

# Headwaters of the South Nation River

## YOUR WATER – GET INVOLVED!



### How You Can Protect The Headwaters

#### During rainstorms and snow melts:

- Water drains off the land into rivers. What we do on land affects the health of a river.
- Be responsible when using pesticides, fertilizers and road salts, especially next to waterways. Use environmentally-friendly products when possible.
- Plant trees and shrubs to filter pollutants, reduce erosion and stabilize shorelines.
- Clean up after your pets.

#### In your daily life:

- Maintain and regularly pump septic systems.
- Upgrade and protect drinking water wells; decommission unused wells.
- Reduce water demands – especially in dry periods. Take short showers, use a bucket to wash your car, use a rain barrel and fix leaky taps.
- Use eco-friendly products in and around your home.

#### Programs of Interest:



##### Healthy Home Guidebook

A one-stop resource for answers to environmental questions in and around your home. Created by SNC in partnership with the Dundas Environmental Awareness Group.



##### Riverwatch

Help SNC monitor the health of a local river. SNC will supply volunteers with a free water chemistry kit. Learn more about water in your area.



##### Volunteer Rain Gauge

For teachers looking for a class project, students seeking community hours, or anyone interested in weather data.

### Calling all landowners:

#### Be a Friend of the Headwaters!

Work with your neighbours to plan tree planting and watercourse clean-up events. SNC can help with grant applications, information and other resources. Let's protect and enhance the headwaters together!

For more information, please contact: Katherine Watson or Lindsay Clement, Water Resources Specialist:

[kwatson@nation.on.ca](mailto:kwatson@nation.on.ca) or [lclement@nation.on.ca](mailto:lclement@nation.on.ca)

### Clean Water Programs

- Cost-share funding for property owners completing water quality improvement projects.
- Grants ranging from 50% to 100% (\$500 to \$10,000) of eligible program costs; Examples:
  - Manure storage.
  - Decommissioning abandoned wells (EOWRC funding).
  - Livestock access restriction to waterways.
  - Runoff control / Stream bank erosion control.

For more information, contact: **Valerie Sylvia**  
[vsylvia@nation.on.ca](mailto:vsylvia@nation.on.ca) or 1-877-984-2948 x238

### Tree Planting Grants

Subsidies may be available for tree planting:

- Buffer strips and wind breaks.
- Block planting.

For more information, contact: **Ed Kupczyk**  
[ekupczyk@nation.on.ca](mailto:ekupczyk@nation.on.ca) or 1-877-984-2948 x249

### SNC Rare Turtle Study

- Blanding's and Snapping turtles were discovered in the headwaters.
- Two types of turtle habitat enhancement projects were completed on Chippenhook Creek: basking platforms and an artificial nesting platform.

For more information, contact: **Michelle Scheerder**  
[mscheerder@nation.on.ca](mailto:mscheerder@nation.on.ca) or 1-877-984-2948 x310

### Watershed Monitoring

#### Flood Forecasting and Warning

The purpose is to provide as much advance warning as possible of an impending flood to ensure lives will be saved and property damages reduced.

#### Low Water Response

SNC is playing a lead role developing the tools to better understand the severity of low water levels.

For more information, contact: **Jason Symington**  
[jsymington@nation.on.ca](mailto:jsymington@nation.on.ca) or 1-877-984-2948 x230

For watershed conditions, visit [www.nation.on.ca](http://www.nation.on.ca) and click on the Watershed Conditions icon.



# South Nation Conservation

## State of the Nation

### Headwaters of the South Nation River



South Nation Conservation is dedicated to monitoring water resources and working with our municipal partners to have a safe and sufficient supply of water for landowners across the watershed.

This report presents the findings of river assessments completed in the headwaters of the South Nation River during the summer and fall of 2009. Over 20 stations were monitored for river health (water quality, fish community) using the Ontario Stream Assessment Protocol.

These headwaters will be revisited every 5 years to track long-term changes in watershed health.

### Key Messages

- Over 28 different fish species were found throughout the headwaters of the South Nation River.
- Water quality is good.



Every river begins somewhere. That somewhere is in the headwaters – a network of small tributaries (streams) that blanket the landscape.

Headwaters are essential for the healthy functioning of the entire system. If we care for and nurture the headwaters, we strengthen the character and value of the water that flows downstream.

The headwaters of the South Nation River arise out of a series of wetlands, and drain an area of 795 km<sup>2</sup> in the south-west portion of the watershed.

The St. Lawrence River is located outside of South Nation Conservation's watershed, but is found within the SNC jurisdiction. Further data collection will be required to build a sound database.

### Land Use

- 51% ... Agriculture
- 33% ... Forest
- 11% ... Wetland
- 1% ... Urban
- 2% ... Transportation
- 2% ... Other

From the Management Plan

Our Local Environment. We're in it Together.







# Headwaters of the South Nation River

## SURFACE WATER MONITORING

### Headwaters of the South Nation is Home to Interesting Bugs!

- "Bugs" are the insects, worms, mollusks and crustaceans that live on the river bottom.
- Their presence and community structure indicates river health and the types of stresses or pollution that may be present in the water.
- Stations with good stream health have abundant shoreline forest cover which provides habitat and filters water (run-off) as it flows over the land into the river.

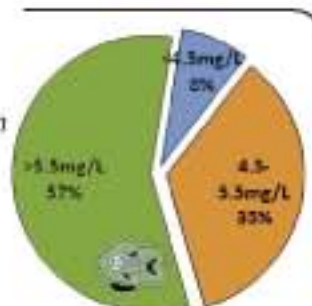


Bug monitoring stations are color-coded on the map below according to river health

Headwaters of the South Nation River Results	Number of Sites
Good watercourse health Major watercourse	5
Fair watercourse health Slow flowing water	7
Poor watercourse health Low water and wetlands	6

### Dissolved Oxygen

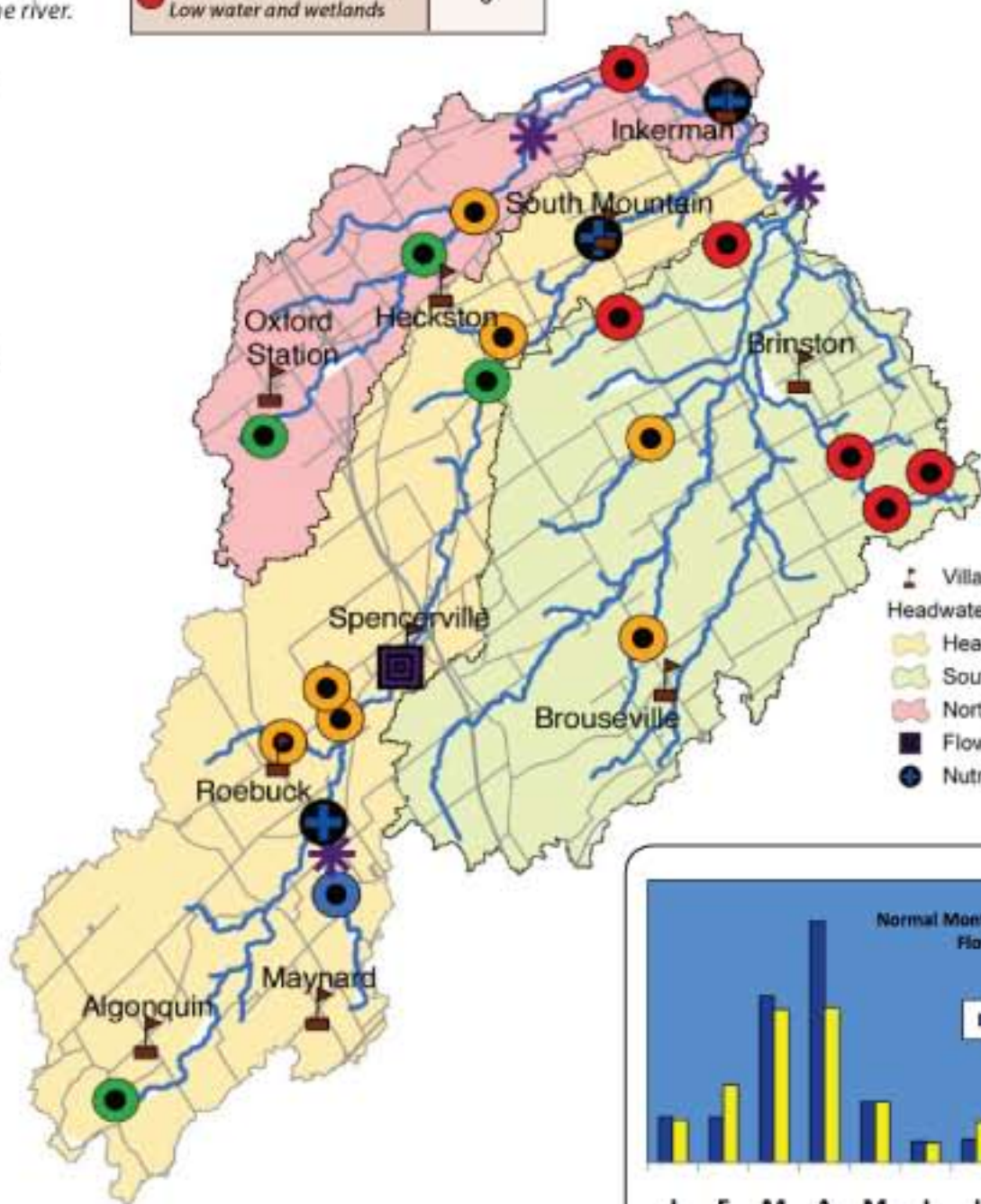
- All living things need oxygen to survive.
- If fish have enough oxygen (>5.5mg/L), then other living things have enough oxygen as well.
- Oxygen levels are lowest in the summer, when stream temperatures are high.



### Phosphorus & Nitrogen

- Some phosphorus and nitrogen are essential for the growth of aquatic plants. Too much can stimulate the growth of algae, which will lower oxygen levels. This affects river health, and may cause fish to die.
- River nutrient samples collected in the headwaters of the South Nation River are compared to Provincial Guidelines.
- **Nitrate** levels are well below the guideline limit of 13 mg/L.
- **Phosphorus** levels are above the guideline limit of 0.03mg/L. Results: Inkerman had the highest results, with 78% >0.03mg/L, Roebuck was approximately 53% >0.03mg/L, South Mountain had the lowest levels of phosphorus with only 43% >0.03mg/L.
- Nutrients are higher during wet weather, when water picks up soil and nutrients as it flows over land into the river.
- Buffer Strips: Trees and shrubs next to streams will reduce nutrients in waterways by filtering water and reducing erosion
- SNC is working to reduce phosphorus through the Total Phosphorus Management Program and Clean Water Program.

Thanks to our Project Partners: North Dundas, South Dundas, Edwardsburgh/Cardinal, Augusta, North Grenville and Elizabethtown- Kitley townships, as well as over 40 landowners.



# Headwaters of the South Nation River

## FISHERIES MONITORING



### Fish are Linked To Water Quality and Stream Health

- A total of 3,124 fish representing 28 different species were captured and released in the headwaters of the South Nation.
- Fish monitoring helps target areas that may have poor water quality, and helps in developing restoration plans.
- Future fish sampling will show how the stream is changing over time.

#### Fish of Interest

- Fallfish
- Iowa Darter



#### Other species of interest:

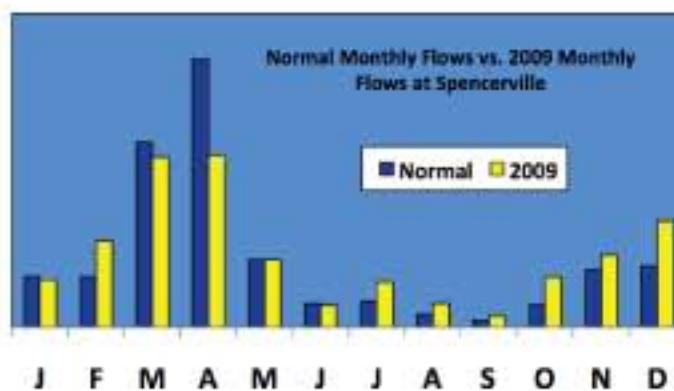
- Northern Two-Lined salamander



### Fish Species for the Headwaters of the South Nation

- Bait
- Game
- Coarse
- Invasive

Common White Sucker
Rock Bass
Brown Bullhead
Yellow Perch
Black Crappie
Smallmouth Bass
Pumpkinseed
Largemouth Bass
Brook Stickleback
Johnny Darter
Fathead Minnow
Brassy Minnow
Northern Redbelly Dace
Central Mudminnow
Common Shiner
Creek Chub
Logperch
Iowa Darter
Tessellated Darter
Banded Killifish
Blackchin Shiner
Hornyhead Chub
Blacknose Shiner
Pearl Dace
Bluntnose Minnow
Tadpole Madtom
Fallfish
Round Goby



### Water Quantity Determines Stream Health

- Overall flows at the headwaters were higher than normal due to above average precipitation in 2009.
- The headwaters are prone to low water events and usually experience them before the rest of the watershed.
- SNC's Water Response Team uses information from rain and stream gauges to evaluate the severity of such events and provides guidance accordingly.





SOUTH NATION  
CONSERVATION

# Headwaters of the South Nation River

## WETLANDS



Wetlands are areas where either the constant or seasonal presence of water affects soil chemistry and plant species. Wetlands are more diverse than any other landform. They include marshes, bogs, swamps, and fens. Maintaining a diverse array of wetlands is extremely important to a healthy watershed.

Environment Canada recommends a minimum of 7% wetland cover in a watershed. The headwaters have 11% wetland cover.

### Wetlands Can:

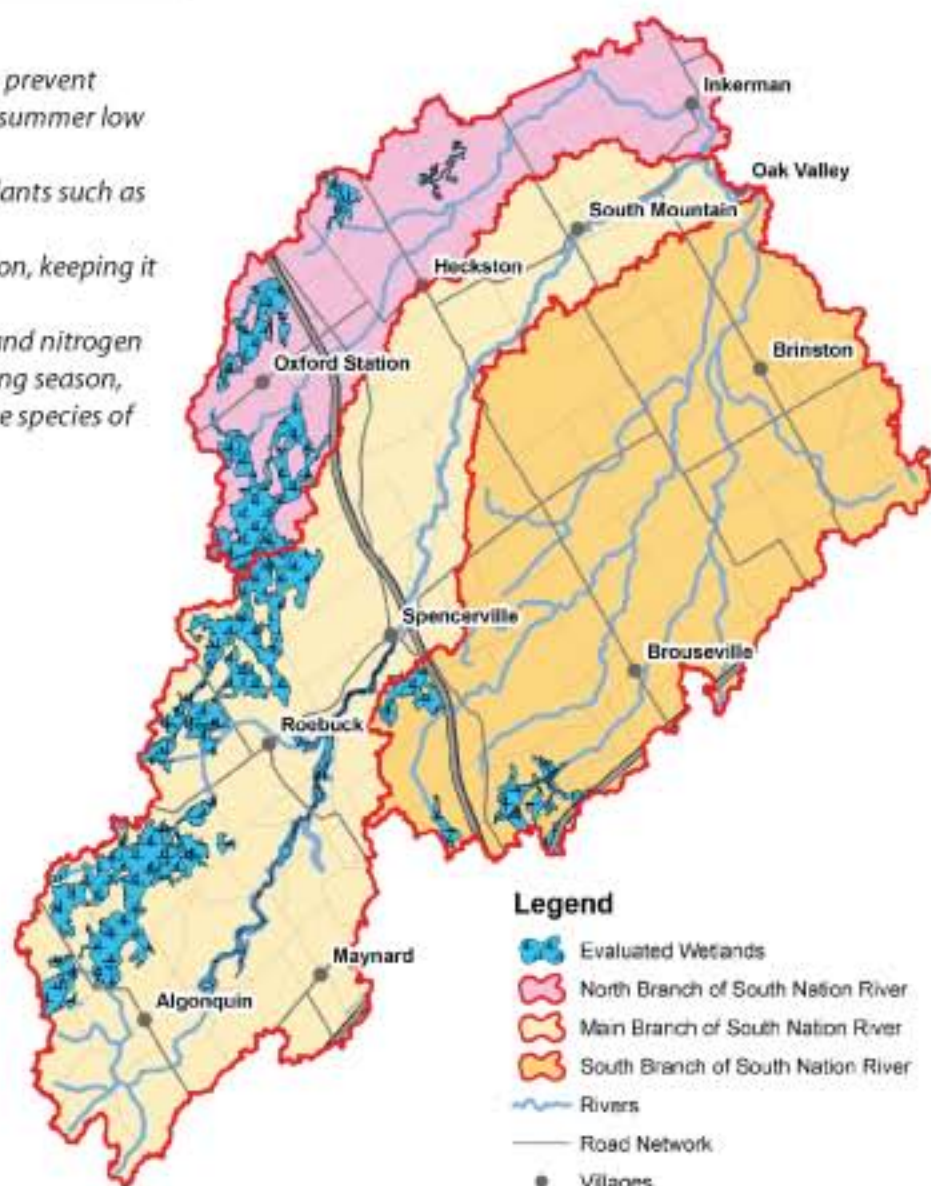
- Hold large amounts of water to help prevent flooding downstream, and stabilize summer low water flow.
- Provide many food and medicinal plants such as Labrador tea and cranberries.
- Work to store huge amounts of carbon, keeping it from the atmosphere.
- Hold nutrients such as phosphorus and nitrogen in roots and leaves during the growing season, preventing damage to more sensitive species of fish or plants.

### Species Highlight:

- Pink Lady Slipper
- Green Heron



Photo by: Sage Ross



#### Legend

- Evaluated Wetlands
- North Branch of South Nation River
- Main Branch of South Nation River
- South Branch of South Nation River
- Rivers
- Road Network
- Villages



SOUTH NATION  
CONSERVATION

# Headwaters of the South Nation River

## FORESTS

Forests are an essential part of a healthy headwater system. They provide numerous benefits such as economic income, erosion control, nutrient filtering, water flow stabilization, food and habitat, as well as having aesthetic and recreational importance.

### Forest Cover

Forest Cover is the total area in a watershed covered by trees. This includes public forests, treed wetlands, private woodlots, windbreaks and hedgerows. A watershed requires a minimum of 30% forest to maintain a functioning ecosystem, which is linked to our own health and prosperity. The headwaters region of the South Nation River has approximately 33% forest cover.

### Species Highlights



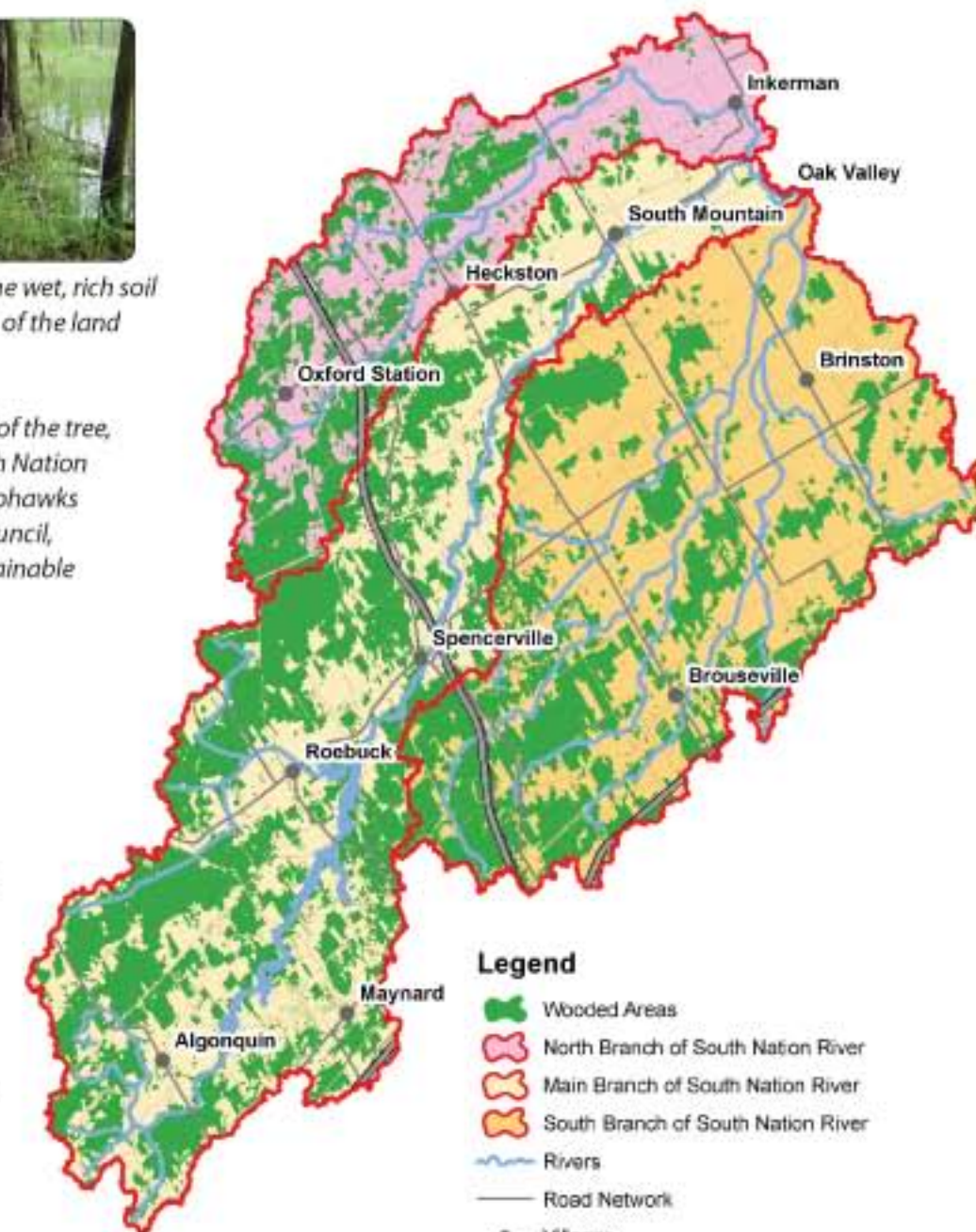
(c) 2008 Jason J. Husveth

**Black Ash (*Fraxinus nigra*)** likes the wet, rich soil in the large swamps that make up much of the land cover in the headwaters.

Black ash baskets, made from the wood of the tree, are a multi-million dollar industry. South Nation Conservation, in partnership with the Mohawks of Akwesasne and the St. Regis Tribal Council, are implementing strategies for the sustainable management of Black Ash.



**Butternut (*Juglens cinerea*)** was once abundant and provided delicious nuts. It is currently under significant threat due to the Butternut Canker. Butternut has been added to a list of species that are protected under Ontario's Species at Risk Act. Oak Valley Pioneer Park, in the South Nation watershed, is home to the Eastern Ontario Butternut Archive.



#### Legend

- Wooded Areas
- North Branch of South Nation River
- Main Branch of South Nation River
- South Branch of South Nation River
- Rivers
- Road Network
- Villages