Severn Sound

Environmental Association

ST. ANDREW'S LAKE WETLAND EVALUATION

JANUARY 2004

ST. ANDREW'S LAKE WETLAND EVALUATION
PENETANGUISHENE

January 2004

Prepared for
THE TOWN OF PENETANGUISHENE

by
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FOREWORD

This document reports on the major findings of the Wetland Evaluation of St. Andrew's Lake, conducted during 2002 by Severn Sound Environmental Association 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 St. Andrew's Lake Wetland Evaluation has been reviewed and accepted by the Ontario Ministry of Natural Resources Midhurst District.

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Many of the landowners surrounding St. Andrew's Lake granted the field crew permission to access their property for the purposes of the wetland evaluation. We would like to thank Robert Maurice in particular, for contributing much additional information to the wetland evaluation, including history of the area and species he has observed using the wetland over the past 20 years. We are grateful to the following property owners for their support of the project:

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We received a great deal of information and assistance from the staff at the Midhurst District Ministry of Natural Resources throughout the project. We would like to extend our thanks to Angela McConnell, Jennifer Lavigne, and Stephanie Sides, who accompanied us into the field on a number of occasions and added their expertise to the evaluation. The guidance and input we received throughout the project from Ecologist Gary Allen was invaluable.

We would like to express our appreciation to Marg Killing, who volunteered throughout the project, assisting with fieldwork and maintaining the plant species list. Thank you also to Paul Hodgins, Director of Planning and Development for the Town of Penetanguishene, for municipal information and support, Don Fraser of Gartner Lee Limited, for providing some of the background information on St. Andrew's Lake Wetland, and Jamie Hunter at Huronia Museum, for providing information on the cultural resources in the area surrounding St. Andrew's Lake.

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1. INTRODUCTION

1.1 Background

St. Andrew's Lake Wetland, also known as Penetang Lake and Mud Lake, is located approximately 2 km east of Penetang Bay, within the limits of the Town of Penetanguishene (Figure 1). A portion of the shoreline is owned by the Ontario Ministry of Natural Resources (OMNR), and the remainder is in private ownership.

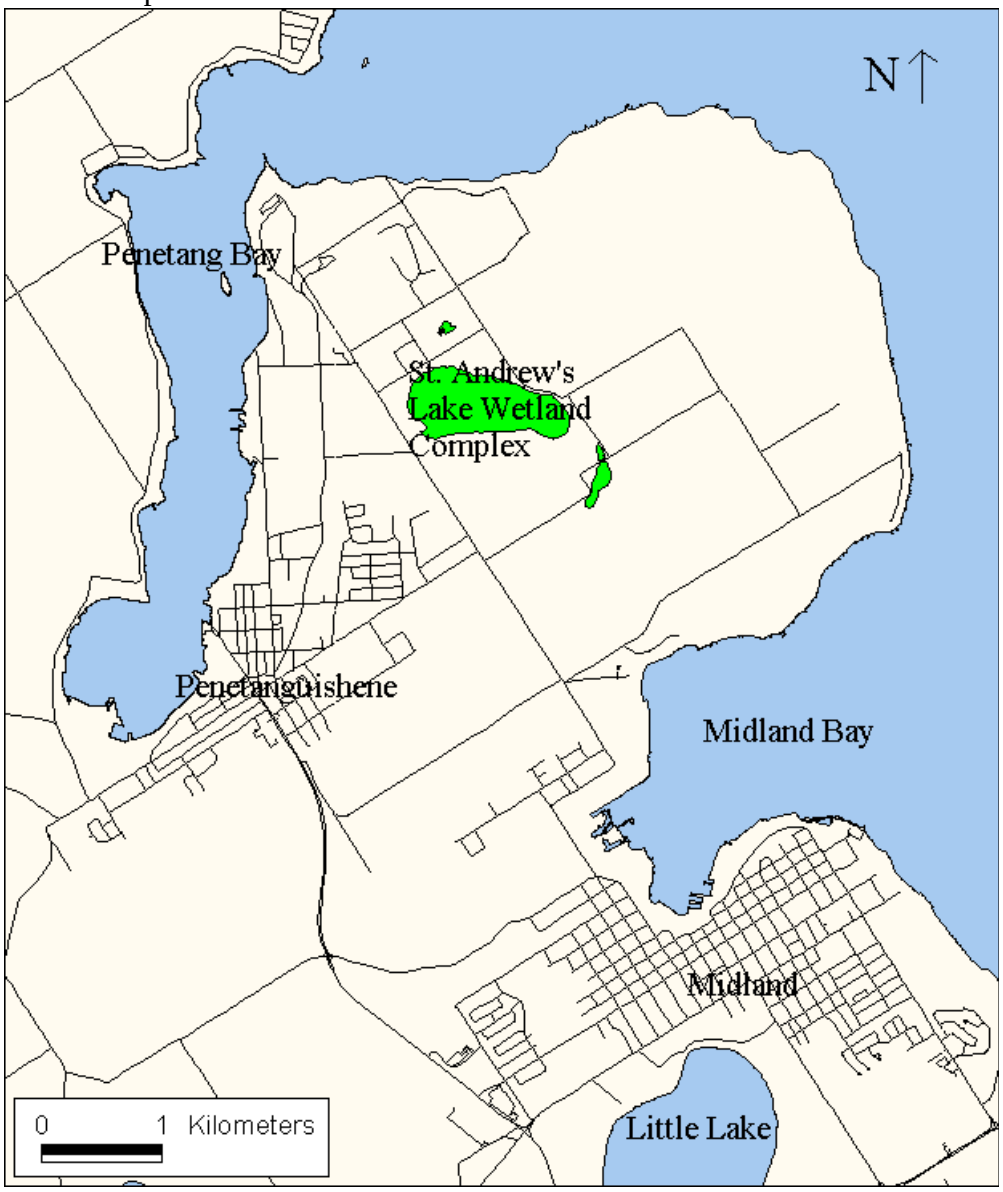

Figure 1: Location of St. Andrew's Lake Wetland

A wetland evaluation was conducted in 1985 by the OMNR, and St. Andrew's Lake Wetland was evaluated as a Class 5 wetland. In 1993, changes were made to the Southern Ontario Wetland Evaluation System. In 2000, a desktop revision of St. Andrew's Lake to third edition Wetland Evaluation Standards was undertaken by the OMNR, resulting in St. Andrew's Lake being evaluated as Provincially Significant. This revision was an in-office exercise, with no additional field work being conducted. The Town of Penetanguishene requested that Severn Sound Environmental Association (SSEA) undertake additional field work to support the desktop revision of the wetland.

1.2 Project Goals and Objectives

The goal of the project was to prepare a revised evaluation for St. Andrew's Lake Wetland that would be submitted to OMNR. Severn Sound Environmental Association conducted field work to assess features in the wetland that may not have been previously documented, and revise the wetland evaluation based on recent field data.

1.3 Study Team

This project was funded by the Town of Penetanguishene and the Ontario Ministry of Natural Resources, and an agreement was made for the Severn Sound Environmental Association to undertake the evaluation revision. The Ontario Ministry of Natural Resources provided direction, technical advice, and field assistance throughout the project. Consultant Bob Bowles and SSEA Wetlands Project Coordinator Michelle Hudolin conducted the inventory, with Geographic Information System support and mapping provided by Lex McPhail, SSEA Applications Specialist. Keith Sherman, SSEA Coordinator, and Gary Allen, OMNR Ecologist, provided guidance and input during the project, and assisted with field work. Additional field support was provided by volunteer Marg Killing and OMNR staff Angela McConnell, Jennifer Lavigne and Stephanie Sides.

1.4 Fieldwork and Data Collection

St. Andrew's Lake Wetland was visited during the spring, summer and early fall of 2002 to collect information on vegetation forms and species present in the wetland. The wetland was visited on May 21st, May 31st, July 3rd, July 31st, September 4th, and October 8th, 2002. The field crew noted any plant and wildlife species observed or heard, and mapped and described wetland vegetation communities, including soils. Water samples were taken during the final field visit and sent to a laboratory for pH, conductivity and phosphorus analysis.

Some information was not directly obtainable from field observations. Access was not granted to the private property on the north and east shores of St. Andrew's Lake (Wetland Unit 1), nor for Wetland Units 2 or 4 (Figure 2). In these instances, aerial photograph interpretation, existing maps, visual interpretation from the lake, and roadside data collection were used to determine the wetland boundary and describe the wetland communities, rather than by direct access to the property. 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 was produced (Figure 2). The communities are divided into wetland types (F=fen, M=marsh, S=swamp, W=open water marsh), and each community given a alpha-numeric identifier. Four distinct wetland units were identified as part of the St. Andrew's Lake Wetland.

Under the Ontario Wetland Evaluation System, 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 wetlands; 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 evaluated. 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 species of special significance.

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 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 an individual 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

St. Andrew's Lake Wetland, made up of four individual wetland units (Figure 2), contains three distinct wetland types: marsh, swamp and fen. The wetland is dominated by marsh, including open water/low marsh and emergent/high marsh habitat. The lake itself is considered to be wetland in this classification, since the evaluation system defines a 'lake' as a body of open water at least 8 hectares in size, and greater than 2 m in depth at the normal low water mark. St. Andrew's Lake is very shallow, and does not exceed 2 m in depth, thus is categorized as open water marsh for the purposes of the evaluation. Swamp is the main sub-component of the wetland, primarily tall shrub swamp, with some conifer tree swamp and deciduous tree swamp also occurring. A small portion of the wetland is fen, a rarer wetland type (Figure 3). Both tall shrub fen and emergent sedge fen are present in St. Andrew's Lake Wetland. The open water portion of the wetland occurs over a central area, with emergents, shrubs and trees around the edge. There are several small islands interspersed with the open water, mainly at the east end of the lake.

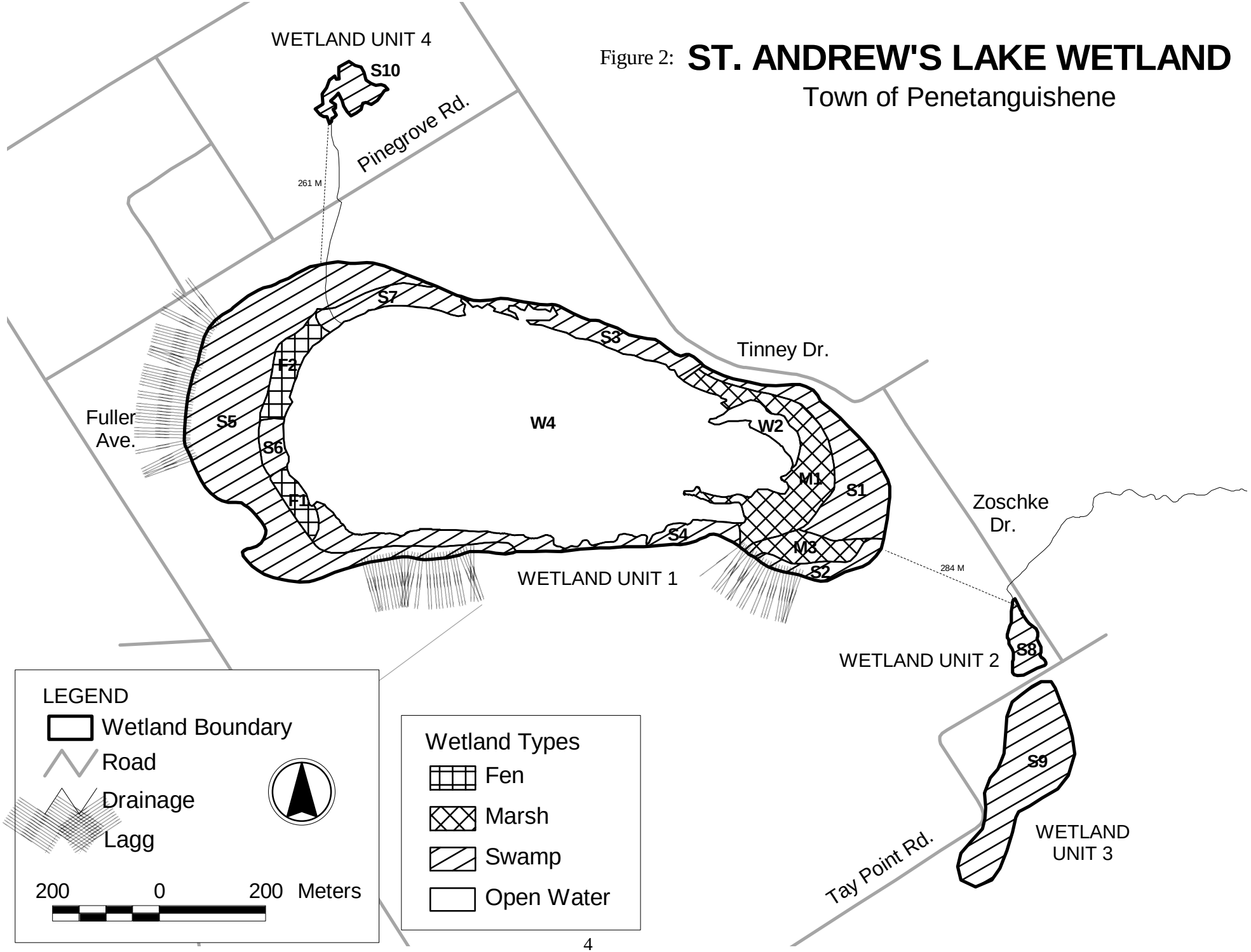

Figure 2: **ST. ANDREW'S LAKE WETLAND**

Town of Penetanguishene

photo: SSEA

Figure 3: Fen community, with Cotton Grass (*Eriophorum sp.*) at left of photo

The habitat surrounding St. Andrew's Lake Wetland is diverse, and includes row crop (hay), abandoned agricultural land, deciduous, coniferous and mixed forest, abandoned pits and quarries, and fence rows with cover. Such diversity in close proximity to the wetland is beneficial from a biological perspective, because greater habitat diversity tends to support more species. St. Andrew's Lake Wetland is also in close proximity to the Provincially Significant Sucker Creek Wetland to the east.

2.2 Social Component

The field crew observed potentially economically valuable products in St. Andrew's Lake Wetland, including wood products in the forested portions of the wetland and minnows (bait fish) in the open water. In addition, resident Robert Maurice provided anecdotal information that Snapping Turtles (*Chelydra serpentina serpentina*) and furbearers such as Mink (*Mustela vison*), Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethica*), Marten (*Martes americana*) and Coyote (*Canis latrans*) are using the wetland. The presence of these potential resources contribute to the scoring for this component of the evaluation.

Recreational activity in St. Andrew's Lake Wetland is relatively low. It is not known to be used for nature enjoyment or ecosystem study, nor for fishing, but there is some use of at least the main wetland by hunters. The field crew found evidence of low intensity use by hunters, including shotgun shells and a makeshift blind erected at the edge of the open water in the fall.

Much of the land surrounding the wetland is held by private landowners, making it relatively inaccessible. However, there is evidence of some localized human disturbance in the wetland. On September 4th, the field crew came across a small amount of peat sitting on a plastic bag, indicating some peat extraction occurs in the wetland, and there were a small number of compacted trails evident in the wetland in the fall that were not observed earlier in the year (Figure 4).

photo: SSEA

Figure 4: Paths in fen community

Several studies of St. Andrew's Lake have been conducted in the past. The Ontario Department of Lands and Forests produced a Lake Survey Summary Sheet for Penetang Lake in 1968, the Ontario Ministry of Natural Resources produced a summary for Penetang Lake Regionally Significant Life Science ANSI (Area of Natural and Scientific Interest) in 1980, and TROW Ontario Ltd. produced a Hydrogeologic report on St. Andrew's Lake in 1987. Gartner Lee Limited produced a Natural Heritage and Hazard Land Study in 2001 for the Town of Penetanguishene which included a small section on St. Andrew's Lake Wetland.

The St. Andrew's Lake area was very popular for Huron-Ouendat people in the period 1550-1650, and a historic Huron village was located in the area from 1600-1630, although there has been little or no archaeological work on the site (Hunter, pers. comm.). Since this site cannot be confirmed to extend into the wetland boundary, no points were awarded in the evaluation for cultural heritage.

2.3 Hydrological Component

There is evidence of groundwater discharge into St. Andrew's Lake Wetland. There were three areas where a lagg was observed. A lagg is a moat that forms around the perimeter of some wetlands that indicates groundwater discharge. Evidence of lagg development was observed on the west side, and the southwest and southeast edges of Wetland Unit 1 (Figure 2).

There is a high potential for groundwater recharge based on the wetland site type. The main portion of the wetland is isolated in site type, meaning there is no surface water outflow from the wetland. This translates into a high score for potential groundwater recharge.

2.4 Special Features Component

There is no known breeding, migration or feeding habitat for an Endangered species in St. Andrew's Lake Wetland. Two Provincially Significant animal species, two Provincially Significant plant species, and two Regionally Significant species were observed in the wetland in 2002. The field crew recorded 72 plant species in the wetland during field visits (Appendix A)

2.4.1. Provincially Significant Animal Species

A Red-shouldered Hawk (*Buteo lineatus*), listed as Vulnerable by the OMNR, was calling, circling and soaring above the main wetland and adjacent land directly to the south of St. Andrew's Lake on July 23rd. This hawk species is typically found utilizing upland areas interspersed with wetlands. On October 8th, a call was heard that may have been a Red-shouldered Hawk, but it was too distant for positive verification. Later the same day, a hawk was observed flying low over the field directly to the south of the main wetland, but again, could not be positively identified. Given the lateness of the season and a brief glimpse at the bird, Bob Bowles speculated that it was likely either a Red-tailed Hawk (*Buteo jamaicensis*) or Red-shouldered Hawk, as most other *Buteo* species had migrated south earlier.

On July 3rd, Bob Bowles identified an Amber-winged Spreadwing damselfly (*Lestes eurinus*) in the wetland. This species has not been given a specific status by the OMNR, but is being tracked, and therefore receives Provincially Significant status for the purposes of scoring the Wetland Evaluation.

2.4.2 Provincially Significant Plant Species

St. Andrew's Lake Wetland is habitat for the Provincially Significant White Fringed Orchid (*Platanthera blephariglottis*), with a significant number of plants noted (Figure 5). The Provincially Significant Yellow-eyed grass (*Xyris difformis*) is also present in the wetland (Figure 6). Both these species are being tracked by the OMNR, resulting in their designation as Provincially Significant species.

photo: B. Bowles

Figure 5: Provincially Significant White Fringed Orchid (*Platanthera blephariglottis*)

photo: B. Bowles

Figure 6: Provincially Significant Yellow-eyed grass (*Xyris difformis*)

2.4.3 Regionally Significant Species

Nutgrass (*Scheuchzaria palustris*) is growing in St. Andrew's Lake Wetland (Figure 7) and Arethusa (*Arethusa bulbosa*) was also observed blooming in the wetland (Figure 8). Both species are considered rare in OMNR Central Region (Riley, 1989), making them Regionally Significant plant species for the purposes of scoring for the evaluation.

photo: B. Bowles

Figure 7: Regionally Significant Nutgrass (*Scheuchzaria palustris*)

photo: B. Bowles

Figure 8: Regionally Significant Arethusa *(Arethusa bulbosa)*

2.4.4 Fish and Wildlife Habitat

The field crew recorded 63 species of birds utilizing the wetland during field visits (Appendix B), including breeding birds, summer residents and migrants. A number of migratory species were recorded in the spring and/or fall, including: Bonaparte's Gull (*Larus philadelphia*), Blue-headed Vireo (*Vireo solitarius*), Cape May Warbler (*Dendroica tigrina*), Western Palm Warbler (*Dendroica palmarum palmarum*), and several Rusty Blackbirds (*Euphagus carolinus*) in with a flock of Common Grackles (*Quiscalus quiscula*). Several bird species were confirmed nesting in St. Andrew's Lake Wetland during 2002. A female Mallard duck (*Anas platyrhynchos*) was flushed off a nest of five eggs on May 31st, a pair of Common Loons (*Gavia immer*) were observed with one chick on several occasions throughout the summer (Figure 9), an adult American Robin (*Turdus migratorius*) was observed carrying food on July 23rd, and a pre-fledgling Eastern Kingbird (*Tyrannus tyrannus*) was observed in the nest on July 23rd. Many more of the species recorded are probably nesting, given that they were singing on territory during the breeding season.

photo: B. Bowles

Figure 9: Adult Common Loon (*Gavia immer*) with young

Appendix B lists other fauna observed during field visits to St. Andrew's Lake Wetland in 2002. This includes seven herpetile species (five amphibians and two reptiles), three mammal species, 26 species of invertebrates, and one species of fish.

Waterfowl moulting and staging are known to occur in St. Andrew's Lake Wetland, but are not of national, provincial or regional significance. The field crew observed large numbers of feathers along the edges of the open water in late summer (Figure 10), and witnessed several flocks of up to 75 Canada Geese (*Branta canadensis*) flying in, with a total of approximately 200 geese congregating on the open water in the fall.

photo: SSEA

Figure 10: Moult feathers on island

The field crew observed minnows in the open water areas of the wetland during 2002. Common Shiner (*Luxilus cornutus*) was identified, and at least one other minnow species was present as well. Schools of these other minnows eluded capture by jumping across the water when approached by a canoe, and a minnow trap failed to catch anything. As a result, the species of these minnows is unknown. Clearly, fish habitat exists in the wetland, but it appears the lake is used primarily by minnows, as no larger fish species were observed.

2.5 Extra Information

Non-native, invasive species are of concern in many wetlands. No invasive Purple Loosestrife (*Lythrum salicaria*) was observed in St. Andrew's Lake Wetland, however, a great deal of non-native, invasive Glossy Buckthorn (*Rhamnus frangula*) was observed throughout the wetland. This shrub is present in virtually all of the vegetation communities in the main wetland, and is extremely thick and abundant in Wetland Unit 3, to the extent that it has choked out most of the other vegetation in the entire community (Figure 11).

photo: SSEA

Figure 11: Glossy Buckthorn (*Rhamnus frangula*)

The results of the water samples taken in St. Andrew's Lake by Severn Sound Environmental Association on October 8, 2002 are provided in Table 1.

Table 1: St. Andrew's Lake Wetland Evaluation - Water Sample Results

Parameter	Station ID			Mean
	SAa	SAb	SAc	
Conductivity (uS/cm)	120	120	121	120
pH	7.67	7.70	7.67	7.68
Alkalinity (mg/L CaCO)	34.1	33.0	34.1	33.7
Chloride (mg/L)	11.3	11.3	11.4	11.3
Nitrogen; ammonia+ammonium (mg/L)	0.032	0.022	0.051	0.035
Nitrogen; nitrite (mg/L)	0.001	0.001	0.001	0.001
Nitrogen; nitrate + nitrite (mg/L)	0.005	0.005	0.009	0.006
Nitrogen; total Kjeldahl (mg/L)	0.65	0.64	0.72	0.67
Phosphorus; phosphate (mg/L)	0.0006	0.0005	0.0006	0.0006
Phosphorus; total (mg/L)	0.012	0.011	0.011	0.011

Parameter	Station ID						Mean
	SA1	SA2	SA3	SA4	SA5	SA6	
Phosphorus; total (ug/L)	13.0	12.6	11.6	12.4	13.0	13.2	12.6

Three main sampling stations were distributed in the open water, along the long-axis of the lake from west to east; six additional samples of total phosphorus were also taken for low level analyses (Figure 12). Sample collection was carried out so as to avoid interference from the canoe wake or disturbance of the shallow lake bed. Samples were analysed at the Ministry of Environment (MOE) Rexdale Laboratory or the MOE Dorset Research Centre using standard analytical techniques.

The lake was slightly alkaline (pH mean 7.68). Based on alkalinity and conductivity, the lake is relatively soft (Alkalinity mean 33.7 mg/L, Conductivity mean 120 uS/cm). Chloride was relatively low with a mean concentration of 11.3 mg/L, indicating that the lake was well isolated from the effects of road salt and other contaminant sources. The single sampling date should adequately characterize the basic water chemistry of the lake.

The four forms of nitrogen analysed indicate that the lake was favourably low in ammonia and nitrate nitrogen with most nitrogen in the organic form. Total phosphorus concentration was moderately low (mean of Dorset samples 12.6 ug/L), indicating that the lake is moderately enriched. It should be noted that the nutrient results represent a single sample in fall, and may fluctuate over the ice-free period of the year. No samples were taken under ice conditions.

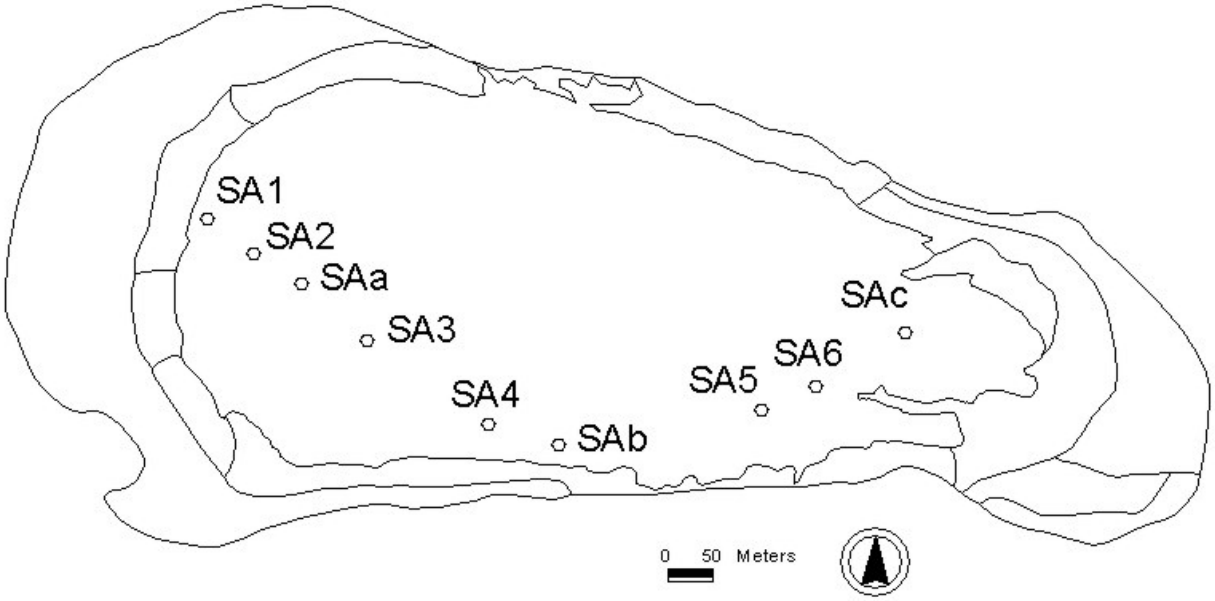

Figure 12: St. Andrew's Lake Water Chemistry Sampling Locations

2.6 Evaluation Score

The total score for St. Andrew's Lake Wetland is 653, making it a Provincially Significant Wetland. It also scores 250 in the Special Features component, due primarily to the presence of rare species and significant habitat. The Data and Scoring Record is on file with the OMNR Midhurst District.

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Appendix A
Plants of St. Andrew's Lake Wetland
Observed during 2002 Wetland Evaluation field work

Family Name	Genus	Species	Common Name	Notes
ACERACEAE	*Acer*	*rubrum*	Red Maple	
BETULACEAE	*Alnus*	*incana ssp rugosa*	Speckled Alder	
ROSACEAE	*Amelanchier*	*arborea*	Downy Serviceberry (Juneberry)	
ERICACEAE	*Andromeda*	*polifolia ssp.glaucophylla*	Bog-rosemary	
ORCHIDACEAE	***Arethusa***	***bulbosa***	**Arethusa**	**Regionally Significant**
ROSACEAE	*Aronia*	*melanocarpa*	Black Chokeberry	
ASCLEPIADACEAE	*Asclepias*	*incarnata ssp. incarnata*	Swamp Milkweed	
ASTERACEAE	*Bidens*	*cernua*	Nodding Beggarticks	
POACEAE	*Calamagrostis*	*canadensis*	Canada Blue-Joint	
ORCHIDACEAE	*Calopogon*	*tuberosus*	Grass Pink/Calopogon	
CYPERACEAE	*Carex*	*lasiocarpa*	Slender Sedge	
CYPERACEAE	*Carex*	*pseudo-cyperus*	Cypress-like Sedge	
CYPERACEAE	*Carex*	*trisperma*	Three-seeded Sedge	
RUBIACEAE	*Cephalanthus*	*occidentalis*	Buttonbush	
ERICACEAE	*Chamaedaphne*	*calyculata*	Leatherleaf	
CYPERACEAE	*Cladium*	*mariscoides*	Water Bog-rush/Twig-rush	
OROBANCHACEAE	*Conopholis*	*americana*	Squawroot	

Family Name	Genus	Species	Common Name	Notes
CORNACEAE	*Cornus*	*stolonifera*	Red-osier Dogwood	
ORCHIDACEAE	*Cypripedium*	*acaule*	Stemless Lady's Slipper	
ORCHIDACEAE	*Cypripedium*	*calceolus var. pubescens*	Large Yellow Lady's Slipper	
DROSERACEAE	*Drosera*	*intermedia*	Spatulate-leaved Sundew	
DROSERACEAE	*Drosera*	*rotundifolia*	Round-leaved Sundew	
CYPERACEAE	*Dulichium*	*arundinaceum*	Reed-like Three-way Sedge	
ERIOCAULACEAE	*Eriocaulon*	*aquaticum*	Pipewort	
CYPERACEAE	*Eriophorum*	*vaginatum ssp spissum*	Hare's Tail Cotton Grass	
CYPERACEAE	*Eriophorum*	*virginicum*	Tawny Cotton Grass	
AQUIFOLIACEAE	*Ilex*	*verticillata*	Winterberry	
IRIDACEAE	*Iris*	*versicolor*	Large Blue-flag	
JUNCACEAE	*Juncus*	*brevicaudatus*	Narrow-Panicle Rush	
ERICACEAE	*Kalmia*	*polifolia*	Bog-laurel	
PINACEAE	*Larix*	*laricina*	Tamarack/American Larch	
ERICACEAE	*Ledum*	*groenlandicum*	Labrador Tea	
MENYANTHACEAE	*Menyanthes*	*trifoliata*	Three-leaved Buckbean	
SCROPHULARIACEAE	*Mimulus*	*ringens*	Square-stemmed Monkey-flower	
NAJADACEAE	*Najas*	*flexilis*	Slender Naiad	
NYMPHACEAE	*Nymphaea*	*odorata*	Fragrant Water-lily	

Family Name	Genus	Species	Common Name	Notes
POLYPODIACEAE	*Onoclea*	*sensibilis*	Sensitive Fern	
OSMUNDACEAE	*Osmunda*	*regalis*	Royal Fern	
POACEAE	*Phalaris*	*arundinacea*	Reed Canary Grass	
PINACEAE	*Picea*	*mariana*	Black Spruce	
PINACEAE	*Pinus*	*strobus*	Eastern White Pine	
ORCHIDACEAE	***Platanthera***	***blephariglottis***	**White Fringed Orchid**	**Provincially Significant**
ORCHIDACEAE	*Platanthera*	*clavellata*	Club Spur Orchid	
ORCHIDACEAE	*Pogonia*	*ophioglossoides*	Rose Pogonia	
PONTEDERIACEAE	*Pontederia*	*cordata*	Pickerel-weed	
POTAMOGETONACEAE	*Potamogeton*	*amplifolius*	Large-leaved Pondweed	
POTAMOGETONACEAE	*Potamogeton*	*epihydrus*	Nuttall's Pondweed	
POTAMOGETONACEAE	*Potamogeton*	*gramineus*	Grass-Like Pondweed	
POTAMOGETONACEAE	*Potamogeton*	*pectinatus*	Sago Pondweed	
ROSACEAE	*Potentilla*	*palustris*	Marsh Cinquefoil	
RHAMNACEAE	*Rhamnus*	*frangula*	Glossy Buckthorn	introduced/non-native
ANACARDIACEAE	*Rhus*	*rydbergii*	Rydberg's Poison-ivy	
CYPERACEAE	*Rhynchospora*	*alba*	White Beaked-rush	
ROSACEAE	*Rosa*	*palustris*	Swamp Rose	
SALICACEAE	*Salix*	*petiolaris*	Slender Willow	

Family Name	Genus	Species	Common Name	Notes
SARRACENIACEAE	*Sarracenia*	*purpurea*	Pitcher Plant	
SCHEUCHZERIACEAE	***Scheuchzeria***	***palustris***	**Pod-grass, Marsh Scheuchzeria**	**Regionally Significant**
CYPERACEAE	*Scirpus*	*hudsonianus*	Hudson Bay Bulrush	
CYPERACEAE	*Scirpus*	*pungens*	Three Square Bulrush	
LAMIACEAE	*Scutellaria*	*galericulata*	Hooded Skullcap	
ROSACEAE	*Spiraea*	*alba*	Narrow-leaved Meadowsweet	
ROSACEAE	*Spiraea*	*tomentosa*	Hardhack/Steeplebush	
POLYPODIACEAE	*Thelypteris*	*palustris var.pubescens*	Marsh Fern	
CUPRESSACEAE	*Thuja*	*occidentalis*	N. White Cedar	
GUTTIFERAE	*Triadenum*	*fraseri*	Marsh St. John's-wort	
TYPHACEAE	*Typha*	*latifolia*	Broad-leaved or Common Cattail	
LENTIBULARIACEA	*Utricularia*	*cornuta*	Horned Bladderwort	
LENTIBULARIACEA	*Utricularia*	*vulgaris*	Greater Bladderwort	
ERICACEAE	*Vaccinium*	*macrocarpon*	Large Cranberry	
ERICACEAE	*Vaccinium*	*oxycoccos*	Small Cranberry	
VIOLACEAE	*Viola*	*macloskeyi ssp. pallens*	Northern White Violet	
XYRIDACEAE	***Xyris***	***difformis***	**Slender Yellow-eyed Grass**	**Provincially Significant**

Provincially Significant designations are given by the OMNR and reported on the NHIC web-site: www.mnr.gov.on.ca/MNR/nhic/nhic.cfm
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 St. Andrew's Lake Wetland
Recorded during 2002 Wetland Evaluation field work

Common Name	Scientific Name	Notes
Birds		
Common Loon	*Gavia immer*	confirmed nesting - 2 adults, 1 young observed
Great Blue Heron	*Ardea herodias*	
Green Heron	*Butorides virescens*	
Canada Goose	*Branta canadensis*	
Wood Duck	*Aix sponsa*	
Mallard	*Anas platyrhynchos*	confirmed nesting - nest with 5 eggs observed
Green-winged Teal	*Anas crecca*	
Common Merganser	*Mergus merganser*	
Sharp-shinned Hawk	*Accipiter striatus*	
Red-shouldered Hawk	***Buteo lineatus***	**Provincially Significant**
Red-tailed Hawk	*Buteo jamaicensis*	
Merlin	*Falco columbarius*	
Killdeer	*Charadrius vociferus*	
Bonaparte's Gull	*Larus philadelphia*	
Ring-billed Gull	*Larus delawarensis*	
Herring Gull	*Larus argentatus*	
Caspian Tern	*Sterna caspia*	
Common Tern	*Sterna hirundo*	
Rock Dove	*Columba livia*	
Mourning Dove	*Zenaida macroura*	
Belted Kingfisher	*Ceryle alcyon*	
Downy Woodpecker	*Picoides pubescens*	
Hairy Woodpecker	*Picoides villosus*	
Least Flycatcher	*Empidonax minimus*	
Eastern Phoebe	*Sayornis phoebe*	
Great Crested Flycatcher	*Myiarchus crinitus*	
Eastern Kingbird	*Tyrannus tyrannus*	confirmed nesting - 1 pre-fledgling in nest
Blue-headed Vireo	*Vireo solitarius*	
Blue Jay	*Cyanocitta cristata*	
American Crow	*Corvus brachyrhynchos*	
Tree Swallow	*Tachycineta bicolor*	
Barn Swallow	*Hirundo rustica*	
Black-capped Chickadee	*Poecile atricapillus*	
House Wren	*Troglodytes aedon*	
Golden-crowned Kinglet	*Regulus satrapa*	
Ruby-crowned Kinglet	*Regulus calendula*	

Common Name	Scientific Name	Notes
Veery	*Catharus fuscescens*	
Swainson's Thrush	*Catharus ustulatus*	
American Robin	*Turdus migratorius*	confirmed nesting - adult carrying food
Gray Catbird	*Dumetella carolinensis*	
European Starling	*Sturnus vulgaris*	
Cedar Waxwing	*Bombycilla cedrorum*	
Nashville Warbler	*Vermivora ruficapilla*	
Yellow Warbler	*Dendroica petechia*	
Cape May Warbler	*Dendroica tigrina*	
Black-throated Blue Warbler	*Dendroica caerulescens*	
Yellow-rumped Warbler	*Dendroica coronata*	
Western Palm Warbler	*Dendroica p. palmarum*	
Black-and-White Warbler	*Mniotilta varia*	
Ovenbird	*Seiurus aurocapillus*	
Northern Waterthrush	*Seiurus noveboracensis*	
Common Yellowthroat	*Geothlypis trichas*	
Savannah Sparrow	*Passerculus sandwichensis*	
Song Sparrow	*Melospiza melodia*	
Swamp Sparrow	*Melospiza georgiana*	
White-throated Sparrow	*Zonotrichia albicollis*	
White-crowned Sparrow	*Zonotrichia leucophrys*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Rusty Blackbird	*Euphagus carolinus*	
Common Grackle	*Quiscalus quiscula*	
Brown-headed Cowbird	*Molothrus ater*	
Baltimore Oriole	*Icterus galbula*	
American Goldfinch	*Carduelis tristis*	
Herpetiles (Reptiles & Amphibians)		
Red-spotted Newt	*Notophthalmus viridescens viridescens*	
Tetraploid Gray Treefrog	*Hyla versicolor*	
Northern Spring Peeper	*Pseudacris crucifer crucifer*	
Northern Leopard Frog	*Rana pipiens*	
Green Frog	*Rana clamitans melanota*	
Midland Painted Turtle	*Chrysemys picta marginata*	
Eastern Garter Snake	*Thamnophis sirtalis sirtalis*	
Mammals		
Snowshoe Hare	*Lepus americanus*	pellets observed
Raccoon	*Procyon lotor*	skull found and keyed out
White-tailed Deer	*Odocoileus virginianus*	

Common Name	Scientific Name	Notes
Invertebrates		
Flower Spider	*Misumena vitia*	
giant water bug	*Family: Belostomadtidae*	
whirligig beetle	*Family: Gyrinidae*	
Butterflies and Moths		
Cabbage White	*Pieris rapae*	
Clouded Sulphur	*Colias philodice*	
Bog Copper	*Lycaena epixanthe*	Uncommon
Brown Elfin	*Callophrys augustinus*	
Silvery Blue	*Glaucopsyche lygdamus*	Uncommon
Dreamy Duskywing	*Erynnis icelus*	
Columbine Duskywing	*Erynnis lucilius*	
European Skipper	*Thymelicus lineola*	
Cranberry Spanworm Moth	*Ematurga amitaria*	
Virginia Yellowbear Moth	*Spilosoma virginica*	
Dragonflies and Damselflies		
Amber-winged Spreadwing	***Lestes eurinus (Say, 1839)***	**Provincially Significant**
Boreal Bluet	*Enallagma boreale (Selys, 1875)*	
Tule Bluet	*Enallagma carunculatum (Morse, 1895)*	Uncommon
Hagen's Bluet	*Enallagma hageni (Walsh, 1863)*	
Common Green Darner	*Anax junius (Drury, 1770)*	
Calico Pennant	*Celithemis elisa (Hagen, 1861)*	
Hudsonian Whiteface	*Leucorrhinia hudsonica (Selys, 1850)*	
Slaty Skimmer	*Libellula incesta (Hagen, 1861)*	
Chalk-fronted Skimmer	*Libellula julia (Uhler, 1857)*	
Widow Skimmer	*Libellula luctuosa (Burmeister, 1839)*	
Twelve-spotted Skimmer	*Libellula pulchella (Drury, 1773)*	
Four-spotted Skimmer	*Libellula quadrimaculata (Linnaeus, 1758)*	
Fish		
Common Shiner	*Luxilus cornutus*	

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Uncommon designations are reported in: Bowles, R.L. 1998. Butterflies of Simcoe County, May 1996. 2 pp., and in: Bowles, R.L. 1999. Odonata of Simcoe County, May 1999. 3 pp.