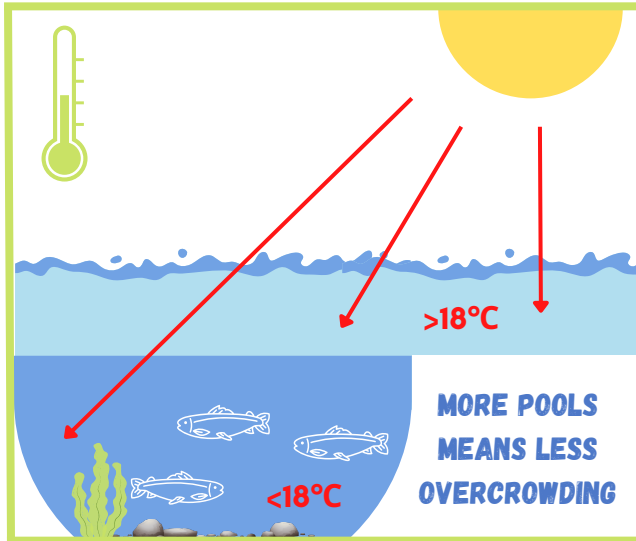


The Wheatley River system may not be able to support native trout in a changing climate without habitat enhancement and restoration.

This allows for an increase in the ecosystem's biodiversity & that will help buffer the impacts of climate change through increased resistance and recovery.

Cold Water Refuge Pool



By creating these pools, we are lowering the water temperature which will help reduce competition with rainbow trout, as this non-native species have a higher thermal tolerance.

Not only will cold water refuge pools provide refuge for brook trout during low flows & high temperatures, but these pools will also reduce overcrowding & its related effects.

Removing barriers to allow movement between habitats & making small improvements to connectivity can produce large improvements in resilience to climate change.



SPECIAL THANKS TO THE PEI CLIMATE CHALLENGE FUND

Cold Water Refuge Pools



With the support of the *PEI Climate Challenge Fund*, The Wheatley River Improvement Group has successfully created 3 Cold Water Refuge Pools at Rackham's Pond through the process of in-stream sediment removal. The cold water refuge pools will increase the climate change resilience for brook trout in the Wheatley River watershed.

Brook trout and other aquatic species move throughout streams and rivers to complete their life cycle. They need connections within waterways during various life stages to reproduce, feed, and contribute to their ecosystems by recycling the nutrients they intake. They move within a river system to find food or refuge from warmer water. During low flows and high temperatures, brook trout depend on pools for survival.



Brook trout seek out groundwater seeps & springs to spawn in. Areas with low flow, high amounts of sediment, & increased temperatures can pose serious obstacles to fish and can create barriers that can not be navigated.

Expected climate change impacts

- an increase in the frequency of extreme precipitation events
- a decrease in summer surface water volume in rivers
- an increase in water temperature & habitat fragmentation

BROOK TROUT PREFER SUMMER WATER TEMPERATURES FROM 13-18°C

How these issues will impact brook trout

- reductions in spawning habitat, hatching success, & prey availability through legacy sediment resuspension & bank erosion
- increased habitat fragmentation & decreased amount of pools
- additional thermal stress & increased competition with other fish species

As summer water levels recede, brook trout are forced to overcrowd pools, causing decreased body condition & density. Increased summer water temperatures will contribute to brook trout mortality, as they are subject to an increased metabolic rate, toxicity and bioaccumulation of pollutants, & decreased growth rate.

Water temperature is one of the most critical factors in determining habitat suitability for cold-water fishes like brook trout.

Shallow, standing water in impoundments such as Rackham's Pond can often exceed this optimal temperature range, increasing stress levels.

THE PROJECT WILL REDUCE NON-CLIMATIC STRESSORS IN THE WHEATLEY RIVER WATERSHED, INCREASE SURFACE WATER VOLUME IN RIVERS, DECREASE WATER TEMPERATURE IN THE BASIN, RESTORE THE SYSTEM'S NATURAL EQUILIBRIUM AND ASSOCIATED CHANNEL MORPHOLOGY, AND INCREASE THE ECOSYSTEM'S BIODIVERSITY TO BUFFER THE IMPACTS OF CLIMATE CHANGE.



HOW WE DID IT!



The restoration of cold water refuge pools is achieved via legacy sediment removal. It is a major sediment removal project focused around Rackham's Pond.

A large excavator dug into the pond and exposed soils on the bank. The excavation re-established the cooler, deep pools for fish to take refuge in as they travel upstream through the Wheatley River. During the work, we used a weighted, floating silt boom, which contained the turbid water & allowed the disturbed silt to settle out instead of washing downstream. We finished by mulching and revegetating the banks around the pond to prevent any further erosion.