

# Cow and Perch Creeks

## **SUBWATERSHED**

Report Card 2018



The St. Clair Region Conservation Authority has prepared this series of 14 subwatershed report cards as a summary of the state of the forests, wetlands, and water resources in the St. Clair Region.





# COW AND PERCH CREEKS SURFACE WATER QUALITY

# D GRADE

## Surface Water Quality

Using a provincial grading system, the three surface water quality indicators producing an overall grade of D for the Cow and Perch Creeks subwatershed. Total phosphorus (TP) levels are slightly above the average for the St. Clair Region at over five times the provincial guideline. Maintaining TP levels below the Interim Provincial Water Quality Objective is intended to control excessive plant growth in rivers and streams and to protect aquatic life. *Escherichia coli* (*E. coli*) levels are the highest in the St. Clair Region at four times the provincial guideline for safe recreational use of water, indicating ongoing fecal contamination. The stream health grade measured by sampling benthic invertebrate communities is worse than the average for the St. Clair Region and suggests that substantial organic pollution is likely and water quality is fairly poor.

## Local Actions to Improve Water Quality

- Plant and maintain vegetated streamside buffers on one side of municipal drains and along both sides of other watercourses to stabilize the banks, shade the water, and capture nutrients;
- Support ongoing improvements to municipal infrastructure (e.g., sewers, wastewater treatment plants);
- Limit use of equipment on sensitive areas like shorelines and stream banks;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations;
- Organize and participate in beach cleanups.

| INDICATOR                            | COW AND PERCH CREEKS |           |           | ST. CLAIR REGION AVERAGE | PROVINCIAL GUIDELINE           | INDICATOR DESCRIPTION                                                                                                                                                                                                                                                                      |
|--------------------------------------|----------------------|-----------|-----------|--------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | 2001-2005            | 2006-2010 | 2011-2015 | 2011-2015                |                                |                                                                                                                                                                                                                                                                                            |
| Total Phosphorus (mg/L)              | 0.15<br>D            | 0.16<br>D | 0.16<br>D | 0.15<br>D                | 0.03<br>B                      | Phosphorus is found in products such as detergents, fertilizers, and pesticides. Phosphorus contributes to excess algae growth and low oxygen levels in streams and lakes.                                                                                                                 |
| Bacteria (CFU <i>E. coli</i> /100ml) | No data              | No data   | 409<br>D  | 211<br>C                 | 100<br>B<br>(recreational use) | <i>Escherichia coli</i> ( <i>E. coli</i> ) bacteria is found in human and animal (e.g., livestock, wildlife) waste. Its presence in water indicates fecal contamination and is a strong indicator that other disease-causing pathogens are present in the watercourse.                     |
| Benthic Score (FBI)                  | 5.77<br>D            | 6.00<br>D | 5.96<br>D | 5.73<br>C                | <5.00<br>B<br>(unofficial)     | Benthic invertebrates are small animals without backbones that live in stream sediments. The pollution tolerances of taxa present in benthic samples are used to calculate the Family Biotic Index (FBI). The FBI ranges from 0 (excellent water quality) to 10 (very poor water quality). |
| <b>Overall Grade</b>                 | <b>D</b>             | <b>D</b>  | <b>D</b>  | <b>D</b>                 |                                |                                                                                                                                                                                                                                                                                            |



# COW AND PERCH CREEKS FOREST CONDITIONS

# F GRADE

## Forest Conditions

For the Cow and Perch Creeks subwatershed, the three forest conditions indicators score a D and two F grades, producing an overall grade of F. The percent forest cover (8.0%) is below the average for the St. Clair Region and is one-quarter of the recommended cover needed to support natural species diversity and water quality. The percent forest interior (1.0%) is the second lowest in the St. Clair Region and is considered very poor as it is one-tenth of the recommended value. This indicates that most woodlots are too narrow to support area-sensitive species, such as Scarlet Tanager and Ovenbird. The Environment Canada guideline for southern Ontario is 10% forest interior. The percentage of the riparian zone that is forested (12.3%) is the second lowest in the St. Clair Region, and is one-quarter of the 50% target.

Any changes in forest cover, either from forest loss or reforestation efforts, is visible using aerial photography. Although there have been a significant number of recent tree planting projects in this subwatershed, forests grow slowly, and young trees are not considered to be forests until they are at least 3 m tall and are developing a canopy.

## Local Actions to Improve Forest Conditions

- Establish and enlarge woodlots using a variety of native species to reduce the impact of aggressive insects and extreme weather events on tree health;
- Plant native species such as dune grass, dogwood, and wild rose for landscaping along the shoreline to help prevent shoreline erosion without introducing exotic species;
- Increase vegetation cover in urban areas by volunteering at events to naturalize public parks and open spaces.

| INDICATOR                            | COW AND PERCH CREEKS |           |           | ST. CLAIR REGION AVERAGE | PROVINCIAL GUIDELINE | INDICATOR DESCRIPTION                                                                                                                                                                                                                                        |
|--------------------------------------|----------------------|-----------|-----------|--------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | 2001-2005            | 2006-2010 | 2011-2015 | 2011-2015                |                      |                                                                                                                                                                                                                                                              |
| Percent Forest Cover (%)             | 8.9<br>D             | 8.0<br>D  | 8.0<br>D  | 12.0<br>D                | 30.0<br>B            | Percent forest cover is the percentage of the watershed that is forested. Forests are necessary to produce oxygen, store carbon, and offer many ecological services that are essential to the well-being of both humans and wildlife.                        |
| Percent Forest Interior (%)          | 0.9<br>F             | 1.1<br>F  | 1.0<br>F  | 2.1<br>F                 | 10.0<br>B            | Percentage of the watershed that is forest interior. Forest interior is the core area inside a woodlot that is more than 100 m from the edge. The outer 100 m is 'edge' habitat and is prone to high predation, sun/wind damage, and alien species invasion. |
| Percent Forested Riparian Buffer (%) | No data              | 12.3<br>F | 12.3<br>F | 23.1<br>D                | 50.0<br>B            | Percent forested riparian buffer is the percentage of forest cover within a 30 m zone along both sides of all open watercourses. Natural cover in this zone prevents sediment and nutrients from entering the water.                                         |
| <b>Overall Grade</b>                 | <b>D</b>             | <b>F</b>  | <b>F</b>  | <b>D</b>                 |                      |                                                                                                                                                                                                                                                              |





# COW AND PERCH CREEKS WATERSHED FEATURES

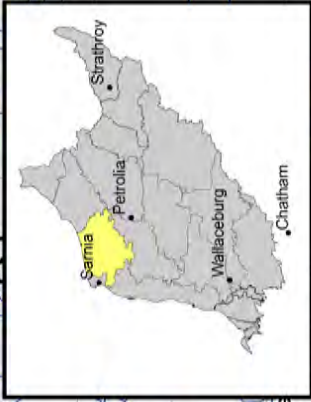
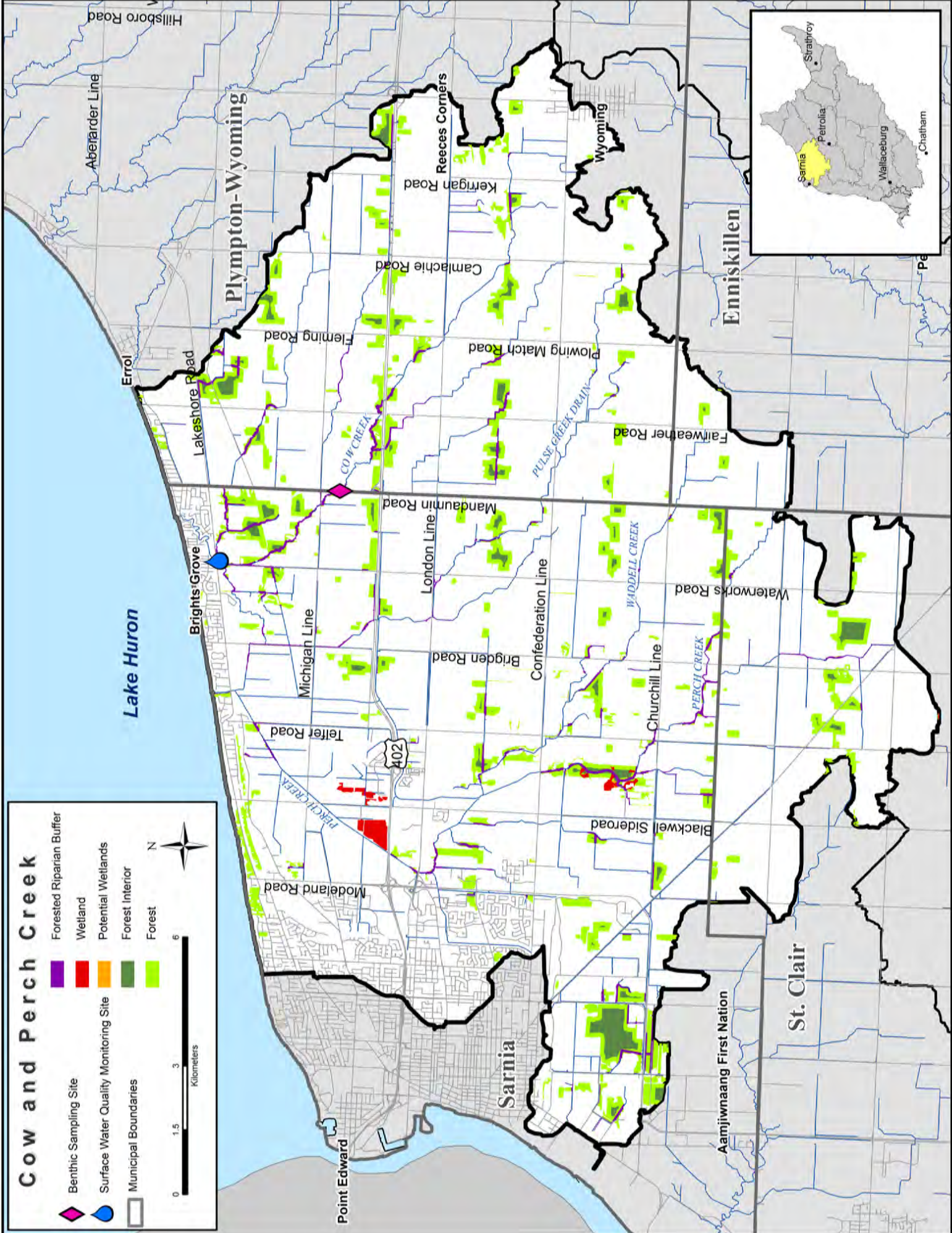
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Area                      | 266 km <sup>2</sup> , 6.4% of the St. Clair Region watershed                                                                                                                                                                                                                                                                                                                                                                                   |
| Municipalities            | Sarnia (141 km <sup>2</sup> , 53%), Plympton-Wyoming (86 km <sup>2</sup> , 32%), St. Clair (33 km <sup>2</sup> , 12%), Enniskillen (7 km <sup>2</sup> , 2%)                                                                                                                                                                                                                                                                                    |
| First Nations             | Aamjiwnaang First Nation (1 km <sup>2</sup> , <1%)                                                                                                                                                                                                                                                                                                                                                                                             |
| Physiography              | 84% bevelled till plains; 6% peat and muck; 5% sand plains; 4% till moraines; 1% beaches and shorecliffs                                                                                                                                                                                                                                                                                                                                       |
| Soil Type                 | 91% silt and clay; 3% sand loams; 3% silt and clay loams; 1% loam; 1% bottom land and beach; 1% organic; 1% not mapped                                                                                                                                                                                                                                                                                                                         |
| Streamflow                | The mean annual flow from 2003 to 2015 was 1.66 m <sup>3</sup> /s as measured in Perch Creek at London Line east of Blackwell Sideroad. The watercourse is a channelized municipal drain throughout that reach. From 2011 to 2015, annual flows were above this mean ranging from 2.79 to 3.17 m <sup>3</sup> /s. During the previous period, from 2006 to 2010, annual flows were below the mean ranging from 0.67 to 1.27 m <sup>3</sup> /s. |
| Precipitation             | The average annual precipitation at Sarnia from 2002 to 2015 was 812 mm. From 2011 to 2015, the annual precipitation varied around this value ranging from 614 to 986 mm. The previous period, 2006 to 2010, was slightly wetter with the values ranging from 640 to 1,080 mm.                                                                                                                                                                 |
| Air Temperature           | The average annual temperature at Sarnia from 2002-2015 was 8.7°C. From 2011 to 2015, average annual temperatures ranged more widely from 7.1 to 10.4°C than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 8.0 to 9.8°C.                                                                                                                                                                     |
| Tile Drainage             | 37% not tiled; 14% randomly tiled; 49% systematically tiled                                                                                                                                                                                                                                                                                                                                                                                    |
| Watercourse Length & Type | Total length: 353 km<br>Watercourse type: 10% natural, 55% municipal drain, 35% unclassified                                                                                                                                                                                                                                                                                                                                                   |
| Dams and Barriers         | No dams                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sewage Treatment          | The Bright's Grove Sewage Treatment Facility discharges treated effluent to McIntyre Drain, which is a tributary of Cow Creek.                                                                                                                                                                                                                                                                                                                 |



# COW AND PERCH CREEKS WATERSHED FEATURES

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |                      |                                 |                                 |                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------|---------------------------------|---------------------------------|-----------------------------|
| <p>Fisheries Resources</p> | <p>Forty fish species recorded; game fish include Yellow Perch, Smallmouth Bass, and Rainbow Trout.</p> <p>Five freshwater mussel species have been recently documented including White Heelsplitter, Pink Heelsplitter, Giant Floater, Mapleleaf, and Paper Pondshell.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           |                      |                                 |                                 |                             |
| <p>Species at Risk</p>     | <p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Cerulean Warbler, Chimney Swift, Eastern Meadowlark, Least Bittern, Northern Bobwhite, Prothonotary Warbler, Yellow-breasted Chat</p> <p>Fishes: Channel Darter, Lake Sturgeon, Pugnose Minnow</p> <p>Insects: Rusty-patched Bumble Bee</p> <p>Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Mapleleaf Mussel, Wavy-rayed Lampmussel</p> <p>Plants: American Chestnut, American Ginseng, Blue Ash, Butternut, Common Hop-tree, Eastern Flowering Dogwood, False Hop Sedge, Goldenseal, Kentucky Coffee-tree, Riddell's Goldenrod, Spoon-leaved Moss</p> <p>Reptiles: Butler's Gartersnake, Common Five-lined Skink, Spiny Softshell</p> |                           |                      |                                 |                                 |                             |
| <p>Groundwater</p>         | <p>There is a shallow overburden aquifer along the lakefront in the sand plain east of Sarnia that is of reasonable quality and quantity. Farther inland, the only aquifer is deep, has high sodium and chloride and is of limited quantity. Most residents are supplied by municipal water that is piped from Lake Huron.</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                      |                                 |                                 |                             |
| <p>Wetland Cover</p>       | <p>59 ha or 0.2% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. One additional hectare (0.004% of the subwatershed) is identified by the St. Clair Region Conservation Authority (SCRCA) as potential wetlands. Wetlands are vital to the landscape as they reduce flooding and filter water. Environment Canada recommends a minimum of 6% wetland cover at a subwatershed scale.</p>                                                                                                                                                                                                                                                                                                                  |                           |                      |                                 |                                 |                             |
| <p>Woodlot Size</p>        | <p>Size Category</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Number of Woodlots</p> | <p>% of Woodlots</p> | <p>Total Woodland Area (ha)</p> | <p>% of Total Woodland Area</p> | <p>Largest Woodlot (ha)</p> |
|                            | <p>&lt;5 ha</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>167</p>                | <p>62</p>            | <p>318</p>                      | <p>15</p>                       | <p>135</p>                  |
|                            | <p>5-10 ha</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>38</p>                 | <p>14</p>            | <p>275</p>                      | <p>13</p>                       |                             |
|                            | <p>10-30 ha</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>49</p>                 | <p>18</p>            | <p>877</p>                      | <p>41</p>                       |                             |
|                            | <p>&gt;30 ha</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>12</p>                 | <p>4</p>             | <p>656</p>                      | <p>31</p>                       |                             |
|                            | <p>Total</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>266</p>                |                      | <p>2,126</p>                    |                                 |                             |





### Cow and Perch Creek

- Benthic Sampling Site
- Surface Water Quality Monitoring Site
- Municipal Boundaries
- Forested Riparian Buffer
- Wetland
- Potential Wetlands
- Forest Interior
- Forest

0 1.5 3 6  
Kilometers

N



# COW AND PERCH CREEKS HIGHLIGHTS

## Highlights and Progress Since 2011

- There were 21 landowner stewardship projects completed in the Cow and Perch Creeks subwatershed from 2011 to 2018. These projects included tree and windbreak plantings. More than 30,200 trees were planted and the total value of all the projects was \$110,800 (82% grants).
- Since 2015, volunteers have planted 900 native trees along the Howard Watson Nature Trail and in Canatara Park through the TD Tree Days event held each fall (left photo).
- Starting in 2011, the Ministry of Transportation contracted the SCRCA to plant windbreaks along the 402 Highway to improve road safety, especially in the winter – 9,500 trees have been planted to date.



- Each year, the SCRCA organizes an education program at the Perch Creek Habitat Management Area with a local high school to introduce students to water quality indicators and Species at Risk (right photo).
- For the 2010-2012 Lambton Natural Heritage Study, regionally rare birds or plants were noted at every survey site, stressing the importance of maintaining and enhancing even small natural areas.
- Thames-Sydenham and Region Source Protection Plan was developed and implemented by the end of 2015. The Plan identifies potential threats to municipal drinking water sources, determines vulnerable areas, and requires the development of Risk Management Plans to address these threats.
- From 2017 to 2018, the SCRCA and Lambton Public Health planted 108 trees with about 250 students from nine schools through the schoolyard greening initiative "Tomorrow's Greener Schools Today."
- Community groups such as Lambton Wildlife Inc. and the Sarnia-Lambton Harbour Week Committee work to conserve, protect and restore natural areas and to share their appreciation of nature with others.



St. Clair Region Conservation Authority  
205 Mill Pond Crescent Strathroy, ON N7G 3P9  
stclair@scrca.on.ca  
519-245-3710  
scrca.on.ca