

Eastern Lake St. Clair Important Bird Area Conservation Plan

November 2001

Produced for the Eastern Lake St. Clair IBA Steering Committee and Stakeholders

by

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Acknowledgments

The Important Bird Areas Program is part of the Natural Legacy 2000 program, a nation-wide initiative to conserve wildlife and habitats on private and public lands. We gratefully acknowledge the financial support of the Government of Canada's Millennium Partnership Program. We also gratefully acknowledge the financial support of the C.S. Mott Foundation to Great Lakes Basin Important Bird Areas.

The Canadian Nature Federation and Bird Studies Canada are the national partners of BirdLife International in Canada. The Federation of Ontario Naturalists is responsible for site conservation planning in Ontario IBAs.

The Eastern Lake St. Clair IBA Steering Committee has met numerous times in providing the background for this conservation plan. The following people and organizations have contributed to this conservation plan in their comments, review, or through meetings with the IBA steering committee:

David Bradley, Diane Caron, Tom Chatterton, Mike Childs, Curly Clark, Michelle Clark, Larry Cornelis, Earl Elgie, Mark Emery, Ron Faubert, John Haggeman, Don Hector, Joel Ingram, Terry Jackson, Janet Jones, Dan Keeler, Ron Ludolph, Muriel Murcer, Norm North, John Paskus, Jason Reaume, Jeff Robinson, Ken Ross, Gerry Tremblay, Denise Vandervere, Valerie Welsh, David West, Mike Williams, Roger Williams, Allen Woodliffe and Heather Wilson. Maureen Garvie provided copy editing.

Special thanks to Tim Marchand, GIS specialist with the OMNR, for providing the mapping in this plan, and to John Haggeman for providing thoughtful and detailed comments to each draft.

The following agencies and organizations have been actively involved in the development of this conservation plan:

Canadian Wildlife Service, Environment Canada
Ontario Ministry of Natural Resources
Ducks Unlimited Canada
Municipality of Chatham-Kent
Stewardship Kent
Sydenham Field Naturalists
Lower Thames Valley Conservation Authority
Wallaceburg Chamber of Commerce
Kent Soil and Crop Improvement Association

Citation:

Cheskey E.D., and W.G. Wilson. 2001. *Eastern Lake St. Clair Important Bird Area Conservation Plan*. Can. Nature Fed., Bird Studies Can., Fed. of Ont. Naturalists. 50pp.

1.0 Introduction

On April 1st, we were standing atop the tower overlooking St. Clair National Wildlife Area. The sheer number of birds swirling around us was dazzling. A steady stream of ducks poured by along the Lake St. Clair shoreline, just beyond the tangled and tree-lined dyke and too distant for identification. Coots grumbled away in the marsh openings, and mysterious sounds emanated from among the dead stalks of last year's growth. High-pitched cooings drew our gaze skywards just in time to see the sun reflecting off the immaculate white wings of Tundra Swans, heading north and west to their next staging area on their long migration to the Arctic.

The coastal wetlands of Lake St. Clair are a remarkable place for observing birds and other wildlife. Unmatched numbers of waterfowl stop here in spring and fall. Marshbirds abound, including several threatened species. On the other side of the dykes, in contrast to the verdant wetlands, lie the flat expanses of highly profitable black soils of agricultural lands. Expansive marshes and prairies once blanketed these same rich soils, before they were grazed upon, drained, ploughed, or flooded, and transformed into the farms or dyked wetlands. Farming and hunting drive the local economy. The black soils grow seed crops or vegetables such as onions, celery, beets, and tomatoes. The dyked marshes are managed for a major fall waterfowl hunt. Lake St. Clair's significance for birds is geographical as much as ecological. Lying on two major flyways, the Atlantic and the Mississippi, it is a critical feeding, resting, and staging area for numerous species.

Eastern Lake St. Clair IBA includes all of the open waters south of the St. Clair River delta under Canadian jurisdiction, excluding areas under the jurisdiction of Walpole Island First Nation. It includes a broad swath of adjacent farmland and inland habitats from Wallaceburg to the mouth of the Thames River. This IBA supports globally significant numbers of waterfowl, Tundra Swan, and Black-bellied Plover, and nationally significant numbers of several marsh species including, the nationally endangered King Rail.

In November 1999 the first stakeholders meeting for the Eastern Lake St. Clair IBA was held. Several meetings and a fledgling waterbird festival later, the IBA Steering Committee produced the following vision statement:

The Eastern Lake St. Clair Important Bird Area will promote conservation, stewardship and the hunting traditions to protect the area's significance for breeding, wintering and migratory birds, as a place where birds can be observed, monitored, studied and enjoyed for the ecological, educational, economic and recreational benefits to the people of Ontario and beyond.

This document provides stakeholders and those interested in conservation of birds and habitat in the Eastern Lake St. Clair Important Bird Area with a broad-based plan to address bird conservation within this area. Several other initiatives either directly or indirectly focused on bird conservation are underway within the Lake St. Clair area. This IBA conservation plan will acknowledge these efforts, attempt to identify conservation gaps, and suggest appropriate actions and means to fill these gaps. Chapter 2 describes the IBA program. Chapter 3 describes the site

in its ecological, geographical, and social setting. Chapter 4 describes significant bird species and groups of species and their habitats in the IBA, delving into their natural histories and characterizing their presence in the IBA. Chapter 5 considers other elements of natural significance at this site. Land use, ownership, and conservation action and management are described in Chapters 6 and 7. Chapter 8 describes the main stakeholders in the IBA. Chapters 9 and 10 explore both threats to the significant bird populations and opportunities for conservation. The goals, objectives, and strategic actions of this plan are presented in Chapter 11. This IBA plan should be considered a living document, open to revision as conditions change.

2.0 The Important Bird Area Program

The IBA program is an international initiative coordinated by BirdLife International, a partnership of member-based organizations in over 100 countries, seeking to identify and conserve sites important to all bird species world-wide. Through the protection of birds and habitats, they also promote the conservation of the world's biodiversity. There are currently IBA programs in Europe, Africa, the Middle East, Asia, and the Americas.

The Canadian BirdLife co-partners are the Canadian Nature Federation (CNF) and Bird Studies Canada (BSC). The Canadian IBA program is part of the Americas IBA program which includes the United States, Mexico, and 17 countries in Central and South America. The Federation of Ontario Naturalists is responsible for implementing conservation planning for IBAs in Ontario.

The goals of the Canadian IBA program are to:

- Identify a network of sites that conserve the natural diversity of Canadian bird species and are critical to the long-term viability of naturally occurring bird populations;
- Determine the type of protection or stewardship required for each site and ensure the conservation of sites through partnerships of local stakeholders who develop and implement appropriate on-the-ground conservation plans; and
- Establish ongoing local involvement in site protection and monitoring.

IBAs are identified by the presence of birds at sites falling under one or more of the following internationally agreed-upon categories:

- 1) sites regularly holding significant numbers of an endangered, threatened, or vulnerable species;
- 2) sites regularly holding an endemic species, or species with restricted ranges;
- 3) sites regularly holding an assemblage of species largely restricted to a biome;
- 4) sites where birds concentrate in significant numbers when breeding, in winter, or during migration.

While the program is at all stages a voluntary one, the advantages of recognizing a site as an IBA extend beyond those of conservation alone. There can be increased awareness of the true worth

of the site among the local community, and community involvement can result in diverse groups working for a common cause.

In Ontario the Federation of Ontario Naturalists oversees community conservation planning in IBAs. Sites were recommended for conservation planning by a panel of ornithologists and conservation leaders. Eastern Lake St. Clair IBA ranked the highest of all sites considered!

Community conservation planning means engaging the local community in developing and implementing the conservation plan. The process of developing a plan was initiated in the Eastern Lake St. Clair IBA in the summer of 1999. A steering committee of local residents, agency representatives, and business owners have provided the ideas and direction for this conservation plan. A great deal of effort and energy was directed to organizing a bird festival for the area in 2000. Most critical for successful conservation efforts is the forging of partnerships around the common theme of conservation between all stakeholders.

3.0 IBA Site Information

3.1 Location and description

Site: Eastern Lake St. Clair, CAON012G

Location: 42°25' N, 82°34' W

Lake St. Clair is located in extreme southwestern Ontario, lying between Lake Huron and Lake Erie, north of the cities of Windsor, Ontario, and Detroit, Michigan. Lake St. Clair links the upper and lower Great Lakes via the in-flowing St. Clair River to the north and the out-flowing Detroit River to the south. The Eastern Lake St. Clair IBA encompasses the eastern shore, marshlands, and agricultural fields from the Sydenham River at Wallaceburg to the mouth of the Thames River and the open waters of Lake St. Clair, south of the St. Clair River delta under Canadian jurisdiction, excluding lands and waters under Walpole Island First Nation jurisdiction.

All of the land within the IBA is within the Municipality of Chatham-Kent, encompassing several hamlets and the community of Mitchell's Bay (population 350), well known for its fishing, duck hunting, boating, and camping facilities. Wallaceburg, situated on the banks of the Sydenham River that flows into Lake St. Clair, is on the northern boundary of the IBA. This community (population 12,000,), was once known as both "the Glass Capital of Canada" and the "Tool and Die Capital of North America." The economy of Chatham-Kent depends largely on the automotive industry and on agriculture, primarily corn and soybeans. Twenty percent of local residents are employed in agriculture. The land along the lake and within the IBA is some of the most fertile and productive in Ontario.

Eastern Lake St. Clair IBA lies within the Lake Erie Lowlands Ecoregion. In July the mean daily temperature is 22°C, in January -3.8°C, with snow cover seldom remaining for long on the ground. The mean annual precipitation on the Chatham Flats is about 760 mm. Summer drought is common (McKeating et al. 1982).

4.0 IBA Species Information

4.1 Waterfowl

Eastern Lake St. Clair has been recognized as a globally significant IBA under the congregatory species category and nationally significant under the threatened species category. Peak totals of waterfowl are estimated to be 150,000 during fall migration and 50,000 during spring migration (Canadian IBA Database 1999). The total number of waterfowl-days¹ for Lake St. Clair between 1969 and 1991 averaged 6,500,000 during fall and 1,600,000 during spring (Mullie et al. 1996).

In the fall this IBA supports 46 percent of the southern Great Lakes waterfowl-days for dabbling ducks and 25 percent for Canvasbacks (*Aythya valisineria*) and Redheads (*Aythya americana*), thus earning it the reputation as one of the most important resting and feeding sites for waterfowl in Canada south of James Bay. Although not monitored on a regular basis, the monitoring that has been undertaken demonstrates that the site exceeds the aggregate global threshold for waterfowl and likely supports more than 1 percent of the population of several different waterfowl species (Canadian IBA Database 1999).

Over half of the eastern population of Tundra Swans (*Cygnus columbianus*) (25 percent of the North American population) migrates through Lake St. Clair during spring migration (Ramsar 2000). According to surveys between the late 1960s and early 1990s, average spring use is 140,000 waterfowl-days and fall use is 9000 waterfowl-days (Mullie et al. 1996). Anecdotal observations suggest that numbers of Tundra Swans using the area have increased in the 1990s (Haggeman, pers. comm.).

4.2 Other IBA Species

In spring the agricultural fields along the eastern shoreline (particularly from Pain Court Line at Bradleys Farms east to the Jacob Sideroad and north to Mallard line) provide stopover habitat for approximately 2.5 percent of the estimated North American population of Black-bellied Plovers (*Pluvialis squatarola*) (Canadian IBA Database 1999, Haggeman, pers. comm.). In May 1993 as many as 5,000 Black-bellied Plovers were observed in one day. Lesser-Golden Plovers (*Pluvialis dominica*) are also observed in large numbers in these flocks, and have been included as an IBA species.

¹ The number of waterfowl-days equals the number of ducks multiplied by the number of days present.

The Lake St. Clair marshes and delta² have the highest populations of Black Tern (*Chlidonias niger*) and Forster's Tern (*Sterna forsteri*) in Ontario (Austen et al. 1994). Of the 555 confirmed Forster's Tern nests reported by Austen et al., 550 of these were located within the delta marshes of Walpole Island and five estimated within the IBA at St. Clair National Wildlife Area. The private marshes of Big Point, however, are reported to have many nesting Forster's Terns, though they have not been surveyed. The overall total represents 3.5 percent of the estimated North American population. The shallow waters, bays, and open marshland waters of the IBA provide excellent foraging habitat for these terns during breeding and migration. An estimated 75+ individuals have been recorded in eastern shore marshes of the IBA (Canadian IBA Database 1999). The status of Forster's Tern is both nationally and provincially indeterminate (COSEWIC 2000; COSSARO 2000).

In 1991, 153 pairs of Black Tern were known to nest in Lake St. Clair Marshes, about 28 percent of the Canadian Great Lakes population. Most nests were located within Walpole Island marshes adjacent to the IBA, however, 39 pairs were nesting within the IBA (Canadian IBA Database 1999). Furthermore, over 75 individual Black Terns have been observed during the breeding season in major portions of the east shore marshes that have not been thoroughly surveyed (Haggeman, pers. comm.). Although no Canadian population estimate is available for Black Tern, a threshold of 50 pairs for significant colonies has been used to identify nationally significant sites (Canadian IBA Database 1999). Black Tern is designated as "Vulnerable" in Ontario and "Not at Risk" nationally (COSSARO 2000; COSEWIC 2000).

The St. Clair Region has the highest diversity and population density of rail species in Ontario (Kozlovic 1997). An estimated 15 percent of the national population of King Rail (*Rallus elegans*) is thought to breed in the IBA with more than 30 percent of the population in the St. Clair region (Canadian IBA Database 1999). The King Rail is a nationally and provincially Endangered species (COSEWIC 2000; COSSARO 2000).

The Least Bittern (*Ixobrychus exilis*) is listed as a Species of Concern nationally and as Vulnerable in Ontario (COSEWIC 2000; COSSARO 2000). It is a common breeder in the east shoreline marshes of the IBA including St. Clair National Wildlife Area. More than 75 individuals have been recorded along the eastern shoreline (Canadian IBA Database 1999).

4.3 Natural History of IBA Species

4.3.1 Dabblers

Tremendous numbers of dabbling ducks stop over in the Lake St. Clair Basin, particularly during fall migration. The marshlands of the IBA provide abundant aquatic vegetation for herbivorous waterfowl. Baited areas and waste cereal grains in agricultural fields supplement the food resources. Invertebrates in the marshes and nearshore waters are an important food source in the spring (Robinson, pers. comm.).

² The delta of the St. Clair River includes Walpole Island, Squirrel Island, and St. Anne's Island, all within the Walpole First Nations Reserve. This area, though ecologically linked to the eastern Lake St. Clair marshes, and of extreme biological significance, is not considered as part of this IBA.

Mallard (*Anas platyrhynchos*), American Black Duck (*Anas rubripes*), and American Wigeon (*Anas americana*) generally comprise over 80 percent of the dabblers migrating through Lake St. Clair. Other dabblers include Green-winged Teal (*Anas crecca*), Blue-winged Teal (*Anas discors*), Northern Shoveler (*Anas clypeata*), Northern Pintail (*Anas acuta*), Gadwall (*Anas strepera*), and Wood Duck (*Aix sponsa*). Lake St. Clair marshes are also of high importance to moulting waterfowl, particularly Mallard and Wood Duck, during the summer months (Haggeman, pers comm.).

Located at the convergence of the Atlantic and the Mississippi flyways, this IBA is at the crossroads of a network of stopovers that is helping agencies involved in the North American Waterfowl Management Plan (NAWMP) achieve population target numbers for many of the waterfowl species mentioned above. American Wigeon, American Black Duck and Northern Pintail, however, remain either continentally or regionally below target levels. More restrictive hunting regulations involving reduced bag limits have been placed on the Black Duck harvest since the mid-1980s to assist in protecting depressed populations (Mullie et al. 1996, CWS Waterfowl Committee 1999; Canadian Wildlife Service 2000).

4.3.2 Canvasback (*Aythya valisineria*) and Redhead (*Aythya americana*)

Canvasbacks and Redheads are members of the genus *Aythya*, which includes Ring-necked Duck and Lesser and Greater Scaup. These diving ducks often congregate during migration in huge rafts on large lakes and bays. Rafts up to 12-14 km long have been described on Lake St. Clair (Pearce, 1997). Canvasbacks and Redheads are readily confused because of their similar colour pattern. Shape and colour of head and bill and general tones of plumage are clues to distinguish them. But with similarities in appearance, habitat preference, and rafting behaviour during migration, there is little wonder that these two species have been coupled in management and conservation plans.

Canvasbacks and Redheads are of special interest across the continent because they are less common than most other ducks. Canadian populations of both species are presently above NAWMP target numbers; however this has not always been the case. With a well-deserved reputation as a “fine table bird,” the Canvasback has been a gamebird of choice among North American hunters. During the years of market hunting, the late 1800s and early 1900s, large numbers of both species were shot for the commercial market. Even after the Migratory Bird Convention Act of 1917, which prohibited market hunting, both the Canvasback and Redhead required special protection for many decades. Despite hunting restrictions, there was little change in population numbers. Canvasbacks declined percent between 1955 and 1974 (del Hoyo 1992a). During the mid-1900s, Redheads were still considered a species at risk continent-wide (Austen et al. 1994). As recently as 1982, they were designated a Species of Concern in the eastern United States (Shaffer and Rail 1996).

Restrictive hunting regulations alone have not had a major bearing on population recovery (Alison and Bailey 1994). Industrial and urban development and agriculture reclamation projects destroyed wetland breeding, migration stopovers, and wintering areas. Periodic droughts have also severely reduced reproductive success of Canvasback and Redhead. Wetland conservation and management are essential to sustaining populations of these waterfowl.

The recoveries of Canvasback and Redhead populations have been largely due to their breeding habitats recovering after the drought (Ross, pers comm, 2001). Also, populations have been managed through hunting restrictions and the North American Waterfowl Management Plan, which strives to conserve and develop prime habitat for these ducks throughout the continent (see Section 7.0). Canvasback and Redhead require large amounts of food to fuel their migration. They dive for aquatic plants including pondweeds, wild celery, grasses, and sedges. A Canvasback's diet includes about 80 percent plant material, while a Redhead's diet is 90 percent plant material, a higher proportion than any other diving duck. These herbivores require foods provided by productive marshlands and, in particular, shallow water with dense beds of submergent and emergent vegetation. These habitats within the IBA attract Canvasbacks and Redheads in large numbers on migration. On Lake St. Clair hunting is restricted to within 300 metres of the shoreline to protect rafts of diving ducks from disturbance (Robinson, pers. comm.)

Fall migration for Canvasbacks is well underway by mid-October. Those arriving in the Lake St. Clair marshes have come from the prairies, possibly in southeastern Saskatchewan. By early November the birds will fly eastward across the Appalachian Mountains to Chesapeake Bay. While many of the eastern prairie population overwinter on Chesapeake Bay, others winter along the Atlantic Coast as far south as Florida. Those migrating along the Mississippi Flyway winter off the Louisiana coast. Depending on ice conditions, large numbers usually winter on the St. Clair River, Detroit River, Niagara River and Long Point (Goodwin 1995). A continental survey of Canvasbacks is undertaken during the first week of November to ascertain population numbers. As well, the Canadian Wildlife Service (CWS) conducts regular aerial surveys of waterfowl numbers along the southern Great Lakes (Mullie et al. 1996).

Redheads stopping over at Lake St. Clair during fall migration arrive from the eastern Canadian prairies via Lake of the Woods on their way to Chesapeake Bay or Florida (Bellrose 1976). Once in Lake St. Clair or Lake Erie, they congregate in mixed flocks of 20,000 to 40,000 with Canvasbacks and Scaup. In late October or early November they move through the Finger Lakes of New York State to the Atlantic Coast (Alison and Bailey 1994). Large flocks overwinter regularly on the lower Great Lakes and in particular along the St. Clair River.

Northbound migrants may join overwintering flocks by late February in traditional locations such as Presqu'ile and Long Point and on Lake St. Clair once the ice breaks up. By mid-April, migrating Canvasbacks and Redheads will be moving through Manitoba to their breeding grounds in central Canada. Both species also breed in relatively small numbers in southern Ontario. Canvasbacks breed in the marshes of Lake St. Clair, Luther Marsh, and the Leslie Street Spit. Redheads breed in the Long Point marshes and Lake St. Clair marshes as well (Sandilands, 1987a, 1987b, Coady, 2000).

4.3.3 Tundra Swan (*Cygnus columbianus*)

In southwestern Ontario, spring is heralded by the arrival of Tundra Swans. In total, Tundra Swans spend four or five months of very year migrating 6,000 kilometres along traditional pathways through the interior of North America. Their high-pitched, soft, melodious calls draw eyes skyward to catch their flashing wings. Recently, with the re-introduction of

Trumpeter Swan to Ontario, observers need to be cautious with identification of individual birds. Both species are all white with black bills and feet, but the Trumpeter Swan is somewhat larger and longer winged. Only the deep, resonant trumpeting call really distinguishes this swan at height and distance, though Trumpeter Swans do not migrate in large flocks. Limpert and Earnst (1994) summarize the natural history of the Tundra Swan.

One hundred years ago, sightings of Tundra Swans were uncommon in Ontario although they were occasionally sighted in the late 1800s near Lake St. Clair (Theberge 1989). Prior to the enactment of the Migratory Birds Convention Act in 1917, Tundra Swan numbers were greatly reduced by hunting. By the 1920s, annual reports of flocks numbering in the hundreds were common on the lake. Today upwards of 20,000 Tundra Swans have been recorded, particularly along the eastern shoreline and the Chatham Flats (Goodwin 1995).

Biologists recognize two populations of this North American swan, based upon their wintering distribution. In 1999 the eastern population was estimated to be 109,000 and the western population 119,800 birds. The eastern population breeds from the Arctic coastline of Alaska to southwestern Baffin Island. This population winters in coastal areas from New Jersey to South Carolina and traditionally in Chesapeake Bay, Maryland. Small numbers overwinter on the shores of both Lake Erie and Lake St. Clair (Limpert and Earnst 1994). The western population breeds along the west coast of Alaska and migrates along the Pacific Coast, wintering primarily in California, Utah, and the Pacific Northwest.

Tundra Swans arrive in the Eastern Lake St. Clair IBA in peak numbers in mid-March. Leaving their wintering grounds along the Atlantic Coast, they stage in the Susquehanna River Valley in Pennsylvania before arriving in Lake St. Clair region. In spring the journey is broken up into four or five trips of 500 to 1,900 kilometres each (Gunn 1979). Stops for rest and food at staging areas last from several days to a couple of weeks. Flights lasting from six to 20 hours are flown at altitudes of 600 to 1,800 metres.

Arriving in large numbers, the swans disperse in small groups throughout the agricultural fields of the Chatham Flats, joining flocks of Canada Geese to feed on waste corn and winter wheat. As well, seeds, stalks, roots, and tubers of submerged and emergent aquatic vegetation may be available, depending on ice conditions in the shallow waters of the marshes. The presence of both these food choices makes this IBA an ideal stopover site. Lake St. Clair has not always been the preferred resting and feeding stopover in southwestern Ontario. Until the early 1970s, large numbers of the swans congregated in the Long Point marshes. Changes in the feeding preferences of this species to winter wheat and crop residues have resulted in many flocks of swans dispersing to feed in a broad band from Long Point to Lake St. Clair and the Chatham Flats and north to Grand Bend.

By early April the swans staging near Lake St. Clair are migrating to Minnesota, southwestern Manitoba, and Devil's Lake, a major staging area in South Dakota. From these locations, swans will strike northward to their Arctic breeding grounds, arriving in late May.

Flocks of family groups leave the Arctic in late September, arriving in North Dakota and Minnesota in early October. Swans remain at these staging locations late into fall until freeze-up.

When forced out, they generally fly non-stop 1,600 kilometres to the Atlantic coast, arriving between mid-November and the end of December. Variable numbers stop at Lake St. Clair in the fall. (Haggeman, pers comm. 2001)

Given their late maturity and low mortality rate, Tundra Swans have a low annual recruitment rate. Nevertheless, both eastern and western population levels exceed the Canadian and United States Wildlife Services target numbers to maintain viable eastern and western populations (80,000 and 60,000 respectively). The western population, for example, has increased at a rate of 7 percent since 1989. Over the last 10 years the eastern population has remained stable – at present about 29,000 above the target population size (Mullie et al. 1996; CWS Waterfowl Committee 1999).

Since their long necks permit feeding in water up to a metre in depth, swans may bottom-feed over a wide area of a marshland. Poisoning from lead shot is recognized as a threat; however, most lead poisoning events do not involve large numbers of these birds. Lead poisoning is also a diminishing threat with time, as the use of non-toxic shot is required in wintering grounds and migratory routes. (Haggeman, pers comm. 2001)

4.3.4 Black-bellied Plover (*Pluvialis squatarola*)

Paulson (1995) summarizes the natural history of the Black-bellied Plover. In breeding plumage the Black-bellied Plover is one of the most strikingly beautiful of all shorebirds. The intense black of its underparts from face to upper belly is separated from its silvery spangled and blackish-grey upper body by a broad band of pure white plumage. It may be recognized by its bold outline almost as far as it can be seen. In early to mid-May, as this plover stands hunched and motionless on the dark soils of the Chatham Flats, its mournful fluting whistle, “*pee-ooo-lu*,” betrays its presence. A search of the field soon turns up the bird – perhaps several, perhaps a hundred. As many as 5,000 individuals were observed within the IBA in May 1993 (Canadian IBA Database 1999).

Black-bellied Plovers winter south through the West Indies to the coastline of Chile and North Argentina. Of the 200,000 birds breeding in North America, about 55 percent winter in South America, the remaining dispersed along the Atlantic and Pacific coastlines of Mexico, the United States, and as far north as southern British Columbia. These plovers are the “wind birds” of the vast coastal mudflats of continents. However, they are equally at home on the wide-open spaces of the agricultural flats of this IBA.

On their spring migration, Black-bellied Plovers arrive overnight, stopping to refuel, feeding primarily on earthworms before continuing their northward migration. Within the IBA and elsewhere in southwestern Ontario, they prefer the low black soils where vegetable crops such as onions, beets, and tomatoes are grown. When the lake level is low, they may use the shoreline extensively for feeding and resting. Their length of stay at a stopover is inversely related to the fat content of their bodies – the higher the fat content, the shorter the stay. Often dispersed within the loose flocks of feeding Black-bellied Plovers are Lesser Golden-Plovers – similarly patterned but not as large or as stout and lacking the black axillaries and white rump. As the name suggests, the upperparts are a golden and dark brown. In flight, both species are strong, swift

fliers with wingspans approaching 60 cm. Black-bellied Plovers show white upper-tail coverts; in contrast, Lesser Golden-Plovers appear entirely golden brown.

Black-bellied Plovers arrive on the breeding grounds in late May or the first half of June, weather permitting. A cosmopolitan species, the Black-bellied Plover nests on the tundra north of the tree limits throughout Arctic regions of Canada, Alaska, Siberia, and Russia (Richards 1988). Adults leave the breeding grounds in late July to September while birds of the year head south five to six weeks later. The southward movement continues into November and, as in the spring, occurs over a broad front although the route tends to be further east.

Much effort in recent decades has located and conserved stopover sites for all species of shorebirds (Weidensaul 1999). Shorebird biologists are well aware that stopover sites underpin the entire migration system of these birds. For long-distant migrants such as the Black-bellied Plover, refuelling and rest en route is critical to their reproductive success. Shorebirds cannot afford to arrive on their breeding grounds in late May or even mid-June in poor condition. The unpredictable nature of Arctic weather could wipe out an entire migrant flock or an entire breeding season. With as many as 5000 Black-bellied Plovers, 2.5 percent of the North American population, stopping over at Eastern Lake St. Clair IBA, this site is obviously a vital link in the chain of continental stopovers for this species.

4.3.5 American Golden-Plover (*Pluvialis dominica*)

This species is very similar to the Black-bellied Plover, often occurring in mixed flocks in agricultural fields. American Golden-Plover is slightly smaller with a finer bill, and lacks the whitish rump, wing stripe, and black “armpits” of the Black-bellied Plover in all plumages. In breeding plumage, the American Golden-Plover has much darker upperparts with golden edging to its dark-centred feathers on its crown, back, secondaries, and tertiaries. This species can be seen in agricultural fields in parts of the IBA during its brief spring migratory stopover in early to mid May. Often its whistled “*que-del*” call announces its presence. Johnson and Connors summarize the natural history of American Golden-Plover (1996).

Distribution and Abundance

The American Golden Plover breeds on sub-Arctic and Arctic tundra from Baffin Island to the Seward Peninsula of Alaska, and from Devon island south to Cape Henrietta Maria on Hudson Bay. The winter range of this species is primarily grasslands, and coastal and inland wetlands and farmlands from southern Brazil to Argentina (Johnson and Connors, 1996). Morrison et al. (2001) estimated the global (and North American) population of American Golden-Plover at 150,000.

Migration

Weidensaul (1999) describes the spectacular elliptical migration of this species. The flight from breeding to wintering grounds takes this species first east across the Canadian Arctic, then south to the Maritimes, before leaving the continent to make landfall in South America. Some adults apparently fly the 8,000 kilometres from breeding to wintering grounds non-stop

(Johnson and Connors 1996). Adults depart shortly after breeding, whereas juveniles leave in late summer or fall. The return flight begins in late January or February, following the mid-continent over the upper reaches of the Amazon, and likely, for most birds, involving a non-stop flight over the Caribbean and Gulf of Mexico. American Golden-Plovers arrive in Texas, Louisiana, and Florida in late February to early March (ibid.). Birds reach extreme southern Ontario by early to mid April, a few as early as late March some years. At Point Pelee, mid April to mid May is given as the peak time for observing this species (Point Pelee National Park, 1981). Spring records in Ontario are concentrated in southwestern Ontario, particularly in the western Lake Erie basin and Lake St. Clair. Birds are typically observed in dyked farm fields with black soils. In 1999 Cheskey observed several hundred American Golden-Plovers in unploughed “no-till” fields just north of Bradley’s Marsh (E. Cheskey, pers comm.). This species also uses the shoreline for feeding and resting during periods of low lake levels.

Natural History and Conservation Issues

These plovers feed on a range of items, including invertebrates such as earthworms, insects, spiders, and crustaceans and also on berries and seeds (Johnson and Connors, 1996). Natural predators on breeding grounds include Peregrine Falcon (*Falco peregrinus*), and Gyrfalcon (*Falco rusticolus*), jaegers, gulls, Common Raven (*Corvus corax*), foxes, and weasels. Johnson and Connors (1996) list conservation and management issues that have affected this species. These include:

- market hunting in the nineteenth and early twentieth centuries;
- loss of habitat to agriculture, ranching, reclamation, pollution, and human growth;
- pesticide exposure; and
- collisions with aircraft

Since 1918 American Golden-Plover has been protected in North America by the Migratory Bird Treaty Act.

In the IBA, both American Golden-Plover and Black-bellied Plover feed in agricultural fields before continuing their flight towards their breeding grounds. The quality of invertebrate life available to these birds depends on the soil quality. Farming practices that minimize pesticide use and reduce or eliminate the need for tillage benefit these species. No firm numbers for plovers have been determined for the IBA, and more thorough investigation of the species’ migration through the IBA is merited.

4.3.6 Forster’s Tern (*Sterna forsteri*)

Listed as “Indeterminate” Federally and Provincially

Forster’s Tern is a white, black-capped tern with a black-tipped orange bill. In flight the upper wing shows silvery white in the primaries, which lack the distinctive dark wedge found in the similar Common Tern. The natural history of Forster’s Tern is summarized in del Hoyo (1996a), and Austen et al. (1994) document Canadian studies.

J.A. Morden and W.E. Saunders reported Forster’s Tern as “common breeding at Lake St. Clair” in 1882. However, documentation of nesting in Ontario did not occur until 1976. Nesting in

nearby Saginaw Bay in Michigan has been reported since 1956 (ibid.). High water levels in Lake Erie during the 1970s and 1980s contributed to both an increase in numbers and range expansion in southwestern Ontario. These breeding sites included Long Point and Rondeau Bay on Lake Erie, Walpole Island and St. Clair National Wildlife Area on Lake St. Clair, and Kettle Point on Lake Huron. In Ontario, present populations of Forster's Tern are small and highly localized and provincially considered rare. Populations in Rondeau Bay and Long Point are a fraction of what they were in the mid-1980s, due to changes in water levels, predation pressures, and habitat availability (Austen et al. 1994). Only in Lake St. Clair marshes are their numbers increasing (Martins 1997).

Forster's Tern breeds in the freshwater marshes of the North America interior and the salt water marshes of the American Atlantic, Gulf, and Pacific coasts. In Canada, it breeds primarily in the prairies with small populations in southeastern British Columbia and southwestern Ontario. Its winter range includes North Carolina to the Gulf of Honduras and southern California to Panama.

Forster's Tern tends to arrive earlier in southwestern Ontario than other breeding tern species – early April, occasionally in March, and in numbers by mid-April (Fazio et al. 1985). Nesting begins in Lake St. Clair marshes by mid-May (McNicholl 1988). These terns nest in either compact or loose colonies of five to 250 pairs (del Hoyo 1996a). Nesting sites are often in deep-water marshes. Nest site location may be determined by watching for courtship behaviour, which is both conspicuous and prolonged (McNicholl 1988).

Nests are placed among floating and emergent vegetation and frequently on muskrat (*Ondatra zibethicus*) lodges. Artificial nest sites have included floating boards and dredge-spoil islands. Use of such sites may be due to loss of marsh habitat. Nest losses are due to predation, muskrat activity about the nest site, and even spawning carp which uproot vegetation. Changes in water levels may cause egg loss, chick mortality, or abandonment of nest sites (Austen et al. 1994). The wake from motorized watercraft in channels (when lake levels are high) can inundate nearby nests. Colonies on the coastal marshes of Lake Erie and Lake St. Clair have had a much lower hatching success and more developmental defects than neighbouring inland U.S. colonies (del Hoyo 1996a).

Although a large percentage of the Forster's Tern nests in the Lake St. Clair region are found in the delta marshes, the marshes of the IBA are reported to have many pairs, most of them in private hunt clubs that have never been surveyed (Haggeman pers comm.). The waters of the IBA likely provide significant feeding areas for both breeding and non-breeding terns as well as migrants in the spring and late summer. Forster's Terns feed mainly on small fish (5-7 cm), aquatic insects, and crustaceans by hunting over water less than a metre deep. Within the IBA, suitable feeding areas in Lake St. Clair extend 0.5 to 1 kilometre into the lake (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000).

4.3.7 Black Tern (*Chilidonias niger*)

“Not at Risk” Federally, “Vulnerable” Provincially

This marsh tern is distinctive in breeding season with its black head and underparts, and thus is readily identified when feeding over a marsh. Outside of this season, however, its plumage exhibits very little black.

Distribution and Abundance

The Black Tern is a localized breeder, concentrating in areas of highly productive wetlands in Eurasia and North America. In Eurasia it breeds between the latitudes of southern Scandinavia and southern Spain east through Europe to central Asia (del Hoyo 1996c). In North America it breeds from northern United States through central Canada. In Canada it breeds in appropriate habitat in a broad band from east of the coast ranges of British Columbia, across the Prairie Provinces, through Ontario, and into southern Quebec. Its northern limit extends to Great Slave Lake. Since the late 1930s it has extended its range east to the New Brunswick-Nova Scotia border marshes. In Ontario the Black Tern occurs along the James Bay shoreline and sporadically through the rest of the province. Black Terns winter in marine habitat along the coasts of Central and South America.

In the 1930s Black Terns occupied every extensive marshland in Southern Ontario (Austen et al. 1994). Surveys undertaken since the 1960s indicate declines in the species at several marshes. Similar declines have occurred throughout North America and Europe since the 1960s (Dunn and Agro 1995). Although the Black Tern is not globally threatened, many local populations are vulnerable. It is declining throughout its range (del Hoyo 1996c). Considered Not At Risk nationally, the species is designated as Vulnerable in Ontario (COSSARO 2000).

Natural History

The natural history of Black Tern is thoroughly summarized by Dunn and Agro (1995). Its habitat includes freshwater marshes, sloughs, wet meadows, and swamps. This species breeds in cattail and bulrush marshes of at least five hectares, although those greater than 20 hectares are preferred, provided that there are fairly extensive stretches of open water (Messier and Rail 1996). Drainage of wetlands throughout North America and Europe for agriculture and urban and industrial development has caused declines in numerous wetland-dependent species.

Black Terns are semicolonial, establishing groups of usually fewer than 20 pairs and rarely more than 100 (del Hoyo 1996c). They often return to their colony of birth to nest. Nesting occurs in dense emergent vegetation where 25-75 percent of the surface is covered with emergent vegetation (e.g., cattails, bulrushes) although not so dense as to prevent a canoe from being forced through it (Dunn and Agro 1995). A nest is “assembled” by collecting masses of floating vegetation from surrounding water on to a pile. Nests may be constructed on clumps of dead reeds, cattail root-stalks, floating boards, or muskrat houses. Nearby there are often dead snags or posts for roosting. Usually located within 0.5-2 metres of open water and virtually at surface level, nests can be easily destroyed by wind or changing water levels. The water depth below the nests is usually 0.5-1.2 metres but may be less. The eggshells of Black Tern are adapted to a moist nest environment (Dunn and Agro 1995).

Nest success is low, with usually only one chick raised per nest of two to three eggs. Black Terns frequently re-nest, although they usually raise only one brood in a season. The nest site may be abruptly abandoned when the emergent vegetation is altered by drought or flooding; birds readily vacate a site to choose another. One study observed that Black Tern will re-nest up to 42 km away from the original site (ibid.).

The primary foods of Black Tern are dragonflies, damselflies, and other marsh insects taken on the wing. Other foods include small fish, crayfish and molluscs, provided that they may be taken at the surface, for this tern rarely dives, instead only immersing its bill. Feeding may occur two to five kilometres from the colony at adjacent marshes or nearby meadows. Before pesticide use on agricultural lands, Black Tern often were observed foraging for insects behind ploughs and over grain fields. Ehrlich et al. (1986) suggest that in the upper midwestern United States, reduced hatching success may be due to agricultural contaminants. On wintering grounds along the coasts of Central and South America, exposure to contaminants may be affecting the terns.

Black Terns are subject to several predators in their marsh habitat. Common Ravens (*Corvus corax*), Northern Harriers (*Circus cyaneus*) and even large fish may prey upon adults. A variety of predators feed on chicks and eggs: Great-horned Owl (*Bubo virginianus*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Great Blue Heron (*Ardea herodias*), long-tailed weasel (*Mustela frenata*), muskrat, mink (*Mustela vison*), Norway rat (*Rattus norvegicus*), northern water snake (*nerodia sipedon sipedon*) and raccoons (*Procyon lotor*) (Dunn and Agro 1995, D.V. Weseloh pers. comm. 2000). These terns can offer no defence against the mostly nocturnal predators listed above. Predators, particularly raccoons, may increase as the water level drops below 30 cm. Small colonies are subject to highest levels of predation (del Hoyo 1996).

Black Terns will readily accept both artificial and restored wetlands provided they are biologically rich (Dunn and Agro 1995). In recent years, Black Tern colonies in many of the lower Great Lakes coastal wetlands have declined dramatically, adding greater importance to dyked marshes such as the St. Clair National Wildlife Area and Tiny Marsh for supporting breeding populations (Weseloh, pers comm.). As with the previous species, non-breeders and migrants feed extensively over the marshes and Lake St. Clair and rest on the offshore waters during the summer. As with other species nesting at or near water level, this species is vulnerable to nest inundation.

4.3.8 King Rail (*Rallus elegans*)

“Endangered” Federally and Provincially

About the size of a small domestic chicken, the King Rail is a large, long-billed marsh bird that is more often heard than seen. It is quite similar to the more common Virginia Rail but considerably larger. Meanley (1992) and Reid et al. (1995) describe the King Rail’s natural history.

Distribution and Abundance

The King Rail inhabits marshlands throughout much of eastern North America from the Gulf of Mexico to the Great Lakes region, from the Atlantic coast west to the Great Plains of the continent. Populations also exist in the Greater Antilles and interior of Mexico. In Canada this rail is found only in southern Ontario. While the populations of the southern U.S. coastal wetlands are doing well (Wemer 1997), elsewhere this rail is in serious trouble, and populations have been in severe decline since the 1940s. The King Rail is endangered in all states bordering Lake Erie except New York, where it has always been rare. Historically, King Rail may have been the most abundant breeding rail in some of the Lake Erie marshes in Ohio (Friesen 1999).

In Ontario, anecdotal accounts indicate that the King Rail was a common breeder a hundred years ago in the large marshlands of western Lake Erie and Lake St. Clair. In 1997 an intensive search for King Rails was undertaken in southwestern Ontario. A total of 32 were located on territory in seven marshes, with more than 50 percent of those found in Walpole Island marshes (ibid.).

Natural History

The habitat of the King Rail is the habitat of the muskrat (Meanley 1992). In wildlife refuges, two key components of the habitat include densely vegetated sites with tussocks in shallow water for nesting and dry patches or swales of tall, dense vegetation for brood foraging and hiding during mid-day (del Hoyo 1996d). Even shallow water in broad roadside ditches with cattails or shrub swamps or upland fields near water may provide habitat.

The King Rail places its nest in a clump of vegetation, usually up to 30 cm above the highest watermark. Nest success is significantly related to both water depth and distance to open water. Clutch size is 10 to 12 eggs and the large brood remains with the adult pair for at least 30 days after hatching. The parents feed their young for the first six weeks after which the young feed themselves while remaining in the company of their parents (Meanley 1992). King Rails are omnivores, although crayfish and aquatic insects are their main food. Foraging is mainly diurnal and always within a few steps from cover.

Raccoons, Red Fox (*Vulpes vulpes*), Striped Skunk (*Mephitis mephitis*), and mink prey on King Rails, especially on their nests. Both Great Horned Owls and Northern Harriers prey upon adults. In marshes close to human habitation, cats and dogs may kill adults as well as young, since these rails are reluctant to flush (Reid et al. 1995).

With the exception of Walpole Island, the heart of Ontario's King Rail population, where Ducks Unlimited Canada (DUC) has no managed wetlands, almost all of the remaining King Rails in southern Ontario have been observed in or near marshes managed for waterfowl (Wemer 1997). These marshes are maintained in a "hemimarsch," i.e., about half emergent vegetation and about half open shallow water interspersed. Marsh succession can ultimately proceed to a lockup stage that results in an old and stagnant marsh choked with vegetation that accumulates most of the marsh nutrients (Pittaway 1997). Pittaway (1997) argues that many of Ontario's marshes are in

lockup stage and are unsuitable for many marsh species. Meanley (1992) suggests that the best opportunity for long-term survival for the King Rail may be on managed waterfowl refuges.

Many factors impact negatively on King Rails. These include water level fluctuations resulting in depths greater than 25 centimetres, chemical contaminants, or sediment-loaded runoff from farm fields which reduce crayfish and aquatic insects, mammalian predators, and habitat fragmentation and can exacerbate some of these factors. *Phragmites* and Purple Loosestrife (*Lythrum salicaria*) compromise the quality of the habitat. Where muskrats are trapped, King Rail could potentially be a casualty because they use the same runways, though it is likely that the trapping season ends before the return of most King Rails from wintering areas.

4.3.9 Least Bittern (*Ixobrychus exilis*)

“Species of Concern” Federally, “Vulnerable” Provincially

Least Bittern is the smallest (28-36 cm) and most inconspicuous of the herons. Its presence in the dense emergent vegetation it favours is often revealed by its dove-like cooing, by a glimpse of its brief flight across the marsh, or when exposed in the “freeze” position – bill pointed skyward, feathers compressed, and eyes in apparent contact with the observer.

Distribution and Abundance

The breeding range of the Least Bittern extends from southeastern Canada through the eastern United States, Mexico, Costa Rica, and well into South America. Its winter range is best described in terms of temperature: south of regions with prolonged winter frosts including the Atlantic coastal plain, Gulf of Mexico coastline, and regions to the south.

In Canada the Least Bittern nests in southern Manitoba east to the Maritimes, including New Brunswick and possibly Nova Scotia. In Ontario it breeds predominantly to the south of the Canadian Shield. The large marshes of the lower Great Lakes continue to provide the most extensive habitat, together with the smaller marshes that dot the landscape south of the Shield in the Peterborough area. Since the 1960s a decline in numbers has been documented in several regions of Ontario (Austen et al. 1994). States bordering Ontario (i.e., Michigan, Ohio, and New York) have also experienced declines.

Natural History

The natural history of Least Bittern is well described by Gibbs et al. (1992), and its status, particularly in Ontario, is well summarized by Sandilands and Campbell (1988). The Least Bittern selects freshwater or brackish marshes with tall, dense emergent vegetation such as cattails and often clumps of woody plants over water up to a metre in depth. Areas of open water occupying as much as 50 percent of the marsh and interspersed throughout this vegetation is preferred. Least Bittern avoids dry conditions and benefits from stable water levels. Breeding pairs are not strongly territorial and are usually solitary nesters, but under ideal conditions they appear to be loosely colonial (Sandilands and Campbell 1988). Nest density ranges from one to 15 nests per hectare; however, one nest per hectare appears to be typical.

The nest is an elevated platform with an overhead canopy built of emergent vegetation. The bird creates the canopy by pulling down and crimping the cattails surrounding the nest. The nest site is within the dense, tall stands of emergent vegetation well above the water level and usually less than 10 metres from open water or from channels made by muskrats. The depth of water below the site ranges from 8 cm to almost a metre. Clutch size ranges from two to seven eggs, the usual number being three or four. Nesting success varies from 20 percent to 73 percent, depending upon the location of the nest within the cattail marsh. Nests along the periphery of the marsh tend to be least successful (Gibbs et al. 1992).

Least Bitterns stalk their prey, predominantly small fish and dragonflies, along the open-water side of emergent vegetation. They cling to the vertical stems and shoot by grasping them with their long toes and curved claws. At particularly productive feeding sites, they may build foraging platforms that may later become hunting platforms for young bitterns. These platforms and hunting techniques permit Least Bitterns to forage over marsh water as deep as that used by large herons (i.e., 25-60 cm), although most feeding occurs at the water's surface. Predators include Snapping Turtles (*Chelydra serpentina*) from below and Red-tailed Hawks (*Buteo jamaicensis*) and Northern Harriers from above. Marsh Wrens (*Cistothorus palustris*) are known to puncture Least Bittern eggs, while American Crows (*Corvus brachyrhynchos*) and mink take both eggs and nestlings. Where water depth below the nest offers insufficient protection, raccoons also become significant predators.

Several factors threaten the breeding habitat of the Least Bittern and even the bird itself. The most serious threat is the destruction or loss of wetlands. In southern Ontario, wetlands have been converted to other uses, primarily agricultural reclamation and urbanization, and since pre-settlement times, almost 70 percent of the Ontario wetlands south of the Precambrian Shield have been lost (Sandilands and Campbell 1988). Some of these wetlands would have provided habitat for Least Bittern. Wetlands that remain do not necessarily guarantee appropriate marshbird habitat. In agricultural areas, siltation from erosion and run-off containing pesticides may degrade nesting and/or foraging sites. Storm water run-off from urban or agricultural areas appears to create conditions that make these bitterns vulnerable to parasitic nematode worms (Gibbs et al. 1992). Natural succession within a marsh can make it uninhabitable for Least Bitterns. The habitat may also become degraded by invasions of Purple Loosestrife and/or *Phragmites*. High water levels also may eliminate habitat, and personalized watercraft (e.g., Sea-doo's) entering open-water areas of marshes produce wakes that may disturb foraging or nesting birds.

The provincial policy to classify Southern Ontario wetlands and identify those that are provincially significant was established in a large part to encourage protection of wetland-dependent species such as the Least Bittern. Hunting opportunities are a main reason why private wetlands within the IBA have not been dyked and drained. Waterfowl hunting is very popular within the IBA and makes a significant contribution to the local economy. While Least Bittern is not a species that is hunted, it is one that benefits from the preservation of wetlands for hunting.

5.0 Other Elements of High Conservation Value

Ontario's wetlands are critical to the survival of more than 142 species of birds, 53 species of fish, 20 mammals, 19 herptiles, and 350 species of plants, many of which inhabit the Eastern Lake St. Clair IBA (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000). By today's standards, this wetland of approximately 30 square kilometres located within the Carolinian zone of southwestern Ontario is unique. In addition to the many rare marsh-dependent birds, three rare reptiles are found within these marshlands. The Eastern Fox Snake (*Elaphe vulpina gloydi*) and Eastern Spiny Softshell (*Apalone spinifera spinifera*) are both considered Threatened provincially and nationally (COSSARO, 2000). The former is abundant in Lake St. Clair marsh edges. The Spotted Turtle (*Clemmys guttata*) is a Species of Concern in Canada and in Ontario is Vulnerable (COSSARO, 2000). Noteworthy rare plants found in the emergent marshes and along some of the dykes in this IBA include: Swamp Rose Mallow (*Hibiscus palustris*), a National Species of Concern, Yellow Star Grass (*Hypoxis hirsuta*), Culver's Root (*Veronicastrum virginicum*), Tickseed Sunflower (*Bidens coronata*), Missouri Ironweed (*Vernonia missurica*), Green Water Arum (*Peltandra virginica*), Cow Lily (*Nuphar advena*), and American Lotus (*Nelumbo lutea*) (Ramsar 2000).

The Lake St. Clair system, including Eastern Lake St. Clair IBA, is readily accessible to more than four million people of southeastern Michigan and southwestern Ontario and is one of the most intensively utilized bodies of water in North America. The Canadian lakeshore (including the St. Clair River delta) encompasses the largest natural shoreline remaining along Lake St. Clair. This comment by Eastern Michigan University geographer Nicholas Raphael states the case: "Viewed from the air, the Canadian side looks a lot like what we imagine [the shoreline] originally was. It's pretty much intact. Then you look at the Michigan side and what do you see? A giant bathtub with cement lining around it" (Pearce 1997a). While Raphael's remark overlooks the fact that most of the marshes along Eastern Lake St. Clair are dyked and pumped, there are marshes nevertheless. With almost 70 percent of the coastal wetlands of the Great Lakes lost to agricultural reclamation and urban and industrial development, the 3,000 hectares along the Canadian coast of Lake St. Clair (not including the delta marshes) have high conservation value to the whole Great Lakes basin.

6.0 Land Ownership and Use

6.1 Land Ownership

Land within the IBA is both publicly and privately owned. Federally owned marshlands include the St. Clair National Wildlife Area (244 ha) and the Bear Creek unit (45 ha). The 65 hectare Corsini/Pidgeon Marsh, of which approximately 50 hectares is marsh and fields, is owned by Ducks Unlimited and in process of transfer to the Canadian Wildlife Service as an expansion of the adjacent Bear Creek Unit of the St. Clair NWA. (D. West, pers comm.) About a dozen remnant marshes are owned and managed by privately owned hunt clubs. Many of the clubs employ marsh managers as caretakers and hunting guides. Agricultural lands (approximately 30,000 ha), are privately owned, and some of these are rented or leased to

commercially operated farms. The village of Mitchell's Bay, situated near the north of the IBA, has approximately 350 residents and is the departure point for many sport fishing and guiding businesses and services. Mitchell's Bay is considered a development node in the Municipal Official Plan. The remaining area of the IBA is the open water of Lake St. Clair that falls under provincial jurisdiction.

6.2 Land Use

6.2.1 Historical

McKeating et al. (1982) provide a detailed history of St. Clair National Wildlife Area, as well as Dover Township, in the St. Clair NWA Management Plan. At the time of European contact, Dover township abutting Lake St. Clair was described as "extensive prairies of exhaustless fertility where thousands of cattle might roam and feed at will" (Jameson 1965). With its abundant resources, Lake St. Clair supported a relatively high population of aboriginal people. In the late 1600s, European settlement in the area began with the establishment of trade, fur trapping, and subsistence agriculture by French settlers. Historical accounts suggest that the wetlands and shorelines were less heavily exploited than other parts of the lower Great Lakes. Nonetheless, land-use modifications began in these pioneer times, and many present-day land-use dilemmas have historic roots (Edsall et al. 1988). From 1800 until today, much of the land and marshes of the Lake St. Clair basin has been dyked, drained, and ploughed for agricultural purposes (McKeating et al. 1982). By 1979 approximately 60 percent of the farmland in Dover Township was pumped (Matt 1979).

During the late 1800s and early 1900s, private and public recreation activities were developing along the lakeshore, particularly on the Michigan side. Recreational fishing, hunting, boating, and swimming attracted thousands. The quantity and quality of the fish and wildlife led to the establishment of many fishing and hunting clubs. While the lake became a recreational paradise upstream, the St. Clair River connecting Lake St. Clair to Lake Huron had become industrial. Dockyards were constructed to service the developing salt mines and lumber mills. In the 1870s, railways and a dredged ship canal through a channel of the delta improved and increased the movement of goods and people. In 1897 the Imperial Oil Company constructed a refinery in Sarnia, the beginning of what would become Ontario's "chemical valley" along the St. Clair River.

Between 1900 and 1960, urban development changed the Michigan shoreline from cottage country to urban sprawl. In Ontario much of the shoreline remained marshland, although drainage to create agricultural land continued and permanent rural housing was established.

The commercial fishery of Lake St. Clair has had a chequered history. Historically, the open waters of the basin supported significant commercial fisheries. The discovery of high levels of mercury in Lake St. Clair's fish led to the closure of the commercial fishery in 1970. By 1980, levels of mercury in fish had decreased sufficiently to permit human consumption once again, so the commercial fishery was reopened under a quota management system. But by the 1980s, pressures from recreational fishing lobby groups, reduction in size of catches, and the

uncertainties generated by contaminants in fish closed the fishery again. A limited commercial fishery was recently re-established within the Canadian waters of Lake St. Clair (and the IBA).

6.2.2 Current

The St. Clair system provides an important transportation route between the upper and lower Great Lakes. Coal, iron ore, grain, and limestone transported in Great Lakes freighters are the major goods shipped through this system. The St. Clair River upstream has 15 heavy industrial plants – mostly in Ontario – using river water. As well, the river receives effluent from at least ten municipal and industrial outfalls. In spite of this heavy upstream use by industry and municipalities, Lake St. Clair continues to support recreational activities, such as sport fishing, for many thousands of Americans and Canadians. For example, more bass, crappie, sunfish, muskellunge and walleye are taken each year from Lake St. Clair than from any of the Great Lakes or their connecting channels (Edsall, T.A., B.A. Manny and C.N. Raphael. 1988). More than 150 marinas serve anglers and recreational boaters in the St. Clair system, thus making a significant economic impact on communities along this border between Ontario and Michigan.

Marshes along the coast are dyked and privately operated as hunt clubs, with the exception of National Wildlife Areas. However, this situation is less clear-cut than it may seem. Very low levels in the lake (and generally in the Great Lakes Basin) have effectively moved the shoreline out from the dykes, allowing marsh vegetation to re-establish in the shallows and mud flats, and complicating land tenure (Haggeman, pers. comm.).

However, if not for the interest and management generated by hunting, it is likely that few marshes would remain along this coastline, as they would have been drained and farmed like much of the rest of this landscape. Dover Township is one of the most productive farming areas in Canada, owing to its rich soils and long growing season. Principle crops include vegetables such as onions, beets, tomatoes, celery, peas, seed corn, and beans (Earl Elgie, pers. comm.).

Amateur naturalists as well as recreational walkers seek out trails to enjoy the natural environment. St. Clair National Wildlife Area, which does little advertising and has limited facilities, attracted over 2,000 visitors to its wetlands in 1998 to use its 2.5 kilometre nature trail and view the marsh from its observation tower (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000). The majority of those visiting wildlife areas are nature photographers and birdwatchers, but interest in butterflies and dragonflies is increasing among amateur naturalists. Publicly owned and accessible wetlands within this IBA are certain to attract naturalists.

7.0 Conservation Management Achieved within This IBA Site

Since the time of European settlement, approximately 90 percent of wetlands in the Lake St. Clair area have been lost to various forms of development, primarily agriculture (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000). Within the Eastern Lake St. Clair IBA, both public and private agencies have acted to preserve what natural

wetlands remain and to rehabilitate reclaimed sites. A number of private hunt clubs manage and protect all of the wetland properties outside the National Wildlife Areas.

7.1 National Wildlife Areas

The Canadian Wildlife Service acquired one such club, the Dover Marshes Hunt Club, in 1974. Now the St. Clair National Wildlife Area, it is managed by Canadian Wildlife Service in cooperation with Ducks Unlimited Canada and protected under regulations of the Canada Wildlife Act of 1973. Canadian Wildlife Service biologists undertake the monitoring of wildlife and vegetation and maintain a precipitation monitoring station for pollutants. Research includes studies of waterfowl and wetland ecology (McKeating 1982).

In 1984 a property of 45 hectares, located north of Mitchell's Bay was acquired and is known as the Bear Creek Unit of the St. Clair National Wildlife Area. St. Clair National Wildlife Area has been designated as a Ramsar wetland of international significance. The Ramsar Convention promotes the conservation and wise use of wetlands by national action and international cooperation as a means to achieve sustainable development throughout the world. This convention is the only global environmental treaty dealing with a particular ecosystem. As of July 2000, 121 states were signatories to the convention, with 1,028 wetland sites totalling more than 78 million hectares designated as wetlands of international importance. Thirty-six wetlands in Canada have been designated as Ramsar Sites.

7.2 Provincial Area of Natural and Scientific Interest and Provincially Significant Wetland

The St. Clair National Wildlife Area is also identified as part of a provincially significant Life Science Area of Natural and Scientific Interest (ANSI). As well, another 2,860 hectares of wetlands adjacent to the National Wildlife Area and within the IBA are identified as part of the same ANSI. This area qualifies as an ANSI due to its representative vegetation and landform features, the rare and endangered marsh-dependent species within the site, and the site's location at the intersection of the Atlantic and Mississippi flyways. The marshes along Lake St. Clair are also Provincially Significant Wetlands (PSW). Many municipalities in their official plans protect PSWs from development and other activities that could threaten them, such as conversion to farmland.

7.3 North American Waterfowl Management Plan – Eastern Habitat Joint Venture

In 1986 an international agreement between the Canadian and United States governments was undertaken to assure the survival and increase of waterfowl populations and their wetland and associated habitats throughout the continent. The North American Waterfowl Management Plan committed these two countries to spending 15 years and an estimated \$1.5 billion (Can) on conserving, enhancing, and managing key wetland ecosystems across North America. In 1994 Mexico became a full North American Waterfowl Management Plan member. The goal of the plan is to restore continental waterfowl populations to 1970s levels exceeding 100 million waterfowl. The NAWMP considers waterfowl to be the most economically valuable group of migratory birds on the continent. An estimated 30 million people observe, photograph, and hunt

waterfowl, resulting in direct expenditures of several billion dollars annually (North American Waterfowl Management Plan 2000).

Under the umbrella of the NAWMP, several regional partnerships have been established. In eastern Canada the Eastern Habitat Joint Venture was established to protect, restore and enhance wetlands. The area encompassed by the IBA has been identified by the Eastern Habitat Joint Venture as one of Ontario's top priorities for migratory waterfowl habitat conservation. Through the joint venture the 64 hectare Pidgeon/Corsini Marsh and surrounding upland property (adjacent to Bear Creek unit of St. Clair National Wildlife Area) was acquired by Ducks Unlimited Canada (DUC) and is being transferred to the CWS as to become part of the adjacent Bear Creek Unit of the St. Clair NWA. Pidgeon Marsh is one of few remnants of the original wetlands east of the Chenal Ecarte extension of the Sydenham River on the northeastern shore of the IBA. DUC has also entered into long term cooperative conservation and management agreements with several of the local hunt clubs, ensuring that the quantity and quality of wetlands they own remain into the future.

Through the Lake St. Clair Technical Committee, the EHJV is presently investigating a major wetland restoration project of approximately 400 hectares within or adjacent to the Eastern Lake St. Clair IBA (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000). The primary goal of the restoration project is to increase migratory staging habitat for waterfowl within eight kilometres of the eastern shoreline of the lake. The North American Waterfowl Management Plan gives Canada, United States, and Mexico a unique opportunity to restore one of the most critical ecosystems in the world (North American Wildlife Management Plan).

7.4 Great Lakes Wetlands Conservation Action Plan

The Great Lakes Wetlands Conservation Action Plan is an Ontario cooperative agreement involving federal and provincial governments and non-government organizations with a goal to create, reclaim, rehabilitate, and protect wetland habitat in the lower Great Lakes Basin. Launched in 1993, it has more than 30 partners committed to protect the area and function of 30,000 hectares of wetlands in the Great Lakes Basin by 2020. Through this program, 162 hectares near the Chenal Ecarte (McDonald's Farm) is being restored into wetland.

7.5 Hunting Regulations

Hunting regulations are established through powers of the Migratory Bird Convention Act, which is the responsibility of Environment Canada. These include establishing season and bag limits and other zone-specific conditions. Special requirements apply to certain populations of Canada Goose,³ American Black Duck, Canvasback and Redhead, all of which have special conservation measures that apply to their harvest (Canadian Wildlife Service 2000). Lake St. Clair also has specific restrictions that limit hunting activity to within 300 metres of the shore in Kent County in Canadian waters, protecting rafts of diving ducks from disturbance from hunting during the fall (Robinson, pers comm.). Hunting is not permitted in the National Wildlife Area. Private hunt clubs have sanctuary zones within their marshes (Haggeman, pers comm.).

³ For example, the Southern James Bay population, which migrates through the IBA.

8.0 Stakeholder Activity

The Eastern Lake St. Clair IBA is a vast and highly complex landscape. The land base is mainly in private ownership. While it is recognized that each landowner is a stakeholder, the list below only includes organizations and groups that have had some connection with the IBA process.

8.1 Canadian Wildlife Service, Environment Canada (CWS)

The Canadian Wildlife Service contributes to the conservation of wildlife and natural habitats through research, monitoring, enforcement, management, and partnership programs. Working in cooperation with the province of Ontario and other government and non-government organizations, innovative approaches are developed and applied to conserve and restore critical remaining natural areas through programs such as the Great Lakes Wetlands Conservation Action Plan and the management of National Wildlife Areas and Migratory Bird Sanctuaries. (Canadian Wildlife Service web page) The Canadian Wildlife Service (CWS) owns two properties in the IBA, the St. Clair National Wildlife Area (NWA) (244 ha), and the Bear Creek Unit of the St. Clair NWA, (45 hectares). CWS oversees enforcement of the Migratory Bird Convention Act. Through this Act and the North American Waterfowl Management Plan, hunting seasons and bag limits are set on an annual basis. CWS conducts Great Lakes waterfowl surveys during the spring and fall, and specialized surveys such as the Canvasback survey in November. CWS also leads or participates in all Species at Risk recovery teams in the IBA. The CWS web page is: http://www.on.ec.gc.ca/wildlife_e.html

8.2 Ontario Ministry of Natural Resources (OMNR)

OMNR has a diverse legislative mandate and a broad client base. Its mandate encompasses: 1) conserving and managing Ontario's natural resources, which include our forest ecosystems, fish, and wildlife resources, Crown lands and waters, and provincially significant natural and recreational environments, including provincial parks and conservation reserves; 2) ensuring the public is protected from natural hazards, such as forest fires and floods, and providing emergency response services in the event of natural disasters; and 3) providing for the creation, maintenance of, and access to geographic information about provincial lands, waters, and natural resources. (OMNR web page) OMNR participates on all of the recovery teams for Species at Risk in the IBA. King Rail, is a provincially endangered species under the Provincial Endangered Species Act. OMNR administers the Fish and Wildlife Conservation Act. The OMNR web page is <http://www.mnr.gov.on.ca/MNR/>.

8.3 Ducks Unlimited Canada (DUC)

Ducks Unlimited Canada's mission is to conserve wetlands and associated habitats for the benefit of North America's waterfowl, which in turn provides healthy environments for wildlife and people. DUC has long recognized the value of Lake St. Clair's remaining wetlands to continental waterfowl populations and wetland species diversity in Ontario. One of the first projects, completed by DUC in 1980, was a cooperative restoration project in partnership with CWS at the St. Clair National Wildlife Area. Since that time DUC has invested over \$1.5 million

securing and restoring wetlands along the eastern shore, in cooperation with many partner agencies and local landowners. The web page for Ducks Unlimited Canada is <http://www.ducks.org/conservation/canada.asp>.

8.4 Eastern Habitat Joint Venture (EHJV)

The EHJV is one of 14 international habitat “joint ventures” in North America under the North American Waterfowl Management Plan. EHJV’s geographical focus is Ontario, Quebec, and the four Atlantic provinces. The EHJV collaborative includes Canadian Wildlife Service of Environment Canada, Ontario Ministry of Natural Resources, Ducks Unlimited Canada, Wildlife Habitat Canada, Nature Conservancy of Canada, and the Ontario Ministry of Agriculture, Food and Rural Affairs. The partnership uses its collective resources in five areas: 1) wetlands/upland securement, 2) wetland restoration, enhancement and management, 3) land use regulation, 4) communication, education, monitoring and evaluation; and 5) stewardship. Within the IBA, EHJV has secured Pidgeon Marsh (64 ha) and adjacent properties, and led the “1000 Acres” project to restore 400 hectares of wetland on existing farmland.

8.5 Stewardship Kent

Stewardship Kent, a stewardship council in Chatham-Kent made up of community members and facilitated by OMNR, focuses on preserving the natural resources of the region for future generations. Dealing with farmers and farming issues is an important element of the council's work. Through active site demonstrations, workshops, and seminars, the provision of resource tools, and landowner assistance, the council aims to promote land stewardship throughout the county.

Stewardship Kent’s Vision is to: “conserve and enhance the municipality for Chatham-Kent's forests, wetlands, wildlife, fish, soil, and water for today and tomorrow.” The council’s goals are: 1) to be educated by, and to educate rural landowners in the area of land stewardship; and 2) to bring together and utilize the strengths and resources of a variety of organizations and landowners in order to conserve the area’s natural resources. Stewardship Kent’s web page is: <http://www.ontariostewardship.org/KENT/kent.htm>.

8.6 Municipality of Chatham-Kent

The Municipality of Chatham-Kent has a population of approximately 110,000 and covers 2,494 square kilometres. The corporation of the Municipality of Chatham-Kent was incorporated in 1998, amalgamating 23 smaller municipalities into one Regional Municipality. Municipal drain maintenance, along with maintenance of most roads and services, is the responsibility of the Municipality. Chatham-Kent Tourism, a department of the region, promotes tourism and offers support to tourism-based initiatives such including the first Eastern Lake St. Clair Waterbird Festival. The Chatham-Kent web page is: <http://www.city.chatham-kent.on.ca/>.

8.7 Conservation Authorities – Lower Thames Valley (LTCA) and St. Clair Region (SCRCA)

Conservation authorities, created in 1946 by an Act of the Provincial Legislature, are mandated to ensure the conservation, restoration, and responsible management of Ontario's water, land and natural habitats through programs that balance human, environmental and economic needs.

Their objectives are: 1) to ensure that Ontario's rivers, lakes and streams are properly safeguarded, managed, and restored; 2) to protect, manage and restore Ontario's woodlands, wetlands and natural habitat; 3) to develop and maintain programs that will protect life and property from natural hazards such as flooding and erosion; and 4) to provide opportunities for the public to enjoy, learn from, and respect Ontario's natural environment. These conservation authorities' interests within the IBA include flood control and water management and management and restoration of natural habitats and education. SCRCA's jurisdiction within the IBA includes the area within the Sydenham River watershed near Wallaceburg and south along the northeastern part of Lake St. Clair. The SCRCA web page is: <http://www.scrca.on.ca/>. LTCA's area of jurisdiction is the southern part of the IBA including the lower part of the Thames River. The LTCA web page is: <http://www.lowerthames-conservation.on.ca/Default2.htm>.

8.8 Kent Soil and Crop Improvement Association (KSCIA)

KSCIA is a member of the Ontario Soil and Crop Improvement Association (OSCIA). OSCIA's Mission Statement is: "The Ontario Soil and Crop Improvement Association (OSCIA), founded in 1939, is a unique non-profit farm organization that promotes the communication and facilitation of responsible economic management of soil, water, crops and air. Our dedicated membership represents virtually all commodity groups across the province and is a credible, active, grassroots voice on agricultural issues" (Ontario Soil and Crop Improvement Association web page).

The OSCIA has 55 local county/district branches across the province (including KSCIA) and is a significant presence in all the major agricultural areas of Ontario. The OSCIA is committed to four strategic directions: 1) producer education; 2) development and delivery of stewardship programs; 3) development of local associations; and 4) addressing consumer concerns on agricultural environmental issues. KSCIA also delivers the Environmental Farm Plan in Ontario, which is an effective voluntary means of improving an wide range of environmental conditions on the farm. The OSCIA web page is: <http://www.ontariosoilcrop.org/>.

8.9 Sydenham Field Naturalists (SFN)

The Sydenham Field Naturalists are a member club of the FON, operating out of Wallaceburg, Ontario. The SFN is incorporated and has approximately 40 members and an elected board of directors. Members are involved in nature observation and conservation issues

in the Lake St. Clair and St. Clair River area. SFN members were instrumental in voluntarily staffing the first Lake St. Clair Waterbird Festival in April 2000.

8.10 Dover Rod and Gun

The Dover Rod and Gun Club has many members within the IBA area. While the primary interest of members is hunting and fishing, the club is also involved in many habitat conservation projects. The clubhouse is located near the St. Clair National Wildlife Area.

8.11 Private Hunt Clubs

Several large privately owned hunt clubs with on-site marsh managers and guides occur along the Lake St. Clair shore. The largest properties include St. Luke's, Big Point, and Balmoral. In addition to waterfowl hunting every fall, trapping from February to mid-March harvests large numbers of muskrat every year.

8.12 Tourist Operators

Many tourist operators are based in the Mitchell's Bay area. Their main clientele are waterfowlers in the fall, ice fishermen in the winter, and sport fishermen in the spring and summer. Some of these operators have expressed support for a spring waterbird festival.

8.13 Wallaceburg Chamber of Commerce

The Wallaceburg Chamber represents local businesses in Wallaceburg and surrounding areas. The Chamber has a full-time manager and actively promotes initiatives that support the community, including potential events that could support the IBA. The Chamber's web page is: <http://www.wallaceburgchamber.com/>.

8.14 Walpole Island First Nation (WIFN) *Bkejwanong* Territory

Though not part of the IBA, Walpole Island First Nations is connected to the IBA ecologically. Walpole Island First Nation is situated in the St. Clair River delta and includes Squirrel, St. Anne, Bassett, and Potawatomi Islands and the Walpole Islands Seaway for a total of 350 square kilometres. It constitutes the "largest and most valuable wetland in the Great Lakes System" (Walpole Island Heritage Centre web page). *Bkejwanong* also contains the largest and richest stands of tall grass prairie in Canada as well as many other rare habitats. Most of the residents of Walpole Island are involved in hunting, trapping, or fishing, which make the largest contribution to this First Nation's economy. *Bkejwanong* is unceded territory, with 3,382 citizens (Walpole Island Heritage Centre web page).

The Walpole Island First Nation Council has the following environmental philosophy and principles: "To preserve, enhance and maintain a mutual respect and to continue our beneficial dependency upon the environment, we shall endeavour to co-exist with mother nature and protect this relationship. We, the Walpole Island First Nation's people, pledge to use these resources to the mutual benefit of all peoples. We shall therefore ensure proper respect for

resources. As our elders have done: we shall maintain laws that preserve our wildlife, lands and resources.” The WIFN web page is: <http://www.bkejwanong.com/profile.htm>.

9.0 Opportunities

Eastern Lake St. Clair is a prime destination in North America for waterfowl hunters. The large populations of waterfowl which attract hunters depend on a healthy aquatic system, adjacent agricultural land for food, and the marshes and offshore lake for shelter. While geography might be the main reason for a large portion of the staging waterfowl, these other features are critical to the length of stay and the health of the birds.

Wildlife areas of similar scale elsewhere in Ontario (e.g., Tiny Marsh IBA) and in Ohio (e.g., Pickerel Creek Wildlife Area) attract about 10,000 visitors each year for nature viewing. For decades Point Pelee National Park and Rondeau Provincial Park have attracted tens of thousands of visitors during spring migration alone. For several decades Point Pelee National Park has encouraged birdwatchers through their “operation outreach” to expand their coverage to include nearby areas such as the St. Clair shoreline. The IBA is ideally located to attract Point Pelee birders and other naturalists. Marsh viewing of birds need not end with the migration. The sounds and activities of marshbirds during and after the nesting season extend viewing opportunities through late spring and into summer.

The majority of marshbirds arrive before the main movement of songbirds, adding to the appeal of an April visit to the IBA. Observation towers and strategically and carefully placed blinds and guides can enhance viewing opportunities, while at the same time reducing disturbance of nesting pairs. The “1000 Acres” project could be an opportunity to enhance the birding and wildlife observation opportunities with the benefit of design and planning. This may be especially true of a shorebird cell that could provide staging habitat for shorebirds with appropriate water management, as well as observation opportunities for birders. At present very few publicly accessible sites to observe a variety of shorebirds exist in southwestern Ontario, as many of the municipally operated sewage lagoons are closed to public access.

In many parts of the world, birders pay to visit reserves to observe special habitats and interesting species. Some of the private landowners in the IBA may wish to consider offering “pay to bird” guided experiences on an experimental basis on their properties.

The sites in Figures 2 and 3 are part of a pay-per-visit reserve in the Baie de Veys in Normandie, France. Water levels are managed in the wetland cells to maintain a considerable amount of exposed mud during shorebird migration season, as well as deeper water for other wading birds. People are hidden from the birds by high fenced berms and comfortable and well-designed observation blinds. These blinds are designed to easily fit a group of 30 people. A shorebird cell and observation blind such as this could be a major attraction in the Eastern Lake St. Clair IBA, if incorporated into the 1000 Acres project.

A partnership of provincial and federal agencies has been promoting the management of agricultural drains for wildlife and to reduce sediment loads to drains and waterways and reduce

erosion. In 1997 this partnership produced the document Managing Agricultural Drains to Accommodate Wildlife, a case-study guidebook to promote best management practices and habitat creation along municipal drains. While none of the examples are from the Lake St. Clair basin, some methods promoted are applicable to some of the areas and should be promoted where needed. One of the problems, and ironies, with drains is that the maintenance requirements of the municipality include heavy equipment access, discouraging buffer plantings along one side of the drain that could otherwise reduce sediment loading, making maintenance (dredging) requirements less frequent. Buffers along drains, particularly of prairie plantings, could have multiple benefits, including sediment reduction, increasing populations of birds beneficial to agriculture, and provision of duck nesting habitat as well as small game habitat. These ideas should be explored and promoted on a pilot basis with the municipality, Stewardship Kent, and the Kent Soil and Crop Improvement Association.

The Environmental Farm Plan (EFP), a voluntary program to promote best management practices and incorporate “ecosystem” thinking into farm management, has been active in Ontario since 1993 (Graham, pers. comm.). The plan is presently being revised, and a third version should be released in 2001. The EFP offers an opportunity to promote “bird-friendly” practices to the farming community as it is actively promoted to area farmers within the IBA and other parts of Chatham-Kent. In the same vein, the Kent Soil and Crop Improvement Association (KSCIA) promotes leading-edge techniques to protect soil and farm resources. KSCIA administers the Environmental Farm Plan and also has a large number of members within the IBA. This association could be an excellent vehicle to promote the IBA and to work with to promote bird-friendly practices that may reduce the impact of the agricultural lands on the wetlands.

Farmers consider hunting opportunities associated with marshes and wetlands on their property a strong reason for keeping an area in wetland rather than draining and converting it to crops. The IBA steering committee feels strongly that the hunting tradition of the area deserves credit for protecting some of the existing wetlands and so needs to be recognized as a viable strategy for conserving wetlands that benefit many species beyond waterfowl. The waterbird festival is seen as an opportunity to promote the area’s hunting traditions to those who may not have appreciated their role in conserving wetlands.

Considerable attention has been focused on cleaning up the Great Lakes in recent decades. Identifying environmental hotspots and enabling remedial action plans have been a focus of the environmental cleanup in the 1990s. The Great Lakes Conservation Action Plan identifies numerous sources of funding and programs for both large and small projects focused on protecting, rehabilitating, or restoring elements of the Great Lakes ecosystem. Examples of programs and funds that could and/or have been applied in the IBA include the Great Lakes Clean-up Fund, the Great Lakes Renewal Foundation, and the Eastern Habitat Joint Venture. This latter program is in the process of restoring approximately 400 hectares of wetlands from former agricultural land.

10.0 Threats

10.1 Loss of Wetlands Habitat

The most serious threat to IBA species is the destruction of wetland. In southern Ontario, wetlands have been converted to other uses, mainly agriculture and urbanization. Since pre-settlement times, almost 70 percent of the Ontario wetlands south of the Precambrian Shield have been lost (Sandilands and Campbell 1988). Although marshland conversion to agricultural land started in settlement times, drainage by pumps did not begin until 1880s (Lake St. Clair Technical Committee of the Ontario Eastern Habitat Joint Venture 2000). Between 1965 and 1978, 25 percent of wetlands between the Thames River and the Chenal Ecarte had been destroyed (McKeating et al. 1982). Drainage of wetlands continues to be a concern within the IBA.

10.2 Contaminants and Sedimentation

As top predators in the food chain, all terns including Forster's Tern have been used to monitor contaminants in the Great Lakes (Martins 1997). Severe reproductive problems such as eggshell thinning and birth defects were detected in many fish-eating birds in the early 1970s. Legislative controls and restrictions on persistent toxic chemicals resulted in significant improvements by 1980; however, within a few years improvements had stopped. In heavily polluted sites such as Green Bay, Lake Michigan, for example, Forster's Tern exhibits reproductive problems. Its low hatching success in Lake St. Clair is of concern, and the levels of contaminants in the St. Clair River and Lake St. Clair are well documented. But further study of contaminant levels in these Forster's Terns and the provenance of contaminants are required before contaminants can be eliminated or confirmed as a cause (Martins 1997).

The widely used herbicide Atrazine was found to be contaminating the St. Clair NWA marsh system. In order to reduce contamination, the CWS changed the source of water for the marsh from the McFarlane Relief Drain to the channel between St. Luke's Marsh and the NWA in 1979 (McKeating et al. 1982). Contamination from herbicides and pesticides as well as sediment (which carries toxins bound to soil particles) is a concern to marsh managers and farmers alike. Sediment from farmland could impair marsh quality and decrease populations of crayfish and other invertebrates, undermining habitat viability for endangered and threatened species such as the King Rail and Black Tern. Reducing chemical use on crops and reducing soil loss through erosion would benefit both the farmers and the marsh inhabitants.

The quality of any wetlands is also a function of the quality of its water, which for Lake St. Clair, is the outflow from the St. Clair River. The St. Clair is not a river in the usual sense but rather a strait – a conduit that transports water, nutrients, and sediments from Lake Huron to Lake St. Clair. The lake's water quality is generally high, because of the massive inflow of cleaner water from Lake Huron that continuously flushes the system. However, a "toxic blob" discovered on the bottom of the St. Clair River in the mid-'80s, and disclosure by government analysts that it contained 120 chemical compounds including two forms of dioxins, reaffirmed concerns about

water quality in the St. Clair system (Keating 1986). Human efforts to clean up Ontario's "chemical valley" along the St. Clair River continue to this day. Dilution does not solve the problems of bioaccumulation of toxins in the food chain nor eliminate the build-up in bottom sediments.

10.3 Residential and Recreational Development

As much as 10 percent of the marshland within the IBA has been drained for marina and cottage development (Edsall et al. 1988). Cottage and residential development places stress on wetland habitat when dredging and channelization for boat slips and marinas are undertaken. Bulk-heading and dyking along shorelines reduces shoreline erosion but eliminates shoreline habitat for marsh-dependent wildlife, fish, and certain wetland plants. Fragmentation of remaining wetlands by such recreational development is a cause for concern. Shoreline development, which usually includes lakeside houses with boatslips, also increases the amount of boat traffic and potential for disturbance of nesting or roosting birds. Residential development adjacent to natural areas also directly and indirectly increases predation on nesting birds by dogs and cats. The National Audubon Society, the American Bird Conservancy, the Humane Society of America, and the Association of Veterinarians of America have undertaken a major campaign called Cats Indoors.⁴ It recognizes the huge impacts of wandering cats to the ecology on natural areas and encourages cat owners to keep their cats inside (American Bird Conservancy). Raccoon and opossum numbers also are high around human settlements. Increased numbers of these species are a direct threat to marsh species such as King Rail.

Residential development in Mitchell's Bay may also increase expectations of public access to dykes for walking, bicycling and horseback riding. These types of uses would likely increase disturbance to breeding and resting birds in adjacent wetlands.

10.4 Non-Native Fauna and Flora

Non-native fauna and flora are a major threat to the health of any freshwater ecosystem (Naiman et al. 1995). In the Great Lakes Basin, over 130 of these exotic species have become established, in many instances bringing about irreversible and detrimental consequences (Wittman 1999). Carp (*Cyprinus carpio*), introduced into western Lake Erie in 1883, have spread throughout the Great Lakes Basin (Edsall et al. 1988). For almost 100 years, large populations of this fish have existed in Lake St. Clair. Here as elsewhere they have destroyed beds of native vegetation such as wild celery and wild rice, the preferred foods of Canvasback and Redhead. Carp spawning activities in spring disturb marsh habitat by stirring up sediment and inadvertently destroying nests and eggs of marsh-nesting terns (Martins 1997). More recently, in 1990, the Round Goby was discovered in Lake St. Clair. This aggressive species of fish has taken over the spawning sites of several native fish species. Its impact on this lake ecosystem is just beginning.

The accidental introduction of Zebra Mussels (*Dreissena polymorpha*) into the Great Lakes has had dramatic impacts on fish and water birds. A filter feeder, this mussel is capable of filtering a

⁴ For more information on the Cats Indoors campaign, write to: Cats Indoors! The Campaign for Safer Birds and Cats, 1250 24th Street, NW, Suite 400, Washington, DC 20037.

litre of water per day and removing most single-celled organisms that live suspended in a lake (Wittman 1999). The mussels' rapid increase in Lake St. Clair has within a decade increased water clarity to the extent that rooted vegetation and bottom-dwelling algae have replaced the single-celled organisms that once lived by the billions suspended in the lake. The presence and actions of this filter feeder may have significantly changed the species composition of fish and increased the numbers of certain waterfowl in the lake community (Pearce 1997). However, consequences in ecosystems are never simple. Because of their high body fat content and ability to filter large quantities of water, Zebra Mussels concentrate ten times as much toxic substance, including PCBs, in their fatty tissues as do native mussels (Wittman 1999). Organisms higher in the food chain that feed on Zebra Mussels, including waterfowl such as scaup, accumulate these toxic substances in their body fat. The effects of this bioaccumulation are currently under study.

Plants such as Purple Loosestrife, *Phragmites*, and European Frogbit (*Hydrocharis morus-ranae*) continue to invade and thrive in wetlands throughout Southern Ontario. Dense stands of these invasive species choke out native wetland species that may be important foods for wildlife and fish. Purple Loosestrife has been effectively controlled in some locations in Eastern North America through introductions of the *Galerucella* beetle, though these beetles are yet to prove effective in the IBA despite several releases (Haggeman, pers comm.). Effective and acceptable controls for the other species have not yet been found.

Mute Swan (*Cygnus olor*), a large and aggressive escapee, has established populations in many Great Lakes marshes. High concentrations of Mute Swans can overgraze an area, causing a functional reduction in aquatic habitat (Ciaranca et al. 1997). Populations in the Long Point area have already created "large holes" in the marsh vegetation (Petrie, pers comm.).

10.5 Disturbance

Nearshore and offshore waters of the IBA offer important feeding and resting areas for migrating waterfowl. Rafts of these waterfowl can be flushed or otherwise disturbed by recreational boaters and fishermen. Such disturbances can force waterfowl to find less favourable feeding and resting sites. As well, these birds unnecessarily expend energy required for migration and possibly reproduction. By seasonally restricting boat traffic (as is the case with the 300 metre limit from the shore to protecting rafting waterfowl from hunting disturbance), re-examining fishing activity in relation to waterfowl disturbance, and designating certain areas as refuges, such disturbance could be minimized. Such measures may be very unpopular and virtually impossible to enforce. Increasing boat traffic and difficulties of enforcement point to education as the best means of communicating this concern to boaters.

11.0 The Action Plan

The following Action Plan lays out the basics for bird conservation in the Eastern Lake St. Clair Important Bird Area. The vision, goals, and objectives were developed over several meetings with the IBA Steering Committee. Bulleted strategies or actions follow each goal and objective. The suggested group or person responsible for implementation is listed in parentheses, followed by the Action's priority: H = high, M = moderate, L = low. Implementation will depend upon the interest and commitment of stakeholders, as well as the availability of resources.

Organizations, groups, and parties identified in the plan as potentially leading or being involved in some aspect of the action or strategy are listed below with their acronym:

Bird Studies Canada	BSC
Canadian Wildlife Service	CWS
Ducks Unlimited Canada	DUC
Federation of Ontario Naturalists	FON
IBA Steering Committee	IBASC
Kent Soil and Crop Improvement Association	KSCA
Kent Federation of Agriculture	KFA
Municipality of Chatham-Kent	MCK
Nature Conservancy of Canada	NCC
Ontario Ministry of Natural Resources	OMNR
Species-at-Risk Recovery Teams	SARRT
Stewardship Kent	SK
Lower Thames Valley Conservation Authority	LTCA
St. Clair Region Conservation Authority	SCRCA
Sydenham Field Naturalists	SFN
Dover Rod and Gun Club	DRGC
Wallaceburg Chamber of Commerce	WC

11.1 Vision

The Eastern Lake St. Clair Important Bird Area will promote conservation, stewardship and hunting traditions to protect the area's significance for breeding, wintering and migratory birds, as a place where birds can be observed, monitored, studied and enjoyed for the ecological, educational, economic and recreational benefits to the people of Ontario and beyond.

11.2 Goals, Objectives and Action Strategies

1. *To ensure that species of conservation concern and their habitats are adequately monitored in the IBA*
 - A. Establish adequate levels of monitoring of IBA species and Species at Risk within the IBA

- Design monitoring protocols to fit varying levels of funding and staffing based on ranking information needs (SARRT, CWS, OMNR) (**H**)
 - Ensure that adequate data are gathered to track populations of species of concern (SARRT, CWS, OMNR) (**H**)
 - Find the resources needed to implement adequate monitoring (SARRT, CWS, OMNR) (**H**)
- B. Develop cooperative relationships for monitoring
- Establish “handshake” agreements with marsh owners with regard to monitoring and access (SARRT, CWS, OMNR) (**H**)
 - Share information from monitoring with private marsh managers (SARRT, CWS, OMNR) (**H**)
 - Distinguish programs which can be implemented by volunteers from those requiring paid staff
- C. Track changes in habitats through remote sensing
- Promote and encourage habitat monitoring by agencies or universities, particularly with regard to habitat loss and conversion and *Phragmites* invasion (CWS, OMNR, DUC) (**M**)
2. *To maintain a viable and healthy wetland system that addresses the ecological needs of all of the species of concern within the IBA*
- A. Conserve all existing dyked wetlands
- Encourage the Municipality of Chatham-Kent to map and protect all wetlands and promote buffers in its Official Plan, and to recognize wetland values in planning decisions within the IBA (MCK, SFN) (**H**)
- B. Create additional wetland habitat within or adjacent to the IBA
- Secure and convert 1,000 acres of agricultural land into wetland and wildlife habitat. Many agencies are heavily involved in wetland conservation and restoration through the Eastern Habitat Joint Venture and the Great Lakes Wetlands Conservation Action Plan. This IBA plan recognizes that wetland conservation and restoration within the IBA is the mandate of these programs and encourages this effort to create 1,000 acres of wetland habitat within or adjacent to the IBA (EHJV) (**H**)
- C. Encourage and support programs to reduce impact of invasive exotic species
- Encourage pilot study to control/reduce *Phragmites* in areas that are highly impacted (CWS, MNR, DUC) (**M**)
 - Encourage management of Mute Swans within the IBA (CWS, MNR, DUC, BSC) (**M**)
- D. Encourage Walpole Island First Nation to participate in the IBA process
- Provide a copy of this conservation plan to band council and meet with band council to discuss the merits of including Walpole within the IBA (IBASC, FON) (**M**)

- E. Encourage American stakeholders to include the lake and associated wetlands in U.S. waters within the IBA
- Meet with representatives from the appropriate American agencies to present the conservation plan and promote the merits of expanding the boundaries to include U.S. waters and wetlands (IBASC, FON) **(M)**

3. *To promote compatible agricultural practices*

- A. Promote farming activities that are compatible with conservation and a healthy ecosystem within the IBA
- Work with farming organizations such as Kent Soil and Crop Improvement Association to promote the IBA. (SK, KFA, KSCA, IBASC) **(M)**
 - Provide Environmental Farm Plan facilitator with information about the IBA and examples of bird-friendly farming practices for dissemination at workshops (FON, SK) **(M)**
 - Work with the municipality and farming organizations to promote prairie buffers along municipal drains (SK, MNR, KSCA, KFA, FON) **(H)**
 - Recognize (in some formal way) landowners in the Eastern Lake St. Clair IBA who are practising good land stewardship to benefit the IBA species (SK, KSCA) **(M)**
 - Establish pilot projects within IBA such as drain buffers and integrated pest management (SK, KSCA, OMNR, KFA) **(M)**
 - Produce simple printed materials about programs and incentive funds that can be accessed by farmers for wetland rehabilitation and conservation management for dissemination through the farming network. (SK, KSCA, OMNR, KFA) **(H)**

4. *To promote awareness and education of the IBA and its values within and beyond the IBA*

- A. Develop an annual waterbird festival in the IBA
- Obtain funding and organizational structure (IBASC, WC, MCK) **(H)**
 - Hold the festival in mid-April (IBASC, WC, MCK) **(H)**
 - Promote the festival in Ontario and Michigan (MCK, WC) **(H)**
- B. Support the value of hunting in its role to preserve wetlands
- Invite local hunting and fishing clubs to participate in displays at the waterbird festival (IBASC, SK) **(M)**
 - Develop co-operative projects with hunt clubs and other groups within the IBA (IBASC, SK) **(M)**
 - Develop relationship and appreciation between hunting and naturalist groups and explore cooperative opportunities for wetland securement and use (IBASC) **(H)**
- C. Minimize disturbance to rafting waterfowl and breeding marshbirds from boat traffic
- Post all marinas with appropriate signage to discourage disturbance of rafting waterfowl (OMNR, CWS, SCRCA, LRCA) **(M)**
 - Work with an American partner to install the same signage at marinas on the American side of Lake St. Clair (CWS, OMNR) **(M)**

- D. Work with local schools to build conservation awareness and interest in the area's natural and cultural history through the IBA
- Work with local schools to introduce and develop educational programs such as FON's *Wildlife in Jeopardy* kit, to learn about the threatened species of wildlife in their area and build appreciation for the area's rich natural heritage (FON, IBASC, KSCA) (M)
 - Hold a poster contest in local schools for promoting waterbird festival (WC, SK, FON) (M)
 - Design and distribute fact sheets to local educators (DUC, FON) (M)
- E. Work with local landowners and residents to develop cooperative and supportive relationships related to the IBA and other conservation issues
- Provide landowners with information about the habitat and significant bird species within the IBA and why the IBA was recognized (FON, SK) (M)
 - Develop and distribute a pamphlet and fact sheets about the IBA and IBA species to local landowners (IBASC, SK, KSCA) (M)
 - Work with local private landowners to explore "pay for use" ecotourism opportunities for spring birding (IBASC, SK) (L)
- F. Develop information products about the Eastern Lake St. Clair IBA that can be distributed throughout the community and via internet access
- Revise Stewardship Kent and other web pages to include information about the IBA (SK, MCK, etc) (H)
 - Write an article about the IBA for farming newsletters/ paper (IBASC) (M)
- G. Develop facilities such as observational blinds and viewing towers for observing wetland birds or shorebirds while minimizing disturbance
- Find or develop an appropriate location for observation opportunities and facilities within the IBA (IBASC, DUC) (M)
 - Encourage the directors of the 1000 Acres project to consider development of an observational facility and shorebird cell as part of this project (IBASC, DUC, FON) (M)
 - Seek funding for developing this initiative (IBASC, DUC, FON) (M)

11.3 Implementation

Whether or not a formal committee exists, it would be of value for present IBA committee partners to meet on a regular basis (e.g., annually) to review implementation priorities and resources. Implementation of much of this plan is contingent upon access to resources. Communications between partners is critical to avoid competition for the same resources. Ideally, partners should focus on mutually beneficial projects. Three potential sources of money for projects are the federal and provincial Species at Risk programs, the Eastern Habitat Joint Venture, and funds through the Stewardship Council. The Species at Risk programs have funds

attached to them for stewardship work, monitoring, and management. The Eastern Habitat Joint Venture (EHJV) has been the delivery mechanism for the North American Waterfowl Management Program but is expanding to include other bird groups including colonial birds, landbirds, and shorebirds and is leading the 1000 Acres project. Other funds such as the Trillium Foundation or the North American Fund for Environmental Cooperation are also appropriate for funding work in this IBA.

Implementation of this plan is largely dependent upon tapping into some of these funds. It is also dependent upon leadership. An organization such as Stewardship Kent is well grounded in the community and could logically lead certain aspects of implementation related to private landowners. Other groups are likely more suited to other leadership or support roles. Below is a sample chart developed for goal “4.A.” to assist the steering committee in establishing priorities for implementation.

4. A. Develop an annual waterbird festival in the IBA
 - Sustain funding and organizational structure (IBASC, WC, MCK) **(H)**
 - Hold the festival in mid-April (IBASC, WC, MCK) **(H)**
 - Promote the festival in Ontario and Michigan (MCK, WC) **(H)**

Table 1. Sample Planning Chart for Objective 4A.

Actions	Priority	Lead responsibility	Cost (in priority order)	Timing	Complexity
A. Obtain funding and organizational structure	1	FON/DUC	12K	Summer 2002	High requires commitment and leadership
B. Hold festival in mid-April	3	IBASC, WC, SK	10K	April 2003	High – requires several groups working together
C. Promote festival outside of IBA	2	WC, SK	2K	2002-2003	Medium – requires one or two groups with expertise

12.0 Evaluation

Planning in complex circumstances should include a system of evaluating progress, rethinking goals and objectives, and revising actions. This iterative approach to planning means not only that the plan is open to revision but also that evaluation and revision are fundamental parts of the planning process. The FON and its national partners are committed to supporting IBAs in plan implementation. Local stakeholders have already invested in the IBA and have a stake in its success.

While the IBA steering committee may not continue in its present form, a mechanism to oversee implementation of these actions should be established. Some of these objectives and actions fall within the mandates of some of the IBA partners (e.g., DUC, Stewardship Kent, FON). Plan implementation will depend on funds being raised to organize the waterbird festival, develop the educational tools, and develop the outreach program for farmers. Implementation will also rely upon the continued interest of the IBA partnership. An annual update on the conservation plan implementation would be of great value to the CNF, FON, and BSC. It is recommended that the IBA partnership consider meeting on an annual basis to review their interests with regard to implementing this plan and to set priorities for implementation.

As the Eastern Lake St. Clair IBA has joined the global family of IBAs, information on the IBA will be incorporated into BirdLife's global IBA database. This database will be used to report on conservation progress in IBAs. The information required is listed below:

- ❑ summary of general progress by the stakeholders group
- ❑ update on actions, objectives and goals
- ❑ changes in actions, objectives and goals (explain why changes were needed)
- ❑ any changes in threats affecting the IBA species and site
- ❑ copies of any media coverage or materials produced
- ❑ an updated list of groups involved in the stakeholder group
- ❑ successes and failures within the IBA.

Keys to plan implementation and revision:

- determine resources required for implementing each action
- confirm responsibilities for actions
- prioritize actions based urgency, resources, and interest of stakeholders
- obtain resources.

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Appendix 1 IBA Program Partners

BirdLife International (BL)

A pioneer in its field, BirdLife International is the first non-government organization dedicated to promoting world-wide interest in and concern for the conservation of all birds and the special contribution they make to global biodiversity. BL operates as a partnership of non-governmental conservation organizations, grouped together within geographic regions (e.g., Europe, Africa, the Americas) for the purpose of planning and implementing regional programs. These organizations provide a link to on-the-ground conservation projects that involve local people with local expertise and knowledge. Currently 20 countries are involved in the Americas program throughout North, Central, and South America. For further information about BirdLife International, check the following website: <<http://www.birdlife.net/>>.

The Canadian Important Bird Areas Program has been undertaken by a partnership of two lead agencies. The Canadian Nature Federation and Bird Studies Canada are the Canadian BirdLife International partners.

The Canadian Nature Federation (CNF)

The Canadian Nature Federation is a national conservation organization with a mission to be Canada's voice for the protection of nature, its diversity, and the processes that sustain it. The CNF represents the naturalist community and works closely with its provincial, territorial, and local affiliated naturalists organizations to directly reach 100,000 Canadians. The strength of CNF's grassroots naturalists network allows it to work effectively and knowledgeably on national conservation issues that affect a diversity of ecosystems and human populations in Canada. The CNF also works in partnership with other environmental organizations, government and industry, wherever possible. Its approach is open and cooperative while remaining firm in the goal of developing ecologically sound solutions to conservation problems. CNF's website is <http://www.cnf.ca>.

Bird Studies Canada (BSC)

The mission of Bird Studies Canada is to advance the understanding, appreciation, and conservation of wild birds and their habitats, in Canada and elsewhere, through studies that engage the skills, enthusiasm, and support of its members, volunteers, staff, and the interested public. BSC believes that thousands of volunteers working together with the guidance of a small group of professionals can accomplish much more than could the two groups working independently. Current programs collectively involve over 10,000 volunteer participants from across Canada. BSC is recognized nation-wide as a leading and respected not-for-profit conservation organization dedicated to the study and understanding of wild birds and their habitats. BSC's website is <http://www.bsc-eoc.org>.

Federation of Ontario Naturalists (FON)

The Federation of Ontario Naturalists protects Ontario's nature through research, education, and conservation action. FON champions wildlife, wetlands, and woodlands and preserves essential habitat through its own system of nature reserves. FON is a charitable organization representing 15,000 members and over 105 member groups across Ontario. FON's website is <http://www.ontarionature.org>.