

**Central Queens Branch of the PEI Wildlife Federation 2025  
West River Redd Survey Summary**



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December 2025**

*Funding provided in part by:  
Foundation for the Conservation of Atlantic Salmon*

## **Introduction**

The Central Queens Branch of the PEI Wildlife Federation (CQWF) has conducted redd surveys annually since 2008. During mid-late November, CQWF monitors spawning efforts of Atlantic salmon by walking and canoeing reaches of rivers that have a history of spawning activity and counting redds. Carrying out these surveys provides vital information used for future management decisions. These surveys provide an estimate of returning adults that enter the freshwater habitat to spawn, which also helps identify which reaches of habitat are used by spawning adults, all of which CQWF will incorporate into future restoration decisions. Long-term trends from these surveys help indicate critical habitat areas important for protection and other areas that could benefit from enhancement. These surveys can also indicate whether past restoration structures are being utilized and are successful (eg- spawning beds).

One of the most exciting results from a recent redd survey was in 2018 (again in 2019, 22 and 2023) when Atlantic salmon redds were found in a reach of Brookvale. This reach was severely degraded from siltation and dense alder growth and CQWF spent almost a decade repairing and restoring habitat components to the point that salmon began to return and spawn again.

Another exciting success story is the recent spawning beds, which were created in the mid-river section below Cudmores during 2023. This stretch historically does not see a high amount of spawning activity. However, in 2024, two salmon redds were observed directly on spawning beds created in 2023. In the 2025 redd survey, another four redds were observed on this same spawning bed. These results helped to reinforce that the work carried out is successful and has effectively created new spawning habitat. Additional spawning effort has noted an increasing trend throughout the Green Bay section of the river. In 2023, we observed five redds, in 2024, we observed ten redds, and this year, we observed 15 redds. This indicates a notable increase in spawning effort throughout this section.

Another exciting development on the West River was the recently installed full tree deflector directly below the mouth of Black Brook. During the redd survey season, four total redds (Image 1) were recorded throughout this area following the altered flow characteristics that this newly installed structure provided to the river. This gives CQWF confidence that these structures work when installed properly with sufficient planning implemented to address limiting factors, such as the lack of velocity increase, which these structures help to address.

## **Methods**

CQWF field crew and volunteers walk the same sections each year to count and determine the spawning efforts of adult Atlantic salmon. Surveyors begin at the lower end of the section and walk upstream to a predetermined location. All major tributaries (Howell's and Quinn's Brook) are surveyed along with the entire main branch of the West River. In total, the minimum distance surveyed is 18 km of river, which includes major tributaries. Additional reaches may be surveyed if the timing is appropriate and additional information is being sought after (eg- brook trout or rainbow trout redds). Surveys on the main branch (Green Bay to Crosby's) are done from the canoe instead of on foot with the same methods described.

An individual redd is counted as an area turned up by an adult salmon with a final depression at the upstream side of the turned-up area. Large areas can be used by multiple salmon or one salmon, creating multiple redds. In this case, the individual depressions are identified and counted as one redd individually, as that upstream depression indicates the final act of the spawning female as she covers the eggs.

GPS waypoints are dropped at each redd location, and measurements are taken for each redd (depression and tailout width x length and depression depth). If an area is identified for future restoration actions, a piece of flagging tape may be placed on a nearby branch or tree to physically mark the redd location since GPS waypoints can be somewhat inaccurate in the field (up to 5m deviation sometimes).

Individual measurements of redds are taken for salmon, including the depression and tailout widths and lengths. This helps to provide further information on the spawning efforts that take place within our watersheds and helps in the standardization of redd surveys on PEI(See attached Redd survey datasheet).

## **Results**

A total of 87 Atlantic salmon redds were counted in 2025. The number of redds in 2025 was below average when compared to recent years' surveys, and still shows an increasing trend since 2008 (Figure 3). Each year the bulk of the recorded redds are in the lower 10km of the main West River, and in 2025 83% of the recorded redds were within this area. In 2025, all of the recorded salmon redds were observed on the main branch of the West River. This could have been influenced by the low water conditions leading into the spawning season, which led the

salmon to utilize the larger main branch instead of the tributaries, which only had sufficient water levels towards the later period of November, missing the peak spawning period.

The survey conditions in 2025 were manageable with some light rain events in the late November period, but a slightly saturated water table in early December decreased survey productivity. When a saturated water table experiences additional precipitation, the river is easily rendered unsurveyable as water levels are too high and visibility conditions become poor. Redd surveys were conducted from the 6th to the 25th of November on a weekly basis. After November 21st redd surveys became slightly more difficult as rain had brought turbid conditions to the river which made some of the previously cut redds look more aged. Another final canoe survey of the main branch of the West river was planned to be completed during December however the early snow made access to the river more difficult.

Three spawning structures on the main branch of the West River that were installed in 2023 Below Bolger Park Bridge had redds observed on them (image 3). This is exciting news as it shows that our involvement in raking these beds every year is making a difference. On the enhanced spawning area below Cudmores also had 4 redds noted in one of the areas.

## **Discussion**

The spawning habitat used by Atlantic salmon from 2018 to 2021 is displayed in Figure 2. Certain reaches of the West River are utilized year after year for spawning and it is imperative to restoration efforts that such areas are identified. Certain areas are used intermittently for redd creation and are flagged by CQWF for restoration efforts. These habitat areas are targeted for enhancement activities such as raking to reduce substrate embeddedness. By raking these “spawning beds” CQWF can reduce the impacts of sedimentation and reduce the embeddedness of substrate used for spawning to increase embryo survival. Another tactic used is by targeting limiting factors, such as a lack of flow, through the addition of coarse woody materials to pinch the water flow

By identifying significant spawning areas CQWF can focus on priority areas for monitoring and enhancement purposes. Another key aspect that can be pulled from this information is areas of the West River that could use additional spawning habitat work to increase the number of redds in new areas and help spread out spawning habitat competition.

This will ultimately spread out the juvenile competition as redds are dispersed throughout the watershed, aiding the dispersal of juveniles, thus reducing competition between juveniles.

Since 2008, redd surveys indicate a slightly increasing trend; however, this does not imply total redd counts are increasing every year (Figure 3). For instance, the redds recorded in 2025 were similar to the 2009-2012 range, and although the 2025 redd count was lower than previous years, this could be related to cyclic patterns influenced by a variety of factors, which can become difficult to relate to one individual variable. A major factor that may greatly influence adult returns is intermittent years of stocking efforts. Additionally, there was a major siltation event that occurred during the construction of the Canada Games grounds in Brookvale. This occurred in 2022, which released sediment into the river during that year's spawning period. This could have smothered redds that were already excavated that year and negatively impacted that year's emerging fish. The release of sediment has also deteriorated highly productive spawning habitats, such as the Riverdale horseshoe, through the sediment that was carried down to this section.

CQWF hopes to eventually meet and exceed its egg conservation requirement by continuously working to improve habitat requirements for the freshwater life stages of salmon. This includes ensuring migratory corridors are maintained to important spawning areas, improving spawning habitat, and providing ideal juvenile-rearing habitat to support robust populations. CQWF's Atlantic Salmon Habitat Management Strategy discusses the strategy to meet these requirements in further detail.

### **Future Management Implications**

Redd surveys will be conducted on an annual basis and incorporated into future management decisions. CQWF will continue to enhance areas that are continuously used for spawning by raking substrate to "clean" and reduce embeddedness, and in some instances, add the preferred-sized substrate where it is lacking. CQWF intends to increase available spawning habitat by altering flow characteristics by installing soft-engineered structures (Image 1), and adding proper-sized substrate (Nova Scotia river rock). These "soft engineered structures" typically involve using local materials (boulders or logs) to alter flow hydraulics to mimic the crest of a riffle or increase flow velocities over areas that contain high-quality spawning substrates (example Image 1). These management techniques will help ensure salmon are

utilizing high-quality spawning habitats, and ensure enough of such are available to spread out spawning efforts to reduce juvenile competition in nearby rearing habitats. Enhancing spawning habitat is one way CQWF intends to increase Atlantic salmon's freshwater productivity and population resilience. New areas will be explored in the mid to upper region of the West River since these areas do experience low amounts of redds and could support much more if additional habitat is provided. This concept will be at the forefront of CQWF's future restoration efforts.



**Figure 1.** Atlantic salmon redds on the West River in 2025.

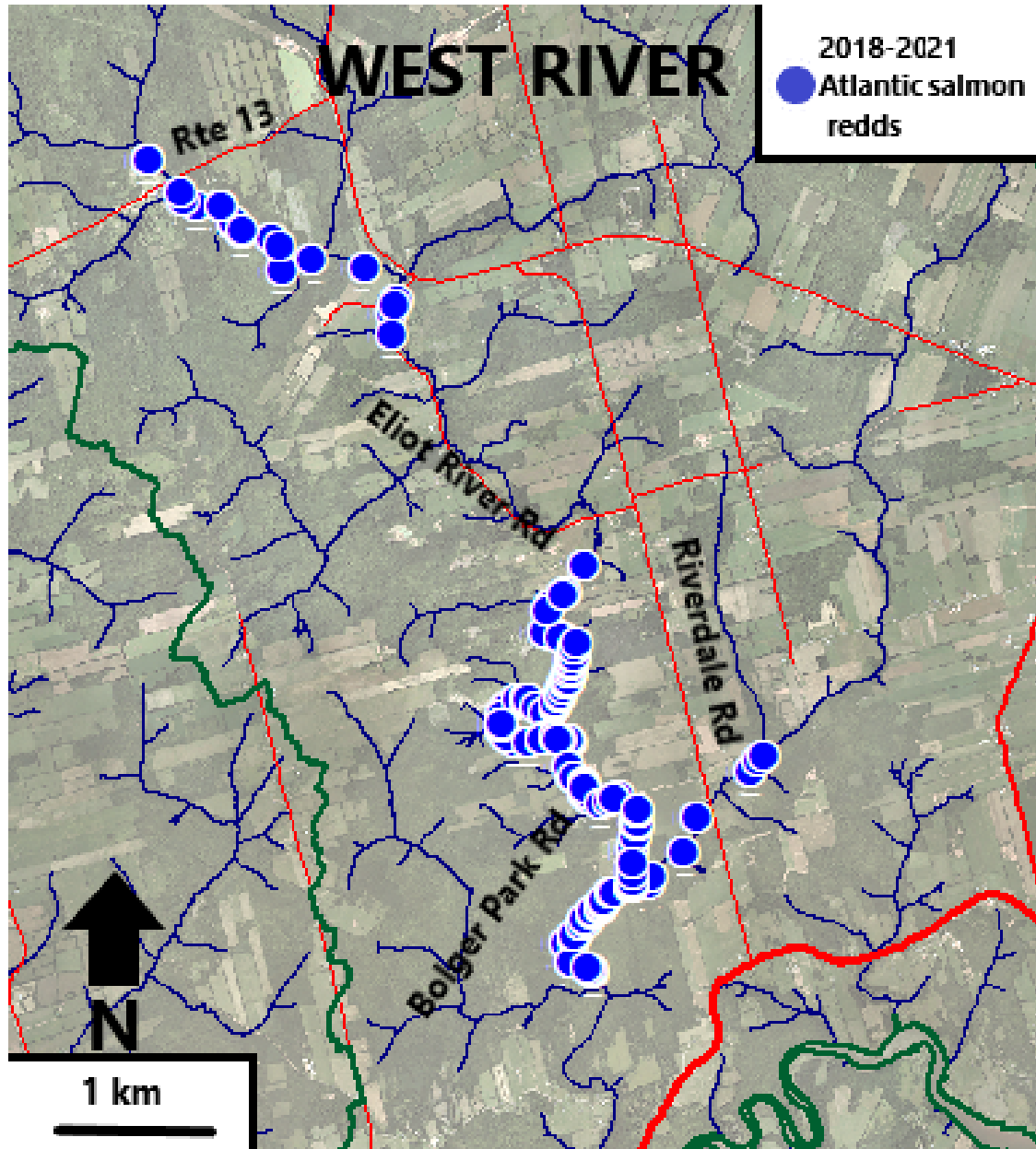
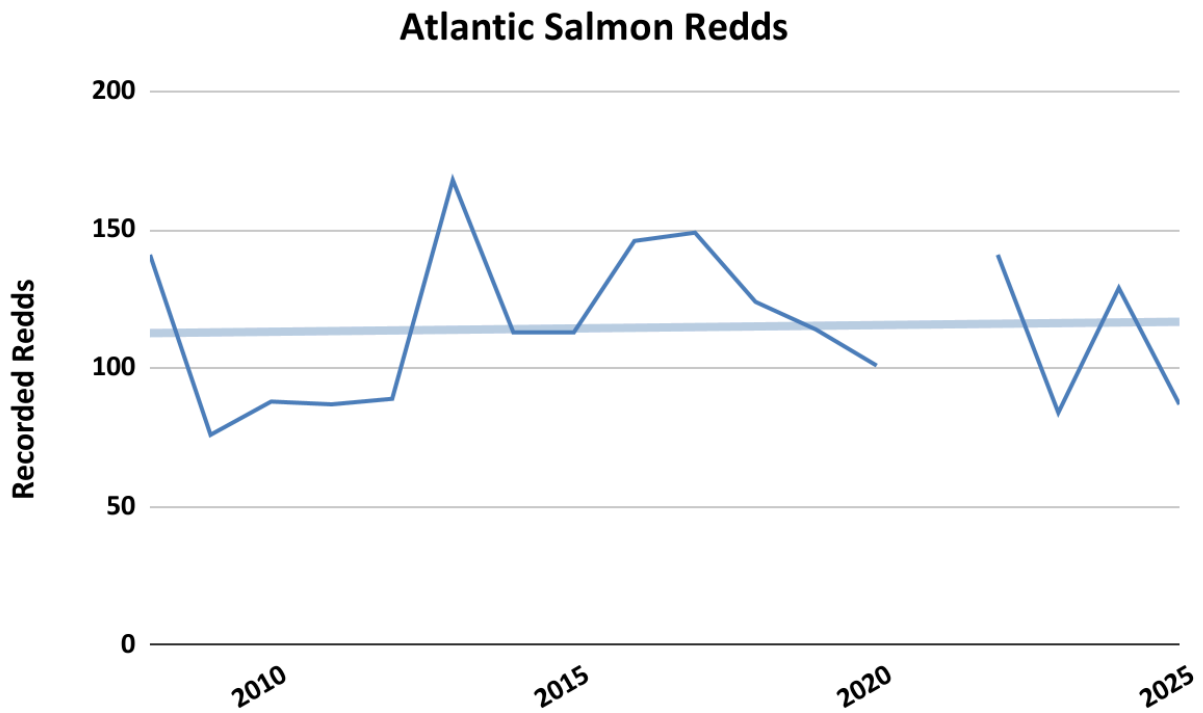


Figure 2. Historic Atlantic salmon redds recorded from 2018-2021 on the West River.

	Crosbys-Bolger Park Rd	Bolger Park- Eliot River Rd	Elliot River Rd/Mckenna Rd	Mckenna Rd - Rte 13	Above Rte 13	Howell's	Quinn's	TOTAL
2016						3		146
2017	53	77	9	6		4		149
2018	58	59	0	3	3	1	0	124
2019	35	56	0	13	1	8	0	113
2020	23	62	10	7	0	0	0	102
2021	20	16	NA	0	0	2	na	38*
2022	58	71	6	0	2	4	0	141
2023	27	48	0	4	0	5	0	84*
2024	41	79	10	0	0	0	0	130
2025	31	41	15	0	0	0	0	87

**Table 1.** An area breakdown for recorded Atlantic salmon redds on the West River. Total numbers with an asterisk next to them indicate incomplete counts.



**Figure 3.** Total counted Atlantic salmon redds from 2008 to 2025. Data from 2021 is not included since it was an incomplete count. A trendline indicates an increasing trend in Atlantic salmon redds on the West River.



**Image 1.** This image shows a soft-engineered structure installed by CQWF to help alter flow characteristics and encourage salmon to spawn over an area with high quality substrate.



**Image 2.** An Atlantic salmon redd observed on a spawning bed constructed in 2023 within the main West River during 2025 surveys.



**Image 3.** CQWF field crew conducting redd surveys. This photo showcases the new measuring methods for salmon redds developed by DFO in collaboration with CQWF.