

## **TROUT RIVER FISH KILL 2013 PRELIMINARY REPORT**

### **SUMMARY**

- A fish kill on Trout River was reported to the Prince Edward Island Department of Environment, Labour and Justice on July 26, 2013. Representatives from the PEI Department of Environment, Labour and Justice, PEI Department of Agriculture and Forestry, and Environment Canada responded to the incident.
- There were 123 brook trout and 14 sticklebacks collected during the clean up.
- Heavy rainfall was recorded on July 25-26th, 2013

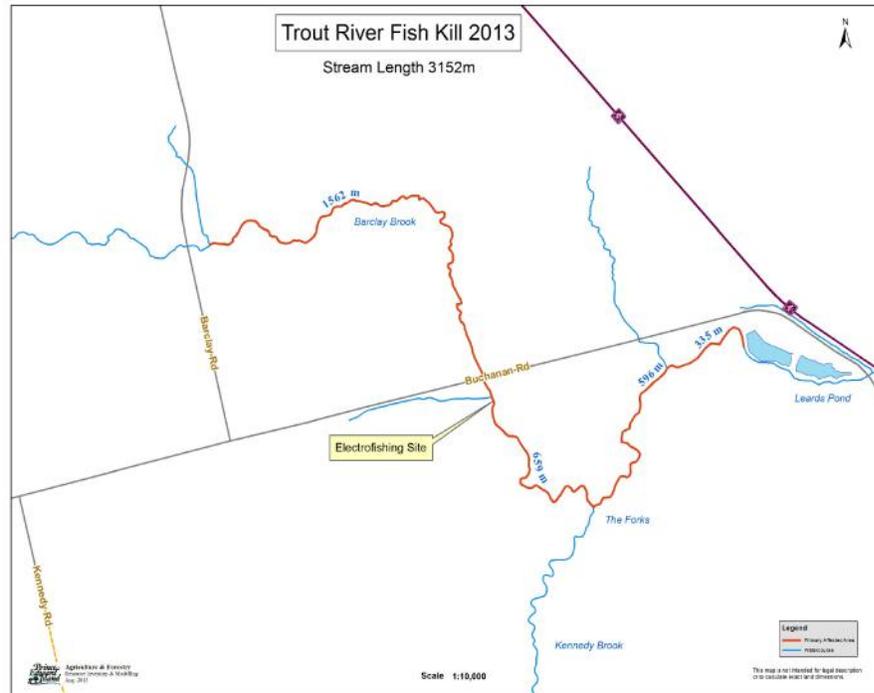
### **BACKGROUND**

At 5:42 PM on July 26th, 2013, the project coordinator with Trout Unlimited Prince County Chapter discovered fish dying and in distress downstream from Buchanan Road on Barclay Brook. The Department of Environment, Labour and Justice (DELJ) was notified and the Environmental Emergency Response Team member and four Conservation Officers responded. The Department of Agriculture and Forestry's freshwater fisheries biologist and an enforcement officer from Environment Canada also responded.

Soil and Water Conservation Engineers arrived at Barclay Brook on July 27th, 2013. All agricultural fields adjacent to the Barclay Brook, from the Barclay Road to the Buchanan Road, were assessed for any potential erosion or existing erosion related issues that may benefit from future mitigation structures.

### **INSPECTION DETAILS**

First responders observed that the water at the Buchanan Road crossing was discoloured (red). Ten brook trout were collected below the Buchanan Road. Some of the fish were dead and others were still alive but moving weakly at the water surface. All fish samples were wrapped in tinfoil. The water at the Barclay Road was clear and there were no dead fish observed at this crossing. Water samples were collected at the Buchanan Road, Barclay Road and at the inlet and outlet to Leards Pond. Soil and vegetation samples were also collected at various locations. All samples were placed in ice-filled coolers and transported to the Environment Canada Laboratory in Moncton.



**Figure 1.** Map of Trout River (Coleman) showing the 2.5 km affected portion of Barclay Brook in red and the electrofishing location downstream from the Buchanan Road.

## ENVIRONMENTAL CONDITIONS

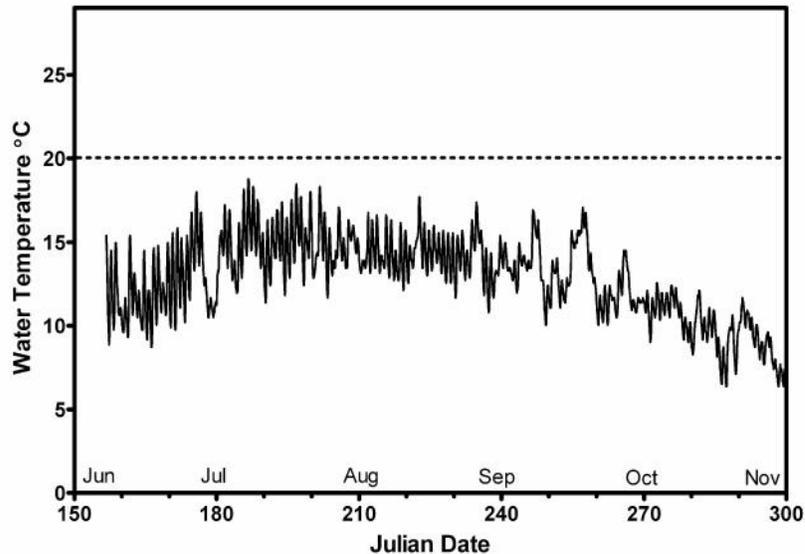
### RAINFALL

Environment Canada recorded rainfall amounts of 42.4 mm between Thursday, July 25 and Friday, July 26<sup>th</sup>, 2013 at the monitoring station in Tyne Valley. Precipitation during this period was localized so the amount of rainfall received at the site of the fish kill may have varied.

### WATER TEMPERATURE

Stream temperatures in Trout River have been monitored for many years by the Fish and Wildlife Section of the PEI Department of Agriculture and Forestry. Data loggers record water temperature at a number of locations every two hours throughout the summer. Water temperature in Barclay Brook in 2013 (Figure 2) is consistently within the optimum range for brook trout (13-18°C).

**Trout River - Barclay Brook at Buchanan Road  
Summer 2013**



**Figure 2.** Water temperature in Barclay brook, Trout River, in summer 2013.

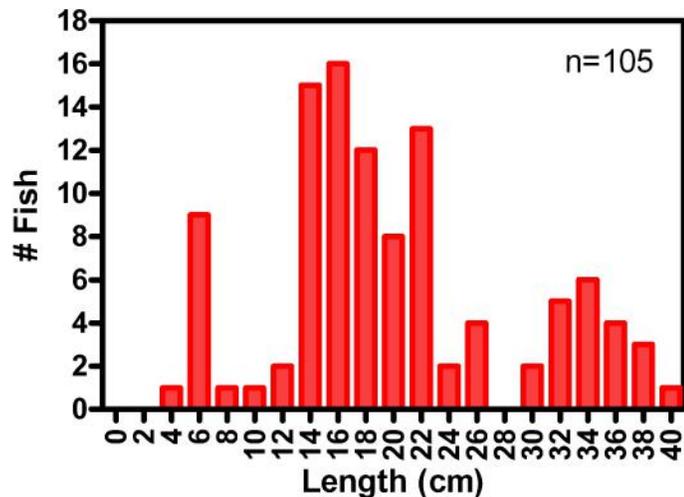
## **FISH CLEAN UP**

Clean-up of dead fish began on July 27<sup>th</sup>, 2013 with the provincial freshwater fisheries biologist and Trout Unlimited Prince County coordinator collecting dead fish upstream from Leards Pond. A canoe was used to retrieve fish from Leards Pond to the forks of the Kennedy and Barclay branches. The freshwater fisheries biologist walked from the forks to the Buchanan Road. Trout Unlimited Prince County staff picked up dead fish observed downstream from Leards Pond. Two conservation officers picked up fish between the Barclay Road and Buchanan Road. The clean-up was completed on July 29<sup>th</sup>.

Ten brook trout were picked up on July 26<sup>th</sup>, 88 on July 27<sup>th</sup> and 25 on July 29<sup>th</sup>. All fish were identified to species and 105 were measured. Sixteen brook trout and 2 stickleback collected by conservation officers on July 27<sup>th</sup> were kept frozen in lockup at the Department of Environment, Labour and Justice building at Beech Grove in Charlottetown. In total, 123 brook trout, 14 sticklebacks, 2 slugs and 3 young green frogs were retrieved.

During the clean up, it was observed that the stream bottom was covered in a layer of fine sediment. Many of the dead fish were observed on the stream banks, well above the height of water, indicating that water levels had previously been much higher. Scavengers had already been in the stream, as evidenced by the remnants of fish on the stream bank and suspended in woody material. Great blue heron and raccoon tracks were also observed.

### Trout River - Fish Kill 2013 Brook trout length frequency



**Figure 3.** Length frequency of brook trout recovered following the 2013 Trout River fish kill.

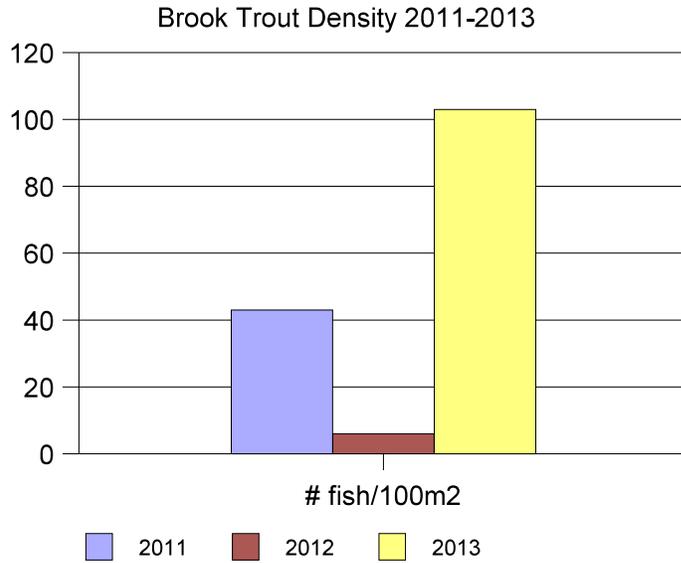
## RESULTS

### ATLANTIC VETERINARY COLLEGE - FISH NECROPSY

Eighteen fish, including 16 brook trout and 2 sticklebacks, were collected on July 27<sup>th</sup>, 2013 and kept frozen until submitted to the Atlantic Veterinary College for necropsy on November 3, 2014. Five were too small and/or too decomposed for examination, six fish had empty or partially full stomachs, and the remaining seven fish had moderate to large amounts of food in their stomachs.

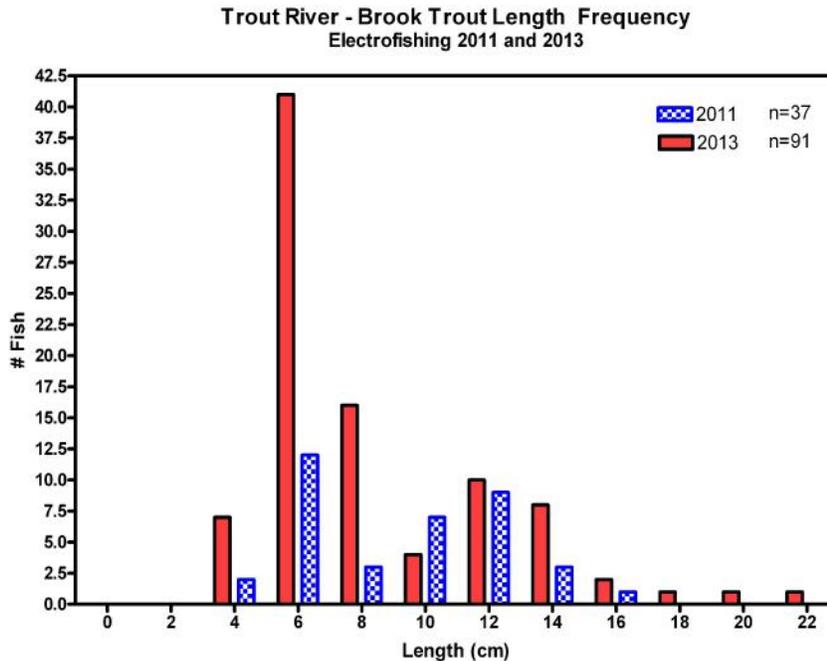
### FISH POPULATION IMPACT ASSESSMENT

On August 15, 2013, an electrofishing survey was carried out to assess densities of salmonids in the affected portion of Trout River. A site downstream from the Buchanan Road was selected because data were available from this site in previous years. The site was assessed using standard three pass removal technique. Density of brook trout was determined to be 103 fish/100m<sup>2</sup>). A comparison with densities determined in 2011 and 2012 is shown in Figure 4. The 2012 fish kill was more extensive than the events of 2011 and 2013, with over 1658 dead trout retrieved. The density of brook trout in Barclay Brook was low in 2012 following this event. Brook trout density rebounded in 2013, and a large percentage of the fish sampled were young-of-the-year. This could indicate successful spawning in fall 2012 and/or downstream movement of fry following emergence in spring 2013.



**Figure 4.** Brook trout density at Buchanan Road site on Barclay Brook, Trout River, 2011-2013

The upper portion of Barclay Brook is a nursery area for the larger Trout River. The majority of fish occupying this section are young-of-the-year brook trout and 1+ fish from the previous year (Figure 5). These younger year classes are under-represented in samples of fish collected following fish kills. Smaller fish are more likely to disappear in mud and debris and are less visible to clean-up crews.



**Figure 5.** Length frequency of brook trout collected during electrofishing surveys in Barclay Brook, 2011 and 2013.



**Figure 6.** Water at the Buchanan Road crossing is discoloured on July 27<sup>th</sup>, 2013.



**Figure 7.** A dead brook trout found immediately downstream from the Buchanan Road on July 27<sup>th</sup>, 2013.



**Figure 8.** Dead fish were visible on the stream banks along Barclay Brook, July 27, 2013.



**Figure 9.** Great blue heron and raccoon tracks were observed in sediment downstream from the Buchanan Road, July 27, 2013..



**Figure 10.** Fish parts were observed hanging from debris downstream from the Buchanan Road on Barclay Brook on July 27, 2013.



**Figure 11.** Brook trout retrieved from Trout River, July 27, 2013.

**APPENDIX**

**TROUT RIVER FISH KILL 2013  
NECROPSY RESULTS**

**Atlantic Veterinary College**



**Wildlife Diagnostic Report**  
**Canadian Cooperative Wildlife Health Centre**  
Atlantic Veterinary College  
University of Prince Edward Island  
550 University Ave., Charlottetown, PEI C1A 4P3  
Phone: 902 628 4314 Fax: 902 566 0871



Diagnosis Date :

**Necropsy # : U26809-14**

#### Incident Information

Incident Code :	CCWHC.112037	Location :	Address : Roxbury, Prince Edward Island
Specimens :	16 x Brook Trout 2 x Brook Stickleback		Latitude: 46.6981998220811 Longitude: -64.0938006877441

#### Finder/Submitter Information

Submitter :	Finder :
Rosie MacFarlane	Unknown
PEI Department of Agriculture & Forestry - Fish & Wildlife	
183 Upton Rd.	
Charlottetown, Prince Edward Island, C1A 7N8	
Phone : (902)314-0723	
Fax : (902)368-5713	
Email : remacfarlane@gov.pe.ca	

#### Information Provided For Incident

These 2 Brook Stickleback and 16 Brook Trout were found dead along the Trout River near Roxbury, PE on July 26, 2013. These specimens were submitted frozen to the CWHC by Roseanne MacFarlane, biologist from the PEI Fish & Wildlife Division on Nov. 3, 2014. They are being submitted for necropsy mainly to determine the stomach contents.

#### Diagnosis and Interpretation

##### Interpretation

All 18 fish submitted were in a relatively advanced state of decomposition, some more than others. Considering the long interval between collection and submission, it is not possible to suggest a time interval between the death of these fish and the day that they were collected from the river. Their relative state of decomposition also prevented an accurate examination for the possible presence of lesions suggestive of a disease process. However, it was possible to examine their stomach contents and thus determine whether they had eaten shortly before death, which would suggest an acute death:

Five fish (1-4, 12), were too small and/or too decomposed for examination.  
In four fish (5, 13, 14, 17), the stomach was either empty or contained only mucus.  
In two fish (6, 16), the stomach contained only a small amount of food.  
In seven fish (7-11, 15, 18), the stomach contained a moderate to large amount of food.

#### Laboratory Results For Specimen Number U26809-14-1

Species :	Brook Stickleback ( <i>Culaea inconstans</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	0.9 g

#### Necropsy

Fish too small for proper examination.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-2**

Species :	Brook Stickleback ( <i>Culaea inconstans</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	1.3 g

**Necropsy**

Fish too small for proper examination.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-3**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	0.7 g

**Necropsy**

Fish too small for proper examination, decomposed.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-4**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	0.7 g

**Necropsy**

Fish too small for proper examination, decomposed.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-5**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	3.0 g

**Necropsy**

Stomach empty.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-6**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	2.7 g

**Necropsy**

Stomach contains a small amount of food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-7**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	11.7 g

**Necropsy**

Stomach is full of food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-8**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	13.2 g

**Necropsy**

Stomach contains moderate amount of food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-9**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	17.1 g

**Necropsy**

Stomach contains one very long earthworm.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-10**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	18.9 g

**Necropsy**

Stomach contains moderate amount of food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-11**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	18.7 g

**Necropsy**

Stomach contains large amount of food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-12**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	30.7 g

**Necropsy**

Fish decomposed.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-13**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	31.9 g

**Necropsy**

Stomach contains mucus.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-14**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	29.9 g

**Necropsy**

Stomach empty.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-15**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	42.5 g

**Necropsy**

Stomach full.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-16**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	63.5 g

**Necropsy**

Stomach contains some food.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-17**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	95.5 g

**Necropsy**

Stomach contains much mucus.

**Diagnosis**

No diagnosis

**Laboratory Results For Specimen Number U26809-14-18**

Species :	Brook Trout ( <i>Salvelinus fontinalis</i> )	Sex :	Unknown
Date Received :	2014-11-03	Age :	Unknown
		Weight :	108.2 g

**Necropsy**

Stomach full of food.

**Diagnosis**

No diagnosis

Pathologist(s) Pierre-Yves Daoust

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