

Severn Sound

Environmental Association

WETLAND EVALUATION OF THUNDER BAY SWAMP TOWNSHIP OF TINY



October 2005

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Prepared for THE ONTARIO MINISTRY OF NATURAL RESOURCES

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FOREWORD

This document reports on the major findings of the Wetland Evaluation of Thunder Bay Swamp, conducted during 2004 by the Severn Sound Environmental Association (SSEA) for 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 Thunder Bay Swamp Wetland Evaluation has been reviewed and accepted by the Ontario Ministry of Natural Resources Midhurst District.

For additional copies of this report or information on the Severn Sound Environmental Association, please contact the SSEA office.

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Severn Sound Environmental Association staff support was fundamental to the preparation of the Thunder Bay Swamp Wetland Evaluation. I would like to thank Keith Sherman, SSEA Coordinator, and Lex McPhail, GIS & Applications Specialist, for their professional expertise and ongoing support of the project, as well as Paula Madill, Mike Sharpe, Kandice MacMillan, Christopher Waffle, and Sebastian Fleischer, for assisting with data collection and providing additional field support.

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Landowner support for this project was significant; we thank the following people for granting the field crew permission to access their property for the purposes of the wetland evaluation:

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

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1. INTRODUCTION

1.1 Background

Thunder Bay Swamp is located in the Township of Tiny, just inland of Thunder Bay, approximately 9 km west of Penetanguishene (Figure 1). This entire wetland complex is owned by private landowners.



Figure 1: Location of Thunder Bay Swamp

A wetland evaluation was conducted in 1987 by the Ontario Ministry of Natural Resources (OMNR), and Thunder Bay Swamp was evaluated as a Class 3 Wetland (now termed Provincially Significant Wetland).

1.2 Project Goal

The goal of this project was to conduct fieldwork, including boundary verification and remapping of wetland boundaries, and prepare and submit a re-evaluation of Thunder Bay Swamp, upgraded to the 3rd edition standards of the Ontario Wetland Evaluation System.

1.3 Study Team

Severn Sound Environmental Association (SSEA) undertook the evaluation, funded by the Ontario Ministry of Natural Resources. The OMNR contacted landowners regarding the evaluation, and provided file materials, direction, and technical advice to SSEA throughout the project. Severn Sound Environmental Association Wetlands & Habitat Biologist Michelle Hudolin and contractor Bob Bowles conducted field work for the project, with considerable field support from SSEA volunteer Margaret Killing. Geographic Information System (GIS) support and mapping was provided by Lex McPhail, SSEA GIS & Applications Specialist, and SSEA Coordinator Keith Sherman provided guidance and input throughout the project. Additional field support and data collection was provided by SSEA staff Mike Sharpe, Kandice MacMillan, Christopher Waffle, and Sebastian Fleischer. SSEA Ecosystem Technologist Paula Madill assisted with water temperature data collection, and provided the analysis of water temperature data for the thermal classification of the Thunder Bay Swamp stream.

1.4 Fieldwork and Data Collection

Thunder Bay Swamp 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 and habitat in the wetland. Field work was conducted on June 8th, June 16th, July 6th, August 3rd, August 6th, August 30th, September 3rd, September 23rd, September 27th, September 30th, and October 1st, 2004. During field visits, the field crew noted plant species observed and wildlife species observed or heard; minnows were trapped and identified on August 30th and September 3rd. A temperature logger was installed in a creek at the outlet of the wetland to monitor water temperature through the summer.

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 and aerial photograph interpretation was 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.

2. WETLAND EVALUATION

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



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), and/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 Thunder Bay Swamp complex contains two distinct wetland types: marsh and swamp. Overall, the wetlands are dominated by swamp (80%), including tall shrub swamp, low shrub swamp, deciduous swamp, and coniferous swamp habitat. Marsh habitat in the wetland (20%) is dominated by emergent marsh habitat.

Eight individual wetland units make up the 66.1 hectare Thunder Bay Swamp complex (Figure 2). Wetland Unit 1 (Figure 3) is a 1.0 hectare emergent marsh, and Wetland Unit 2 is a 0.1 hectare deciduous swamp community. These two wetland units are located south-west of the main wetland, on the west side of Thunder Beach Road (Figure 2).



Figure 3: Wetland Unit 1, Emergent Marsh Community M4

Wetland Unit 3 is located on the east side of Thunder Bay Road, across from units 1 and 2 (Figure 2). Access was not granted to the property for the 2004 wetland update, therefore the wetland boundaries of this 3.9 hectare wetland unit were interpreted from aerial photographs. The vegetation community descriptions for S2, S5, and S13 are from the 1987 wetland evaluation.

Wetland Unit 4 is a 55.4 hectare unit located south of Green Point Road, and between Thunder Beach Road and County Road 6/Chemin Du Loup Road (Figure 2). This unit contains a variety of wetland communities, some of which are depressions that formed behind relict beach ridges, and some that are dependent on a small creek system. Marsh communities include wet depressions that contain wetland vegetation (Figure 4), and emergent communities with some open water (Figure 5). Swamp communities include coniferous swamp, deciduous swamp (Figure 6), low shrub swamp (Figure 7), and tall shrub swamp habitat (Figure 8).



Figure 4: Wetland Unit 4, Herbaceous Marsh Community M1



Figure 5: Wetland Unit 4, Emergent Marsh Community M3



Figure 6: Wetland Unit 4, Deciduous Swamp Community S4



Figure 7: Wetland Unit 4, Low Shrub Swamp Community S6



Figure 8: Wetland Unit 4, Tall Shrub Swamp Community S16

The 1.0 hectare Wetland Unit 5 and the 1.7 hectare Unit 6 are deciduous swamp depressions located south-east of Beatrice Avenue, and Wetland Unit 7 is a 2.4 hectare swamp and marsh complex located east of Beatrice Avenue (Figure 2). Wetland Unit 8 is a small 0.6 hectare tall shrub swamp community located east of County Road 6/Chemin Du Loup Road (Figure 2).

The habitat and topography surrounding Thunder Bay Swamp is a diverse mixture of row crops, deciduous forest, coniferous forest, open lake, fence rows with cover, a creek flood plain and hilly terrain. In addition, Thunder Bay Swamp is hydrologically connected by surface water to Thunder Bay (Georgian Bay), and some of the wetland overlaps with the Thunder Bay Regionally Significant Life Science Area of Natural and Scientific Interest. Thunder Bay Swamp is approximately 1.5 km north-west of Lafontaine Swamp Non-provincially Significant Wetland, and approximately 3.5 km south-west of Macey Lake Bog Provincially Significant Wetland. 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 plant and animal species.

2.2 Social Component

The field crew noted the presence of a number of potential resources in Thunder Bay Swamp that contribute to the scoring for the social component of the evaluation, including wood products and wildlife species. Approximately 42 hectares of the wetland is dominated by deciduous and coniferous forest. The field crew directly observed or found evidence (e.g. scat, tracks, browse) of several economically valuable wildlife species, including Red Squirrel (*Tamiasciurus hudsonicus*), Beaver (*Castor canadensis*), Raccoon (*Procyon lotor*), and Mink (*Mustela vison*). Local residents Pete Stubbins and Myron Humeniuk also reported that Fisher (*Martes pennanti*), Skunk (*Mephitis mephitis*), Marten (*Martes americana*), Bullfrog (*Rana catesbeiana*) and Snapping Turtle (*Chelydra serpentina serpentina*) use the wetland. Minnows were also observed in the wetland creeks by the field crew.

Thunder Bay Swamp is completely under private ownership, which results in a relatively low level of recreational activity in the wetland. The field crew observed shotgun shells along a trail at the edge of the wetland, as well as a deer stand in the uplands adjacent to the wetland, but little evidence of hunting within the wetland itself. Local resident Myron Humeniuk reported that some residents use the wetland for nature enjoyment and cross-country skiing; hunting and fishing within the wetland are low intensity use.

Human disturbances to the wetland include roads and ditches, as well as a trail that passes near the wetland, and is partially flooded in spring as a result (Figure 9).



Figure 9: Trail Bordering Thunder Bay Swamp

2.3 Hydrological Component

Thunder Bay Swamp is a coastal wetland located near the bottom of the watershed, but is one of the only wetlands in its catchment area (Figure 10), thus it receives a relatively high score for flood attenuation capability. It receives a moderate score for short term water quality improvement, but a relatively low score for long term nutrient trapping capacity.



Figure 10: Thunder Bay Swamp Catchment Area

There are numerous springs, seeps and iron deposits in Thunder Bay Swamp, indicating there is high potential for groundwater discharge. The wetland is also located within 1 km of an aquifer, surrounded by hilly topography. These factors contribute to a relatively high score for groundwater discharge. There is also high potential for groundwater recharge based on the wetland site type and sandy soils surrounding the wetland, consequently, the score for groundwater recharge is very high. The wetland is palustrine in site type, meaning there is either absent or intermittent surface water inflow, and intermittent or permanent surface water outflow from the wetland.

The water levels in Thunder Bay Swamp fluctuated widely throughout the 2004 field season. This was particularly noticeable in Wetland Unit 4, where the water level was much lower in the fall than it was in spring. Marsh community M3 and the swamp communities on the east side of Wetland Unit 4 were particularly affected (Figure 2). In the fall, trees with water stains and "butt swell" were noted in many communities. "Butt swell" is a response that occurs at the base of a tree when it is submerged for a period of time (Figure 11).



Figure 11: Trees with "Butt Swell" in Thunder Bay Swamp

2.4 Special Features Component

During field visits to Thunder Bay Swamp, the field crew recorded 131 plant species (Appendix A). Although not a species of special significance, Cardinal Flower (*Lobelia cardinalis*) was found growing in the wetland (Figure 12).



Photo: Bob Bowles Figure 12: Cardinal Flower (*Lobelia cardinalis*)

Eighty-seven wildlife species were observed in Thunder Bay Swamp, including birds, mammals, amphibians, butterflies, fish, and dragonflies and damselflies (Appendix B). An additional 13 wildlife species were noted adjacent to the wetland boundaries.

The field crew documented 41 species of birds in the wetland during field visits, including breeding birds, summer residents and migrants. Water birds utilizing the wetland included Canada Goose (*Branta canadensis*), Mallard (*Anas platyrhynchos*), Great Blue Heron (*Ardea herodias*), and Green Heron (*Butorides virescens*). Other avifauna observed included American Woodcock (*Scolopax minor*), Ruby-throated Hummingbird (*Archilochus colubris*), Great Crested Flycatcher (*Myiarchus crinitus*), Tree Swallow (*Tachycineta bicolor*), Brown Thrasher (*Toxostoma rufum*), and Northern Waterthrush (*Seiurus noveboracensis*). Breeding evidence was noted for Nashville Warbler (*Vermivora ruficapilla*) and Mourning Warbler (*Oporornis philadelphia*); both species were exhibiting agitated behaviour as a result of the field crew's presence, indicating there was likely a nest nearby. Migrants observed in the wetland included White-crowned Sparrow (*Zonotrichia leucophrys*) and Rusty Blackbird (*Euphagus carolinus*). Cooper's Hawk (*Accipiter cooperii*), Blackburnian Warbler (*Dendroica fusca*), Rose-breasted Grosbeak (*Pheucticus ludovicianus*), and Indigo Bunting (*Passerina cyanea*) were observed outside the wetland boundaries, as well as the nest of an Ovenbird (*Seiurus aurocapillus*).

Seven amphibian species were observed during the field season, including a red eft phase of the Redspotted Newt (*Notophthalmus viridescens viridescens*) in the uplands directly adjacent to the wetland (Figure 13), American Toad (*Bufo americanus*), Tetraploid Gray Treefrog (*Hyla versicolor*), Spring Peeper (*Pseudacris crucifer*), Wood Frog (*Rana sylvatica*), Northern Leopard Frog (*Rana pipiens*), and Green Frog (*Rana clamitans melanota*). A Midland Painted Turtle (*Chrysemys picta marginata*) was also observed in the wetland.



Photo: Bob Bowles Figure 13: Eastern Newt (*Notophthalmus viridescens*)

Mammal observations included direct observations and/or observations of tracks, scat, browse, dams, etc. In addition to the furbearers listed in section 2.2, Snowshoe Hare (*Lepus americanus*), Eastern Chipmunk (*Tamias striatus*), and Eastern Gray Squirrel (*Sciurus carolinensis*) were all observed in and around the wetland. A Porcupine (*Erethizon dorsatum*) carcass was found, as well as tracks of Raccoon (*Procyon lotor*) and White-tailed Deer (*Odocoileus virginianus*).

Minnows were trapped in three locations (Figure 2), on August 30th, and September 3rd, 2004. The most numerous species trapped were Emerald Shiner (*Notropis atherinoides*) and Blacknose Dace (*Rhinichthys atratulus*); over two hundred individuals of each of these two species were trapped. Other species trapped included Northern Redbelly Dace (*Phoxinus eos*), Creek Chub (*Semotilus atromaculatus*), and Brook Stickleback (*Culaea inconstans*).

Twelve species of butterflies were identified in Thunder Bay Swamp, including the uncommon Silver-spotted Skipper (*Epargyreus clarus*). Other species observed within the wetland included Canadian Tiger Swallowtail (*Papilio canadensis*), Northern Crescent (*Phyciodes selenis*), Mourning Cloak (*Nymphalis antiopa*), Eyed Brown (*Satyrodes eurydice*), Little Wood Satyr (*Megisto cymela*), Common Ringlet (*Coenonympha tullia*), Dreamy Duskywing (*Erynnis icelus*), European Skipper (*Thymelicus lineola*), Tawny-edged Skipper (*Polites themistocles*), and Hobomok Skipper (*Poanes hobomok*).

Thirteen dragonfly and damselfly species were observed in Thunder Bay Swamp during field visits. This included: Ebony Jewelwing (*Calopteryx maculata*), Slender Spreadwing (*Lestes rectangularis*), Aurora Damsel (*Chromagrion conditum*), Common Green Darner (*Anax junius*), Twin-spotted Spiketail (*Cordulegaster maculata*), Dot-tailed Whiteface (*Leucorrhinia intacta*), Common Whitetail (*Libellula lydia*), Twelve-spotted Skimmer (*Libellula pulchella*), Four-spotted Skimmer (*Libellula quadrimaculata*), and White-faced Meadowhawk (*Sympetrum obtrusum*). Shadow Darner (*Aeshna umbrosa umbrosa*) and Emerald Spreadwing (*Lestes dryas*) were observed in the wetland and photographed (Figures 14 and 15).





Photo: Bob Bowles Figure 15: Emerald Spreadwing (*Lestes dryas*)

Photo: Bob Bowles Figure 14: Shadow Darner (*Aeshna umbrosa umbrosa*)

Although not a Provincially Significant species, the uncommon Elegant Spreadwing (*Lestes inaequalis*) was present in Thunder Bay Swamp. This damselfly was captured and identified by Bob Bowles; both males and females of the species were present at the site.

There is no known breeding, migration or feeding habitat for Endangered species in Thunder Bay Swamp. One Provincially Significant animal species and one Regionally Significant species were observed in Thunder Bay Swamp in 2004.

2.4.1. Provincially Significant Animal Species

Red-shouldered Hawk (*Buteo lineatus*) was heard and observed in Thunder Bay Swamp on two occasions. This hawk species is of Special Concern provincially and nationally, and is a tracked species. The Red-shouldered hawk was heard calling and seen above forested swamp habitat on August 30th. Bob Bowles indicated that suitable nesting habitat is present in the wetland, although no nest was found by the field crew. On September 3rd, a Red-shouldered Hawk was seen again, soaring above swamp and marsh communities, and giving territorial calls. Red-shouldered Hawk calls were heard on a number of other occasions during field visits, but there was no visual confirmation; since the Blue Jay (*Cyanocitta cristata*) will imitate hawk calls, the field crew was unable to definitively confirm the presence of Red-Shouldered Hawk in the wetland on those occasions.

2.4.2 Regionally Significant Species

Nodding Sedge (*Carex gynandra*) was observed and identified by Bob Bowles in Thunder Bay Swamp. 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

Fish habitat is present in Thunder Bay Swamp, as evidenced by the minnows trapped and larger fish observed during field visits. However, since the significance of fish spawning and nursery habitat, and fish migration and staging habitat is unknown, the wetland was scored according to vegetation types present in the wetland; the wetland scores relatively low in these categories.

According to the OMNR, Thunder Bay Swamp provides Locally Significant winter cover for wildlife (Brad Allan, pers. comm.).

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

2.4.4 Great Lakes Coastal Wetlands

Thunder Bay Swamp is classified as a Great Lakes Coastal Wetland, and receives a score based on its size. Thunder Bay Swamp is considered a coastal wetland under the evaluation system because it is on a tributary to Georgian Bay, 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 Thunder Bay Swamp. Although Purple Loosestrife (*Lythrum salicaria*) was observed in Thunder Bay Swamp in a few locations, it has not formed a monoculture that excludes native species. The non-native, invasive Glossy Buckthorn (*Rhamnus frangula*) was observed throughout Thunder Bay Swamp, and is beginning to displace Winterberry (*Ilex verticillata*) and other native species (Figure 16).



photo: Bob Bowles Figure 16: Winterberry (*Ilex verticillata*)

Local resident Andre Beausoleil reported Common Loon (*Gavia immer*) in the wetland in the spring. 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 a stream at the outflow of Thunder Bay Swamp during the summer (Figure 2), through the use of a temperature data logger. The temperature logger was installed in the wetland on June 14th, and removed on September 30th, 2004. The logger 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 stream (Fisheries and Oceans Canada & Ontario Ministry of Natural Resources, n.d.). Under this methodology, water temperature measurements between 4:00 and 4:30 p.m. are considered representative of the maximum daily water temperature, and are graphed against the maximum daily air temperature. The sampling period used to determine the thermal classification of the creek in Thunder Bay Swamp is between July 1st and September 10th. An analysis of the data reveals that the stream can be considered a coolwater/warmwater stream (Figure 17).



Figure 17: Thermal Classification of Thunder Bay Swamp Stream

2.6 Evaluation Score

The total score for Thunder Bay Swamp is 650, making it a Provincially Significant Wetland. Thunder Bay Swamp scores 135 in the Biological component, 87 in the Social component, 198 in the Hydrological component, and 230 in the Special Features component, due to the presence of significant species and habitat. The Data and Scoring Record is on file with the OMNR Midhurst District.

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Appendix A Plants of Thunder Bay Swamp

Observed during 2004 Wetland Evaluation field work

Family Name	Genus	Species	Common Name	Additional Notes
ACERACEAE	Acer	pensylvanicum	Striped Maple	
ACERACEAE	Acer	rubrum	Red Maple	
ACERACEAE	Acer	saccharinum	Silver Maple	
ACERACEAE	Acer	x freemanii	Hybrid Soft Maple	
ASTERACEAE	Achillea	millefolium spp. millefolium	Common Yarrow	introduced
ALISMATACEAE	Alisma	plantago-aquatica	Common Water-plantain	
BETULACEAE	Alnus	incana ssp rugosa	Speckled Alder	
ASCLEPIADACEAE	Asclepias	syriaca	Common Milkweed	
ASTERACEAE	Aster	lanceolatus ssp. lanceolatus	Panicled Aster	
ASTERACEAE	Aster	puniceus	Purple-stemmed Aster	
POLYPODIACEAE	Athyrium	filix-femina ssp. angustum	Lady Fern	
BETULACEAE	Betula	alleghaniensis	Yellow Birch	
BETULACEAE	Betula	papyrifera	White Birch	
ASTERACEAE	Bidens	cernua	Nodding Beggarticks	
URTICACEAE	Boehmeria	cylindrica	False Nettle	
CABOMBACEAE	Brasenia	schreberi	Water Shield	
POACEAE	Calamagrostis	canadensis	Canada Blue-Joint	

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Family Name	Genus	Species	Common Name	Additional Notes
RANUNCULACEAE	Caltha	palustris	Marsh Marigold	
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	interior	Inland Sedge	
CYPERACEAE	Carex	lupulina	Hop Sedge	
CYPERACEAE	Carex	lurida	Sallow Sedge	
CYPERACEAE	Carex	oligosperma	Few-seeded Sedge	
CYPERACEAE	Carex	retrorsa	Retrorse Sedge	
CYPERACEAE	Carex	stipata	Awl-fruited Sedge	
CYPERACEAE	Carex	stricta	Tussock Sedge	
CYPERACEAE	Carex	trisperma	Three-seeded Sedge	
CYPERACEAE	Carex	tuckermanii	Tuckerman's Sedge	
CYPERACEAE	Carex	vulpinoidea	Fox Tail Sedge	
ERICACEAE	Chamaedaphne	calyculata	Leatherleaf	
SCROPHULARIACEAE	Chelone	glabra	Turtlehead	
PYROLACEAE	Chimaphila	umbellata spp. cisatlantica	Pipsissewa	
APIACEAE	Cicuta	bulbifera	Bulb-bearing Water-hemlock	
APIACEAE	Cicuta	maculata	Spotted Water-hemlock	

Family Name	Genus	Species	Common Name	Additional Notes
LILIACEAE	Clintonia	borealis	Yellow Clintonia	
OROBANCHACEAE	Conopholis	americana	Squawroot	
RANUNCULACEAE	Coptis	trifolia spp. groenlandica	Goldthread	
CORNACEAE	Cornus	amomum ssp. obliqua	Silky Dogwood	
CORNACEAE	Cornus	stolonifera	Red-osier Dogwood	
ORCHIDACEAE	Cypripedium	acaule	Stemless Lady's-slipper	
POLYPODIACEAE	Cystopteris	bulbifera	Bulbet Bladder Fern	
LYTHRACEAE	Decodon	verticillatus	Swamp Loosestrife	
CAPRIFOLIACEAE	Diervilla	lonicera	Bush Honeysuckle	
DROSERACEAE	Drosera	rotundifolia	Round-leaved Sundew	
POLYPODIACEAE	Dryopteris	cristata	Crested Wood Fern	
POLYPODIACEAE	Dryopteris	intermedia	Intermediate Wood Fern	
CYPERACEAE	Dulichium	arundinaceum	Reed-like Three-way Sedge	
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	
OLEACEAE	Fraxinus	americana	White Ash	
OLEACEAE	Fraxinus	nigra	Black Ash	

Family Name	Genus	Species	Common Name	Additional Notes
OLEACEAE	Fraxinus	pennsylvanica var. subintegerrima	Green Ash	
RUBIACEAE	Galium	aparine	Cleavers Bedstraw	
RUBIACEAE	Galium	palustre	Marsh Bedstraw	
GERANIACEAE	Geranium	robertianum	Herb-robert	introduced
ROSACEAE	Geum	rivale	Water Avens	
POACEAE	Glyceria	borealis	Northern Manna Grass	
POACEAE	Glyceria	canadensis	Rattlesnake Manna Grass	
POACEAE	Glyceria	striata	Fowl Meadow or Manna Grass	
AQUIFOLIACEAE	Ilex	verticillata	Winterberry	photo
BALSAMINACEAE	Impatiens	capensis	Spotted Touch-me-not	
IRIDACEAE	Iris	versicolor	Large Blue-flag	
JUNCACEAE	Juncus	effusus ssp. solutus	Soft or Bog Rush	
URTICACEAE	Laportea	canadensis	Wood Nettle	
PINACEAE	Larix	laricina	Tamarack/American Larch	
POACEAE	Leersia	oryzoides	Rice Cut Grass	
CAMPANULACEAE	Lobelia	cardinalis	Cardinal Flower	photo
CAMPANULACEAE	Lobelia	inflata	Indian Tobacco	
CAPRIFOLIACEAE	Lonicera	tatarica	Tartarian Honeysuckle	introduced
LAMIACEAE	Lycopus	uniflorus	Northern Water-horehound	
PRIMULACEAE	Lysimachia	nummularia	Moneywort	introduced

Family Name	Genus	Species	Common Name	Additional Notes
LYTHRACEAE	Lythrum	salicaria	Purple Loosestrife	introduced
POLYPODIACEAE	Matteuccia	struthiopteris	Ostrich Fern	
LAMIACEAE	Mentha	arvensis ssp. borealis	Wild Mint	
SCROPHULARIACEAE	Mimulus	ringens	Square-stemmed Monkey-flower	
MYRICACEAE	Myrica	gale	Sweet Gale	
HALORAGACEAE	Myriophyllum	spicatum	Eurasian Water-milfoil	introduced
POLYPODIACEAE	Onoclea	sensibilis	Sensitive Fern	
OSMUNDACEAE	Osmunda	regalis	Royal Fern	
VITACEAE	Parthenocissus	inserta	Virginia Creeper	
POACEAE	Phalaris	arundinacea	Reed Canary Grass	
PHRYMACEAE	Phryma	leptostachya	Lopseed	
ROSACEAE	Physocarpus	opulifolius	Ninebark	
PINACEAE	Pinus	strobus	Eastern White Pine	
POLYGALACEAE	Polygala	paucifolia	Gay Wings/Fringed Polygala	
LILIACEAE	Polygonatum	pubescens	Hairy Solomon's-Seal	
POLYGONACEAE	Polygonum	cilinode	Fringed Black Bindweed	
POLYGONACEAE	Polygonum	hydropiperoides	Mild Waterpepper	
POTAMOGETONACEAE	Potamogeton	crispus	Curly Muck Pondweed	introduced
POTAMOGETONACEAE	Potamogeton	epihydrus	Nuttall's Pondweed	
POTAMOGETONACEAE	Potamogeton	natans	Common Floating Pondweed	

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Family Name	Genus	Species	Common Name	Additional Notes
ROSACEAE	Potentilla	palustris	Marsh Cinquefoil	
POLYPODIACEAE	Pteridium	aquilinum	Eastern Bracken-fern	
RHAMNACEAE	Rhamnus	frangula	Glossy Buckthorn	introduced
ANACARDIACEAE	Rhus	typhina	Staghorn Sumac	
ANACARDIACEAE	Rhus	rydbergii	Rydberg's Poison-ivy	
FABACEAE	Robinia	pseudo-acacia	Black Locust	introduced
ROSACEAE	Rosa	palustris	Swamp Rose	
ROSACEAE	Rubus	allegheniensis	Alleghany Blackberry	
ROSACEAE	Rubus	occidentalis	Black Raspberry	
POLYGONACEAE	Rumex	crispus	Curly-leaf Dock	introduced
SALICACEAE	Salix	amygdaloides	Peachleaf Willow	
SALICACEAE	Salix	fragilis	Crack Willow	introduced
CAPRIFOLIACEAE	Sambucus	canadensis	Common Elderberry	
CYPERACEAE	Scirpus	acutus	Hard-stemmed Bulrush	
CYPERACEAE	Scirpus	atrovirens	Dark Green Bulrush	
CYPERACEAE	Scirpus	cyperinus	Wool-grass	
CYPERACEAE	Scirpus	validus	Softstem Bulrush	
LAMIACEAE	Scutellaria	lateriflora	Mad-dog Skullcap	
APIACEAE	Sium	suave	Water-parsnip	
SOLANACEAE	Solanum	dulcamara	Climbing Nightshade	introduced

Family Name	Genus	Species	Common Name	Additional Notes
ASTERACEAE	Solidago	canadensis	Canada Goldenrod	
SPARGANIACEAE	Sparganium	americanum	American Bur-reed	
POLYPODIACEAE	Thelypteris	palustris var. pubescens	Marsh Fern	
CUPRESSACEAE	Thuja	occidentalis	N. White Cedar	
TILIACEAE	Tilia	americana	American Basswood	
GUTTIFERAE	Triadenum	fraseri	Marsh St. John's-wort	
PRIMULACEAE	Trientalis	borealis	Star-flower	
PINACEAE	Tsuga	canadensis	Eastern Hemlock	
ТҮРНАСЕАЕ	Typha	latifolia	Broad-leaved or Common Cattail	
ТҮРНАСЕАЕ	Typha	x glauca	Hybrid Cattail	
ULMACEAE	Ulmus	americana	American Elm	
URTICACEAE	Urtica	dioica ssp. gracilis	Stinging Nettle	
SCROPHULARIACEAE	Veronica	scutellata	Marsh Speedwell	
VITACEAE	Vitis	riparia	Riverbank Grape	

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 Thunder Bay Swamp Recorded During 2004 Wetland Evaluation Field Work

Common Name	Scientific Name	Additional Notes
Birds		
Great Blue Heron	Ardea herodias	
Green Heron	Butorides virescens	
Turkey Vulture	Cathartes aura	
Canada Goose	Branta canadensis	
Mallard	Anas platyrhynchos	
Cooper's Hawk	Accipiter cooperii	observed outside wetland boundaries
Red-shouldered Hawk	Buteo lineatus	Provincially Significant Species
Wild Turkey	Meleagris gallopavo	observed outside wetland boundaries
American Woodcock	Scolopax minor	
Mourning Dove	Zenaida macroura	
Ruby-throated Hummingbird	Archilochus colubris	
Belted Kingfisher	Ceryle alcyon	
Yellow-bellied Sapsucker	Sphyrapicus varius	
Downy Woodpecker	Picoides pubescens	
Hairy Woodpecker	Picoides villosus	
Northern Flicker	Colaptes auratus	
Pileated Woodpecker	Dryocopus pileatus	
Eastern Wood-Pewee	Contopus virens	
Great Crested Flycatcher	Myiarchus crinitus	
Red-eyed Vireo	Vireo olivaceus	
Blue Jay	Cyanocitta cristata	
American Crow	Corvus brachyrhynchos	
Tree Swallow	Tachycineta bicolor	
Black-capped Chickadee	Poecile atricapillus	
Red-breasted Nuthatch	Sitta canadensis	observed outside wetland boundaries
White-breasted Nuthatch	Sitta carolinensis	
Veery	Catharus fuscescens	observed outside wetland boundaries
Wood Thrush	Hylocichla mustelina	observed outside wetland boundaries
American Robin	Turdus migratorius	
Gray Catbird	Dumetella carolinensis	
Brown Thrasher	Toxostoma rufum	
Cedar Waxwing	Bombycilla cedrorum	
Nashville Warbler	Vermivora ruficapilla	breeding evidence - agitated behaviour
Yellow Warbler	Dendroica petechia	
Chestnut-sided Warbler	Dendroica pensylvanica	
Black-throated Green Warbler	Dendroica virens	observed outside wetland boundaries
Blackburnian Warbler	Dendroica fusca	observed outside wetland boundaries

Common Name	Scientific Name	Additional Notes
Ovenbird	Seiurus aurocapillus	observed outside wetland-confirmed nest
Northern Waterthrush	Seiurus noveboracensis	
Mourning Warbler	Oporornis philadelphia	breeding evidence - agitated behaviour
Common Yellowthroat	Geothlypis trichas	
Song Sparrow	Melospiza melodia	
Swamp Sparrow	Melospiza georgiana	
White-throated Sparrow	Zonotrichia albicollis	
White-crowned Sparrow	Zonotrichia leucophrys	migrant
Rose-breasted Grosbeak	Pheucticus ludovicianus	observed outside wetland boundaries
Indigo Bunting	Passerina cyanea	observed outside wetland boundaries
Red-winged Blackbird	Agelaius phoeniceus	
Rusty Blackbird	Euphagus carolinus	migrant
Common Grackle	Quiscalus quiscula	observed outside wetland boundaries
Purple Finch	Carpodacus purpureus	
American Goldfinch	Carduelis tristis	
Amphibians		
Red-spotted Newt	Notophthalmus viridescens viridescens	red eft on wetland edge - photo
American Toad	Bufo americanus	adults and tadpoles in wetland
Tetraploid Gray Treefrog	Hyla versicolor	
Spring Peeper	Pseudacris crucifer	
Wood Frog	Rana sylvatica	
Northern Leopard Frog	Rana pipiens	
Green Frog	Rana clamitans melanota	adults and tadpoles in wetland
Reptiles		
Midland Painted Turtle	Chrysemys picta marginata	
Mammals		
Snowshoe Hare	Lepus americanus	
Eastern Chipmunk	Tamias striatus	
Eastern Gray Squirrel	Sciurus carolinensis	
Red Squirrel	Tamiasciurus hudsonicus	
Beaver	Castor canadensis	evidence
Porcupine	Erethizon dorsatum	carcass
Raccoon	Procyon lotor	tracks, scat
Mink	Mustela vison	tracks
White-tailed Deer	Odocoileus virginianus	tracks, browse, scat

Common Name	Scientific Name	Additional Notes
Fish		
Emerald Shiner	Notropis atherinoides	
Northern Redbelly Dace	Phoxinus eos	
Blacknose Dace	Rhinichthys atratulus	
Creek Chub	Semotilus atromaculatus	
Brook Stickleback	Culaea inconstans	
Butterflies		
Canadian Tiger Swallowtail	Papilio canadensis	
Summer Azure	Celastrina neglecta	observed outside wetland boundaries;
Northern Crescent	Phyciodes selenis	
Mourning Cloak	Nymphalis antiopa	
Eyed Brown	Satyrodes eurydice	
Little Wood Satyr	Megisto cymela	
Common Ringlet	Coenonympha tullia	
Silver-spotted Skipper	Epargyreus clarus	uncommon species
Dreamy Duskywing	Erynnis icelus	
European Skipper	Thymelicus lineola	
Tawny-edged Skipper	Polites themistocles	
Hobomok Skipper	Poanes hobomok	
Dragonflies and Damselflies		
Ebony Jewelwing	Calopteryx maculata	
Emerald Spreadwing	Lestes dryas	photo
Elegant Spreadwing	Lestes inaequalis	uncommon species; male and female present
Slender Spreadwing	Lestes rectangularis	
Aurora Damsel	Chromagrion conditum	
Shadow Darner (Common Paddletail)	Aeshna umbrosa umbrosa	photo
Common Green Darner	Anax junius	
Twin-spotted Spiketail	Cordulegaster maculata	
Dot-tailed Whiteface	Leucorrhinia intacta	
Common Whitetail	Libellula (Plathemis) lydia	
Twelve-spotted Skimmer	Libellula pulchella	
Four-spotted Skimmer	Libellula quadrimaculata	
Cherry-faced Meadowhawk	Sympetrum internum	observed outside wetland boundaries
White-faced Meadowhawk	Sympetrum obtrusum	

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, and Bowles, R.L. 1999. Odonata of Simcoe County.