

# **Luther Marsh Important Bird Area Conservation Plan**

**Produced for the Luther Marsh IBA stakeholder**

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Dufferin Northern Peel Anglers and Hunters

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## 1.0 Introduction

The back roads of north Wellington and Dufferin counties criss-cross flat expanses of farmland, more in corn and soybean than previous years but many still in hay and alfalfa. Numerous low areas, once cultivated, are dotted with the reddish hues of dogwood and pockets of willow. One hardly notices the gradual climb onto the “Dundalk plateau,” driving north from Guelph or Kitchener-Waterloo. But here the growing season is shorter and the winters longer than in the urban areas to the south. Within this largely treeless rural landscape sprawls Luther Marsh. The expansive wetlands and surrounding woodlands throb with verdant life in the spring and hum with biting insects in the summer. Flocks of migrating waterfowl congregate there in the fall. Winters are snowy, cold, and desolate – similar enough to Arctic tundra to attract the occasional Snowy Owl and wheeling flocks of white and black Snow Buntings.

Luther is a Mecca for birds of many feathers in all seasons. Its large reservoir supports thousands of migrating waterfowl each fall, which in turn support a significant waterfowl hunt. Marshes established around the perimeter of islands and the reservoir attract nesting Least Bitterns, Black Terns, and other marshbirds. A substantial mix of plantation and native forest around the reservoir provides breeding habitat for regionally significant numbers of forest birds. Hay fields and early successional old fields near Luther Marsh have occasionally attracted rare and threatened grassland species including Henslow’s and LeConte’s Sparrows.<sup>1</sup>

The Grand River Conservation Authority (GRCA) and the Ontario Ministry of Natural Resources (OMNR) own this large piece of Grand River headwaters and manage the resource for both river augmentation and wildlife. The Luther Marsh Management Plan (1991), currently under revision, directs management activities within Luther Marsh Wildlife Management Area.

How does one maintain the significance of this site for the diversity of species now present? What parts should be left alone and what parts managed to create target habitats? These questions are at the root of this conservation plan.

Plans are works in progress, open to revision and rethinking. Yet we are hopeful that this plan will serve in demonstrating the significance of the Luther Marsh for breeding and migrant birds. We are hopeful that the information presented in this plan, and its goals and objectives, will serve the community and the birds well, and inform the process of updating the Luther Marsh Management Plan of the GRCA.

The layout for this conservation plan is as follows. Chapter 2 describes the IBA program, its goals, and criteria for site selection. Chapter 3 provides a geographical and biophysical context to the IBA. Chapter 4 provides readers with a summary of the natural history of each species within the IBA. Chapter 5 describes other biologically significant features of IBA. Chapters 6 to 8 discuss land ownership, human cultural activity, the history of the site and stakeholder information. Chapters 9 and 10 present opportunities and threats to IBA species. The Action

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<sup>1</sup> Henslow’s Sparrows were located just southeast of Luther in the mid 1980s and in the Keldon source area in Proton Township in the late 1980s (Cadman, pers comm.).

Plan, a presentation of the steering committee's vision, goals, objectives, and strategies, is presented in Chapter 11.

The vision statement for the Luther Marsh IBA is as follows:

*The Luther Marsh Important Bird Area will be conserved and managed in concert with the Luther Marsh Management Plan, to maintain and enhance its significance for waterbirds and landbirds, and will be 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.*

## **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 at all stages is a voluntary one, the advantages of IBA recognition 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 is conducting community conservation planning in approximately 20 sites as of 2000. Community conservation planning means engaging the local community in the development and implementation of the conservation plan. In March 2000, stakeholders met to discuss the Important Bird Area (IBA) for the first time. Subsequently, a steering committee was struck to guide the development of a conservation plan for Luther Marsh IBA. This document is the fruit of the steering committee's labour. It is hoped that this report can provide valuable direction to Grand River Conservation Authority and the Ontario Ministry of Natural Resources in their updating of the Luther Marsh Management Plan. Innovative approaches such as IBA conservation plans are intended to be tools for stakeholders, interested parties, and individuals to further bird conservation at their site.

### **3.0 IBA Site Information**

#### **3.1 Location and description**

**Site:** Luther Marsh IBA, CAON059N

**Location:** 43°56' N, 80°26' W

Luther Marsh IBA is located in central southwestern Ontario in the Grand River watershed about 25 kilometres west of Orangeville (population 21,498) and 15 kilometres northeast of the village of Arthur (population 2,139) (see Fig. 1). The Greater Toronto Area (population 4.3 million) is about an hour's drive from this IBA. The IBA encompasses Luther Marsh Wildlife Management Area, an area of approximately 5,200 hectares straddling the border between Dufferin County and Wellington County and includes Damascus Conservation Area (about 300 hectares), which abuts the southwest corner of Luther Marsh Wildlife Management Area. Lying along the IBA's eastern boundary in Dufferin County is the township of East Luther Grand Valley (population 2,773). The hamlets of Monticello, Monck, Damascus, and Mount View lie just outside the IBA. Several concession roads that pass through these hamlets abut the boundary of the Management Area. As well, County Road 15, which runs from Monck through Monticello, passes through the northern portion of the IBA. Although some concession roads dead-end in the Management Area, public access to the IBA is through the main gate located near the Luther Marsh dam, about a kilometre south of Monticello.

Historically, Luther Marsh was a large peat bog surrounding two small lakes and containing several streams. In 1954 the Grand River Conservation Commission constructed a dam across Black Creek, a headwater tributary of the Grand River, to provide low-flow augmentation during the summer months to the upper Grand River (GRCA 1991). By impounding Black Creek and flooding Luther Marsh, the dam created Luther Lake, one of the largest inland wetlands, as well

as the first large inland impoundment in southern Ontario (Luther Marsh Management Plan,<sup>2</sup> 1991). From late June to early September, Luther Lake is gradually drawn down. During April and May it is filled by spring runoff from the surrounding drainage area of 64 square kilometres. Luther Lake is a shallow marsh lake containing several islands and an open water area of about 1,975 hectares. The lake has an average depth of one to two metres, five metres near the dam. By mid-July it is often choked with submergent vegetation.

Wetlands surrounding Luther Lake include all four wetland types, including marshes, a bog, fens, and several swamps. The marshes are densely vegetated with cattails and bulrushes, while shrub-thicket swamps are dominated by willows and Red-osier Dogwood. Reed canary grass is a common invasive plant. Decades after this artificial lake was created, the wetland still has a high diversity of aquatic plants, although many large stands of submergent or emergent vegetation are of a single species (GRCA 1991). Bogs, both open and treed, are a significant component of the IBA. A 500-hectare raised bog with many boreal affinities surrounds Wylde Lake in the southeast portion. The open water of the lake is surrounded by sphagnum moss interspersed with acid-tolerant plants such as pitcher plant, sundew, leather leaf, Labrador tea, and cranberries.

Swamp birch, tamarack, and black spruce define the exterior of the bog. A 17-hectare fen along the Monck-Monticello road is dominated by sedges in its open areas and encircled by successional shrubs and trees. Fens of this size are scarce at this latitude and hence significant (GRCA 1991). Where forested areas are flooded as a result of dam construction, numerous dead spires remain particularly in the northwest portion of the site, although their number has significantly declined (ibid.).

Surrounding the wetlands is agricultural land, conifer plantations, lowland forest, and upland hardwood forest. The agricultural lands are substantial – over 600 hectares – although considerably less than in the mid-1950s. During the 1950s and 1960s, 2.1 million trees, mostly pine, spruce and white cedar with smaller numbers of 16 other species, were planted, creating over 100 plantations (Sandilands 1984). The lowland forest covers about 2,000 hectares of the IBA and is made up of forest types with northern affinities: deciduous forests of balsam poplar and trembling aspen, mixed woods of poplars and white cedar, and conifer stands of white cedar with some balsam fir and tamarack.

*Table 1. Luther Marsh Provincial Wildlife Area major habitat types*

<b>Major Habitat</b>	<b>Hectares</b>
Lake	1975
Plantation	660
Natural forest	1350
Agriculture	600
Remaining	948
Roads	18 km
Total	5511.8

<sup>2</sup> Henceforth the Luther Marsh Management Plan will be referenced as LMMP, 1991.



*Figure 1. Location of Luther Marsh in Southern Ontario*

*Figure 2. Luther Marsh Important Bird Area Boundaries*

This IBA lies within the Manitoulin-Lake Simcoe ecoregion (Environment Canada 2000); however, within this ecoregion its climate is unique. Situated on the Dundalk plateau with an elevation of approximately 480 metres above sea level, this region is aptly named the “Roof of Ontario” (Ontario Road Atlas 2000). The Dundalk plateau is the coldest off-shield region of southern Ontario, with temperatures and precipitation similar to those of Algonquin Park 300 kilometres to the northeast (Sandilands 1984). The mean annual temperature is 5.5 °C. Mean dates for last spring frost and first fall frost are May 31 and September 20, a mere 101 days apart. With its decidedly cool climate and extremely flat topography resulting in poor drainage, good crop yields have historically been difficult to achieve. This, no doubt, has contributed to these lands being designated a Wildlife Management Area (see Section 6.0). The influence of faster growing varieties of corn and climate warming is evident in the Luther area, as many fields have been recently drained and planted in row crops (R. Bell, pers comm., 2001).

The Dundalk plateau was the first land in southern Ontario to re-emerge after the retreat of the Wisconsin ice sheet (Wake 1997). Within the IBA a till sediment layer of 25 to 50 metres covers the limestone bedrock, though bedrock is nearer the surface in areas near Monck. Muck and peat deposits are extensive (Sandilands 1984). Characterized by numerous, poorly drained depressions, the surface soils are loam or silt loam of 30 to 60 cm depth. Appearing sporadically in the IBA are the regionally significant Luther Marsh eskers that are prominent as small islands within Luther Lake.

## **4.0 IBA Species Information**

### **4.1 Why Luther Marsh Is an Important Bird Area**

The creation of the impoundment and resulting wetlands of Luther Marsh in the 1950s attracted a significant variety of waterfowl and marsh birds. Luther Marsh provided habitat for the colonization, and ultimately the distribution, of several waterfowl species in southern Ontario (GRCA 1991). Today Luther Marsh is a staging area for large numbers of migrating waterfowl and provides breeding habitat for both waterfowl and several species of marsh birds.

Luther Marsh is an IBA of national significance for both congregatory and threatened species. More than 10,000 waterfowl utilize the IBA as a staging area during fall migration (Canadian IBA Database 1999). During the 1970s as many as 15,000 waterfowl migrated annually in fall through Luther Marsh. The majority of migrants are dabbling ducks. The most common fall migrants include Mallard (*Anas platyrhynchos*), American Black Duck (*Anas rubripes*), American Wigeon (*Anas americana*), and Green-winged Teal (*Anas crecca*) and Blue-winged Teal (*Anas discors*). Notable spring migrants include Bufflehead (*Bucephala albeola*) and Ruddy Duck (*Oxyura jamaicensis*).

Least Bittern (*Ixobrychus exilis*), a marsh species of Special Concern nationally, nests within Luther Marsh IBA. At least ten pairs of Least Bittern have bred here most years, representing about 1 percent of the Canadian population (Canadian IBA Database 1999).

According to the Canadian IBA Database (1999), the wetlands of Luther Marsh provide breeding habitat for a variety of wetland bird species. Fifteen species of ducks, including nine species of dabblers, five species of divers and Hooded Merganser (*Lophodytes cucullatus*), breed or have bred in Luther Marsh. During the 1960s, an estimated 900 pairs of ducks bred here; that number has declined significantly with only 200 pairs breeding in the 1970s and 100 pairs in the 1990s. The most common breeding ducks are Mallard, Gadwall (*Anas strepera*), American Wigeon, Blue-winged Teal, Ring-necked Duck (*Aythya collaris*), Lesser Scaup (*Aythya affinis*), and Redhead (*Aythya americana*). Black Tern (*Chlidonias niger*), designated as Vulnerable in Ontario, also breeds in Luther Marsh. During the 1960s and 1970s, as many as 100 pairs were reported nesting. During the 1990s, between 20 and 25 pairs of Black Terns nested here. Like the Black Tern, other marsh birds such as Pied-billed Grebe (*Podilymbus podiceps*), Black-crowned Night-Heron (*Nycticorax nycticorax*), American Bittern (*Botaurus lentiginosus*), and American Coot (*Fulica americana*) bred in larger numbers in the early decades of the marsh than they do now. Other wetland species of note breeding annually include Common Loon (*Gavia immer*), a regionally rare species (one to two pairs), Great Blue Heron (*Ardea herodias*) (almost 100 pairs), and Osprey (*Pandion haliaetus*) (three to four pairs). Both nesting Great Blue Herons and Ospreys have benefited from artificial nesting structures (GRCA 1991).

Water levels of Luther Lake are lowered annually. In fall, the exposed shoreline of the lake, islands, and lowered levels in the marsh provide foraging and resting stopovers for 27 species of shorebirds. In its early stages of development, Luther Marsh was similar to a prairie wetland and, within a few years, attracted several western wetland species including Red-necked Grebe (*Podiceps grisegena*), Gadwall, Ruddy Duck, American Wigeon, Canvasback (*Aythya valisineria*), Redhead, and Wilson's Phalarope (*Phalaropus tricolor*) (GRCA 1991). Luther Marsh was one of the few locations in southern Ontario where these "western" species were observed regularly during the breeding season. Red-necked Grebe bred at Luther Marsh from 1960 until 1985, a unique breeding site in southern Ontario at that time (Armstrong 1987). In 1983, Liz Yerex of the Grand River Conservation Authority obtained the first evidence of nesting Canvasback in Ontario when she photographed a brood (Sandilands 1984). Wilson's Phalarope ( has bred frequently at Luther Marsh since 1958; however, it has not bred there since 1995 (Cadman, pers comm.).

Luther Marsh attracts a number of marsh birds not regularly occurring in southern Ontario. In 1962 Luther Marsh became the first Canadian nesting site for Cattle Egret (*Bubulcus ibis*). A number of rare wanderers or vagrant species to southern Ontario have also been recorded here including Glossy Ibis (*Plegadis chihi*), Snowy Egret (*Egretta thula*), Yellow-crowned Night-Heron (*Nyctanassa violacea*), and American White Pelican (*Pelecanus erythrorhynchos*), an Endangered species in the province.

Nesting within or near Luther Marsh IBA, presently and historically, are landbirds of conservation interest. Henslow's Sparrow (*Ammodramus henslowii*), an Endangered species in Canada and Ontario, and designated as globally near--threatened, nested near the IBA from the early 1960s through to the mid-1980s. There are, however, no breeding records during the last decade. Old-fields, at one time a significant habitat within Luther Marsh Wildlife Management Area, have been replaced by conifer plantation or by natural succession. Not only has this

eliminated habitat for this sparrow, but for other grassland species including Grasshopper Sparrow (*Ammodramus savannarum*). The Wylde Lake bog is one of the southern-most breeding locations in Ontario for Lincoln’s Sparrow (*Melospiza lincolni*).

The trend in Luther Marsh Wildlife Management Area has been one of decline for many species, whether waterfowl, marsh birds, or grassland birds. Designating Luther Marsh as an IBA acknowledges the concern of stakeholders, from managers to concerned citizens and neighbours, about this decline.

## 4.2 Staging and Breeding Waterfowl

### 4.2.1 Importance of staging areas

A waterfowl staging area is a location where large numbers of waterfowl, often mixed-species flocks, gather to feed, rest, and preen during migration. Such stopover sites are vital to the survival of migratory species whose breeding and wintering grounds are separated by great distances. These stopovers are necessary for waterfowl to refuel, rest fatigued flight muscles, and maintain flight feathers. In North America, major flyways tend to follow coastlines or major river courses and are well known, generalized routes of migration: the Pacific, the Central, the Mississippi, and the Atlantic flyways. Banding studies and radar observations have identified more precise and defined routes termed migration corridors (Bellrose 1976).

Table 2: Status of Waterfowl at Luther Marsh IBA

A = Abundant; C = Common; R = Rare; U = Uncommon

<b>Dabblers</b>	<b>Spring migrant</b>	<b>Breeding</b>	<b>Fall migrant</b>
Gadwall	C	C	C
American Wigeon	U	C	C
American Black Duck	R	R	U/C
Mallard	A	C	A
Blue-winged Teal	U	C	A
Northern Shoveler	R	R	U/R
Northern Pintail	U	R	U
Green-winged Teal	U	R	C
<b>Divers</b>			
Canvasback	R	R	R
Redhead	C	U	C
Ring-necked Duck	C	U	C
Greater Scaup			U
Lesser Scaup	C	R	C
<b>Other Waterfowl</b>			
Canada Goose	C	C	A
Wood Duck	C	R	C
Bufflehead	C	–	U
Common Goldeneye	U	–	U
Hooded Merganser	U	R	U
Common Merganser	U	R	U
Ruddy Duck	U	U	U

Some stopovers are world-renowned, attracting tens of thousands of waterfowl annually, e.g., Long Point Bay. Smaller and perhaps lesser known stopovers are also important links in the

migrating chain. Recognizing the importance of these links, both public and private waterfowl agencies throughout North America manage and protect thousands of staging areas.

Luther Marsh has been an important site for both breeding and staging of migrating waterfowl since its inception. Trends in waterfowl numbers indicate a decrease in breeding pairs over time (GRCA 1991). Analysis of banding recoveries and hunting success, 1953-94, undertaken by David Lamble (1995), points to stable or increasing numbers of many species of migrant waterfowl.

#### 4.2.2. Waterfowl Species Accounts<sup>3</sup>

**Canada Goose** (*Branta canadensis*) is a common breeder and the only regularly occurring goose at Luther Marsh. Introduced into the marsh in 1969 from the Toronto Islands (GRCA 1991) and through the management program a resident population dependent upon a winter-feeding program became established. In fall of 1977, all of the geese migrated south for the first time. By the early 1980s, the fall migration through Luther Marsh exceeded 1,200 as birds from other Canada Goose management programs in Ontario staged at Luther Marsh (Sandilands 1984). Geese are found throughout the Luther reservoir, nesting on muskrat lodges and elevated areas near open water.

**Wood Duck** (*Aix sponsa*) is a common migrant and a rare breeder. It is the “second most frequently shot duck in the province” (Biro 1987), having been the most threatened waterfowl species early in the twentieth century. Nest boxes have had limited success in many parts of Ontario, although they have been extremely successful in the southern United States (Biro 1987). Nest boxes have been successful in Luther Marsh and surrounding areas (Lamble 1995) although an earlier project involving the stocking of young birds in an area with nest boxes was unsuccessful (Sandilands 1984). Wood Ducks are commonly banded at Luther.

**Gadwall** (*Anas strepera*) is both a common migrant and common breeder at Luther Marsh. This species was first discovered nesting in Ontario in 1955 in the Lake St. Clair area and at Luther Marsh the same year (Sandilands 1987a). A bird of the prairie provinces, its eastward expansion continued throughout Ontario during the next three decades. Expansion was mainly in southern Ontario and sporadically into the north. During its first 30 years, the population at Luther Marsh increased from one to more than 100 breeding pairs. The Ontario Breeding Bird Atlas, 1981-1985, showed the Luther Marsh square as the only square in Ontario with an estimate of more than 100 pairs (ibid.).

**American Wigeon** (*Anas americana*) is both a common migrant and uncommon breeder at Luther Marsh. Since the 1930s, it has expanded its breeding range locally throughout southern Ontario; previously it was most common along the James Bay and Hudson Bay coastlines (Sandilands 1987b). Analysis of hunter success data at Luther Marsh suggests that the population is increasing (Lamble 1995).

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<sup>3</sup> Note that the waterfowl species individually do not have adequate numbers to meet the IBA congregatory criterion. However, as a group they have historically surpassed this threshold. The species summarily presented are those that comprise the balance of the breeding and migrating waterfowl.

**American Black Duck** (*Anas rubripes*) was the most common nesting species in the Luther wetlands prior to the construction of the dam (GRCA 1991). In the two decades after construction, this duck remained one of the three most common waterfowl at the marsh. During fall migration, in those years, as many as 5000 were observed. By the mid-1970s, it was rare to absent during the breeding season, likely the result of the change in habitat at Luther (ibid.). During the 1980s, a stocking program was of limited success. No Black Ducks were found nesting since 1980 (L. Yerex, pers comm., 2001). This species remains an uncommon to common fall migrant. Most birds stopping at Luther Marsh are likely coming from northern Ontario (Lamble 1995). Predominantly an eastern species whose range extends mainly from Ontario to the Maritimes, the American Black Duck was in gradual decline throughout much of its range from 1955 to the early 1980s but has since stabilized at a low level (Canadian Wildlife Service Committee 1999).

**Mallard** (*Anas platyrhynchos*) is an abundant migrant, particularly in fall, and a common breeder. Luther Marsh is a preferred stopover and numbers continue to increase. The Mallard is the most abundant breeding duck at Luther, and is second only to Blue-winged Teal in its brood production (GRCA 1991). Banding returns for birds banded at Luther Marsh come from New York, Michigan, and Illinois southward to Virginia and the Carolinas, Tennessee, Missouri, and Arkansas (Lamble 1995). These returns suggest migration corridors from Ontario to the American southeast and predominantly along the Mississippi flyway as described by Bellrose (1976).

**Blue-winged Teal** (*Anas discors*) is an abundant fall migrant and has been an abundant breeder with an estimate of 200+ pairs in the 1960s. It is unlikely that this number has been maintained (GRCA 1991). Blue-winged Teal breeds throughout most of southern Ontario, where it is second only to the Mallard in breeding density (Ross 1987). In the Wildlife Management Area, numbers of Blue-winged Teal increased after the Damascus Reservoir was created in 1982 (L. Yerex, pers. comm., 2001).

**Northern Shoveler** (*Anas clypeata*) has been observed in small numbers at Luther Marsh since 1958. It is a rare to uncommon migrant and a rare, sporadic nesting species (GRCA 1991). Predominantly western in its distribution in North America, Northern Shoveler's breeding range extended in southern and central Ontario during the second half of the last century. Breeding also occurs along the northern coastal region of the province (Sandilands 1987c).

**Northern Pintail** (*Anas acuta*) is a common migrant and a rare to uncommon nesting species that may not breed every year in Luther Marsh (GRCA 1991). It is one of the earliest spring migrants in Ontario, and flocks of a thousand have staged here (Sandilands 1984). Population estimates of Northern Pintail have declined dramatically throughout most of its North American breeding range since 1971 (Canadian Wildlife Service Committee 1999).

**Green-winged Teal** (*Anas crecca*) is a common migrant, although unlike the Blue-winged Teal it is a rare nester with only four or five pairs nesting in Luther Marsh (Lamble 1995). The first confirmed pair was observed on the Mallard pond, a Ducks Unlimited Canada project, in the late 1980s. A significant breeding species along the James and Hudson Bay coastlines, Green-winged

Teal breeds sporadically throughout the boreal forest region and the northern mixed forests of Ontario. During the mid-twentieth century, it underwent a range expansion in southern Ontario, responding to new habitat opportunities created by newly created reservoirs and sewage lagoons (Sandilands 1987d).

**Canvasback** (*Aythya valisineria*) is an uncommon migrant and rare nesting species, last recorded nesting at Luther in 1987<sup>4</sup> (Coady 2000). Luther Marsh was the first location in Ontario in which photographic evidence of Canvasback young was recorded, indicating nesting (Sandilands 1984). A very rare breeder in the province, this western species declined more than 50 percent between the mid-1950s and mid-1970s (Austen et al. 1994). Populations are recovering across the country, however, and are currently above North American Waterfowl Management Plan goals (Canadian Wildlife Service Committee 1999).

**Redhead** (*Aythya americana*) is a common migrant and uncommon nesting species. Complicating its breeding status, this species may lay its eggs in the nests of Blue-wing Teal, Gadwall, and Ring-necked Duck – all nesting species at Luther Marsh. Breeding distribution in the province is localized and confined to well-established marsh regions of the province, although there is some indication that numbers of Redhead may increase where habitat is provided by sewage lagoons (Sandilands 1987e). Most nests for Redhead were located in the cattail fringes around the islands, particularly Roger's Island and Heron Island (Yerex, pers. comm., 2001).

**Ring-necked Duck** (*Aythya collaris*) is a common migrant but uncommon nesting species. Luther Marsh was the southern most breeding site in Ontario for this species when it was first discovered in 1955 (McNichol 1987). This species breeds in all provinces of Canada, as well as in the Northwest Territories and Nunavut. In Ontario it is absent only in much of the extreme north and southwest areas of the province.

**Lesser Scaup** (*Aythya affinis*) is an abundant migrant, particularly in late fall. It is a rare breeding duck at Luther Marsh IBA. With its greatest breeding concentrations in the northwest of the continent, Lesser Scaup is thought to be extending its range eastward. It now breeds sparsely throughout the province, although it is more common in the north than in the south (Dennis 1987b). Population estimates for the country remain well below the North American Waterfowl Management Plan goal. Concern about the decline in scaup brought 45 research scientists from Canada, the United States, and United Kingdom together in 1998 to discuss problems facing scaup, including effects of contaminants in food sources such as zebra mussels and factors causing reduced reproduction (Austin et al. 1999).

**Bufflehead** (*Bucephala albeola*) is an abundant spring migrant and uncommon fall migrant that stages at Luther Marsh. It nests on lakes and ponds throughout the north-central and northwestern regions of Ontario (Abraham 1987). One of the smallest ducks in North America, Bufflehead breeds predominantly in western Canada and Alaska.

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<sup>4</sup> 1987 was the last year that systematic waterfowl surveys were conducted at Luther (Yerex, L. pers comm. 2001), underlining the need to recommence these surveys.



**Hooded Merganser** (*Lophodytes cucullatus*) is an uncommon migrant and rare nesting species at Luther Marsh. More common in northern Ontario than in the south, Hooded Merganser nests in tree cavities. Its secretive nature, particularly during the breeding season, makes it an easily overlooked species. In southern Ontario, evidence suggests it breeds in areas where there is an active Wood Duck nest box program (Bouvier 1987).

**Ruddy Duck** (*Oxyura jamaicensis*) is not as common a spring migrant as it once was at Luther Marsh (Yerex, pers. comm., 2001) and remains an uncommon fall migrant and breeder, having first bred at Luther Marsh in the late 1950s. A duck of the “prairie potholes” in western North America, it now breeds sporadically in Quebec and eastern Canada (Richards 1987, Erskine 1992). Nests at Luther were located in the cattail fringe of Roger’s Island (Yerex, pers. comm., 2001).

### **4.3 Least Bittern (*Ixobrychus exilis*)**

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 perhaps when exposed in the “freeze” position – bill pointed skyward, feathers compressed, and eyes in apparent contact with observer.

#### 4.3.1 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 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 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. States bordering Ontario (i.e., Michigan, Ohio, and New York) have also experienced declines.

#### 4.3.2 Natural history

The natural history of the 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, e.g., cattails, which may include clumps of woody plants over deep water (up to one metre). Areas with open water occupying as much as 50 percent of the marsh and interspersed throughout this vegetation are preferred. Least Bitterns avoid dry conditions and benefit from stable water levels. Breeding pairs of Least Bittern are not strongly territorial and are usually solitary nesters, but under ideal conditions 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. At Luther, Least Bittern nests were found in the cattail fringe around Roger's Island (Yerex, pers. comm., 2001).

The nest is an elevated platform with overhead canopy built of emergent vegetation and sticks. The Least Bittern creates the canopy by pulling down and crimping the cattails surrounding the nest. The nest is within dense, tall stands of emergent vegetation well above water and usually less than 10 meters from open water or from channels made by muskrats. The depth of water below the nest ranges from eight centimetres to almost one metre. Clutch size ranges from two to seven eggs, the usual number being three or four. The success rate from egg laying to fledged young, varying from 20 percent to 73 percent, depends 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 Bittern stalk their prey, predominantly small fish and dragonflies, along the open-water side of emergent vegetation. They cling to vertical stems and shoots 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 deep), although most feeding occurs at the water's surface. In turn, Snapping turtles (*Chelydra serpentina*) from below and Red-tailed Hawks (*Buteo jamaicensis*) and Northern Harriers from above feed upon the Least Bittern. 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 (*Procyon lotor*) may be a significant predator.

Several factors threaten the breeding habitat of the Least Bittern and even the bird itself. The most serious threat is the destruction of wetlands. In southern Ontario, wetlands have been converted to other uses – predominantly agricultural reclamation 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). Most of these wetlands would have provided habitat for the Least Bittern. Wetlands that remain don't necessarily guarantee appropriate habitat for marsh birds. In agricultural areas, siltation from erosion and run-off containing pesticides may degrade nesting and/or foraging habitats. The habitat may also become degraded should purple loosestrife (*Lythrum salicaria*) or *Phragmites* invade the marsh. Natural succession within a marsh makes it uninhabitable for Least Bitterns. High water levels may eliminate habitat. Storm water runoff from urban or agricultural areas appears to create conditions that make these bitterns vulnerable to parasitic nematode worms (Gibbs et al. 1992). Disturbance from recreational activities may reduce either breeding or foraging success.

## 5.0 Other Elements of High Conservation Value

Luther Marsh IBA is one of the largest inland marshes in Ontario and provides habitat for a large diversity of animals and plants (GRCA 1991). Of the 243 species of birds recorded, 143 species have nested (GRCA 1991). During the Ontario Breeding Bird Atlas, 1981-1985, the Luther Marsh atlas square ranked-tenth in the province for bird species richness. About 58 percent of all bird species reported breeding in southern Ontario were recorded at Luther Marsh during this atlas period (GRCA 1991).

Other animals recorded in Luther Marsh IBA include 35 species of mammals, 11 species of reptiles, and 10 species of amphibians. Only two of the reptiles have been assigned status designations: Butler's Garter Snake (*Thamnophes butleri*) and Spotted Turtle (*Clemmys guttata*) are both species of Special Concern nationally and Vulnerable provincially. Luther Marsh is the most northeastern location of Butler's Garter Snake in Canada by over 200 km (GRCA 1991). Wylde Lake Bog has been recognized by the International Biological Program as the largest *Polytrichum* bog under public ownership in southwestern Ontario (Sandilands 1984). A 17-hectare fen along the Monck-Monticello Road in the northern portion of the IBA is noteworthy, as large fens are scarce at this latitude (GRCA 1991). The sporadic occurrence of the Luther Marsh eskers in bog habitat is an unusual feature (GRCA 1991).

In summary, few species in Luther Marsh IBA are nationally or provincially rare and no community or land formation within the area is provincially rare or unique. Nevertheless, Luther Marsh is considered as a provincially significant wetland and a provincial Area of Natural and Scientific Interest (ANSI) by the Ontario Ministry of Natural Resources (Sandilands, pers. comm., 2001). The IBA is very important to the regional landscape of central southwestern Ontario, and could be a "source" for forest breeding species within the region (Cadman, pers. comm). These 55 square kilometres of wetland and adjacent lands lie within a landscape of agricultural lands, fragmented forests, and woodlots. Many of the original wetlands in this region were drained and reclaimed for agriculture. Those that remain are often degraded swamplands and marshlands (Mitchell and Shrubsole 1992).

## 6.0 Land Ownership and Use

### 6.1 Land Ownership

Luther Marsh Wildlife Management Area is jointly owned by the Grand River Conservation Authority (GRCA) and Ontario Ministry of Natural Resources (OMNR). The Luther Marsh Technical Working Committee, which includes GRCA and OMNR representatives, is responsible for management of the Wildlife Management Area. The IBA boundaries are those of the Wildlife Management Area, while including Damascus Conservation Area (see Figure 1).

## 6.2 Land Use

### 6.2.1 Historic

Situated along a headwater tributary of the Grand River, Luther Marsh IBA lies near the southern fringe of the Dundalk Plateau. Surveyed in the mid-1800s, the adjoining townships of Luther and Melancthon (to the north) contained vast wetlands referred to as Luther Swamp (Dunham 1945). This swampy tableland contained the headwaters of eight Ontario rivers, including the Grand River. Apparently aboriginal use of this swampland was minimal (Dennis and Skibicki 1990). As with much of the land immediately to the north, the land occupied by present day Luther Marsh IBA would prove difficult to farm. The poor drainage and cool climate prevented good crop yields (GRCA 1991). Homesteaders, many of them Irish immigrants with limited farming experience, accepted the challenge of clearing and draining the land.

Since 1869 the province of Ontario has promoted the improvement of agricultural land by subsidizing the drainage of wetlands. In the early days, when attempts to farm these lands failed, homesteaders often turned to logging. During the 1860s hundreds of loggers arrived from Quebec to log the headwaters' swampland (Dunham 1945). Extensive fires in the early 1870s destroyed large stands of timber and dried portions of the bog (Grand River Conservation Authority 1991).

Numerous drains were dug to produce dry land. By 1900 the forests were almost completely cleared, but despite these efforts the area remained mostly swamp and bog. It was becoming apparent that the drainage, together with the clearing of the forests, was causing both irregular, unreliable, and at times, unpredictable flows in the Grand River watershed (Dunham 1945, Mitchell and Shrubsole 1992). In the early 1900s, recommendations were made to construct storage reservoirs to retard the flow of spring floods and augment flow during the summer.

The spring floods of 1912, 1913, 1929, and 1937 devastated communities down-river, raising levels of frustration and exasperation with government inaction. In 1938 the Grand River Commission was notified that all three levels of government – federal, provincial and municipal – had worked out a cost-sharing arrangement, and work on dam construction in the watershed began.

Out of these concerns, as part of the system of water control measures, the construction of a concrete spillway and earthen dyke across Black Creek created Luther Lake in 1954. This reservoir was built with a surface area of 1975 hectares and a storage capacity of 26,000,000 cubic metres. One incentive for building the Luther dam and reservoir was that it would be “the cheapest per unit of storage capacity of any possible storage concentration” in the entire watershed system (Mitchell and Shrubsole 1992).

No sooner was the reservoir at Luther Marsh complete than it attracted thousands of waterfowl. Almost overnight this isolated wetland, augmented by the impoundment of Black Creek, became favourable habitat for waterfowl, marsh birds, and other wildlife (Yerex 2000).

Between 1952 and 1967 and continuing for a time in the 1980s, there was an active reforestation program in response to concerns about the degraded land base. Approximately 2.1 million trees, mostly pine and spruce, were planted in the Wildlife Management Area. Managing these plantations – thinning, pruning, harvesting – and implementing fire, pest, and disease programs were designed to convert the forests eventually to hardwood (GRCA 1991).

Thirty-four percent (2000 ha) of the management area is in plantation and woodlot. Almost 1,400 hectares are naturally forested land, with about 85 percent lowland forest and the remaining, upland forest. The deciduous component of the lowland forest is predominately balsam poplar, and trembling aspen, while the main conifer is white cedar. The natural upland forest which makes up less than 3 percent of the Management Area was in poor condition at the time of acquisition due to historical livestock grazing and high-grade logging, activities currently excluded from this area by the GRCA.

Numerous examples of scientific research on the wetland ecosystems occurred over time, including studies by the University of Western, Wilfred Laurier University, University of Guelph, and University of Waterloo. Research has included the life histories of a variety of organisms, particularly birds, ecological modelling, taxonomic studies, and bog ecology.

### 6.2.2 Current

Today, Luther Marsh is an integral component of the Grand River Conservation Authority water management program. Specifically, this reservoir provides low-flow augmentation during the normally low-flow summer months to the upper Grand River upstream from Bellwood Lake. Without water stored in Luther Marsh during 1998 and 1999, for example, the upper river would have been virtually dry (Yerex, 2000).

Since the construction of the dam, land has been acquired through private sale (GRCA 1991). Local farmers on annual leases from the GRCA farm approximately 600 ha.

## **7.0 Conservation Management Achieved at the IBA Site**

### **7.1 General Management Arrangements**

The Grand River Conservation Authority and the Ontario Ministry of Natural Resources jointly manage Luther Marsh Wildlife Management Area. Luther Marsh is managed to augment water flow to the upper Grand River during drier summer months (GRCA 1991). As a Wildlife Management Area, activities are subject to approval of the management committee of the GRCA and the Ontario Ministry of Natural Resources. Luther Marsh is a Provincially Significant wetland and therefore protected under provincial policy under the Planning Act, (i.e., it is not protected from impacts due to agriculture or land drainage under this policy). In 1980 Luther Marsh was designated a Life Sciences Area of Natural and Scientific Interest (ANSI), a provincial designation that offers conservation incentives to land owners but does not confer protected status. Luther Marsh is also a regional Earth Science ANSI.

Portions of the Wildlife Management Area (WMA) were designated as sanctuary for waterfowl, and hunting is prohibited within them. Designating these locations as sanctuaries afforded better protection for the waterfowl as entry into these sensitive areas is restricted (GRCA 1991). Three sanctuaries provide safe feeding and resting areas for waterfowl and one of the sanctuaries protects the Great Blue Heron colony in the IBA.

In 1991 Gore and Storrie produced the Luther Marsh Management Plan for the GRCA. This plan is the basis for all management decisions and activities within the Wildlife Management Area. Currently, this plan is being revised.

## **7.2 Species Specific Management**

The management agencies, Grand River Conservation Authority and the Ontario Ministry of Natural Resources, have undertaken management initiatives at Luther Marsh WMA to benefit wildlife including birds (GRCA 1991). One example of an initiative was the release of Canada Geese to Luther Marsh from Toronto Island in 1969. By the early 1980s, fall population numbers reached 1,200. Initially, pinioned birds bred in the marsh, but by 1977 a small population of Canada Geese was migrating. Artificial nest structures have enhanced nesting opportunities for Great Blue Heron and Osprey. Nest box programs have increased Purple Martin numbers (*ibid.*) and to some extent those of Wood Ducks (Lamble 1995). Habitat improvement has been a priority within the IBA. The management agencies have planted shrubs and wild food crops for wildlife. Ducks Unlimited has completed five projects at Luther. Winter feeders augment the wild seed crops for birds with about one tonne of food put out annually (GRCA 1991). Many other projects have been undertaken with respect to habitat improvement (Yerex, pers.comm., 2001).

Waterfowl and small game hunting is permitted in the Luther Marsh Wildlife Management Area from September to February on Mondays, Wednesdays, Fridays, and Saturdays during the hunting season. All provincial and federal hunting regulations apply, and a permit is required to hunt at Luther Marsh. In areas marked with red signs or buoys (sanctuary), no entry is allowed from March 15 to November 16 each year. A day-use fee is imposed, or season permits can be purchased. Hunting of white-tailed deer during both the archery season and a controlled deer hunt (shotguns and muzzle-loaders) is also permitted.

## **7.3 North American Waterfowl Management Plan**

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 Can\$1.5 billion 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 as the most economically valuable migrant group of migratory birds on the continent. An estimated 30 million people observe, photograph, hunt,

and appreciate waterfowl, resulting in direct expenditures of several billion dollars annually (North American Wildlife Management Plan). Under the umbrella of the NAWMP, several regional partnerships have been established. In eastern Canada, the Eastern Habitat Joint Venture (EHJV) was established to protect, restore, and enhance wetlands. 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.

#### **7.4 Other Wildlife Management Initiatives**

As elsewhere in southern Ontario, white-tailed deer numbers in the IBA have been increasing (Yerex, 2000). One of the sanctuaries is the primary yarding area within the IBA. The deer are dependent upon planted food crops, including corn for their over-winter survival. Deer and other game animals are hunted within the IBA as regulated by the OMNR. As elsewhere in provincial Wildlife Management Areas, muskrat and beaver present management challenges because they change the habitat for other species. Lacking natural predators, their populations are reduced by trapping (GRCA 1991).

The GRCA and the OMNR cooperate with other agencies and special interest groups to improve wildlife habitat within the Luther Marsh IBA. In 1988, together with the Ruffed Grouse Society and Wildlife Habitat Canada, they completed a habitat management program to improve habitat for Ruffed Grouse (GRCA 1991). Recently, together with Ducks Unlimited Canada (DUC), they are undertaking an 80-hectare wetland project to enhance the area for waterfowl production. As well, DUC has proposed a self-guided walking trail through one of the wetland areas (Yerex, 2000).

The GRCA has had some success in reducing stands of purple loosestrife through introduction of the *Galerucella* beetle (Bell, pers. comm.). Released four times since 1995 and trapped and transferred since 1999, this beetle has had a visible impact on previously dense stands of this plant (Yerex, pers.comm., 2001).

#### **7.5 Managing the Public**

Public access in Luther Marsh Wildlife Management Area is supervised and restricted. Sanctuaries are posted and no entry is permitted from March 15 to November 15. Permits are required from the GRCA or the OMNR, depending on the activity, to conduct research, harvest baitfish, trap fur-bearing animals, and to hold special events. Snowmobiles are restricted to specific and established routes. The marsh, Luther Lake, is closed to watercraft from spring break-up until July 31. Entry during that time requires special permission and is restricted to canoe use. During the hunting season, outboard motors may be used.

Luther Marsh is considered one of the few areas in southern Ontario that provides excellent opportunities and facilities for dog trials. Both the Canadian Field Trials and the Canadian Amateur National Working-Retriever Trials are held there. The internal road system is used occasionally for horse riding. In winter, snowmobiling is permitted.

## **8.0 Stakeholder Activity**

Following are descriptions of the major stakeholders within the IBA. This listing is not comprehensive, and may not include all organizations and groups with a stake in bird conservation.

### **Canadian Wildlife Service (CWS), Environment Canada**

A department of the Environment Canada, the CWS is responsible for enforcement of the Migratory Bird Convention Act that protects IBA species and regulates harvest of waterfowl. The CWS, in collaboration with other partners, particularly Bird Studies Canada, monitors bird populations through volunteer programs including marsh monitoring, forest bird monitoring, colonial bird surveys, and breeding bird surveys. The CWS web page is: [http://www.on.ec.gc.ca/wildlife\\_e.html](http://www.on.ec.gc.ca/wildlife_e.html)

### **Ontario Ministry of Natural Resources (OMNR)**

The Grand River Conservation Authority (GRCA) and the OMNR jointly manage Luther Marsh IBA, though management has largely been delegated to GRCA. As a Wildlife Management Area, activities undertaken within the IBA are subject to approval of the OMNR. Luther Marsh is recognized as a Provincially Significant Wetland by OMNR. In 1980 Luther Marsh was designated a Life Sciences Area of Natural and Scientific Interest (ANSI), which is a provincial designation. Luther Marsh is also a regional earth science ANSI. The OMNR web page is <http://www.mnr.gov.on.ca/MNR/>

### **Grand River Conservation Authority**

The Grand River Conservation Authority (GRCA) and the OMNR jointly manage Luther Marsh WMA, though management has largely been delegated to GRCA. The mission of the GRCA is "to conserve the natural processes and resources that support a safe and healthy environment for future generations in the Grand River watershed."

The GRCA is a corporate body and was formed as a result of the conservation movement which began in Ontario in the early 1930s. The Government of Ontario passed the Conservation Authorities Act (1946) to provide terms of reference and guidelines for the establishment and functioning of conservation authorities in Ontario. The act was based on three principles: 1) the initiative for the establishment and support of a conservation authority with power to carry out conservation works within a watershed must come from the local people (all watershed municipalities); 2) the best unit on which to co-ordinate all conservation work dealing with renewable resources is the watershed, if local people show initiative and support; and 3) the Ontario government would be prepared to provide technical advice and financial assistance in the form of grants.

The broad goal of all conservation authorities in Ontario is specified in Section 20 of the Ontario Conservation Authorities Act:



"The objects of the Authority are to establish and undertake in the area over which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals". (*R.S.O.* 1990, c. 27).

Under the terms of the act, the Grand Valley Conservation Authority was formed in 1948. The authority, as it exists today, was established in 1966 through the amalgamation of the Grand River Conservation Commission (1938) and the Grand Valley Conservation Authority (1948) under the terms of the Act. The GRCA web page is [www.grandriver.on.ca](http://www.grandriver.on.ca)

### **County of Wellington**

The western portion of the IBA, including Monck and Damascus, lies within the boundaries of Wellington County, and specifically the township of Wellington North. Wellington County stretches from southeast of Guelph to Mount Forest. Guelph is the County Seat. Wellington County is delegated authority through the Planning Act of the Ontario Ministry of Housing and Municipal Affairs to develop both an official plan for the county and a zoning bylaw that regulates legal use of land. The township is responsible for implementing some areas of the Planning Act and for township services (e.g., roads, sewage treatment, water). The County of Wellington website is <http://www.county.wellington.on.ca/>.

### **County of Dufferin**

The eastern portion of the IBA is in Dufferin County. Orangeville, the County seat, is located about 120 kilometres northwest of Toronto. Dufferin County has an area of 1,442 km<sup>2</sup> and a population of 50,130 (2000). As with Wellington County, Dufferin has an official plan to guide development and a zoning bylaw to regulate legal land use. The municipalities within Dufferin County have their own official plans and zoning by-laws. The County of Dufferin website is <http://www.dufferincounty.on.ca/>.

### **Ducks Unlimited Canada**

The goals of Ducks Unlimited Canada (DUC) are as follows: to secure, and where necessary rehabilitate and manage wetland habitats; to educate the public about the value of wetlands; and to encourage governments to follow legislative and policy directions that promote the conservation of wetlands in ways that encourage cooperation and respect landowner rights. DUC has local chapters operating throughout Canada. These are strictly fund-raising in nature, and all money raised is channelled back through DUC to be disseminated throughout the province or country. DUC has been involved in creating dyked wetlands within the Luther Marsh Wildlife Management Area for several years, and currently has completed a major wetland project near Monticello. The web page for Ducks Unlimited Canada is [www.ducks.ca](http://www.ducks.ca).

### **Guelph Field Naturalists**

The main goals of the Guelph Field Naturalists are to promote understanding and awareness of the flora and fauna of Wellington County to its members, the public, with special

attention to young people, and to be a positive advocate for the environment (hold regular meetings, outings, Young Naturalists Club, and fundraising activities). Guelph Field Naturalists is an incorporated, non-profit club based in Guelph, Ontario. The club is a member of the Federation of Ontario Naturalists, has a board of directors, and holds monthly members meetings. Events are also held throughout the year, including trips to Luther Marsh, one of which is an annual spring Luther Marsh bird survey. Several members of the club have kept records on bird observations from Luther Marsh since the 1960s. Guelph Field Naturalists has approximately 160 members.

### **Dufferin Northern Peel Anglers and Hunters**

This club of Anglers and Hunters is based out of Orangeville, Ontario. Many members of the club actively hunt during the fall and winter months in the Luther Marsh Wildlife Management Area, and take part in habitat restoration projects. Dufferin Northern Peel Anglers and Hunters has approximately 50 members.

## **9.0 Opportunities**

This section outlines opportunities to further advance bird conservation within existing or new initiatives related to the IBA, and opportunities to people for education and recreation at Luther.

### **9.1 Luther Marsh Management Plan**

As a Grand River Conservation Authority Resource Planner for the north area of the Grand River watershed, Liz Yerex recognizes that over the next couple of decades population growth in south-central Ontario may have a significant impact upon Luther Marsh IBA (Yerex 2000). With urban growth and expansion, more people will be seeking out opportunities to experience and interact with nature. Such demands could put pressure on Luther Marsh's sensitive ecosystems. The GRCA is presently updating its management plan for Luther Marsh. Revisions to the plan are to consider stakeholder perspectives and input. The plan will guide the activities within the IBA over the next several years and accordingly is the most important vehicle for integrating bird conservation policies and strategies and protecting the ecosystem while providing people with opportunities for education and recreation.

### **9.2 Conservation Initiatives**

Continental initiatives such as the North American Waterfowl Management Plan (NAWMP) and Partners in Flight<sup>5</sup> (PIF) provide opportunities for local initiatives to link with like-minded stakeholders for advice and planning. Through these initiatives and through IBA planning, local residents, hunters, and naturalists have the opportunity to develop and implement projects to bring about habitat improvement for wildlife. Since Luther Marsh is an IBA for

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<sup>5</sup> Partners in Flight is multi-stakeholder program that addresses conservation issues for landbirds in the Americas.

congregatory waterfowl, local stakeholders can not only enhance this regional site but also contribute to the goal of the NAWMP to restore populations of waterfowl to their 1970s levels (NAWMP 2000).

### **9.3 Recreation and Education**

In the management of Luther Marsh, the goal of the managing agencies, Grand River Conservation Authority and the Ontario Ministry of Natural Resources, has been “to encourage passive human use of natural resources without impairing their function or quality” (GRCA 1991). To date a wide variety of activities has attracted visitors to Luther Marsh. Hunting has been a traditional use, and efforts continue to improve the quality of the hunt (ibid.; Lamble 1995). Advantages to hunting in this area include its size and location and the minimal effects on adjacent landowners. Nature viewing, including photography, is encouraged. Observation towers provide grand views of the marsh and lake. An observation blind for marsh viewing erected by the Guelph Field Naturalist Club was damaged by a tornado and requires repairs. More careful placement of the blind may attract more observers and provide observation opportunities. As well as using the nature trails and picnic areas, visitors have opportunities to canoe the lake and marsh after July 31. A marked canoe route is planned along the north shore (Yerex, pers. comm., 2001).

In the past, educational opportunities within Luther Marsh IBA have been described as low key (GRCA 1991). Recently, a new interpretive kiosk was constructed near the dam. Plans exist for a limited number of bus tours for school groups through the property each year, with interpretive stops along the route. Currently a limited number of school groups from Dufferin County tour the marsh via the internal road system. It is unlikely that Luther will become a major destination for environmental education trips because of the distance of Luther Marsh from major centres such as Guelph and Kitchener/Waterloo. However, a small residential building south of the main entrance to the conservation authority provides an excellent location from which a university group or naturalists could undertake research or monitoring, with the possibility of overnight stays. Use of this facility by these types of groups should be encouraged.

### **9.4 Grassland Restoration**

At one time the lands about Luther Marsh were noted for a variety of grassland species including Grasshopper Sparrow, Bobolink (*Dolichonyx oryzivorus*), Eastern Meadowlark (*Sturnella magna*), Northern Harrier (*Circus cyaneus*), and the Endangered Henslow’s Sparrow. The second Breeding Bird Atlas of Ontario is underway in 2001. It will clarify the present status of many of these species. Weidensaul (1999) points out that of all groups of species for which there is concern in North America – waterfowl, marshland birds, raptors, neotropical forest birds, and grassland birds – grassland birds have declined faster, for a longer period of time, and over more of the continent than any of these groups. Weidensaul states that habitat loss for grassland species in many parts of North America can only be described as “apocalyptic.” Within the IBA, a significant amount of agricultural land is presently leased to local farmers. Some of these parcels could be restored to grassland habitat to create core areas for grassland birds.

## **9.5 Woodland Restoration and Enhancement**

The management agencies and naturalists recognize that natural succession and maturation of conifer plantations have brought about significant changes in bird life at Luther Marsh. The woodlands around Luther are now a regionally significant source for forest interior breeding birds. Efforts are being made to enhance this woodland by allowing the transformation of plantations into natural forest and consolidating woodland patches by encouraging forest to fill in openings and gaps; these efforts could result in one of the most significant woodland forest patches in south central Ontario.

Farmlands within the IBA (leased to farmers by the GRCA) could serve as important buffer zones, protecting the wetlands of the IBA from more intensive agriculture and allowing passive farming activities. Alternatively, these lands could be transformed into woodland (or grassland) where appropriate. Such lands could also serve to provide habitat for hedgerow species. Hedgerows can enhance connectivity between woodlands and wetlands surrounding the IBA.

Municipalities have a mandate for environmental protection through the official planning process. This process can be used to identify significant features and functions, including species of concern and sensitive habitats. It can also be used to enhance conditions and features that benefit significant species and habitats. From a perspective of bird conservation, it would be of great value if the significance of Luther for wetland, grassland, and woodland birds and other fauna and flora was reflected in the Wellington, Grey and Dufferin County Official Plans. An example of a policy to enhance bird conservation, while serving other conservation objectives such as erosion reduction, enhancement of surface water quality, and carbon sequestering, would be one that encouraged the planting of hedgerows, riparian buffers, and even roadside “forests” to enhance connectivity between Luther and surrounding natural areas.

## **9.6 Wetland Restoration and Enhancement**

Water levels, which greatly influence the distribution and nature of vegetation at Luther, are controlled primarily for flow augmentation in the upper Grand River and for flood control. Since this will always be the case, it is unlikely that significant changes can be made to increase the marsh and swamp habitat that currently fringes parts of the lake. However, the creation of satellite wetlands by Ducks Unlimited Canada in appropriate areas of the IBA, with water levels that may be controlled independently of the main lake, could provide managed habitat for waterfowl and marshland species. DUC, along with the GRCA and the OMNR, is leading wetland habitat creation around Luther, which should increase populations of marsh birds.

## **9.7 Tourism**

The Wellington County Official Plan recognizes the importance of the natural landscape and recreational opportunities for tourism in its region (Dennis and Skibicki 1990). Orangeville, the largest nearby community, is a member of the Headwaters Country Tourism Association that includes Luther Marsh in its list of places to visit in “Headwaters Country” (Headwaters Country Tourism Association 2000). Within an hour’s drive of the metropolitan area of Toronto, Luther

Marsh IBA could be one of these destinations. Visitations to Luther will bring money to the conservation area, which could be applied to wildlife management and habitat enhancement.

## **10.0 Threats**

No known severe or imminent threats exist within the Luther Marsh IBA. With its relatively remote location, secure ownership, relative lack of major infrastructure, abundance of biting insects in the summer, and hunting activity in the fall, Luther is an unlikely place to receive a crush of people or be the site of development. However, a number of lower level issues and some larger ones do exist, which could ultimately impact on the birds and their habitat. These are briefly discussed below.

### **10.1 Human Disturbance**

At present, threats to bird species from human disturbance are minor at Luther Marsh. Certain types of disturbances, such as untimely entrance into a Great Blue Heron heronry, could result in abandonment of nests and has occurred (D. Brewer, pers. comm., 2000). Great Blue Herons can ill-afford nesting disruptions for young birds. Disturbances during the nesting period may increase an already high mortality rate of young Great Blue Herons, as an estimated 70 percent die soon after they fledge from the nest (ibid.). However, the heronry is within the sanctuary zone, which is posted with signs.

Pressures for recreational opportunities in this south-central Ontario are increasing. Currently the Grand River Conservation Authority operates 12 parks in the watershed that attract over a million visitors annually. At present Luther Marsh IBA offers limited recreational opportunities to the visitor, including restricted boating opportunities. However, the nature of the lake – shallow, large and full of pondweeds and stumps – makes it an unattractive place for most boaters. Off-road vehicles are perhaps a greater potential threat. While the internal network of roads is closed to such vehicles, Luther's lack of enforcement staff and numerous access points make it challenging to keep out undesired visitors.

Perhaps the most sensitive habitat at Luther is the Wylde Lake bog. While accessing the bog is normally difficult due to the moat-like ditch of water separating it from the road, many people cross onto the bog to visit its unique plant communities. One person's footprints in the sphagnum mat may last dozens of years. Without means of managing people and access, anyone walking on the bog will cause damage and potentially introduce plant seeds from outside of the bog into the bog ecosystem. An elevated boardwalk would allow access with the least impact. Boardwalks have been used successfully to allow human access to bog communities in numerous parks in Ontario. Boardwalk construction is expensive and requires regular maintenance. At Luther, the lack of manpower for enforcement could make controlling use on such a project difficult.

## **10.2 Water Levels and Hydrology**

The primary reason for creating Luther Lake was to provide low flow augmentation to the upper Grand River. Water storage is undertaken in spring, and water release begins in early July. Shoreline drying stimulates the growth of emergent vegetation that in turn provides habitat for waterfowl. Dramatic short-term successional changes can be induced by means of drawdown (Weller 1999). The extent and the length of time of a drawdown in a marsh needed to stimulate the growth of emergent vegetation are difficult to determine and require study (GRCA, 1991). Water levels and associated drawdowns may adversely affect nesting marshbirds and increase predation at a heronry. To protect muskrat lodges from predation, the Luther Marsh Management Plan (1991) recommends that drawdowns be limited during September. Beginning drawdown before June 1 may threaten shoreline waterfowl nests and encourage the spread of Purple Loosestrife. However, a water management curve has been established for Luther so as not to impact shorebirds or muskrat populations (Yerex, pers. comm., 2001).

Periodic and irregular infiltration of nutrient-rich surface water into Wylde Lake from Luther Lake is gradually changing the character of the bog to a fen or thicket swamp (Sandilands, pers. comm., 2001). High spring water levels in Luther Lake may be accelerating this process. This change in conditions allows invasion of woody species such as white birch and trembling aspen onto the bog. Global warming may also be accelerating changes. Wylde Lake bog is one of few locations in Southern Ontario for breeding Lincoln's Sparrow, as well as a large variety of bog flora and fauna. Changes in the bog's ecology may lead to the loss of some of these species.

## **10.3 Loss of Habitat Due to Succession and Changing Farming Practices**

Luther Marsh has undergone successional change in its 50 year existence. Several sites within the IBA exhibit typical long-term successional changes associated with mixed forest and with forested swamp wetland habitats. Such changes can reduce or eliminate habitat for both waterfowl and marshbirds. Of increasing concern is the management of the islands within the marsh and the shorelines about the lake, where tree growth has rendered many areas unsuitable for waterfowl nesting.

The marshes at Luther are confined mainly to the fringe of the lake, as well as a few sheltered bays such as East Bay. Luther marshes have never achieved the hemi-marsh conditions recognized as providing premium habitat for nesting marsh birds (Pittaway 1997) and have recently been described as "middle-aged" and in need of rehabilitation (Yerex 2000).

Farming practices outside of the IBA have intensified over time. There is continual pressure from local farmers to improve cropland drainage within the management area (GRCA 1991). This trend towards increased tile drainage, conversion of pasture and hay fields to row crops, and field consolidation by bulldozing hedgerows results in conditions less favourable to grassland birds, and effectively results in loss of habitat. One of the consequences is the reduction of regional populations of scrub and grassland bird species. As scrubland and hayfields are transformed to row crops, these areas can no longer support many species, increasingly isolating protected areas such as Luther.

Global warming may exacerbate this process by lengthening the relatively short growing season at Luther, allowing farmers to more easily grow row crops such as corn and beans.

#### **10.4 Non-Native Invasive Species**

Within the marsh itself, non-native plants, particularly purple loosestrife, are cause for concern. Dense stands of invasive species choke out native wetland species that may be important foods for wildlife and fish. There has been success in controlling purple loosestrife in some areas of Luther through the release of the *Galerucella* beetle (see Section 9) (Bell, pers. comm.).

Another major threat to wetlands is reed canary grass (*Phalaris arundinacea*), which can replace native species within several years of its introduction. This hardy, aggressive grass grows rapidly and has been used throughout farmlands of North America for hay and forage. A European form (f. *variegata*) of the species is virtually impossible to distinguish from the ecotype native to North America. The European form, however, is the more aggressive and hardy of the two (Hutchison 2000).

## 11. The Action Plan

The following action plan lays out the basics for bird conservation in Luther Marsh Important Bird Area. The vision, goals, and objectives were developed by the IBA Steering Committee. Bulleted strategies or actions follow each goal and objective. The suggested action's priority – H=high, M=moderate, L=low is listed in brackets, followed by a suggested group or person responsible for implementation. The IBA partnership is encouraged to refine these priorities for undertaking or implementing the objectives and actions. Implementation will depend upon the interest and commitment of stakeholders, as well as the availability of resources.

The organizations, groups, and individuals suggested as leading certain actions are as follows:

IBA steering committee	IBASC
Grand River Conservation Authority	GRCA
Ontario Ministry of Natural Resources	OMNR
Federation of Ontario Naturalists	FON
Ducks Unlimited Canada	DUC
Guelph Field Naturalists	GFN
Breeding Bird Atlas	BBA
Dufferin Northern Peel Anglers and Hunters	DNPAH
Dave Lamble	DL

### 11.1 Vision

*The Luther Marsh Important Bird Area will be conserved and managed in concert with the Luther Marsh Management Plan, to maintain and enhance its significance for waterbirds and landbirds, and will be 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.*

**Caveat:** The goals and objectives of this IBA respect the goals of the Luther Marsh Management Plan.

### 11.2 Goals, Objectives, and Strategic Actions

#### 1. *To maintain viable populations of species of conservation concern*

- a. Maintain and enhance a viable and healthy wetland system that addresses the ecological needs of all of the species of concern
  - Promote satellite wetland creation within the IBA with habitats suitable to species of concern (**ongoing**) (DUC, GRCA)
  - Control purple loosestrife through use of *Galerucella* beetle (**ongoing**) (GRCA)



- Manage water levels within the lake to minimize impacts and infiltration into Wylde Bog **(H)** (GRCA)
- b. Maintain and enhance grassland and scrubland ecosystems within the IBA
- Identify priority areas through field reconnaissance **(done)** (IBASC)
  - Map priority areas for restoration **(M)** (IBASC, GRCA, DU)
  - Selectively convert some cultivated fields within the IBA to grassland **(M)** (GRCA, DU, IBASC)
  - Cultivate delayed hay crops where possible (crops harvested later in the summer, after nesting birds have fledged) **(M)** (GRCA)
  - Undertake prescribed burn on Prairie Island to enhance Gadwall and Wilson’s Phalarope habitat (Roger’s Island should not be burned because of its value to Least bittern) **(H)** (GRCA)
- c. Maintain and enhance the forest habitat and forest connectivity within the IBA
- Identify priority areas field reconnaissance **(H)** (done)<sup>6</sup>
  - Map restoration priorities and communicate to the management planning process **(H)** (SC, GRCA)
  - Selectively convert cultivated fields within the IBA to woodland **(M)** (GRCA, DU, IBASC)
  - Promote and enhance connectivity of woodland patches through fence rows and vegetation corridors within the IBA **(H)** (GRCA)
  - Rank projects for restoration and secure resources to implement projects **(H)** (IBASC, GRCA, DU)
  - Continue with harvesting of conifers and conversion of plantations to mixed forests **(H)** (GRCA)
  - Work with GRCA to advise in forest management decision for woodland birds **(H)** (IBASC)
- d. Enhance nesting opportunities for species of conservation concern
- Install and maintain nesting structures for Osprey and Great Blue Heron **(M)** (DL, MNR)
  - Install and maintain four anchored, floating loon platforms **(M)** (GFN, GRCA)
  - Install and maintain nesting structures for Black Terns **(M)** (OMNR, GFN, GRCA)
  - Install and maintain Eastern Bluebird and Tree Swallow nest boxes **(M)** (DL, GRCA)
  - Install and maintain Wood Duck boxes **(M)** (DU, DNPAH)

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<sup>6</sup> A map of priority restoration sites identified during reconnaissance is included as Appendix 2.

- e. Promote connectivity with habitats beyond the IBA
    - Provide a copy of the completed IBA plan to the relevant municipalities (**H**) (FON)
    - Encourage municipalities to consider amending their Official Plans to recognize the ecological significance of Luther Marsh and the surrounding landscape and to encourage compatible land use practices within the townships (**M**) (IBASC, GFN)
  - f. Promote compatible stewardship of adjacent lands
    - Present plan to the local stewardship council and farming organizations (**M**), (FON, GRCA)
2. *To develop a system of monitoring species and habitats in the IBA*
- a. Identify programs, and implement coordinated monitoring of species of conservation concern
    - Undertake a thorough biological inventory of the IBA to determine the distribution, relative abundance, and habitat relationship of all species of conservation concern within the IBA (including any Federal or Provincial Species At Risk) (**H**) (OMNR, GRCA, GFN)
    - Identify existing programs and monitoring activities at Luther, and identify gaps in monitoring (**H**) (IBASC, GRCA)
    - Develop and implement a protocol to monitor Least Bittern and Black Tern populations every five years (**H**) (IBASC, GRCA)
    - Continue undertaking Luther spring bird surveys, and send results to GRCA (**H**) (GFN)
    - Repeat waterfowl nesting and brood surveys on regular basis (**M**) (GRCA)
    - Design and implement a program to monitor the distribution and relative abundance of breeding birds of all major habitats within the IBA, including sites targeted for restoration, and integrate Breeding Bird Atlas point counts into the sampling scheme (**H**) (IBASC, BBA)
    - Conduct inventory of nesting colonial waterbirds (e.g., herons) at least every second year (**H**) (DL, GFN, GRCA)

Communicate all monitoring information and results to the GRCA (**H**) (all monitors)
  - b. Monitor habitat quality and changes within the IBA
    - Track changes in habitats through field studies and remote sensing (**L**) (GRCA)

- Monitor the outcome of habitat manipulation projects (e.g., prescribed burns), to evaluate whether they are meeting targets **(H)** (GRCA, DU, GFN)
  - Monitor populations of invasive wetland species within the IBA including purple loosestrife, reed canary grass, and *Phragmites* **(H)** (GRCA)
- c. Develop core group of people to undertake monitoring, and consider what incentives are available
- Identify priority monitoring project and project leaders **(H)** (IBASC, GRCA)
  - Secure regular funding for summer staff to undertake surveys less suited to volunteers **(H)** (GRCA)
3. *To promote public awareness of the IBA and develop educational, recreational, and economic opportunities that support bird conservation*
- a. Develop facilities and infrastructure to enhance opportunities for observation
- Repair and reinstall observational blind in a functional location along shoreline trail **(H)** (GRCA, GFN)
  - Create a shorebird cell with observation blind in either the Monticello project, or another suitable location **(L)** (GRCA, DUC)
- b. Build local support for Luther Marsh and the IBA.
- Establish a “Friends of Luther” organization to foster volunteer support and local interest **(M)** (GRCA)
  - Hold an annual workshop about projects with the potential for public involvement for residents of communities around Luther **(M)** (GRCA)
- c. Encourage educational institutions to use the marsh and share their data
- Encourage and promote the use of the small residential building south of the dam for research and monitoring by universities and naturalist groups **(M)** (GRCA)
  - Periodically circulate information on Luther Marsh and its facilities and research potential to the Dufferin, Wellington, and Waterloo school boards, as well as universities **(L)** (GRCA)
  - Publish information about Luther Marsh IBA in local newspapers and newsletters for rural circulation **(M)** (GRCA, IBASC).

### 11.3 Implementation

Implementation of this plan is largely dependent upon the GRCA incorporating it into their management plan for Luther Marsh. An informal steering committee was established to assist in the development of the IBA conservation plan. There would be a value in the steering committee continuing, in some form, to serve as bird conservation “watch dogs,” monitor implementation, and assist in obtaining resources for these actions. Below is a sample chart to assist the steering committee in establishing priorities for implementation.

*Table 3. Sample Planning Chart for Objective 1.b.*

Actions	Priority	Lead responsibility	Cost (in priority order)	Timing	Complexity
A. Map priority sites for restoration	1	GRCA	.5K	Winter 2001-2002	Low – much of work done by Steering Committee
B. Restore cultivated fields to grassland	3	GRCA	20K	2002-2007	High – requires major planning effort and resources
C. Prescribed burn, Prairie Island	2	GRCA	3K	2002	Medium – requires cooperation with OMNR and plan

## 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 a fundamental part 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 by the GRCA. Plan implementation will come, in part, through the revision and implementation of the Luther Marsh Management Plan. It will also depend on the interest and energy from steering committee members and the groups that they represent. An annual update on the conservation plan implementation would be of great value to the CNF, FON, and BSC.

As Luther Marsh 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.

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### **Personal Communications**

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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>

## **Appendix 2. Woodland and Grassland Restoration Priorities**