

Aquatic Species at Risk in the Sydenham River

Mussels

northern riffleshell - **Endangered**
 wavy-rayed lampmussel - **Endangered**
 rayed bean - **Endangered**
 snuffbox - **Endangered**
 mudpuppy mussel - **Endangered**
 kidneyshell - **Endangered**
 round hickorynut - **Endangered**

Fish

northern madtom - **Endangered**
 eastern sand darter - **Threatened**
 spotted gar - **Threatened**
 blackstripe topminnow - **Special Concern**
 pugnose minnow - **Special Concern**
 bigmouth buffalo - **Special Concern**
 spotted sucker - **Special Concern**
 greenside darter - **Special Concern**

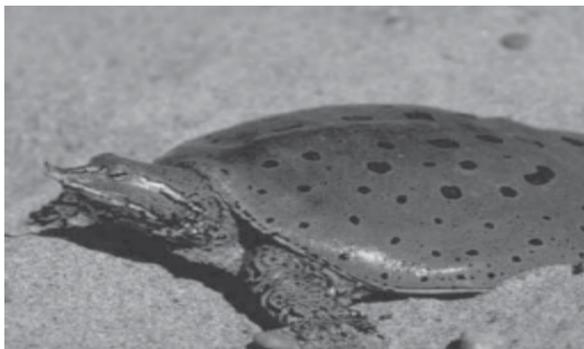
Reptiles

Eastern Spiny Softshell Turtle - **Threatened**

Endangered: A species facing imminent extirpation or extinction.

Threatened: A species that is likely to become endangered if limiting factors are not reversed

Special Concern: A species is of special concern because of characteristics that make it particularly sensitive to human activities or natural events.



eastern spiny softshell turtle

Best Management Practices helping species at risk series

- Restricted Livestock Access
- Manure Application
- Manure Storage
- Well Repair and Decommissioning
- Tree Planting
- Fuel & Pesticide Storage
- Wetlands
- Bioengineering for Streambank Stabilization
- Septic Systems
- Clean Water Diversion
- Milkhouse Waste Water
- Conservation Tillage
- Exotic Species
- Riparian Buffers

Partners in Conservation

Environment Canada
 Department of Fisheries and Oceans
 Government of Canada's Species at Risk Program
 Middlesex Stewardship Committee
 Natural Heritage Information Centre
 Ontario Great Lakes Renewal Foundation
 Ontario Ministry of Natural Resources
 Royal Ontario Museum
 Rural Lambton Stewardship Network
 St. Clair Region Conservation Authority
 Stewardship Kent
 University of Guelph
 World Wildlife Fund

Best Management Practices

helping aquatic species at risk Conservation Tillage

The Sydenham River in southwestern Ontario is the only major watershed which lies completely within the Carolinian Life Zone and is relatively undisturbed by industrial development. This has made the river a biological treasure. The Sydenham River supports an incredible variety of aquatic life, or what we call biodiversity. At least 82 species of fish and 34 species of freshwater mussels have been found here, making it one of the most species rich watersheds in all of Canada. Several species in the Sydenham River are found nowhere else in Canada, and some remain at only a few locations globally. Many of these species at risk have been nationally listed as endangered, threatened, or of special concern by the Committee on the Status of Endangered Wildlife in Canada. You can help too. By adopting Best Management Practices (BMPs), you can help protect the Sydenham River and its tributaries. This series of fact sheets will assist you in deciding which BMPs are right for your property.

The loss of soil occurs through many agricultural practices. On many occasions, soil particles lost from fields are deposited in the river, degrading water quality and impacting crop production. One way to reduce this problem is to introduce a system of no-till or reduced tillage.

Normal tillage leaves the soil surface bare, prone to sheet erosion from raindrop impact. Water flowing over bare surfaces cause rilling and gully formation. The loss of topsoil reduces present and future crop yields. As the soil leaves the field, it takes nutrients and pesticides with it into the watercourses. The soil, nutrients and pesticides are all contaminants to the river system.

In the late 1970s, OMAF studies indicated an average annual loss of 9 tonnes per acre from the flat lands of Lambton County. Other studies showed that between 70% to 100% of sediment in southern Ontario streams was coming from crop fields.

Grassed waterways, bufferstrips and sediment basins deal with erosion and sedimentation after the problem is started. Conservation tillage prevents the problem in the first place. On some fields, or sections of fields, contour tillage, terracing, catchbasins, grassed waterways and other expensive control measures may be required in addition to conservation tillage.

- Technical advice and grants may be available to assist in implementing Best Management Practices on your property.
- If your project involves work in or near a watercourse, you may require permits including a Fill, Construction or Alteration to watercourse permit from the Conservation Authority.
- Call before you begin your project.



Beans emerging from corn stubble from a field which is utilizing reduced tillage.



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“Working Towards Healthy Watersheds”

Benefits of Conservation Tillage

There are many benefits to the methods associated with the use of no-till or reduced tillage. Using these methods can save money by reducing labour, fuel requirements, investment in equipment, and by increasing long-term productivity of the field.

If residue is managed properly, you will benefit by: less soil erosion; a seedbed improved by added organic matter from residues; and increased soil moisture. The residue will also act as insulation to the soil by slowing the rate of warming during the day, and the rate of cooling at night. All of these qualities increase the potential for the crop that is planted. These factors, however, could result in some delay for spring planting.

By decreasing the sediment load going into the stream, reduced tillage will improve the aquatic habitat conditions. This will significantly aid the aquatic species in the river. The Sydenham River is home to at least 34 species of mussels (7 of which are listed as endangered) and 82 species of fish (8 of which are listed as threatened or of special concern).



Conservation tillage equipment planting into corn stubble.

Equipment Used

In a no-till situation, the equipment used has a slightly different purpose than equipment in a regular till situation. Planting equipment in a no-till situation must manage the residue from the previous planting in order to allow for the most benefits. The equipment should cut and move excess residue, loosen the seedbed for good seed-to-soil contact, place the seed in moist soil, and then close the planting furrow and adequately press the soil around the seed.

Coulters

A coultter will cut residue, move residue, and till a narrow strip of soil in which the seed and fertilizer would be placed.

Row Cleaners

Row cleaners are usually mounted on or ahead of the planter unit and are used to move residue from the row in no-till, and to move soil and residue from the ridge in ridge tillage.

Press Wheels

Press wheels are used to firm the soil over and around the seed. They are used and must work within the tilled strip in which the seed and fertilizer is placed.

Methods of Cropping Used to Reduce Erosion

Soil erosion due to tillage has devastating results on hill slopes and knolls. Large amounts of soil are moved down slope due to improper tillage practices and the result is yield losses due to stunted growth or poor development of the crop. Soil erosion on slopes can be reduced by adopting a reduced till practice and/or by several cropping techniques that will minimize the amount of erosion.

Contouring

By farming across the slope instead of up-and-down the slope, erosion rates will be significantly decreased, and yields will be maintained or increased.



Crop rotation and contouring combined in equal-width strips of corn or soybeans planted on the contour and alternated with strips of oats, grass or legumes.

Strip Crop Farming

In this method, you alternate row crop with a cereal crop or forage. There are four

different types of strip cropping:

Contour Strip Cropping

By using the same method as mentioned above in contouring, plant alternate strips of crops across the slope.

Field Strip Cropping

In this method, strips are planted across the slope in uniform widths.

These methods can reduce erosion up to 75%. The following table provides a guide to the size of strips that should be planted for these 2 field strip cropping methods:

Contour Buffer Strip Cropping

Even width strips of crops are separated by permanent strips of native grass.

Wind Strip Cropping

On light sandy land, by planting alternate strips of even width crops laid cross-wise to prevailing winds, wind erosion can be reduced.

Maximum Strip Widths and Slope Length for Contour and Field Strip Cropping		
Land Slope (%)	Strip Width (m)	Maximum Slope Length (m)
1-2	40	240
3-5	30	180
6-8	30	120
9-12	25	75