mispec River in New Brunswick to Pereaux River in Nova Scotia (DFO, 2019). In 2019, ACAP Saint John set out to complete management plans for seven undermanaged iBoF rivers from Saint John to St. Martins. These rivers are not classified as 'critical habitat' for the recovery of iBoF salmon and therefore have been mostly overlooked. To complete these plans, ACAP Saint John conducted stream assessments, monitoring, and restoration along these rivers and released the plans in 2021.

Irish River is located along the Fundy Coast in St. Martin's and has historically been known to support salmon. The river is also known to receive minimal supplementation from the Department of Fisheries and Oceans Canada through their stocking program. In 2020, the main stem of Irish River was surveyed for salmon presence, habitat, and land use issues. After these surveys a major dam at the mouth of the river was removed, in 2021, fully restoring migration access to the river.

In 2024, ACAP Saint John expanded on activities and recommendations from the 2020 management plan for Irish River by conducting an electrofishing survey in the main stem of the river with financial support from the Foundation for Conservation of Atlantic Salmon (FCAS) and field support from the Hammond River Angling Association (HRAA). Since Salmon would be caught through the electrofishing survey anyway, they were Passive Integrated Transponders (PIT) tagged, a genetic sample taken (to be analyzed through a different project), and length and weight recorded to increase understanding of distribution and abundance of salmon within Irish River.

## Salmon Presence

Electrofishing was conducted on Sept 18, 2024, within the main stem of Irish River (Figure 1). The survey site was selected based on 2020 habitat assessments as well as where it sat spatially within the system.

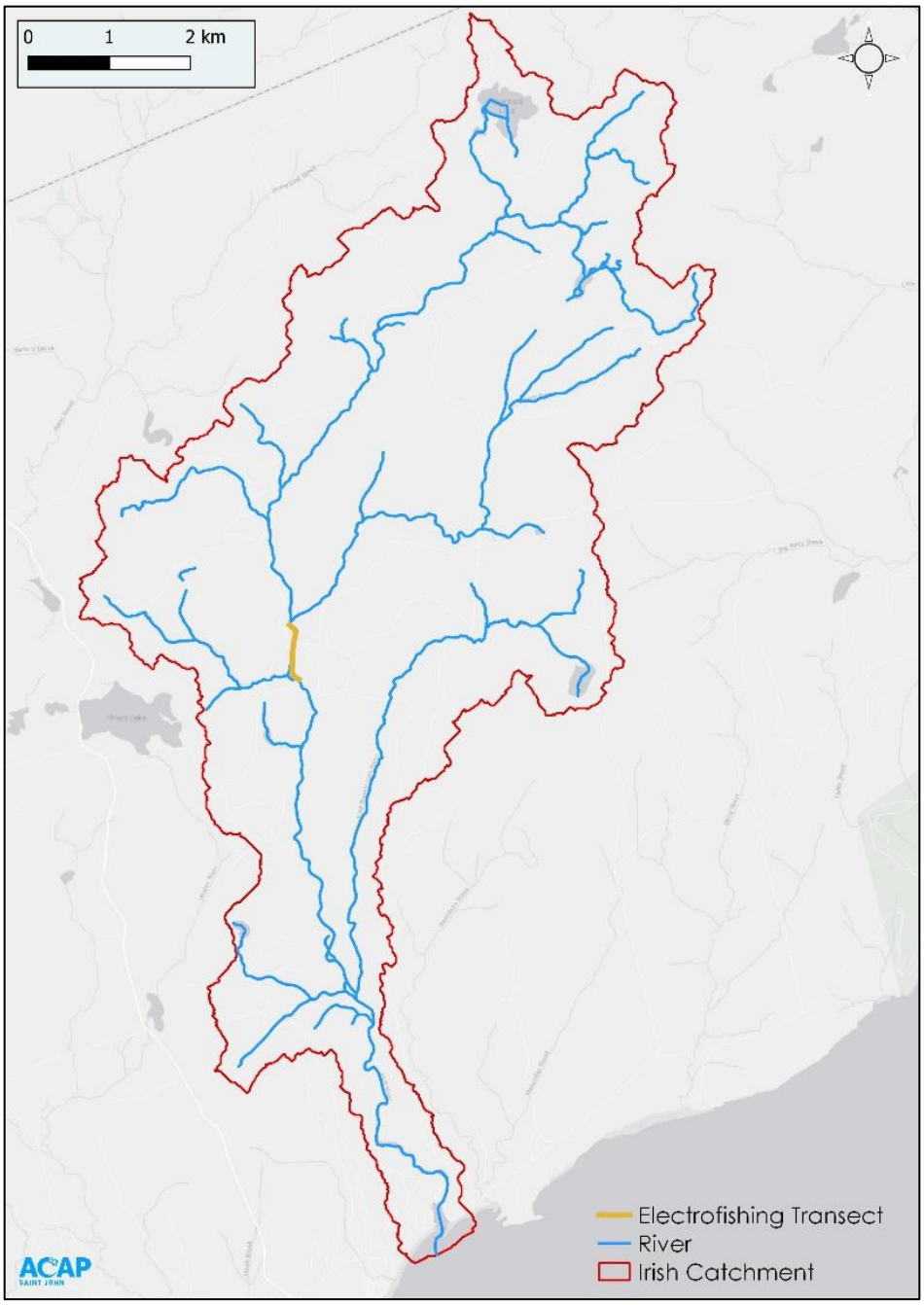


*Figure 1. Electrofishing stretch on Irish River.*

Electrofishing transects were conducted by walking from one bank to the other targeting niches preferable for Salmon (boulders, eddies, downed woody debris, pools, etc.). When Salmon were captured, they were kept in a cool aerated bucket and walked to the field lab. At the field lab, salmon were sedated one at a time using clove oil. Once sedated, a series of measurements were taken. Measurements included, total length & fork length (mm), weight (g), life stage, and whether the individual was precocious. An 8 mm Passive Integrated Transponders (PIT) tag was then inserted into the dorsal muscle, followed by a small fin clip on the caudal fin to acquire a genetic sample. The salmon was then placed

in a separate aerated bucket to recover, then placed in the river and monitored for full recovery before being released. Project partner HRAA aided in electrofishing efforts and fish processing (Figure 2).

*Figure 2. HRAA staff (Left) alongside ACAP Saint John staff (Right), measuring an Atlantic Salmon.*

A total of 33 salmon were captured along the 750 m stretch of river, with a total of 30 receiving a PIT tag and fin clip as per license requirements, the remaining 3 salmon were only measured. Mean total length was 162.6 mm, mean fork length was 150.3 mm, and mean weight was 45.5 g. Four individuals were precocious (Figure 3). The total abundance caught in the fished section resulted in an approximate density of 0.022 parr/$m^2$, or 1 parr/68$m^2$. This density was found to be similar to that of a section of Black River, another unmanaged iBoF surveyed in 2023 by ACAP Saint John, that had 0.025 par/$m^2$. Other larger sections of Black River surveyed in 2023 with similar total area covered had much lower densities (0.011- 0.005 parr/$m^2$) than what was observed in Irish River. Continued work on Irish River and the mark-recapture study will be vital in estimating and tracking the population found in the river, which can then be compared to other mark-recapture study rivers, such as Black River.

The success of this project acted as a stepping stone into understanding the role Irish River plays in iBoF salmon recovery and conservation. Further investigation on a larger multi-year scale is required to fully understand the distribution, populations, and site abundances of iBoF Atlantic Salmon within Irish River. Fully understanding the distribution

and ecology of this river will lead to better management and recovery throughout the entire watershed.

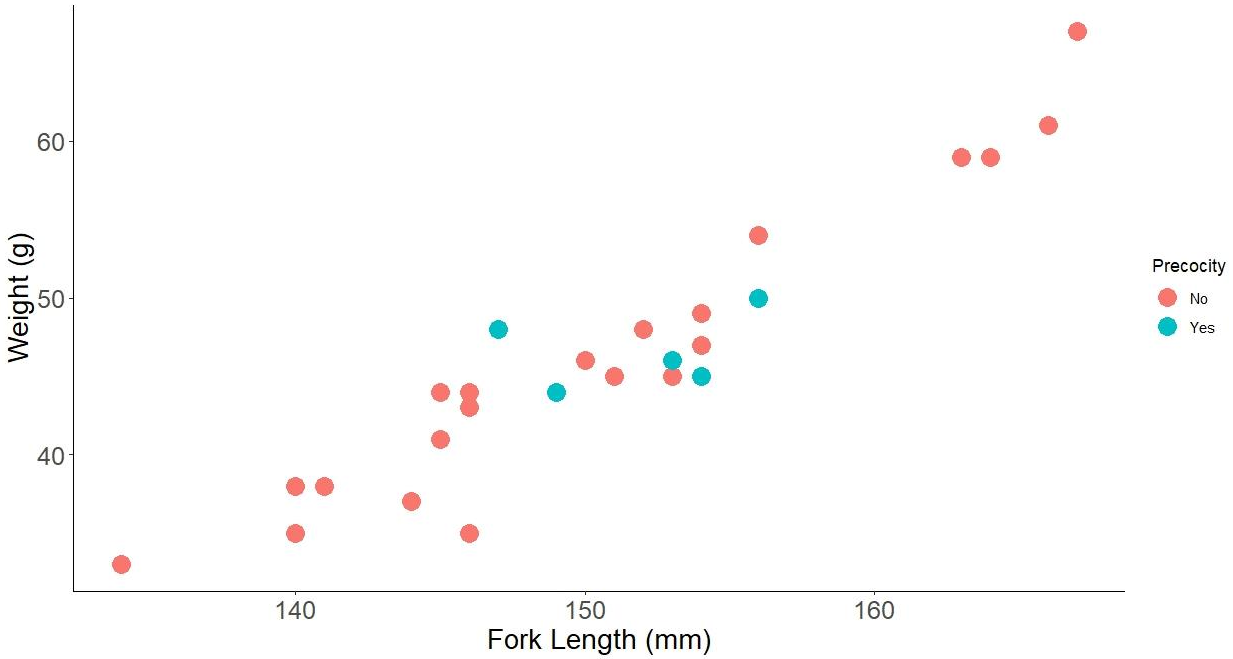


*Figure 3. Atlantic salmon catch fork length (mm) by weight (g). Blue signifies if the individual was precocious when it was caught.*

## Education and Engagement

Our education goal was to educate the public on the importance of iBoF Salmon and their recovery. Many people are unfamiliar with the iBoF population so through public education and engaging in person we are able to make the endangered population more well known and promote conservation work that is happening on the rivers.

To reach a broad community-wide audience social media content was created. In total three posts were shared that focused on Salmon specific education and awareness. Other posts were shared that focused on more broad fish habitat and the importance of healthy riparian areas but are not presented here and will continue into the winter of 2025. Social media posts were shared across ACAP Saint John's various platforms (i.e., Facebook, Instagram, X, and LinkedIn) and had a combined reach of over one thousand viewers (Figure 4).


*Figure 4. Example of social media content created and posted to Instagram, highlighting the work that was accomplished.*

In-person engagement was also completed to give participants a more hands-on learning experience. One presentation was given to grade 9 environmental science students. The presentations covered endangered species with a focus on the inner Bay of Fundy Atlantic Salmon. Students learned about the various work going on at ACAP Saint John and other organizations to monitor and restore the iBoF and oBoF populations. Students received hands on learning where they were able to PIT tag a banana, using grains of rice. This interactive learning was a big success with the students and helps to engage different learning styles. A total of 20 youth and 2 teachers experienced this presentation. Two community events were also attended where iBoF salmon were presented at. The first was at the Saint John Community Partners Port Days, where we were set up at the Saint John Container Village and presented to the public. At the event we had 45 people stop by to learn about Atlantic Salmon. The second event was a girl guide rally where 250 young girls stopped by and learned about salmon conservation.

## Conclusion

Overall, this project was a success and has demonstrated that Atlantic Salmon are still utilizing Irish River. Through the capture and tagging of 30 Salmon, ACAP Saint John has started the groundwork to determine the distribution of these Salmon and track movement through future recaptures by either ACAP Saint John or other organizations working in these rivers. Building off the success of this project to further explore Salmon distribution and abundance in this river will be vital to understanding the role these smaller iBoF rivers play in the recovery of wild self-sustaining population. Education and engagement activities undertaken through this project also help to build a more aware and engaged community that can actively participate in Salmon conservation through land-use practices and getting involved in restoration volunteer opportunities. Together the actions of this project have broadened the understanding of iBoF Salmon in the region.