

Miramichi Salmon and Trout Restoration – Stocking 2017

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Introduction

Stocking Atlantic salmon first-feeding fry can improve the juvenile production capacity of the Miramichi River by targeting areas that are under-seeded or not accessible to wild spawning adults. An electrofishing survey is carried out each year by the Miramichi Salmon Association (MSA) to assess areas of the river that are lacking adequate numbers of fry or parr. Low fry or parr numbers could be the result of multiple factors, including: poor adult returns, barriers to adult movement into upper stream reaches (i.e.: beaver dams), environmental events such as ice scouring that could destroy a redd, or less than optimal water conditions. Areas with zero/minimal fry present will be targeted to stock, and efforts will also be made to identify and remove any impediments to natural spawning. The majority of these areas are located in small tributaries and the headwaters of the Miramichi River. Small brooks and streams often have good quality habitat and lower numbers of predators than larger downstream locations. These narrow waterways may be inaccessible however, because of barriers or decreased water levels in low flow years.

Juvenile abundance electrofishing surveys and smolt estimates are used to aid in determining specific tributaries that may need additional stocking. Since it is impossible to stock every small stream in the Miramichi with a limited number of fish, it is important to place hatchery salmon fry into streams that will benefit most from their introduction. Stocking salmon fry into a tributary with high salmon fry abundance could negatively impact those fish by increasing the level of competition for food resources. To avoid this, any site containing more than 100 fry/100m² is not considered for stocking as it appears to reflect a healthy natural population. Sites with less than 50 fry/100m² are considered candidates for further stocking. The absence of fry at an already stocked site may indicate that the site does not contain the appropriate habitat or it may have too many predators.

Prior to 2010, fall fingerlings were stocked and identified by an adipose clip (removal of the adipose fin). In 2010 the MSA shifted the focus from Atlantic salmon fall fingerlings to stocking first-feeding salmon fry in the early summer. These fry are incubated as eggs on unheated brook water to ensure that the rate of egg development is similar in timing to that of wild eggs. The stocking of fry over fingerlings has several benefits, including the reduced risk of

fish contracting a pathogen while in artificially high densities at the hatchery, and the improved capacity to develop “wild” behaviour tendencies at a younger age. First-feeding fry are stocked out in June/July at an average size of 0.5g which makes fin clipping impossible. However, there are still locations that raise fall fingerlings for stocking purposes. Atlantic salmon and brook trout fry were raised this year in satellite rearing stations run in collaboration with J.D. Irving Ltd. and the Miramichi Headwaters Salmon Federation. The objective of the stocking program is to improve Atlantic salmon production in the headwaters of the Miramichi watershed.

The number of broodstock collected from the Northwest system was decreased in 2015 because of a new initiative, which would see a decreased need for stocking on this branch. The Collaboration for Atlantic Salmon Tomorrow (CAST) initiative began in 2014 with plans to collect smolts from the Northwest Miramichi River and grow them at the Miramichi Salmon Conservation Centre (MSCC) until maturity, after which they would be released to spawn naturally in the wild. Smolt to adult survival has decreased in the last decade, resulting in a decreased number of adults returning to the river. This part of the CAST initiative would increase the number of spawning adults in the Northwest Miramichi.

Methods

Adult salmon were collected from September to mid-October 2016 for broodstock from six tributaries on the Miramichi River – Northwest River, Sevogle River, Little Southwest River (LSW), Clearwater Brook, the Main Southwest River in Juniper, and the Cains River. These fish were held at the MSCC and kept separated based on their river of origin. Once ripe, female salmon were stripped of their eggs, which were then fertilized by a male salmon from the same river. Immediately following spawning, the adults were released back into the wild via Stewart Brook, which runs beside the MSCC. Eggs were incubated on brook water in trays until the eyed stage, when dead eggs were removed daily. Eyed eggs were transferred to upwelling incubation boxes in preparation for hatching. After hatching, fry were fed a formulated salmonid diet (Skretting Nutra XP 1.0/EWOS #1CR) for approximately 5 weeks until stocking. All salmon fry were stocked in their river of origin (“river specific stocking”).

Stocking sites were selected based on low juvenile densities found at the exact or nearby locations from the previous year's electrofishing results and in tributaries that typically have low juvenile production. Additional salmon fry were taken to satellite rearing sites for continued growth before stocking.

Results

Approximately 235,031 first-feeding Atlantic salmon fry were stocked into 67 sites in five tributaries of the Miramichi River (Figure 1 and Figure 2). The Northwest system received 93,431 fry and the Southwest system 84,113 (Table 1a&b). An additional 57,487 fry were taken to satellite holding tanks for future release by local conservation groups (Table 2). Furthermore, 2,619 brook trout fry were distributed to a satellite tank rearing location (Table 3).

Acknowledgements

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- J.D. Irving Ltd. (rearing salmon and trout fry for fall distribution)
- Miramichi Headwaters Salmon Federation (rearing salmon fry for fall distribution)
- White Rapids and Other Small Streams Enhancement Association (salmon fry stocking)

Table 1a. Distribution of first-feeding Atlantic salmon fry from the Miramichi Salmon Conservation Centre in 2017 on the Northwest branch of the Miramichi River.

Branch	Stock Origin	Site	# of fish	Latitude	Longitude
Northwest	SEV	Travis Brook	2478	47.045	-66.221
Northwest	SEV	Johnston Brook	2478	47.048	-66.229
Northwest	SEV	Clearwater Brook	2478	47.101	-66.233
Northwest	SEV	Barracks Brook	4957	47.071	-66.293
Northwest	SEV	South Branch Bridge	4957	47.094	-66.312
Northwest	SEV	South Branch 1	4957	47.110	-66.321
Northwest	SEV	Little Sheephouse Brook	2664	47.095	-66.006
Northwest	SEV	Sheephouse Brook	5328	47.080	-66.021
Northwest	SEV	Peabody Lake Brook	2664	47.118	-66.135
Northwest	SEV	North Branch Bridge	2664	47.203	-66.321
Northwest	SEV	North Branch	7992	47.208	-66.354
Northwest	SEV	South Branch	2664	47.104	-66.318
Northwest	SEV	Travis Brook	1085	47.045	-66.221
Northwest	SEV	Johnston Brook	2516	47.048	-66.228
Northwest	SEV	South Branch Bridge	2516	47.094	-66.312
Northwest	SEV	South Branch	2516	47.110	-66.321
Northwest	SEV	South Branch	2516	47.103	-66.317
Northwest	SEV	South Branch	5032	47.089	-66.311
Northwest	LSW	North Branch North LSW	2529	46.984	-66.519
Northwest	LSW	Bridge	2529	46.970	-66.531
Northwest	LSW	Below Smith Forks	4354	46.962	-66.581
Northwest	LSW	Squaw Barron Brook	5058	46.973	-66.700
Northwest	LSW	County Line Brook	2529	46.927	-66.742
Northwest	NW	Mountain Brook	3615	47.203	-66.073
Northwest	NW	Northwest South Branch	2071	47.249	-66.393
Northwest	NW	Gill Brook	2071	47.245	-66.213
Northwest	NW	Stoney Brook	2071	47.153	-66.057
Northwest	NW	Trout Brook	4142	47.115	-65.798

Table 1b. Distribution of first-feeding Atlantic salmon fry from the Miramichi Salmon Conservation Centre in 2017 on the Southwest branch of the Miramichi River.

Branch	Stock Origin	Site	# of Fish	Latitude	Longitude
Southwest	JUN	Juniper Brook	2524	46.539	-67.185
Southwest	JUN	Big Teague 1	2524	46.558	-67.233
Southwest	JUN	Big Teague 2	5048	46.563	-67.243
Southwest	JUN	Big Teague 3	2524	46.573	-67.249
Southwest	JUN	Elliot Brook	2524	46.583	-67.307
Southwest	JUN	Little Teague	2524	46.635	-67.315
Southwest	JUN	South Branch SW	2524	46.554	-67.254
Southwest	JUN	South Branch SW 2	2524	46.529	-67.309
Southwest	JUN	White Rapids Brook	1000	46.769	-65.858
Southwest	JUN	North Branch Hudson Brook	500	46.755	-65.846
Southwest	JUN	Main Branch Hudson Brook	500	46.758	-65.845
Southwest	JUN	South Branch Hudson Brook	200	46.757	-65.844
Southwest	JUN	White Rapids Brook	2000	46.789	-65.801
Southwest	JUN	Four Mile Brook	500	46.609	-66.079
Southwest	JUN	Fowler Meadow Brook	1000	46.619	-66.108
Southwest	JUN	Ledbetter's Brook	1000	46.619	-66.112
Southwest	JUN	Davis Landing Brook	800	46.600	-66.209
Southwest	JUN	Lake Brook	500	46.860	-65.795
Southwest	JUN	Watch Brook	200	46.705	-65.904
Southwest	JUN	Washed out bridge	200	46.720	-65.870
Southwest	JUN	Brandy/Mersereau Brook	100	46.690	-65.840
Southwest	JUN	Zacks Brook	300	46.674	-65.847
Southwest	JUN	Morse Brook	1000	46.668	-65.849
Southwest	JUN	Morse Brook	1000	46.698	-65.786
Southwest	JUN	Hallihan Brook	200	46.712	-65.819
Southwest	JUN	Watson Brook	500	46.730	-65.880
Southwest	CAINS	Tyler's Camp	2517	46.560	-65.804
Southwest	CAINS	Cains 1	2517	46.558	-65.810
Southwest	CAINS	Mahoney Brook	2517	46.509	-65.872
Southwest	CAINS	Brads Camp	2517	46.506	-65.873
Southwest	CAINS	Cains 2	2517	46.500	-65.884
Southwest	CAINS	McKenzie Brook	2517	46.457	-66.012
Southwest	CAINS	Ten Mile Brook	2517	46.412	-65.998
Southwest	CAINS	Muzzroll Brook	2517	46.498	-66.073
Southwest	CAINS	West Branch Lower Otter Brook	2517	46.386	-66.269
Southwest	CAINS	Salmon Brook	2507	46.645	-65.613
Southwest	CAINS	East Branch Sabbies River	7521	46.564	-65.684
Southwest	CAINS	Six Mile Brook	5014	46.483	-65.828
Southwest	CAINS	Ten Mile Brook Tributary	2507	46.422	-65.988
Southwest	CAINS	Blue Rock Brook	5014	46.383	-66.071
Southwest	CAINS	North Branch Cains River	4681	46.331	-66.341

Table 2. Distribution of first-feeding Atlantic salmon fry to satellite holding tanks for continued growth and stocking in 2017.

Stock Origin	Organization	# of fish	Latitude	Longitude
Juniper	Miramichi Headwaters Salmon Association	22457	46.51831	-67.17829
Clearwater	J.D. Irving Ltd.	35030	46.55475	-67.16395

Table 3. Distribution of brook trout fry to satellite tanks for continued growth and stocking in 2017.

Stock Origin	Organization	# of fish	Latitude	Longitude
Beadle Brook	J.D. Irving Ltd.	2619	46.55475	-67.16395

Figure 1. Stocking sites of salmon fry distributed on the Northwest Miramichi River in 2017.

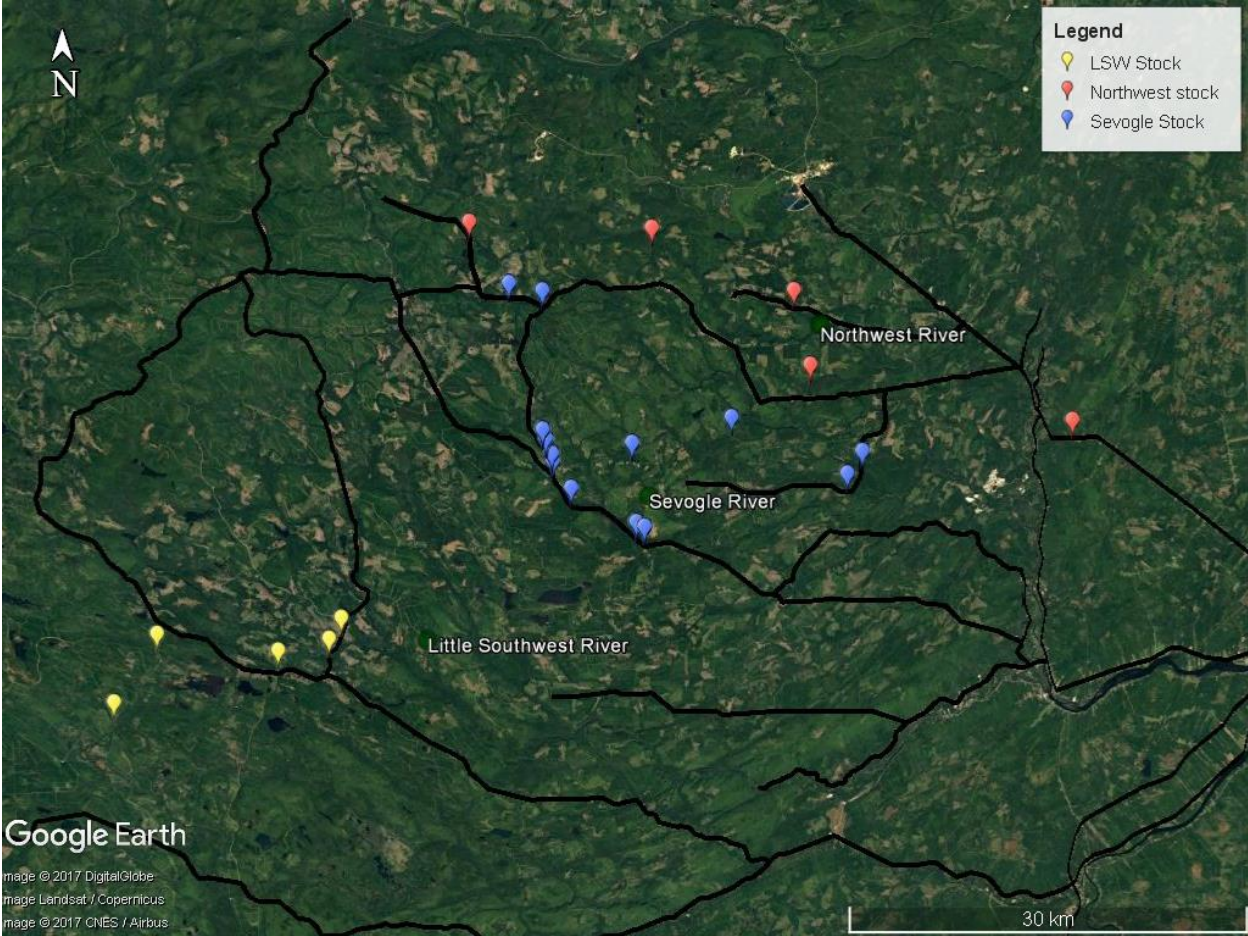


Figure 2. Stocking sites of salmon fry distributed on the Southwest Miramichi River in 2017.

