Severn Sound

Environmental Association

WETLAND EVALUATION OF PENETANG MARSH
PENETANGUISHENE

MARCH 2006

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Prepared for
THE TOWN OF PENETANGUISHENE
and
THE ONTARIO MINISTRY OF NATURAL RESOURCES

by
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SEVERN SOUND ENVIRONMENTAL ASSOCIATION

FOREWORD

This document reports on the major findings of the Wetland Evaluation of Penetang Marsh, conducted during 2004 by the Severn Sound Environmental Association (SSEA) for the Town of Penetanguishene and the Ontario Ministry of Natural Resources.

The evaluation was conducted using the standards set out in the Ontario Wetland Evaluation System, Southern Manual, 3rd edition. The Penetang Marsh Wetland Evaluation has been reviewed and accepted by the Ontario Ministry of Natural Resources Midhurst District.

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I would like to express my appreciation to Bob Bowles for his contributions to this project. In addition to his invaluable expertise in the field and his extensive assistance with this project, Bob's Simcoe County Checklists were used as a basis for the species lists in this report. I am also particularly grateful to volunteer Margaret Killing for her substantial contributions to the project. Margaret assisted with field work and data collection, and updated and maintained the plant species list for the project. In addition, I would like to thank the Severn Sound Environmental Association staff, especially Keith Sherman, Lex McPhail and Paula Madill, whose support and professional expertise was fundamental to the preparation of the Penetang Marsh Wetland Evaluation.

The project team would like to offer our sincere thanks to the staff at the Ontario Ministry of Natural Resources Midhurst District for their assistance with the evaluation. In particular, we would like to thank Brad Allan (Area Biologist), Gary Allen (District Ecologist), Greg Cull (Senior Fish & Wildlife Technician), and Kathy Woeller (District Planner) for the background information, support and expertise they provided to the project team.

Special thanks to Town of Penetanguishene staff Paul Hodgins and Rick Patrick, for municipal information and wildlife observations in Penetang Marsh, to Jamie Hunter of Huronia Museum, for providing information on the cultural resources of the Penetang Marsh area, and to Lisa Moore at Georgian Bay Islands National Park, for loaning us field equipment. We are also grateful to David & Cynthia MacKenzie, and to Mike McKeown at Beacon Bay Marina, for granting access to their properties to assist in completing the Penetang Marsh wetland evaluation.

All photographs in this report were taken by SSEA unless otherwise noted.

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1. INTRODUCTION

1.1 Background

Penetang Marsh is located at the south end of Penetang Harbour, within the Town of Penetanguishene (Figure 1). The Town of Penetanguishene owns approximately 55% of this wetland complex, and the remainder is under private ownership.

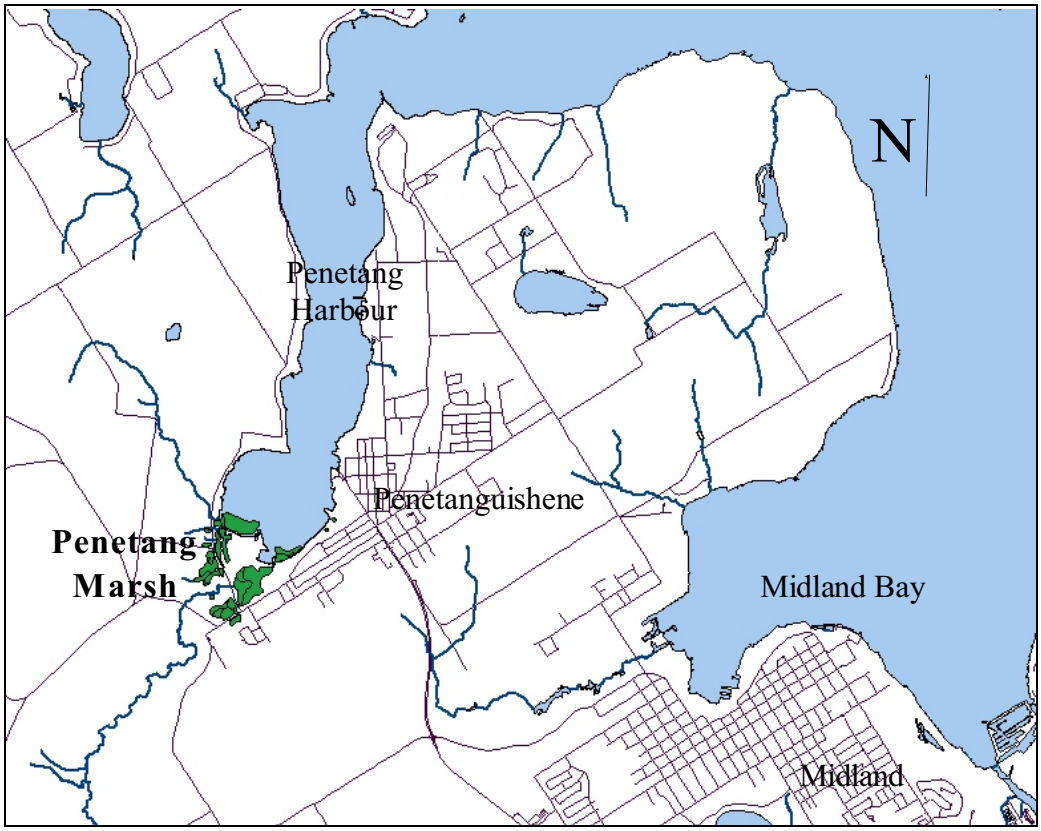


Figure 1: Location of Penetang Marsh

A wetland evaluation was conducted in 1985 by the Ontario Ministry of Natural Resources (OMNR), and Penetang Marsh was evaluated as a Class 3 Wetland (now termed Provincially Significant Wetland). Revisions to the wetland boundary were made by the OMNR in 1993 as a result of an environmental evaluation for the Champlain Homes property (Michalski 1993), and in 2002 as a result of additional OMNR field work on the north-west portions of the wetland complex, however, no changes to the evaluation scoring record were made at that time.

1.2 Purpose

The goal of this project was to conduct field work, and prepare and submit a revised evaluation for Penetang Marsh, upgraded to the 3rd edition standards of the Ontario Wetland Evaluation System.

1.3 Study Team

The Severn Sound Environmental Association (SSEA) undertook the evaluation, funded by the Town of Penetanguishene, with support from the Ontario Ministry of Natural Resources. The Town of Penetanguishene provided background and assessment information, and OMNR provided direction and technical advice to the project. Contractor Bob Bowles and SSEA Wetlands and Habitat Biologist Michelle Hudolin conducted field work for the project, with additional field support provided by Margaret Killing (volunteer), Christopher Waffle (SSEA seasonal staff), and Sebastian Fleischer (SSEA intern). Geographic Information System support and mapping was provided by Lex McPhail, SSEA GIS/Applications Specialist, and SSEA Coordinator Keith Sherman provided guidance and input throughout the project. SSEA Ecosystem Technologist Paula Madill provided the analysis of water temperature data for the thermal classification of two streams in Penetang Marsh.

1.4 Fieldwork and Data Collection

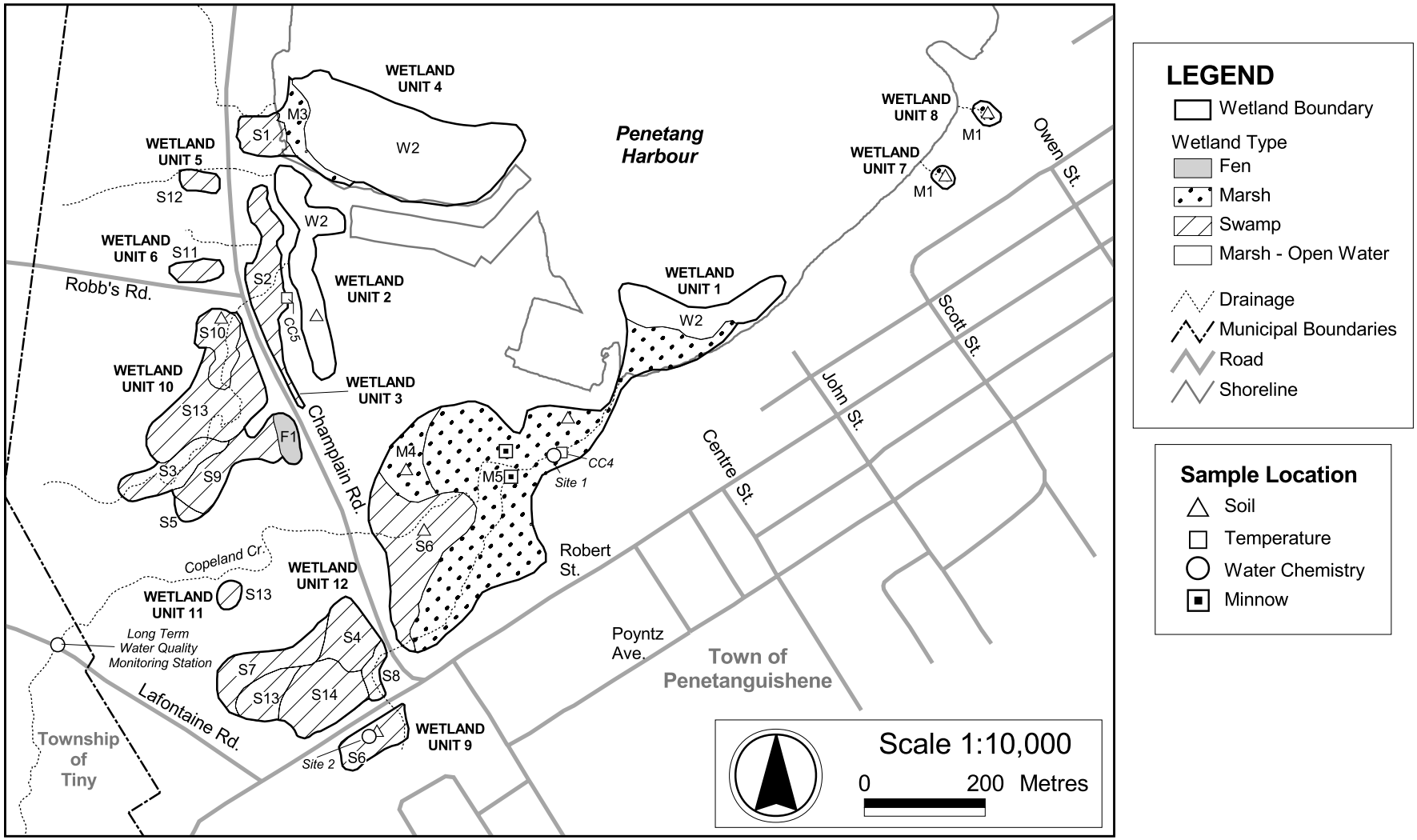
Penetang Marsh was visited during the spring, summer and fall of 2004, to assess features in the wetland, map and describe vegetation communities, and collect information on species utilizing the wetland. Field work was conducted on May 17, June 21, July 20, August 20, September 9, September 14, and October 7, 2004. During field visits, the field crew noted plant species observed and wildlife species observed or heard; minnows were trapped and identified on September 9 and 14. Temperature loggers were installed in the wetland to monitor water temperature through the summer, and water samples were taken on October 7 and sent to the Ministry of the Environment Laboratory Services Branch for analysis.

Access was not granted to all parcels of land within the study area, therefore some information was not directly obtainable from field observations. In these cases, existing information, aerial photograph interpretation, and "over-the-fence" or roadside data collection were used to determine the wetland boundary and describe the wetland communities. If an opportunity arises in the future to access these lands, the evaluation record should be updated accordingly. In the case of the Champlain Homes property, OMNR indicated to the landowner that they would accept the information from the 1993 evaluation revisions (Woeller, personal communication). Consequently, in this evaluation, the mapping, scoring and descriptions for vegetation communities on that property are based on information from 1993 and air photo interpretation, rather than on 2004 field work.

2. WETLAND EVALUATION

A map of the wetland communities in the complex was produced (Figure 2). The communities are divided into wetland types (F=fen, M=marsh, S=swamp, W=open water marsh), and each community has been given an alpha-numeric identifier.

Figure 2 **Penetang Marsh** Town of Penetanguishene



Produced by the Severn Sound Environmental Association with Data supplied under License by Members of the Ontario Geospatial Data Exchange, 2004.

Under the 3rd Edition Ontario Wetland Evaluation System Southern Manual, a wetland evaluation is scored in four main categories: Biological, Social, Hydrological, and Special Features components. The Biological section assesses the ecological and biological values of the wetland; the Social component evaluates the uses that wetlands provide to people, such as recreation and natural resources; the Hydrological category evaluates factors such as flood attenuation and water quality improvement; the Special Features component allows attributes such as significant wildlife habitat and rare species to be scored. The Extra Information section of the evaluation provides an opportunity to report additional information that is not scored in the evaluation, such as invasive species or other notable species.

Points are awarded for each category, based on the evaluation system protocol. The sum of the points from all categories results in the final score for the wetland or wetland complex, and represents the status of the wetland at the time of the study. Each of the four components can score a maximum of 250 points, and thus a wetland or wetland complex can score a maximum of 1000 points. Wetlands that receive a total score of 600 points (or greater), or score 200 points (or greater) in either the Biological or Special Features scoring components are categorized as Provincially Significant Wetlands. Wetlands that receive a total score of less than 600 points and do not score 200 points (or greater) in either the Biological or Special Features scoring components are categorized as Non-provincially Significant Wetlands, and are often designated Locally Significant Wetlands by the municipality. The significant findings of the field work for the Wetland Evaluation are outlined below.

2.1 Biological Component

The Penetang Marsh complex contains three distinct wetland types: fen, marsh and swamp. Overall, the wetlands are dominated by marsh (54%), including emergent marsh and open water marsh habitat. Swamp habitat in the wetlands (45%) includes tall shrub swamp, and deciduous and coniferous swamp habitat. There is also a small area of fen habitat (1%) in Penetang Marsh.

Twelve individual wetland units make up the 30.6 hectare Penetang Marsh complex (Figure 2). Wetland Unit 1 (Figure 3) is 11.8 hectares in size, and is located at the mouth of Copeland Creek (Figure 2). This wetland unit is composed primarily of emergent marsh habitat, with a portion of treed swamp on the south-west side.

Figure 3: Penetang Marsh, Wetland Unit 1

Wetland Unit 2 (Figure 4), a 1.6 hectare open water marsh, is an area that was previously dredged, presumably for marina development. This unit receives water from Wetland Unit 3, a 1.2 hectare tall shrub swamp located directly to the west of unit 2 (Figure 2).

Figure 4: Penetang Marsh, Wetland Unit 2

The 5.9 hectare Wetland Unit 4 is located north of wetland units 2 and 3 (Figure 2). It is made up of a tall shrub swamp that flows into an area of emergent marsh habitat, and then into submergent marsh habitat on Penetang Bay. Wetland Unit 5, a 0.2 hectare deciduous treed swamp is separated from Wetland Unit 4 by Champlain Road, while nearby Wetland Unit 6, a 0.3 hectare tall shrub swamp, is located at the corner of Champlain Road and Robb's Road (Figure 2). Wetland Unit 7 is a 0.1 hectare emergent marsh; this unit and the 0.1 hectare Wetland Unit 8 (Figure 5) are both areas of restored wetland located in the Penetanguishene Waterfront Park (Figure 2).

Figure 5: Penetang Marsh, Wetland Unit 8

Wetland Unit 9 is located south of unit 1, across Robert Street West (Figure 2). This 0.6 hectare unit is a deciduous treed swamp, and was not included in the original 1985 evaluation. Wetland Units 10, 11 and 12 (8.8 hectares, total) include the Champlain Homes property, thus the community information for these units are primarily from 1993 field work by OMNR. These units are made up of treed swamp (both coniferous and deciduous), tall shrub swamp, and a small area of fen habitat near Champlain Road (Figure 2).

The habitat and topography surrounding Penetang Marsh is a highly diverse mixture of row crops, abandoned agricultural land, deciduous forest, coniferous forest, open lake, fence rows with cover, a creek flood plain and hilly terrain. In addition, Penetang Marsh is hydrologically connected by surface water (Copeland Creek) to Penetang Bay. Penetang Marsh is also located approximately 3 km south-west of St. Andrew's Lake Provincially Significant Wetland and Penetang Lake Regionally Significant Life Science Area of Natural and Scientific Interest (ANSI), and is also approximately 0.3 km south-east of the Penetanguishene Harbour Provincially Significant Earth Science ANSI. Habitat variety adjacent to wetlands and connectivity to other natural areas is valuable from a biological perspective, because high ecological diversity typically supports a large number of species.

2.2 Social Component

The field crew noted the presence of a number of potential resources in Penetang Marsh that contribute to the scoring for the social component of the evaluation, including wood products and wildlife species. Approximately 9.6 hectares of the wetland is dominated by coniferous and deciduous forest. The field crew directly observed or found evidence (e.g. scat, tracks, browse) of several economically valuable wildlife species, including Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethica*), and Raccoon (*Procyon lotor*). Town of Penetanguishene staff member Rick Patrick reported Skunk (*Mephitis mephitis*) in and around the wetland during the summer; Mink (*Mustela vison*), Fox (*Vulpes vulpes*), and Coyote (*Canis latrans*) were all reported in the 1985 evaluation. Bait fish were observed in the wetland and creeks by the field crew, and Snapping Turtle (*Chelydra serpentina serpentina*) was reported in the 1985 evaluation, with suitable habitat still existing in the wetland for this species.

Penetang Marsh is located within the Town of Penetanguishene, however, portions of it are privately owned. No hunting in the wetland was reported or observed by the field crew. Rick Patrick, Town of Penetanguishene staff, reported low intensity use of the wetland by birdwatchers and hikers, and moderate use of the wetland by anglers. The field crew observed paths trampled along the edges of the wetland in the fall, as well as people fishing on several occasions. A gutted Rainbow Trout (*Oncorhynchus mykissi*) was observed in the wetland by the field crew on October 7, 2004 (Figure 6).

photo: Bob Bowles

Figure 6: Rainbow Trout (*Oncorhynchus mykissi*)

Human disturbances to the wetland include roads and ditches, sawdust and wood debris (Figure 7), and an old landfill site leaching iron precipitates in Wetland Unit 1.

Figure 7: Wood Debris in Bank

There are maintained paths and bridges in Wetland Units 7 and 8, but no interpretation programs or brochures for Penetang Marsh. Several reports have been written about the wetland, including the Natural Heritage and Hazard Land Study produced for the Town of Penetanguishene by Gartner Lee Limited (2001).

Penetang Marsh is within the Town of Penetanguishene, with 55% of the wetland area owned by the municipality, and the remaining 45% in private ownership.

2.3 Hydrological Component

Penetang Marsh is a coastal wetland located directly on Penetang Bay, at the bottom of the watershed, and thus does not receive a score for flood attenuation in the catchment area, short term water quality improvement, or long term nutrient trap.

There are numerous springs, seeps and upwellings in Penetang Marsh, and the wetland is located within 1 km of an aquifer, surrounded by hilly topography. This contributes to a relatively high score for groundwater discharge. There is relatively low potential for groundwater recharge based on the wetland site type and soils surrounding the wetlands. The wetlands are mainly riverine in site type, meaning there is a permanent surface water inflow and outflow from the wetland; the surrounding soils are predominantly sand, resulting in no score for groundwater recharge capability.

The presence of trees and shrubs along the shoreline and floodplain of the wetlands results in a high score for shoreline erosion control.

2.4 Special Features Component

During field visits to Penetang Marsh, the field crew recorded 119 plant species (Appendix A), and 103 wildlife species, including birds, mammals, amphibians, butterflies and moths, dragonflies and damselflies, and fish (Appendix B). An additional 13 species were noted adjacent to the wetland.

The field crew documented 61 species of birds in the wetland during field visits, including breeding birds, summer residents and migrants. Waterfowl utilizing the wetland included Canada Goose (*Branta canadensis*), Wood Duck (*Aix sponsa*), Mallard (*Anas platyrhynchos*), and Common Merganser (*Mergus merganser*). Other marsh avifauna observed included Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*), Virginia Rail (*Rallus limicola*), Tree Swallow (*Tachycineta bicolor*), Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Common Yellowthroat (*Geothlypis trichas*), Song Sparrow (*Melospiza melodia*), Swamp Sparrow (*Melospiza georgiana*) and Red-winged Blackbird *(Agelaius phoeniceus*), among others. Breeding evidence was noted for Mallard (with young), Song Sparrow (carrying food) and Swamp Sparrow (carrying food).

Four species of herpetiles (reptiles and amphibians) were observed during the field season, including American Toad (*Bufo americanus*), Wood Frog (*Rana sylvatica*), Northern Leopard Frog (*Rana pipiens*), Green Frog (*Rana clamitans melanota*), and Eastern Garter Snake (*Thamnophis sirtalis sirtalis*).

Mammal observations included direct observations and/or observations of tracks, scat, browse, etc. Beaver are maintaining dams in the wetland (Figure 8), which is helping preserve wetland habitat in Penetang Marsh. Other mammals noted include Meadow Vole (*Microtus pennsylvanicus*), Muskrat, Raccoon, and White-tailed Deer (*Odocoileus virginianus*).

Figure 8: Beaver Dam Maintaining Wetland Habitat

Minnows were trapped in two locations (Figure 2), on September 9 and 14, 2004. Species trapped included Common Shiner (*Luxilus cornutus*), Northern Redbelly Dace (*Phoxinus eos*), Bluntnose Minnow (*Pimephales notatus*), Blacknose Dace (*Rhinichthys atratulus*), Creek Chub (*Semotilus atromaculatus*), and Brook Stickleback (*Culaea inconstans*). Mottled Sculpin (*Cottus bairdi*), a coldwater species, was observed in the wetland, and Rainbow Trout (*Oncorhynchus mykissi*) were observed spawning in the wetland in the fall.

Nine species of dragonflies and damselflies were observed in Penetang Marsh during field visits. Fifteen species of butterflies and moths were observed in the wetland, with five additional species observed outside the wetland boundaries. Several uncommon butterflies were observed, including Silver-spotted Skipper (*Epargyreus clarus*) within the wetland, and Henry's Elfin (*Callophrys henrici*) and Eastern Pine Elfin (*Callophrys niphon*) outside the boundaries of the wetland. A Salt Marsh Caterpillar (*Estigmene acrea*) was also observed in Penetang Marsh (Figure 9).

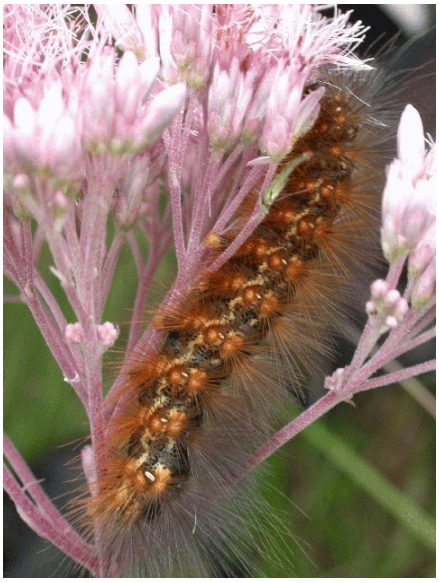


photo: Bob Bowles

Figure 9: Salt Marsh Caterpillar (*Estigmene acrea*)

There is no known breeding, migration or feeding habitat for Endangered species in Penetang Marsh. Three Provincially Significant animal species and one Regionally Significant species were observed in Penetang Marsh in 2004.

2.4.1. Provincially Significant Animal Species

Three species being tracked by the OMNR were observed in Penetang Marsh during field visits. Although these species have not been given Vulnerable, Threatened or Endangered status by the OMNR, as species being tracked and with a provincial rank of 'S3' (rare to uncommon) or 'S3B' (rare to uncommon breeding migrants/vagrants), all three are scored as Provincially Significant under the Wetland Evaluation System protocol. Caspian Tern (*Sterna caspia*) was observed foraging in Penetang Marsh during field visits on May 17 and August 20, 2004; migrant Buffleheads (*Bucephala albeola*) were observed feeding in Penetang Marsh at the mouth of Copeland Creek in the fall. In addition, an Eastern Red Damsel (*Amphiagrion saucium*) was captured and identified by Bob Bowles on July 20, 2004 (Figure 10).

photo: Bob Bowles

Figure 10: Provincially Significant Eastern Red Damsel (*Amphiagrion saucium*)

2.4.2 Regionally Significant Species

Nodding Sedge (*Carex gynandra*) was observed and identified by Bob Bowles in Penetang Marsh. This species is considered rare in OMNR Central Region (Riley, 1989), making it a Regionally Significant plant species for the purposes of scoring for the evaluation.

2.4.3 Fish and Wildlife Habitat

While waterfowl breeding, moulting and staging occur in Penetang Marsh, they are not known to be of national, provincial or regional significance, and thus score low in the evaluation.

Fish habitat is present in Penetang Marsh, as evidenced by the minnows trapped and larger fish observed during field visits. Spawning and nursery habitat, and migration and staging habitat are considered locally significant by the OMNR (Allan, personal communication). In addition, Brook Trout (*Salvelinus fontinalis*) were captured in previous fish surveys in the vicinity of the wetland (Portt, personal communication).

2.4.4 Great Lakes Coastal Wetlands

Penetang Marsh is classified as a Great Lakes Coastal Wetland, and receives a score based on its size. Penetang Marsh is considered a coastal wetland under the evaluation system because it is on a tributary to Georgian Bay (Copeland Creek), and lies downstream of a line located 2 km upstream of the 1:100 year flood line of Georgian Bay.

2.5 Extra Information

Non-native, invasive species are of concern in many wetlands, including Penetang Marsh. Although Purple Loosestrife (*Lythrum salicaria*) was observed in Penetang Marsh in many locations, it had not formed a monoculture that excludes native species. In 1999, *Galerucella calmariensis* and *G. Pusilla* beetles were released near the mouth of Copeland Creek to help biologically control this invasive, non-native plant. The field crew observed that on most plants, the Purple Loosestrife leaves were perforated as a result of being eaten, presumably by the *Galerucella* beetles. The non-native, invasive Glossy Buckthorn (*Rhamnus frangula*) was observed throughout Penetang Marsh, and may soon out-compete native species for habitat and reduce overall diversity of the wetland.

Rick Patrick, Town of Penetanguishene staff, reported that Common Loon (*Gavia immer*) have been observed feeding at the edge of the wetland at the mouth of Copeland Creek. Although no points are awarded for the presence of Loons in the wetland, it is a species that receives special note in the Extra Information section of the Wetland Evaluation System.

Water temperature data was collected at two locations in Penetang Marsh during the summer (Figure 2) through the use of Onset Stow Away Tidbit Temp Logger data loggers. Temperature logger CC4 was installed in the wetland on June 21, and removed on October 7, 2004. Temperature logger CC5 was installed in the wetland on July 20, and removed on September 14, 2004. The loggers collected water temperature data every 30 minutes; this data was analysed according to the methods used by Fisheries and Oceans Canada and the OMNR to determine the thermal classification of the streams (Fisheries and Oceans Canada & Ontario Ministry of Natural Resources, n.d.). Under this methodology, water temperature measurements between 4:00 p.m. and 4:30 p.m. are considered representative of the maximum daily water temperature, and are graphed against the maximum daily air temperature for days when the air temperature is at or above 25°C. The sampling period used to determine the thermal classification of the streams in Penetang Marsh is July 1 to September 10 for logger CC4, and July 20 to September 10 for logger CC5.

An analysis of the water temperature data from Penetang Marsh reveals that station CC4 can be considered a coldwater/coolwater stream, and station CC5 can be considered a coldwater stream (Figures 11 and 12). Cool and cold water conditions during the warmest days of the year indicate that the small streams were heavily influenced by groundwater. The temperature regimes and the potential for fish passage up the streams indicates that good quality fish habitat is present in Penetang Marsh.

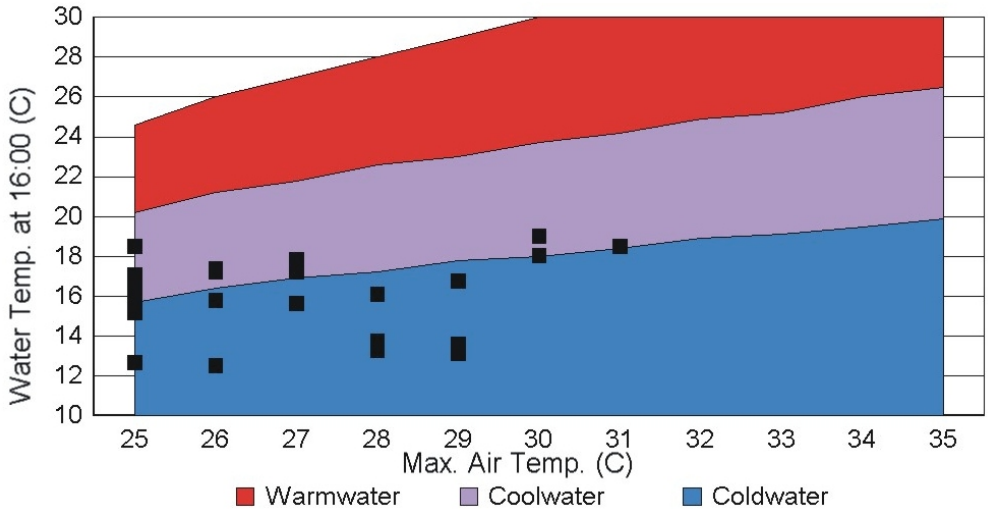


Figure 11: Thermal Classification of Station CC4, Penetang Marsh

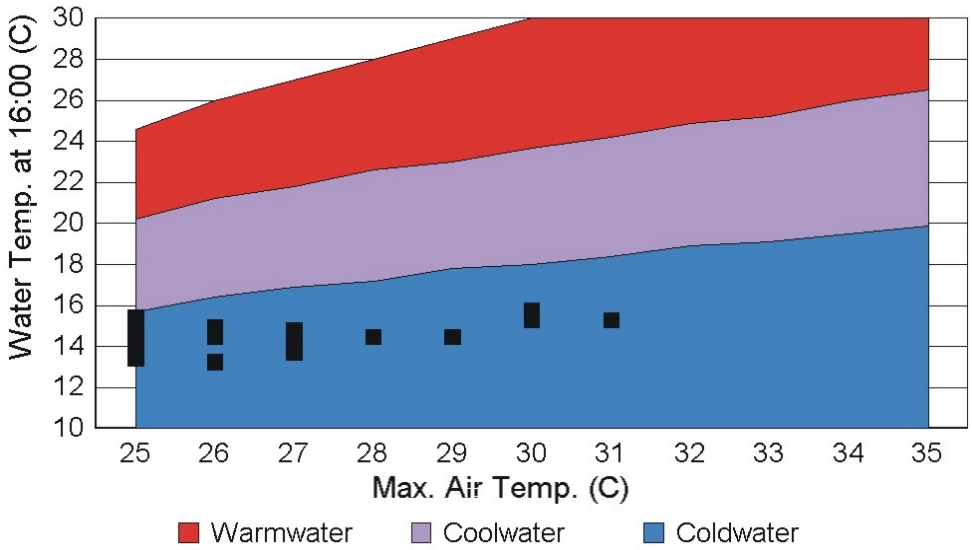


Figure 12: Thermal Classification of Station CC5, Penetang Marsh

Severn Sound Environmental Association collected water chemistry samples at two sites in Penetang Marsh on October 7, 2004; additional samples were taken on October 4 and throughout 2004 at a long-term water quality monitoring station on Copeland Creek just upstream of Penetang Marsh (Figure 2). The results of the water chemistry samples are provided in Table 1.

Table 1: Penetang Marsh and Copeland Creek Water Chemistry Results

	Penetang Marsh Site 1	Penetang Marsh Site 2	Copeland Creek	
	07-Oct-2004	07-Oct-2004	04-Oct-2004	2004 mean
Suspended Solids (mg/L)	2.2	2.6	0.7	3.0
Turbidity (FTU)			1.5	5.09
Ammonium + Ammonia (mg/L)	0.005	0.024	0.005	0.009
Total nitrate (mg/L)	0.500	0.614	0.498	0.457
Total Kjeldahl Nitrogen (mg/L)	0.10	0.11	0.11	0.24
Phosphate (mg/L)	0.0005	0.0005	0.005	0.0023
Total phosphorus (ug/L)	8.0	7.8		
Total Phosphorus (mg/L)			0.010	0.016
Conductivity (uS/cm)			359	328
Calcium (mg/L)			42.9	36.43
Magnesium (mg/L)			7.72	6.12
Sodium (mg/L)			5.78	6.24
Potassium (mg/L)			1.27	1.20
Chloride (mg/L)			8.2	8.51
Alkalinity (mg/L)			164	132
pH			8.24	8.27

The basic chemistry of marsh water, based on results for Copeland Creek, indicated that the water was well buffered (alkalinity mean 132 mg/L, conductivity mean 328 uS/cm) and alkaline (pH mean 8.27). The relatively low concentrations of chloride (mean 8.51 mg/L) and sodium (mean 6.24 mg/L) in Copeland Creek, and nitrate concentrations (0.500 to 0.614 mg/L) at sites 1 and 2 in Penetang Marsh suggested water strongly influenced by groundwater discharge.

Total phosphorus was slightly lower at sites 1 and 2 in Penetang Marsh (8 ug/L) than in Copeland Creek (10 ug/L) for the same season. All of these values are low relative to the open water concentrations typically measured off shore in Penetang Harbour. This suggested that the quality in the streams flowing to the marsh including Copeland Creek will not be contributing to algae growth at that time of year. Seasonal values of total phosphorus and suspended solids for Copeland Creek, which has a much larger watershed than the two small streams, fluctuate to higher levels in spring and in response to storm events.

2.6 Evaluation Score

The total score for Penetang Marsh is 599. Penetang Marsh scores 152 in the Biological component, 146 in the Social component, 51 in the Hydrological component, and 250 in the Special Features component, making it a Provincially Significant Wetland. The Data and Scoring Record is on file with the OMNR Midhurst District.

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Appendix A
Plants of Penetang Marsh
Observed during 2004 Wetland Evaluation field work

Family Name	Genus	Species	Common Name	Additional Notes
SCROPHULARIACEAE	*Agalinis*	*paupercula*	Small-flowered Agalinis	
ALISMATACEAE	*Alisma*	*plantago-aquatica*	Common Water-plantain	
BETULACEAE	*Alnus*	*incana ssp rugosa*	Speckled Alder	
POACEAE	*Andropogon*	*gerardii*	Big Bluestem	
RANUNCULACEAE	*Anemone*	*canadensis*	Canada Anemone	
ASCLEPIADACEAE	*Asclepias*	*syriaca*	Common Milkweed	
ASTERACEAE	*Aster*	*lanceolatus ssp. lanceolatus*	Panicled Aster	
ASTERACEAE	*Aster*	*novae-angliae*	New England Aster	
POLYPODIACEAE	*Athyrium*	*filix-femina ssp. angustum*	Lady Fern	
BETULACEAE	*Betula*	*alleghaniensis*	Yellow Birch	
BETULACEAE	*Betula*	*papyrifera*	White Birch	
ASTERACEAE	*Bidens*	*cernua*	Nodding Beggarticks	
POACEAE	*Bromus*	*ciliatus*	Fringed Brome	
POACEAE	*Calamagrostis*	*canadensis*	Canada Blue-Joint	
RANUNCULACEAE	*Caltha*	*palustris*	Marsh Marigold	
CAMPANULACEAE	*Campanula*	*aparinoides*	Bedstraw Bellflower	

Family Name	Genus	Species	Common Name	Additional Notes
CYPERACEAE	*Carex*	*bebbii*	Bebb's Sedge	
CYPERACEAE	*Carex*	*crinita*	Fringed Sedge	
CYPERACEAE	*Carex*	*flava*	Yellow Sedge	
CYPERACEAE	*Carex*	*gynandra*	Nodding Sedge	**Regionally Significant Species**
CYPERACEAE	*Carex*	*lacustris*	Lake Bank Sedge	
CYPERACEAE	*Carex*	*lasiocarpa*	Slender Sedge	
CYPERACEAE	*Carex*	*pseudo-cyperus*	Cypress-like Sedge	
CYPERACEAE	*Carex*	*retrorsa*	Retrorse Sedge	
CYPERACEAE	*Carex*	*scabrata*	Rough Sedge	
CYPERACEAE	*Carex*	*scoparia*	Pointed Broom Sedge	
CYPERACEAE	*Carex*	*stipata*	Awl-fruited Sedge	
CYPERACEAE	*Carex*	*stricta*	Tussock Sedge	
CYPERACEAE	*Carex*	*vulpinoidea*	Fox Tail Sedge	
SCROPHULARIACEAE	*Chelone*	*glabra*	Turtlehead	
APIACEAE	*Cicuta*	*bulbifera*	Bulb-bearing Water-hemlock	
ASTERACEAE	*Cirsium*	*vulgare*	Bull Thistle	introduced
ASTERACEAE	*Conyza*	*canadensis*	Horseweed	
CORNACEAE	*Cornus*	*stolonifera*	Red-osier Dogwood	
ASTERACEAE	*Crepis*	*tectorum*	Narrow-leaved Hawk's Beard	introduced

Family Name	Genus	Species	Common Name	Additional Notes
APIACEAE	*Daucus*	*carota*	Wild Carrot/Queen Anne's Lace	introduced
DIPSACACEAE	*Dipsacus*	*fullonum ssp. sylvestris*	Teasel	introduced
POLYPODIACEAE	*Dryopteris*	*cristata*	Crested Wood Fern	
HYDROCHARITACEAE	*Elodea*	*canadensis*	Canada Waterweed	
ONAGRACEAE	*Epilobium*	*ciliatum ssp. glandulosum*	Sticky Willow-herb	
ONAGRACEAE	*Epilobium*	*hirsutum*	Hairy Willow-herb	introduced
ONAGRACEAE	*Epilobium*	*parviflorum*	Small-flowered Willow-herb	introduced
EQUISETACEAE	*Equisetum*	*arvense*	Field Horsetail	
ASTERACEAE	*Erigeron*	*philadelphicus*	Philadelphia Fleabane	
ASTERACEAE	*Eupatorium*	*maculatum*	Spotted Joe-pye-weed	
ASTERACEAE	*Eupatorium*	*perfoliatum*	Boneset	
ASTERACEAE	*Euthamia*	*graminifolia*	Grass-leaved Goldenrod	
RUBIACEAE	*Galium*	*triflorum*	Fragrant Bedstraw	
GENTIANACEAE	*Gentianopsis*	*virgata*	Smaller Fringed Gentian	
ROSACEAE	*Geum*	*rivale*	Water Avens	
POACEAE	*Glyceria*	*canadensis*	Rattlesnake Manna Grass	
POACEAE	*Glyceria*	*striata*	Fowl Meadow or Manna Grass	
PONTEDERIACEAE	*Heteranthera*	*dubia*	Water Star-grass	
GUTTIFERAE	*Hypericum*	*perforatum*	Common St. John's-wort	introduced

Family Name	Genus	Species	Common Name	Additional Notes
BALSAMINACEAE	*Impatiens*	*capensis*	Spotted Touch-me-not	
IRIDACEAE	*Iris*	*versicolor*	Large Blue-flag	
JUNCACEAE	*Juncus*	*alpino-articulatus*	Alpine Rush	
JUNCACEAE	*Juncus*	*brevicaudatus*	Narrow-Panicle Rush	
JUNCACEAE	*Juncus*	*dudleyi*	Dudley's Rush	
JUNCACEAE	*Juncus*	*effusus ssp. solutus*	Soft or Bog Rush	
PINACEAE	*Larix*	*laricina*	Tamarack/American Larch	
FABACEAE	*Lathyrus*	*palustris*	Marsh Vetchling	
POACEAE	*Leersia*	*oryzoides*	Rice Cut Grass	
CAMPANULACEAE	*Lobelia*	*kalmii*	Kalm's Lobelia	
LAMIACEAE	*Lycopus*	*americanus*	Cut-leaved Water-horehound	
LAMIACEAE	*Lycopus*	*uniflorus*	Northern Water-horehound	
PRIMULACEAE	*Lysimachia*	*ciliata*	Fringed Loosestrife	
LYTHRACEAE	*Lythrum*	*salicaria*	Purple Loosestrife	introduced
PRIMULACEAE	*Lysimachia*	*thyrsiflora*	Tufted Loosestrife	
LAMIACEAE	*Mentha*	*x piperita*	Pepper Mint	introduced
BORAGINACEAE	*Myosotis*	*scorpioides*	True Forget-me-not	introduced
HALORAGACEAE	*Myriophyllum*	*spicatum*	Eurasian Water-milfoil	introduced
BRASSICACEAE	*Nasturtium*	*microphyllum*	Water-cress	introduced

Family Name	Genus	Species	Common Name	Additional Notes
ONAGRACEAE	*Oenothera*	*biennis*	Yellow Evening-primrose	
POLYPODIACEAE	*Onoclea*	*sensibilis*	Sensitive Fern	
OSMUNDACEAE	*Osmunda*	*cinnamomea*	Cinnamon Fern	
POACEAE	*Panicum*	*virgatum*	Switch Grass	
SAXIFRAGACEAE	*Parnassia*	*glauca*	American Grass-of-Parnassus	
VITACEAE	*Parthenocissus*	*inserta*	Virginia Creeper	
POACEAE	*Phalaris*	*arundinacea*	Reed Canary Grass	
POACEAE	*Phragmites*	*australis*	Reed Grass	introduced
POLYGONACEAE	*Polygonum*	*amphibium*	Water Smartweed	
POLYGONACEAE	*Polygonum*	*cuspidatum*	Japanese Knotweed	introduced
POLYGONACEAE	*Polygonum*	*lapathifolium*	Pale Smartweed	
SALICACEAE	*Populus*	*balsamifera*	Balsam Poplar	
POTAMOGETONACEAE	*Potamogeton*	*crispus*	Curly Muck Pondweed	introduced
POTAMOGETONACEAE	*Potamogeton*	*zosteriformis*	Flat-Stemmed Pondweed	
RANUNCULACEAE	*Ranunculus*	*abortivus*	Kidney-leaf Buttercup	
RANUNCULACEAE	*Ranunculus*	*acris*	Tall Buttercup	introduced
RANUNCULACEAE	*Ranunculus*	*pensylvanicus*	Bristly Buttercup	
RANUNCULACEAE	*Ranunculus*	*aquatilis*	White Water Buttercup	
RHAMNACEAE	*Rhamnus*	*frangula*	Glossy Buckthorn	introduced

Family Name	Genus	Species	Common Name	Additional Notes
ANACARDIACEAE	*Rhus*	*rydbergii*	Rydberg's Poison-ivy	
POLYGONACEAE	*Rumex*	*orbiculatus*	Great Water Dock	
ALISMATACEAE	*Sagittaria*	*latifolia*	Broad-leaved Arrowhead	
SALICACEAE	*Salix*	*discolor*	Pussy Willow	
SALICACEAE	*Salix*	*fragilis*	Crack Willow	introduced
SALICACEAE	*Salix*	*petiolaris*	Slender Willow	
POACEAE	*Schizachyrium*	*scoparium*	Little Bluestem	
CYPERACEAE	*Scirpus*	*acutus*	Hard-stemmed Bulrush	
CYPERACEAE	*Scirpus*	*atrovirens*	Dark Green Bulrush	
CYPERACEAE	*Scirpus*	*microcarpus*	Red-Tinged Bulrush	
CYPERACEAE	*Scirpus*	*pungens*	Three Square Bulrush	
CYPERACEAE	*Scirpus*	*validus*	Softstem Bulrush	
SOLANACEAE	*Solanum*	*dulcamara*	Climbing Nightshade	introduced
ASTERACEAE	*Solidago*	*canadensis*	Canada Goldenrod	
ASTERACEAE	*Solidago*	*rugosa ssp. rugosa*	Rough Goldenrod	
ASTERACEAE	*Solidago*	*squarrosa*	Stout Goldenrod	
ASTERACEAE	*Sonchus*	*oleraceus*	Annual Sow-thistle	introduced
LEMNACEAE	*Spirodela*	*polyrhiza*	Greater Duckweed	
POLYPODIACEAE	*Thelypteris*	*palustris var.pubescens*	Marsh Fern	

Family Name	Genus	Species	Common Name	Additional Notes
CUPRESSACEAE	*Thuja*	*occidentalis*	N. White Cedar	
PINACEAE	*Tsuga*	*canadensis*	Eastern Hemlock	
TYPHACEAE	*Typha*	*x glauca*	Hybrid Cattail	
VERBENACEAE	*Verbena*	*hastata*	Blue Vervain	
SCROPHULARIACEAE	*Veronica*	*americana*	American Brooklime	
SCROPHULARIACEAE	*Veronica*	*officinalis*	Common Speedwell	introduced
CAPRIFOLIACEAE	*Viburnum*	*trilobum*	Highbush-cranberry	
FABACEAE	*Vicia*	*cracca*	Cow Vetch	introduced

Regionally Significant designations are reported in: Riley, J.L. 1989. Distribution and status of the vascular plants of Central Region. OMNR Open File Ecological Report SR 8902. 110 pp.

Appendix B
Fauna of Penetang Marsh
Recorded During 2004 Wetland Evaluation Field Work

Common Name	Scientific Name	Additional Notes
Birds		
Double-crested Cormorant	*Phalacrocorax auritus*	
Great Blue Heron	*Ardea herodias*	
Green Heron	*Butorides virescens*	
Turkey Vulture	*Cathartes aura*	observed outside wetland boundaries
Canada Goose	*Branta canadensis*	
Wood Duck	*Aix sponsa*	
Mallard	*Anas platyrhynchos*	confirmed nesting - female with young
Lesser Scaup	*Aythya affinis*	observed outside wetland boundaries
Bufflehead	***Bucephala albeola***	**Provincially Significant Species - fall migrants**
Common Merganser	*Mergus merganser*	
Red-tailed Hawk	*Buteo jamaicensis*	
Virginia Rail	*Rallus limicola*	
Killdeer	*Charadrius vociferus*	
Spotted Sandpiper	*Actitis macularia*	
Least Sandpiper	*Calidris minutilla*	
Ring-billed Gull	*Larus delawarensis*	
Herring Gull	*Larus argentatus*	
Caspian Tern	***Sterna caspia***	**Provincially Significant Species - foraging**
Mourning Dove	*Zenaida macroura*	
Belted Kingfisher	*Ceryle alcyon*	
Downy Woodpecker	*Picoides pubescens*	
Hairy Woodpecker	*Picoides villosus*	
Northern Flicker	*Colaptes auratus*	
Alder Flycatcher	*Empidonax alnorum*	
Least Flycatcher	*Empidonax minimus*	
Eastern Phoebe	*Sayornis phoebe*	
Great Crested Flycatcher	*Myiarchus crinitus*	
Eastern Kingbird	*Tyrannus tyrannus*	
Blue-headed Vireo	*Vireo solitarius*	
Warbling Vireo	*Vireo gilvus*	
Blue Jay	*Cyanocitta cristata*	
American Crow	*Corvus brachyrhynchos*	
Purple Martin	*Progne subis*	
Tree Swallow	*Tachycineta bicolor*	
Bank Swallow	*Riparia riparia*	
Barn Swallow	*Hirundo rustica*	
Black-capped Chickadee	*Poecile atricapillus*	

Common Name	Scientific Name	Additional Notes
White-breasted Nuthatch	*Sitta carolinensis*	
Winter Wren	*Troglodytes troglodytes*	observed outside wetland boundaries
Veery	*Catharus fuscescens*	
American Robin	*Turdus migratorius*	
Gray Catbird	*Dumetella carolinensis*	
Brown Thrasher	*Toxostoma rufum*	
European Starling	*Sturnus vulgaris*	
Cedar Waxwing	*Bombycilla cedrorum*	
Nashville Warbler	*Vermivora ruficapilla*	
Yellow Warbler	*Dendroica petechia*	
Chestnut-sided Warbler	*Dendroica pensylvanica*	
Black-throated Blue Warbler	*Dendroica caerulescens*	observed outside wetland boundaries
Yellow-rumped Warbler	*Dendroica coronata*	
Black-throated Green Warbler	*Dendroica virens*	observed outside wetland boundaries
Black-and-White Warbler	*Mniotilta varia*	
American Redstart	*Setophaga ruticilla*	
Ovenbird	*Seiurus aurocapillus*	observed outside wetland boundaries
Common Yellowthroat	*Geothlypis trichas*	
Eastern Towhee	*Pipilo erythrophthalmus*	observed outside wetland boundaries
Chipping Sparrow	*Spizella passerina*	
Song Sparrow	*Melospiza melodia*	breeding evidence - carrying food
Swamp Sparrow	*Melospiza georgiana*	breeding evidence - carrying food
White-throated Sparrow	*Zonotrichia albicollis*	
White-crowned Sparrow	*Zonotrichia leucophrys*	
Northern Cardinal	*Cardinalis cardinalis*	observed outside wetland boundaries
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Common Grackle	*Quiscalus quiscula*	
Brown-headed Cowbird	*Molothrus ater*	
Baltimore Oriole	*Icterus galbula*	
American Goldfinch	*Carduelis tristis*	
House Sparrow	*Passer domesticus*	
Amphibians		
American Toad	*Bufo americanus*	
Wood Frog	*Rana sylvatica*	
Northern Leopard Frog	*Rana pipiens*	
Green Frog	*Rana clamitans melanota*	

Common Name	Scientific Name	Additional Notes
Reptiles		
Eastern Garter Snake	*Thamnophis sirtalis sirtalis*	
Mammals		
Beaver	*Castor canadensis*	evidence - dam, old lodge, chewings
Meadow Vole	*Microtus pennsylvanicus*	
Muskrat	*Ondatra zibethicus*	
Raccoon	*Procyon lotor*	tracks at edge of wetland
White-tailed Deer	*Odocoileus virginianus*	scat & tracks observed
Fish		
Common Shiner	*Luxilus cornutus*	identified in minnow trap
Northern Redbelly Dace	*Phoxinus eos*	identified in minnow trap
Bluntnose Minnow	*Pimephales notatus*	identified in minnow trap
Blacknose Dace	*Rhinichthys atratulus*	identified in minnow trap
Creek Chub	*Semotilus atromaculatus*	identified in minnow trap
Steelhead (Rainbow) Trout	*Oncorhynchus mykissi*	observed spawning
Brook Stickleback	*Culaea inconstans*	identified in minnow trap
Mottled Sculpin	*Cottus bairdi*	observed in wetland
Butterflies & Moths		
Mustard White	*Pieris napi*	
Cabbage White	*Pieris rapae*	
Orange Sulphur	*Colias eurytheme*	
Brown Elfin	*Callophrys augustinus*	observed outside wetland boundaries
Henry's Elfin	*Callophrys henrici*	uncommon species; observed outside wetland boundaries
Eastern Pine Elfin	*Callophrys niphon*	uncommon species; observed outside wetland boundaries
Spring Azure	*Celastrina ladon*	
Mourning Cloak	*Nymphalis antiopa*	observed outside wetland boundaries
American Lady	*Vanessa virginiensis*	observed outside wetland boundaries
Red Admiral	*Vanessa atalanta*	
Viceroy	*Limenitis archippus*	
Little Wood Satyr	*Megisto cymela*	
Common Ringlet	*Coenonympha tullia*	
Silver-spotted Skipper	*Epargyreus clarus*	uncommon species
Tawny-edged Skipper	*Polites themistocles*	
Hobomok Skipper	*Poanes hobomok*	
Dun Skipper	*Euphyes vestris*	
Salt Marsh Caterpillar	*Estigmene acrea*	larva stage - photo
Forage Looper Moth	*Caenurgina erechtea*	
Yellow Bear Caterpillar	*Spilosoma virginica*	larva stage

Common Name	Scientific Name	Additional Notes
Dragonflies and Damselflies		
Eastern Red Damsel	***Amphiagrion saucium***	**Provincially Significant species - photo**
Marsh Bluet	*Enallagma ebrium*	
Eastern Forktail	*Ischnura verticalis*	
Common Green Darner	*Anax junius*	
Beaverpond Baskettail	*Epitheca canis*	
Widow Skimmer	*Libellula luctuosa*	
Common Whitetail	*Libellula lydia*	
Twelve-spotted Skimmer	*Libellula pulchella*	
Yellow-legged Meadowhawk	*Sympetrum vicinum*	

Provincially Significant designations include tracked species, and are given by the OMNR and reported on the NHIC web-site: http://www.mnr.gov.on.ca/MNR/nhic/species/species_list.cfm
Uncommon designations are reported in: Bowles, R.L. 1998. Butterflies of Simcoe County.