Environment, Energy
and Climate Action

CARDIGAN RIVER FISHKILL 2024

Preliminary Report

March 2025

CARDIGAN RIVER FISHKILL
PRELIMINARY REPORT, MARCH 2025

SUMMARY

- An angler observed dead fish in the Cardigan River on June 6, 2024 and left a message on the Department of Justice and Public Safety's after-hours phone.
- Representatives from the PEI Department of Justice and Public Safety, the PEI Department of Environment, Water and Climate Action, and Fisheries and Oceans Canada (DFO) responded to the incident on June 7, 2024.
- A total of 136 brook trout, 50 rainbow trout, 82 Atlantic salmon and 2 three-spined sticklebacks were collected over an 800 metre section of the Cardigan River.
- Water chemistry results from samples submitted to Environment and Climate Change Canada showed no abnormalities. DFO has determined that the test results are inconclusive, and the investigation has been closed.

BACKGROUND

At 9:41 PM, June 6, 2024, the PEI Department of Justice and Public Safety (PEIJPS) after-hours answering service recorded a call from an angler who reported seeing a number of dead fish in the Cardigan River (Figure 1) that evening. On June 7, 2024, a Conservation Officer contacted the individual and after visiting the site at 9:32 AM, called the provincial Freshwater Fisheries Biologist with the PEI Department of Environment, Energy and Climate Action (EECA). The Conservation Officer and Fisheries Biologist walked a short section of river downstream from the 48 Road and confirmed that a fish kill had taken place. A Fisheries Officer with the Department of Fisheries and Oceans (DFO) and two members of the on-call Environmental Emergency Response team responded.

RESPONSE AND INSPECTION DETAILS

First responders observed that the streambed in the Cardigan River, both upstream and downstream from the 48 Road stream crossing, was covered in a grey, slimy material. This "sludge" was attached to rocks, wood and other vegetation. There was also a putrid odour akin to sewage throughout the stream. During their initial assessment, a number of dead fish were collected immediately downstream from the 48 Road culvert. Photos taken during the investigation and clean up are presented in Appendix I.

After a fish kill was confirmed, the Conservation Officer contacted an Enforcement Officer with Environment Canada and was advised to contact the Department of Fisheries and

Oceans office in Charlottetown. The DFO Conservation and Protection Branch in Charlottetown indicated that a Fisheries Officer would be dispatched to the site.
The Conservation Officer and Fisheries Biologist checked conditions in a tributary which originates in Head of Cardigan, crosses the Straghbohgie Road and joins the main branch of Cardigan River approximately 500 metres upstream from the MOWI Fish Hatchery. Unlike the main branch at the 48 Road, the streambed in the tributary was clear, and an abundance of live fish were observed.

The Fisheries Biologist and Conservation Officer walked upstream from the 48 Road crossing, collecting all dead fish observed and taking photographs (Appendix I). The slimy material in the streambed and the foul odour continued until immediately upstream from the confluence of the main branch and the channel exiting the MOWI Hatchery's settling pond. Water in the outlet channel coming from the two pipes was cloudy and this discoloration continued on the north side of the main channel until it was fully mixed with water from the main stream. Immediately upstream from the effluent pipes, the streambed was clean and had none of the slimy material or odour observed downstream. No dead fish were found upstream from the channel exiting the settling pond.

The collection of dead fish continued in the Cardigan River between the Alleys Mill Road and the 48 Road crossing. The Fisheries Biologist and a Wildlife Technician began near the head of tide downstream from the Alleys Mill Road crossing. Some dead smelts were seen in the main pool but the first dead trout was found on the upstream side of the road. Walking the stretch of river upstream from the Alleys Mill Road was made difficult by slow, deep water behind old beaver dams and muddy substrate. As a result, dozens of dead fish that were observed were unable to be retrieved. Conditions improved midway to the 48 Road but some dead fish, especially the smaller ones, were unable to be collected. A bucket containing 29 dead fish which had been collected by MOWI Hatchery staff earlier on June 7, 2024, was provided to the Fisheries Officer on site.

Two environmental emergency response team members from the PEI Department of Environment, Energy and Climate Action collected water samples and recorded water temperature and dissolved oxygen measurements at three locations upstream from the 48 Road (Figure 2). DFO staff collected water samples for submission to the Environment and Climate Change Canada laboratory.

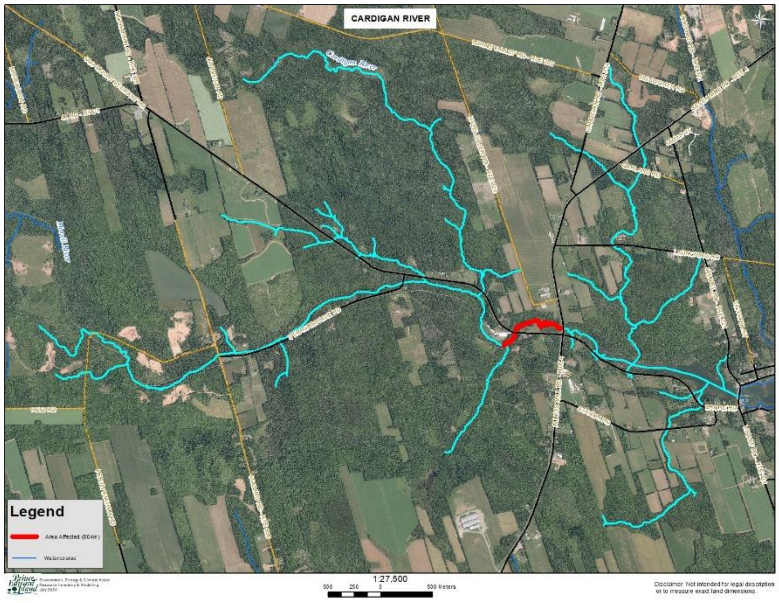


Figure 1. Cardigan River, Kings County, PEI. The length of stream affected (~800 m) is indicated in red.

ENVIRONMENTAL CONDITIONS

Weather Conditions

Weather conditions from June 1-7, 2024 were relatively cool, with maximum daily air temperatures recorded at Environment Canada's Charlottetown airport ranging from 9.9˚C to 20.7˚C, with an average of 15.2˚C. Rainfall during the first two days of June yielded approximately 10 mm but only trace amounts were recorded at the Charlottetown weather station from June 3-7, 2024. A UPEI Climate Research Laboratory weather station on the Queens Road in Montague recorded 1.5 mm of rainfall on June 4, 2024 but no other rainfall for the week of June 1-7, 2024.

Water Temperature and Dissolved Oxygen

The water temperature at all three sampling locations on July 7, 2024 was 11.6 ˚C, which is within the optimum range for salmonids. Dissolved oxygen concentrations varied, with the upstream site having the highest level at 23 mg/L, which is 210% saturated. The concentration at the effluent channel was 15.2 mg/L, with 13.8 mg/L recorded further downstream. Water samples collected at these locations were taken to the PEI Analytical Lab for further analyses.

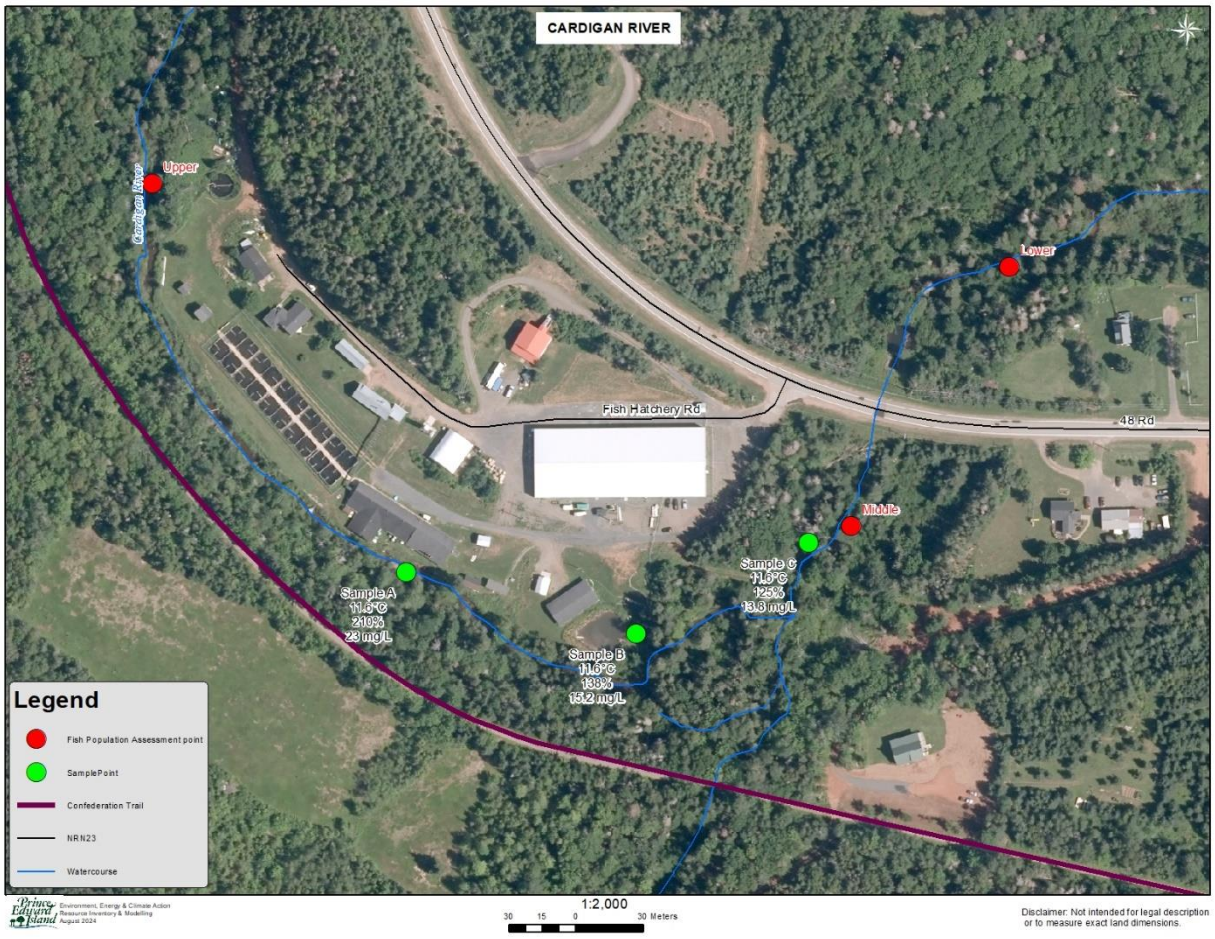


Figure 2. Map of Cardigan River indicating water quality sampling sites on June 7, 2024 and fish population surveys on July 19 and 23, 2024.

FISH CLEAN-UP

Clean-up of dead fish on the Cardigan River was completed on June 7, 2024. In total, 136 brook trout, 50 rainbow trout, 82 Atlantic salmon and 2 three-spined sticklebacks were collected over an 800 metre section of stream. Length measurements were obtained on all fish collected (Figures 3-5).

A sample of the dead fish was placed in a zip lock bag and kept frozen until submitted to the Canadian Wildlife Health Cooperative at the Atlantic Veterinary College on June 10, 2024.

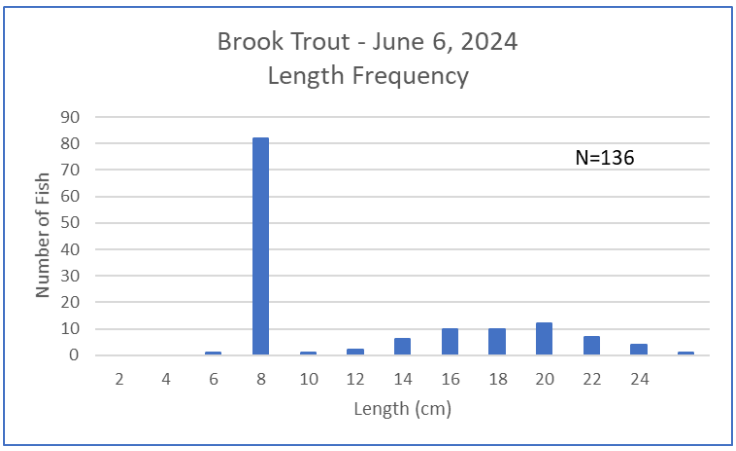


Figure 3. Length frequency of brook trout collected in Cardigan River. June 7, 2024.

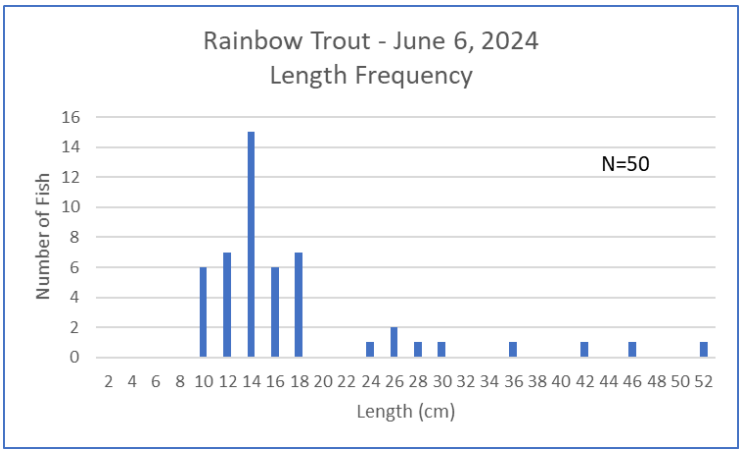


Figure 4. Length frequency of rainbow trout collected in Cardigan River. June 7, 2024.

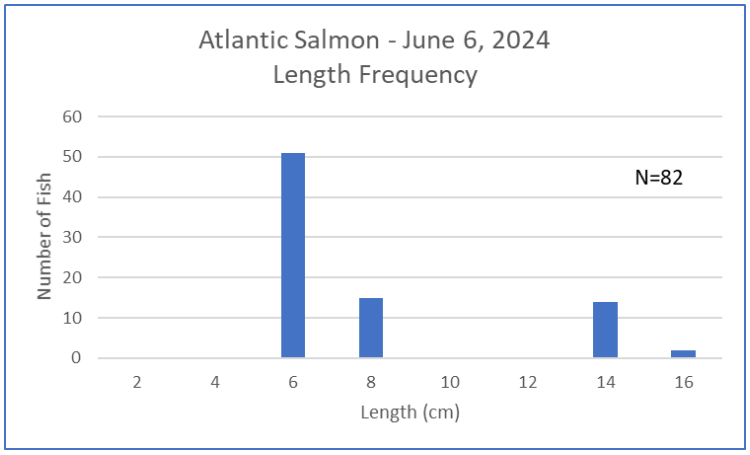


Figure 5. Length frequency of Atlantic salmon collected in Cardigan River. June 7, 2024.

RESULTS

WATER QUALITY ANALYSES

PEI Department of Environment, Energy and Climate Action

Total Suspended Solids (TSS) levels at the upstream sampling site (A) were well below CCME guideline of 25 mg/L but concentrations increased at sampling site B, below the effluent channel (29 mg/L) and at site C downstream (89 mg/L). The concentration of TSS at the downstream location (89 mg/L) exceeded the CCME Guidelines during the time of sampling. BOD (Biological Oxygen Demand) was highest in the effluent channel (74 mg/L) but the downstream sample location (17 mg/L) showed a concentration close to what was recorded upstream (12 mg/L).

Water chemistry analyses for the three sampling sites (Appendix II) indicate that Sampling site B had levels considerably higher than the upstream site A for many parameters including Ammonia-N, Barium, Chloride, Nitrate-N, Sodium, Total Nitrogen and Total Phosphorus. Concentration of these substances decreased at the lower sampling station C but remained higher than what was recorded at the upstream site C. None of the levels recorded in water chemistry analyses exceeded CCME Guidelines.

Fisheries and Oceans Canada

No abnormalities were found in water chemistry of samples submitted to Environment and Climate Change Canada.

FISH NECROPSY – Canadian Wildlife Health Cooperative at the Atlantic Veterinary College

Six fish were submitted for necropsy, with three considered too decomposed for examination. Two of the three fish had evidence of food in their gastrointestinal tracts and no underlying infectious diseases were identified. Ultimately, no cause of death could be determined so it was suggested that a water quality issue (eg. nutrient overload, heat stress, hypoxia or toxin) could be a factor. The diagnostic report from the Canadian Wildlife Health Cooperative is included in Appendix III.

FISH POPULATION ASSESSMENT

The Forests, Fish and Wildlife Division carried out fish population assessments at three locations. Two sites were surveyed on July 19, 2024 – one site upstream from hatchery inputs and another immediately upstream from the 48 Road. A third site downstream from the 48 Road was surveyed on July 23, 2024. Fish were captured using a Smith-Root LR-24 backpack electrofisher and a three-pass removal technique with barrier nets at upstream and downstream boundaries of the site. The density of fish per $100m^2$ was determined using the Zippon method.

The density of salmonids was 59.5 fish/$100m^2$ at the upper unaffected site, 11.1 fish/$100m^2$ at the middle site and 29.5 trout/$100m^2$ in the lower site. Brook trout was the most abundant species, with the majority of fish sampled being trout fry and fingerlings <10 cm (Figures 6-8). There were many rainbow trout fry at the upper site, with the smallest being 2.9 cm.

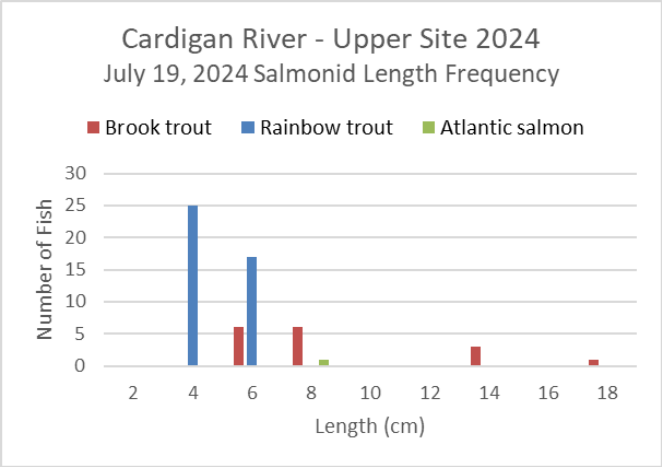


Figure 6. Salmonid length frequencies at the upper electrofishing site in Cardigan River. July 19, 2024.

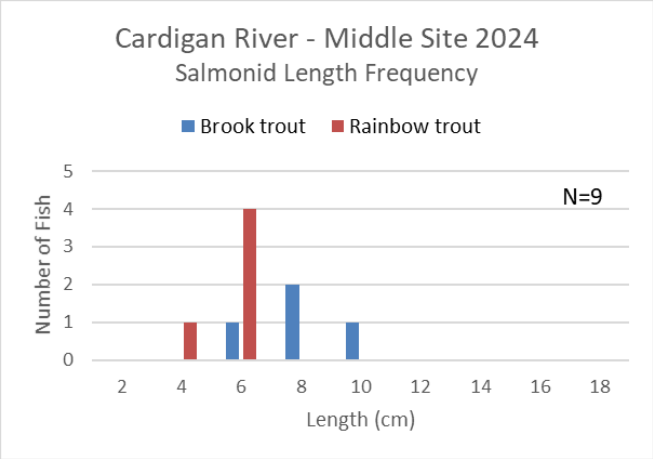


Figure 7. Salmonid length frequencies at the middle electrofishing site in Cardigan River. July 19, 2024.

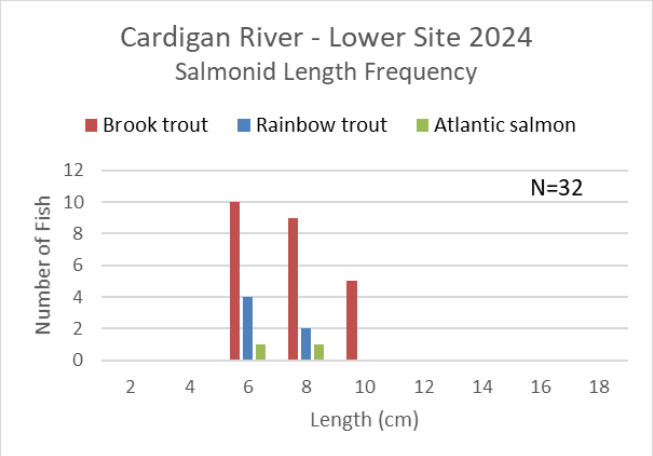


Figure 8. Salmonid length frequencies at the lower electrofishing site in Cardigan River. July 23, 2024.

FISH STOCKING

On July 23, 2024, staff from the Forests, Fish and Wildlife Division, Abegweit Biodiversity Enhancement Hatchery and the Southeast Environmental Association stocked 4000 brook trout fingerlings into Cardigan River (Appendix V). These fish, offspring from Brudenell River broodstock, were produced at the Abegweit Biodiversity Enhancement Hatchery in Scotchfort. Half of the fish were stocked downstream from the 48 Road and the remaining fish stocked between the 48 Road and the private stream crossing below the hatchery.

APPENDIX I

CARDIGAN RIVER FISHKILL

June 7, 2024

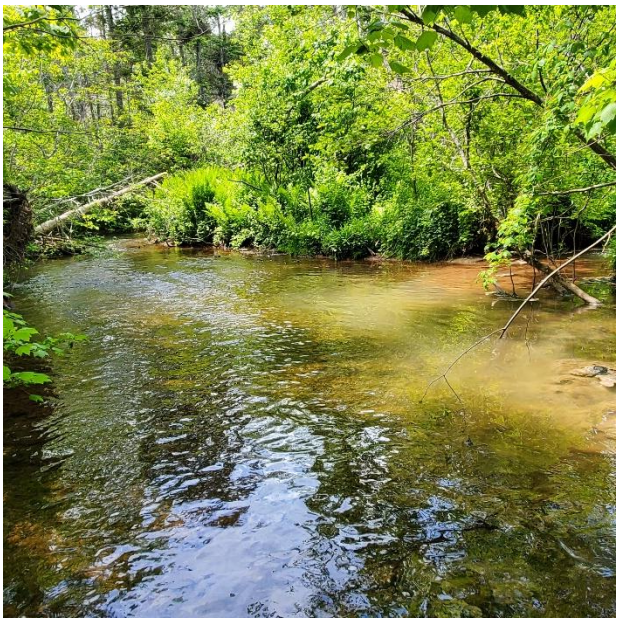
PHOTOS

Cardigan River downstream from 48 Road. June 7, 2024. Substrate was covered with a grey slimy material.

Slimy material attached to stream bed and wood. Cardigan River, June 7, 2024.

Dead trout in the pool below the 48 Road. Cardigan River, June 7, 2024.

Dead trout visible on the stream bed immediately upstream from the 48 Road culvert. June 7, 2024.



Discoloured water entering Cardigan River from hatchery effluent pond. June 7, 2024. Photo taken facing upstream.

Discoloured water entering Cardigan River from hatchery effluent pond. June 7, 2024. Photo taken facing downstream.

DIscoloured water exiting discharge pipes at the hatchery effluent pond. Cardigan River, June 7, 2024.

Water exiting the hatchery effluent pond into Cardigan River. June 7, 2024.

Cardigan River upstream from hatchery effluent pond. Some fish food was observed on the stream bed but no slimy material present. June 7, 2024.

Cardigan River adjacent to the fish hatchery. June 7, 2024.

Cardigan River adjacent to the fish hatchery. June 7, 2024.

Cardigan River upstream from the fish hatchery. June 7, 2024.

Large pool at Alley Mills Road, Cardigan River. June 7, 2024.

Slow, deep water upstream from the Alley Mills Road. Cardigan River. June 7, 2024.

Dead fish on the stream bottom downstream from the 48 Road, Cardigan River. June 7, 2024.

Wildlife technician collects dead fish downstream from the 48 Road, Cardigan River. June 7, 2024.

Large rainbow trout being collected on Cardigan River. June 7, 2024.

Large rainbow trout downstream from the 48 Road, Cardigan River. June 7, 2024.

Rainbow trout, Atlantic salmon and brook trout collected in Cardigan River. June 7, 2024.

A variety of fish species and sizes collected in Cardigan River. June 7, 2024.

APPENDIX II

PEI Analytical Laboratories
Water Quality Test Report
23 Innovation Way, Charlottetown, PE C1E 0B7

SCC Accredited LAB
Accrédité CCN

Client Name: Environment, Energy & Climate Action
Sampler: Jocelyn Robbins
Sample Location: Environment, Energy & Climate Action
Sample Point: A
Water Type: SurfaceWater
Surface Water - Fresh

Sample Number: SW240607019
Date Sampled: 07-Jun-2024
Received Date: 07-Jun-2024
Reported Date: 24-Jun-2024

Water Microbiology Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WML_07M*	BOD*	<10	mg/L	10.00	12-Jun-2024
WML_06M*	COD*	12	mg/L	10	11-Jun-2024
WML_04M*	TSS*	4	mg/L	1	14-Jun-2024

Water Chemistry Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WCL_04M*	pH for Water*	8.0			19-Jun-2024
WCL_01M*	Alkalinity*	84.0	mg of CaCO3/L	8.0000	12-Jun-2024
WCL_01M*	Chloride*	9.6	ppm	1.0000	12-Jun-2024
WCL_07M*	Barium, dissolved*	162	ppb	2.0000	20-Jun-2024
WCL_07M*	Calcium, dissolved*	21.08	ppm	0.2000	20-Jun-2024
WCL_07M*	Cadmium, dissolved*	<2	ppb	2.0000	20-Jun-2024
WCL_07M*	Chromium, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Potassium, dissolved*	1.21	ppm	0.1000	20-Jun-2024
WCL_07M*	Copper, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Iron, dissolved*	27	ppb	9.0000	20-Jun-2024
WCL_07M*	Magnesium, dissolved*	10.52	ppm	0.1000	20-Jun-2024
WCL_07M*	Manganese, dissolved*	12	ppb	3.0000	20-Jun-2024
WCL_07M*	Phosphorus, dissolved*	0.07	ppm	0.0200	20-Jun-2024
WCL_07M*	Sodium, dissolved*	5.02	ppm	0.2000	20-Jun-2024
WCL_07M*	Sulfate, calc from S diss*	6.75	ppm	0.2000	20-Jun-2024
WCL_07M*	Nickel, dissolved*	<7	ppb	7.0000	20-Jun-2024
WCL_07M*	Lead, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Zinc, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Hardness*	96.0	mg/L as CaCO3	0.0000	20-Jun-2024
WCL_02M*	Ammonia-N*	0.109	ppm	0.1000	12-Jun-2024
WCL_01M*	Nitrate-N + Nitrite-N*	1.1	ppm	0.2000	12-Jun-2024
WCM_05M*	Total Nitrogen*	1.3	ppm	0.5000	12-Jun-2024
WCL_08M*	Total Phosphorus*	75.5	ppb	10.0000	20-Jun-2024

Legend:
MPN = Most Probable Number
cfu/100 mls = colony forming units per 100 millilitres
* = method accredited by Standards Council of Canada to ISO/IEC 17025:2017
Ammonia is equivelent to (Ammonia + Ammonium)-N
[3]Dates of Analysis refers to the date of performance of lab activities.
mg/L = milligrams per litre
nd = not detected; na = not analysed
< = less than
[2]=Estimated

PEI Analytical Laboratories
Water Quality Test Report
23 Innovation Way, Charlottetown, PE C1E 0B7

SCC Accredited LAB
Accrédité CCN

Client Name: Environment, Energy & Climate Action
Sampler: Jocelyn Robbins
Sample Location: Environment, Energy & Climate Action
Sample Point: B
Water Type: SurfaceWater
Surface Water - Marine

Sample Number: SW240607018
Date Sampled: 07-Jun-2024
Received Date: 07-Jun-2024
Reported Date: 24-Jun-2024

Water Microbiology Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WML_07M*	BOD*	37	mg/L	10.00	12-Jun-2024
WML_06M*	COD*	74	mg/L	10	11-Jun-2024
WML_04M*	TSS*	29	mg/L	1	14-Jun-2024

Water Chemistry Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WCL_04M*	pH for Water*	7.3			19-Jun-2024
WCL_01M*	Alkalinity*	105	mg of CaCO3/L	8.0000	12-Jun-2024
WCL_01M*	Chloride*	24.4	ppm	1.0000	12-Jun-2024
WCL_07M*	Barium, dissolved*	445	ppb	2.0000	20-Jun-2024
WCL_07M*	Calcium, dissolved*	20.03	ppm	0.2000	20-Jun-2024
WCL_07M*	Cadmium, dissolved*	<2	ppb	2.0000	20-Jun-2024
WCL_07M*	Chromium, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Potassium, dissolved*	1.74	ppm	0.1000	20-Jun-2024
WCL_07M*	Copper, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Iron, dissolved*	14	ppb	9.0000	20-Jun-2024
WCL_07M*	Magnesium, dissolved*	10.61	ppm	0.1000	20-Jun-2024
WCL_07M*	Manganese, dissolved*	12	ppb	3.0000	20-Jun-2024
WCL_07M*	Phosphorus, dissolved*	0.80	ppm	0.0200	20-Jun-2024
WCL_07M*	Sodium, dissolved*	27.60	ppm	0.2000	20-Jun-2024
WCL_07M*	Sulfate, calc from S diss*	6.81	ppm	0.2000	20-Jun-2024
WCL_07M*	Nickel, dissolved*	<7	ppb	7.0000	20-Jun-2024
WCL_07M*	Lead, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Zinc, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Hardness*	93.7	mg/L as CaCO3	0.0000	20-Jun-2024
WCL_02M*	Ammonia-N*	1.801	ppm	0.1000	12-Jun-2024
WCL_01M*	Nitrate-N + Nitrite-N*	6.4	ppm	0.2000	12-Jun-2024
WCM_05M*	Total Nitrogen*	9.1	ppm	0.5000	12-Jun-2024
WCL_08M*	Total Phosphorus*	1020	ppb	10.0000	20-Jun-2024

Legend:
MPN = Most Probable Number
cfu/100 mls = colony forming units per 100 millilitres
* = method accredited by Standards Council of Canada to ISO/IEC 17025:2017
Ammonia is equivelent to (Ammonia + Ammonium)-N
[3]Dates of Analysis refers to the date of performance of lab activities.
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nd = not detected; na = not analysed
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PEI Analytical Laboratories
Water Quality Test Report
23 Innovation Way, Charlottetown, PE C1E 0B7

SCC Accredited LAB
Accrédité CCN

Client Name: Environment, Energy & Climate Action
Sampler: Jocelyn Robbins
Sample Location: Environment, Energy & Climate Action
Sample Point: C
Water Type: SurfaceWater
Surface Water - Fresh

Sample Number: SW240607017
Date Sampled: 07-Jun-2024
Received Date: 07-Jun-2024
Reported Date: 24-Jun-2024

Water Microbiology Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WML_07M*	BOD*	<10	mg/L	10.00	12-Jun-2024
WML_06M*	COD*	17	mg/L	10	11-Jun-2024
WML_04M*	TSS*	8	mg/L	1	14-Jun-2024

Water Chemistry Results

Method ID	Parameter	Results	Units	Detection Limits	Date of Analysis[3]
WCL_04M*	pH for Water*	7.8			19-Jun-2024
WCL_01M*	Alkalinity*	86.0	mg of CaCO3/L	8.0000	12-Jun-2024
WCL_01M*	Chloride*	11.6	ppm	1.0000	12-Jun-2024
WCL_07M*	Barium, dissolved*	198	ppb	2.0000	20-Jun-2024
WCL_07M*	Calcium, dissolved*	20.74	ppm	0.2000	20-Jun-2024
WCL_07M*	Cadmium, dissolved*	<2	ppb	2.0000	20-Jun-2024
WCL_07M*	Chromium, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Potassium, dissolved*	1.27	ppm	0.1000	20-Jun-2024
WCL_07M*	Copper, dissolved*	<5	ppb	5.0000	20-Jun-2024
WCL_07M*	Iron, dissolved*	25	ppb	9.0000	20-Jun-2024
WCL_07M*	Magnesium, dissolved*	10.42	ppm	0.1000	20-Jun-2024
WCL_07M*	Manganese, dissolved*	14	ppb	3.0000	20-Jun-2024
WCL_07M*	Phosphorus, dissolved*	0.16	ppm	0.0200	20-Jun-2024
WCL_07M*	Sodium, dissolved*	8.03	ppm	0.2000	20-Jun-2024
WCL_07M*	Sulfate, calc from S diss*	6.36	ppm	0.2000	20-Jun-2024
WCL_07M*	Nickel, dissolved*	<7	ppb	7.0000	20-Jun-2024
WCL_07M*	Lead, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Zinc, dissolved*	<6	ppb	6.0000	20-Jun-2024
WCL_07M*	Hardness*	94.7	mg/L as CaCO3	0.0000	20-Jun-2024
WCL_02M*	Ammonia-N*	0.319	ppm	0.1000	12-Jun-2024
WCL_01M*	Nitrate-N + Nitrite-N*	1.8	ppm	0.2000	12-Jun-2024
WCM_05M*	Total Nitrogen*	2.3	ppm	0.5000	12-Jun-2024
WCL_08M*	Total Phosphorus*	186	ppb	10.0000	20-Jun-2024

Legend:
MPN = Most Probable Number
cfu/100 mls = colony forming units per 100 millilitres
* = method accredited by Standards Council of Canada to ISO/IEC 17025:2017
Ammonia is equivelent to (Ammonia + Ammonium)-N
[3]Dates of Analysis refers to the date of performance of lab activities.
mg/L = milligrams per litre
nd = not detected; na = not analysed
< = less than
[2]=Estimated

APPENDIX III

CARDIGAN RIVER FISH KILL

NECROPSY RESULTS

Canadian Wildlife Health Cooperative at the Atlantic Veterinary College

WILDLIFE DIAGNOSTIC REPORT

CANADIAN WILDLIFE HEALTH COOPERATIVE

ATLANTIC REGION
Atlantic Veterinary College
550 University Avenue, Charlottetown, PE, C1A 4P3
Phone: 902.628.4314 Fax: 902.628.4314
Email: atlantic@cwhc-rcsf.ca

Date Report Generated: 2024-07-08

Necropsy number: X12314-24, X12315-24, X12316-24, -

Event Information

Event Code: CWHC.241712
Specimen: Rainbow Trout (*Oncorhynchus mykiss*) x 2
Brook Trout (*Salvelinus fontinalis*) x 1
Atlantic Salmon (*Salmo salar*) x 1
Salmoninae (Salmons, Trouts & Chars) (*Salmoninae*) x 2

Location: 96 Shore Rd
Cardigan
Prince Edward Island
Latitude: 46.24
Longitude: -62.63
Location description:

Finder/Submitter Information

Submitter:
Locke Jones
P.O. Box 1500, 41 Wood Islands Rd.
Montague, Prince Edward Island
Phone: (902) 394-6813
Email Address: lfjones@gov.pe.ca

PEI Department of Justice & Public Safety - Montague
41 Wood Islands Rd.
Montague, Prince Edward Island, C0A 1R0
Phone: (902) 838-0600

Information Provided For Event

Rainbow and Brook trout and some juvenile salmon (~150 fish) were found dead in the Cardigan River, PE on June 7, 2024. Trout were submitted as a legal case for further investigation by CO Locke Jones via Rosanne MacFarlane, Fresh water fish biologist for the province of PEI on June 10, 2024.

Diagnosis and Interpretation

Final Diagnosis -
Open diagnosis, no cause of death identified

Interpretation

Thank you for submitting this case to the CWHC for necropsy examination. The three best preserved fish were examined for necropsy, and the remainder were determined to be too decomposed for examination. There was evidence of recent feeding in the gastrointestinal tract of two of the three examined fish. There was no evidence of underlying infectious disease microscopically, but the significant decomposition of tissues could have masked lesions. All tissues have been saved in a lockbox at -20°C. The cause of death was not determined through necropsy, and so is presumed to be related to a water quality issue (ex: nutrient overload, heat stress, hypoxia, or toxin exposure). Please don't hesitate to contact me if you have questions concerning this report.

Laboratory Results

Necropsy

All six fish were superficially examined. There was moderated to marked decomposition of these carcasses. Fish 1, 2, and 3 received complete necropsies. Fish 4, 5, and 6 were not necropsied due to advanced post mortem decomposition. All extraneous tissues were saved and sealed in a lock box at -20°C.

Fish#1 (rainbow trout): The stomach contains abundant green tinged mucus with scattered invertebrate fragments. The colon is distended with mucus and friable tan contents and there is generalized dark red mottling of the serosal surface. Tissues frozen in vials at -80°C include: Heart, pyloric ceca, gill, brain, kidney, liver, spleen

Fish#2 (rainbow trout): The stomach contains a mass of small white segmented larvae. Tissues frozen in vials at -80°C include: Heart, pyloric ceca, gill, kidney, liver, spleen.

APPENDIX IV

CARDIGAN RIVER FISHKILL

FISH POPULATION ASSESSMENT

July 19 and 23, 2024

PHOTO

Electrofishing survey on Cardigan River. July 19, 2024. ***Photo: Southeast Environmental Association.***

APPENDIX V

CARDIGAN RIVER FISHKILL

FISH STOCKING

July 23, 2024

PHOTO

Crew members of Southeast Environmental Association helping to stock brook trout fingerlings into Cardigan River. July 23, 2024.