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# Historical review of water bird populations and annotated list of water birds associated with Burlington Bay, Lake Ontario, 1857–1990

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Number 78  
Canadian Wildlife Service



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Cover photo: The moorings—Hotel Brant Inlet. From this photo (probably taken in the early 1900s), one is presumably looking into the northeast corner of Burlington Bay with the north shore in the background, from the property originally belonging to Joseph Brant on the north end of the beach strip. Note the heavy growth of emergent vegetation. Today, this area has undergone extensive shoreline management, infilling, residential development, and highway roadbed construction. Photo courtesy of Special Collections, Hamilton Public Library.

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## Abstract

Burlington Bay lies on the western end of Lake Ontario and is an important habitat for migratory and resident water birds. The bay is composed of three sections: Cootes Paradise, Windermere Basin, and Hamilton Harbour proper. Hamilton Harbour was recently designated by the International Joint Commission as an "Area of Concern." A Remedial Action Plan (RAP) for the cleanup of Hamilton Harbour was initiated by the Ontario Ministry of the Environment and Environment Canada. The purpose of this report is to document historical changes in and the present status of water birds associated with Burlington Bay and to provide a historical data base for the water bird component of the Hamilton Harbour RAP.

Records for 151 water bird species associated with Burlington Bay were located for the period 1857–1990. Of these species, populations of 50 (33%) have increased, 22 (15%) have decreased, and 79 (52%) have apparently not changed. Water bird populations that have declined, probably because of loss of marsh habitat, include Least Bittern *Ixobrychus exilis*, American Bittern *Botaurus lentiginosus*, Yellow Rail *Coturnicops noveboracensis*, King Rail *Rallus elegans*, Virginia Rail *Rallus limicola*, Sora *Porzana carolina*, Common Moorhen *Gallinula chloropus*, and Black Tern *Chlidonias niger*. Reduced populations of Bald Eagle *Haliaeetus leucocephalus* and Osprey *Pandion haliaetus* are most likely due to persecution by hunters, habitat destruction, and the detrimental effects of DDT and DDE.

Populations of Double-crested Cormorant *Phalacrocorax auritus*, Black-crowned Night-Heron *Nycticorax nycticorax*, and Ring-billed Gull *Larus delawarensis* have benefited from the availability of suitable breeding habitat on reclaimed land at Tollgate Ponds. Gulls, in particular, have responded to the foraging opportunities at garbage dumps and in agricultural fields, as well as to a plentiful new food source in the form of alewives *Alosa pseudoharengus*. The general increase in waterfowl and shorebird populations has occurred since the establishment of the Migratory Birds Convention Act in 1916. More extensive mudflat habitat now exists for shorebirds at Cootes Paradise and Windermere Basin because of losses of marsh habitat, creation of disposal facilities for dredged sediment, and increased erosion and sedimentation from urbanization and agricultural practices. Species such as Mute Swan *Cygnus olor* and Canada Goose *Branta canadensis* have also benefited from introductions by humans.

Most of the 79 water bird species whose status has not changed are those that have always been of irregular occurrence in Burlington Bay. In addition, 14 species of migratory waterfowl associated with the pelagic habitat of

the bay have not changed much in status. These species rely on fish and benthic organisms whose overall densities have not changed drastically.

To ensure the long-term well-being and proliferation of water birds at Burlington Bay, the following steps should be taken: (1) protect and enhance wetland and cattail marsh; (2) improve water quality and clarity; (3) maintain and enhance breeding habitat; and (4) inform and educate the public about the diverse and rich wildlife and natural resources that Burlington Bay provides.

## Résumé

La baie de Burlington, située à l'extrémité ouest du lac Ontario, est un habitat de première importance pour les oiseaux aquatiques migrateurs et sédentaires. La baie comprend trois parties : Cootes Paradise, le bassin Windermere et le port de Hamilton proprement dit. Dernièrement, la Commission mixte internationale a classé le port de Hamilton dans la catégorie des « secteurs préoccupants ». Le ministère de l'Environnement de l'Ontario et Environnement Canada ont lancé un Plan de mesures correctives visant le nettoyage du port. Le présent rapport retrace l'évolution de l'avifaune aquatique de la baie de Burlington jusqu'à nos jours, décrit la situation actuelle des espèces visées et fournit une base de données d'archives sur les oiseaux aquatiques visés par le Plan de mesures correctives du port de Hamilton.

Les données rassemblées sur l'avifaune aquatique de la baie de Burlington portent sur 151 espèces; elles ont été recueillies entre 1857 et 1990. Elles révèlent que les effectifs de 50 (33 %) de ces 151 espèces ont augmenté, tandis que ceux de 22 autres espèces (15 %) ont baissé, ceux des 79 dernières (52 %) semblant être demeurés stables. Parmi les espèces dont les populations ont diminué, probablement à cause de la disparition des marais qu'elles fréquentaient, on compte notamment le Petit Butor *Ixobrychus exilis*, le Butor d'Amérique *Botaurus lentiginosus*, le Râle jaune *Coturnicops noveboracensis*, le Râle élégant *Rallus elegans*, le Râle de Virginie *Rallus limicola*, le Râle de Caroline *Porzana carolina*, la Poule-d'eau *Gallinula chloropus* et la Guifette noire *Chlidonias niger*. La diminution des effectifs du Pygargue à tête blanche *Haliaeetus leucocephalus* et du Balbuzard *Pandion haliaetus* est fort probablement le résultat de la chasse acharnée dont ces oiseaux ont été victimes, de la destruction de leur habitat et des effets délétères du DDT et du DDE.

Quant au Cormoran à aigrettes *Phalacrocorax auritus*, au Bihoreau à couronné noire *Nycticorax nycticorax* et au Goéland à bec cerclé *Larus delawarensis*, ils ont trouvé un habitat propice à leur reproduction au site de remblayage de Tollgate Ponds. Les Mouettes et les Goélands, tout particulièrement, ont su exploiter les sources de nourriture qu'offrent les décharges publiques et les terres agricoles, en plus de profiter d'une nouvelle manne, venue avec le foisonnement du Gaspereau *Alosa pseudoharengus*. C'est après l'adoption de la Loi sur la Convention concernant les oiseaux migrateurs, en 1916, que dans l'ensemble, les effectifs de la sauvagine et des oiseaux de rivage ont augmenté. Les vasières, habitat des oiseaux de rivage, sont maintenant plus étendues à Cootes Paradise et au bassin Windermere : cette expansion s'explique par la destruction de marais, l'aménagement d'installations servant

à l'élimination des sédiments dragués et l'augmentation de l'érosion et de la sédimentation qu'ont entraînée l'urbanisation et l'agriculture. L'introduction de nouvelles espèces par les humains a profité à d'autres espèces, comme le Cygne tuberculé, *Cygnus olor* et la Bernache du Canada *Branta canadensis*.

Pour la plupart, les 79 espèces dont la situation est restée inchangée sont des oiseaux aquatiques qui, depuis toujours, ne viennent qu'irrégulièrement dans la baie de Burlington. Par ailleurs, les effectifs de 14 espèces migratrices de sauvagine fréquentant la zone pélagique de la baie n'ont guère changé. Ces oiseaux se nourrissent de poissons et d'organismes benthiques dont la densité globale n'a pas vraiment changé.

Pour assurer de façon durable le bien-être et la multiplication des oiseaux aquatiques de la baie de Burlington, diverses mesures doivent être mises en oeuvre : 1) protéger et mettre en valeur les terres humides et les marais à quenouilles; 2) améliorer la qualité et la limpidité de l'eau; 3) préserver et améliorer l'habitat de reproduction; 4) faire connaître au public la diversité et la richesse de la faune et des ressources naturelles de la baie de Burlington.

## Introduction

The purpose of this report is to document historical changes in and the present status of water bird populations associated with Burlington Bay at the west end of Lake Ontario. Burlington Bay is a stopover along the migration route for water birds passing through southern Ontario. Consequently, the area has a rich ornithological history. However, this rich history has not been well documented in either the historical or recent literature. The immediate use of this report is to provide a historical data base for the water bird component of the Remedial Action Plan for Hamilton Harbour, a joint project of the Ontario Ministry of the Environment and Environment Canada. This report will also serve as a summary of water bird occurrences on Burlington Bay. Stakeholders, people with a direct interest in the harbour, have stated their wildlife and habitat goals (Hamilton Harbour Stakeholders 1986). However, in order to develop remedial measures to fulfill these goals, it is necessary to have an understanding of past and present wildlife populations.

Records for 151 species of water birds associated with the study area were located and summarized to determine the occurrence and abundance of these species during four periods of history: pre-1900, 1900-1947, 1948-1969, and 1970-1990. The records were summarized for three subareas of Burlington Bay: Hamilton Harbour, Cootes Paradise, and Windermere Basin. From these records, a general comment can be made on the historical change in status for most water bird species utilizing Burlington Bay.

## Study area

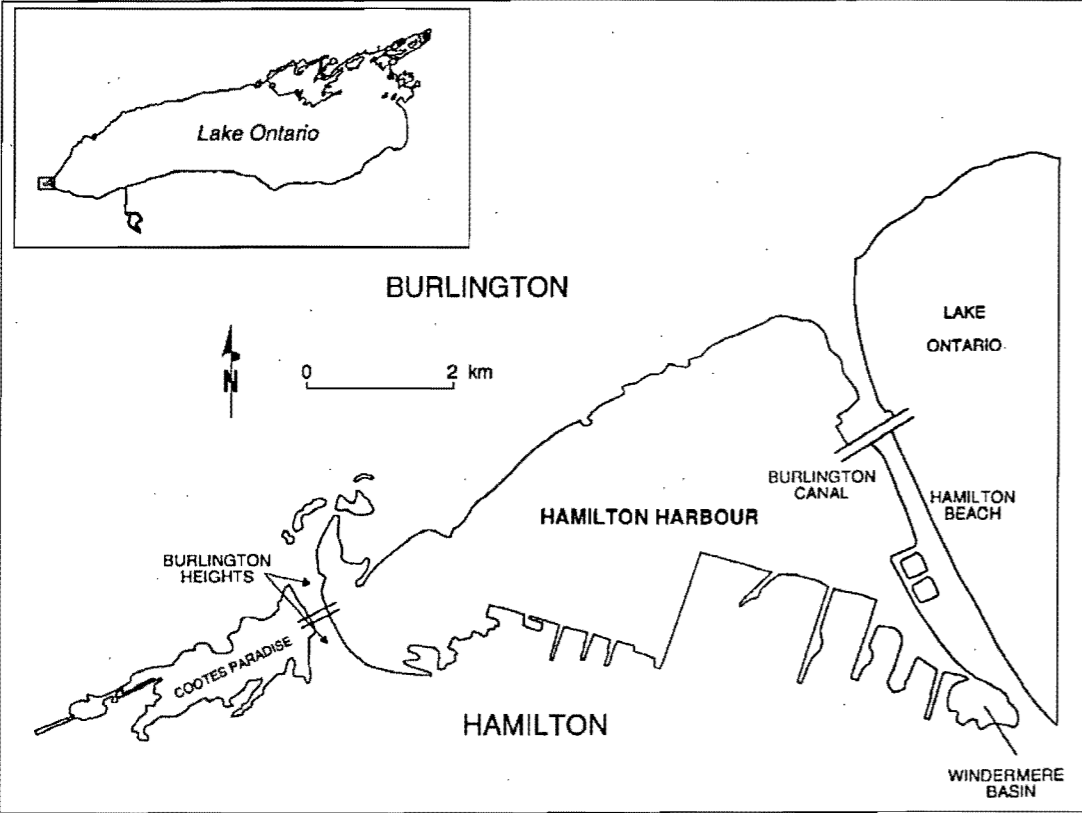
Burlington Bay lies on the western end of Lake Ontario between the cities of Hamilton to the south and Burlington to the north (Fig. 1). It consists of a large, deep water, outer basin called Hamilton Harbour, a shallow, artificially created basin at the southeast end called Windermere Basin, and a shallow marsh at the western end called Cootes Paradise.

Hamilton Harbour has an area of 2150 ha, a mean depth of 13 m, and a maximum depth of 26 m (Remedial Action Plan for Hamilton Harbour 1989). It is separated from Lake Ontario by a large sandbar, the Hamilton Beach strip. On the western end, the harbour is separated from Cootes Paradise by another large sandbar, the Burlington Heights, the shoreline of ancient Lake Iroquois. Water exchange occurs between the harbour and Lake Ontario through the human-made Burlington Canal. The 45-km shoreline of Hamilton Harbour is used primarily for industrial and residential purposes. Shoreline restructuring and filling along the south shore have resulted in the loss of 74.5% of the original marshland (Whillans 1982) (Fig. 2). Water in Hamilton Harbour has become heavily polluted by inputs from major industries and three municipal sewage treatment plants. Rapid eutrophication, caused by inputs from sewage treatment plants, began about 65 years ago (Bacchus 1974; Poulton 1986; Harlow and Hodson 1988; Mayer and Manning 1990).

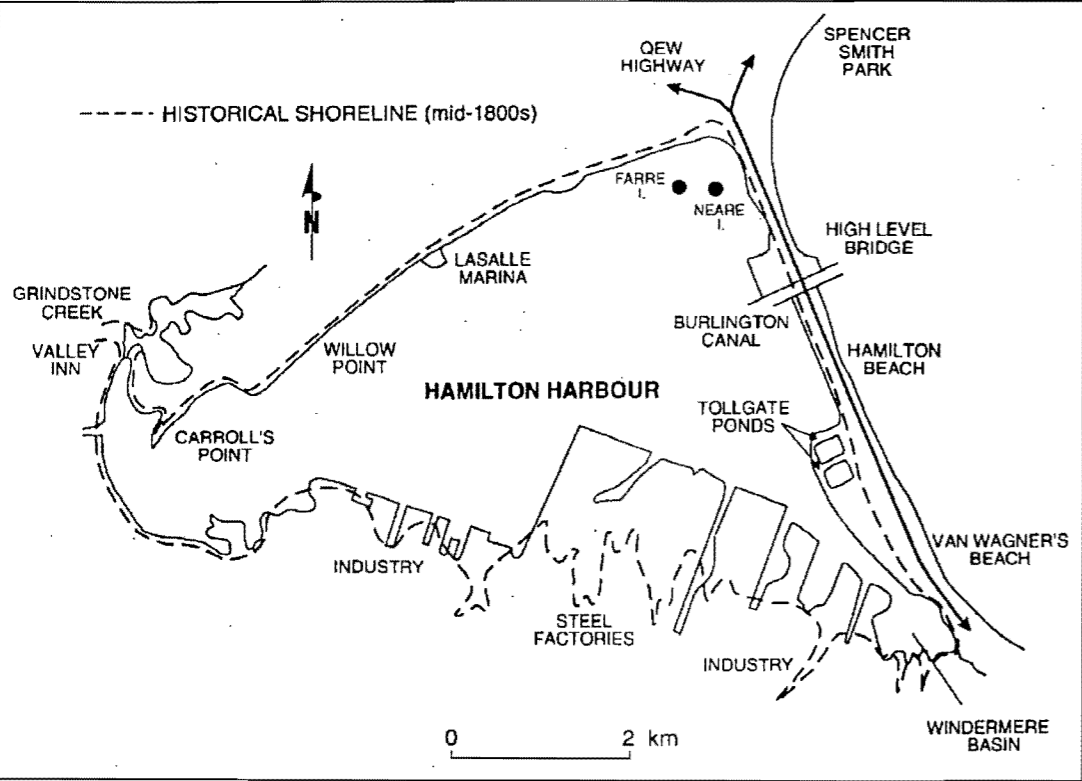
Before dredging in 1989, Windermere Basin, at the southeast end of Burlington Bay, had a surface area of approximately 40 ha and a mean depth of 0.7 m (Remedial Action Plan for Hamilton Harbour 1989). At present, it has a surface area of approximately 20 ha and a mean depth of 2 m. It was artificially created by landfilling between 1957 and 1972 and by dredging in 1989. Historically, it was an extensive cattail marsh through which Redhill Creek flowed. At present, the basin is bordered by several industries, including a slag crushing firm and a scrap metal yard on the south side. In 1988, a program was implemented to deal with the heavily contaminated sediments at Windermere Basin. Dikes were constructed from October 1988 to May 1989. From June to December 1989, contaminated sediments were dredged from the central cell of Windermere Basin and deposited behind the dikes to settle and de-water (Fig. 3).

Cootes Paradise at the western end of Burlington Bay has a surface area of approximately 250 ha and a mean depth of 0.7 m (Remedial Action Plan for Hamilton Harbour

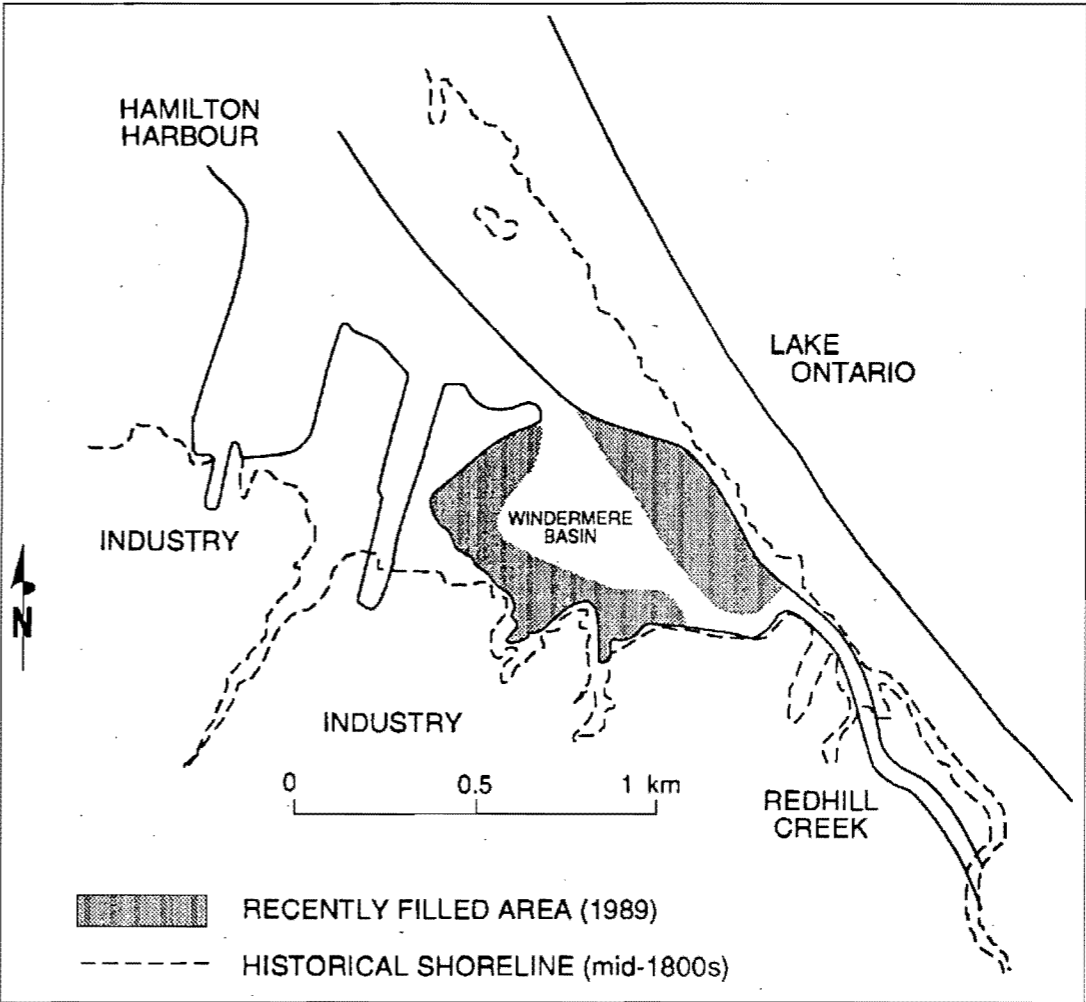
**Figure 1**  
Location of Hamilton Harbour, Windermere Basin, and Cootes Paradise in Burlington Bay, Lake Ontario



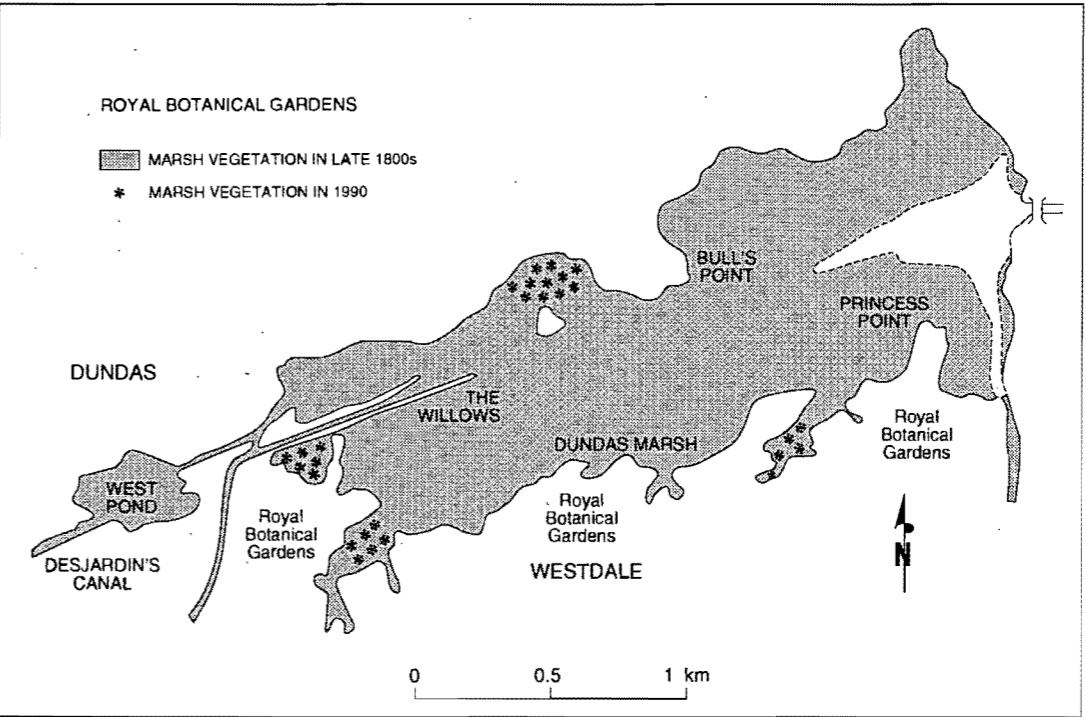
**Figure 2**  
Characteristics and historical shoreline of Hamilton Harbour



**Figure 3**  
Characteristics of Windermere Basin



**Figure 4**  
Characteristics of Cootes Paradise



1989). Most of its shoreline is bordered by deciduous forest, which is part of the Royal Botanical Gardens' nature sanctuary. An Ontario Hydro generating plant is now located on the western end. In the late 1800s, almost 100% of Cootes Paradise was cattail marsh, compared to only about 10% at present (Fig. 4; Painter et al. 1988).

During the time period covered by this study, dramatic habitat changes have taken place along the shores of Burlington Bay. There has been a tremendous amount of infilling along the southern shore, the beach strip has been widened greatly, and a whole series of marshes and wetlands in the northeast corner of the bay have been filled and replaced by the Queen Elizabeth Way. We have tried to show the extent of some of these changes and to demonstrate the tremendous difference in the habitat that was available for birds and other wildlife in the late 1800s as opposed to the late 1900s (Figs. 5–7).

**Figure 5**

The ferry crossing and the beach strip at the Burlington Canal looking north from atop the lighthouse. Photo was taken at an unknown date prior to the construction of the first bridge over the canal in 1905. Note how narrow the beach strip is. Since this photo was taken there has been extensive infilling on the bay side of the strip. Photo: William Henry Edwards, Special Collections, Hamilton Public Library.



**Figure 6**

Looking west along the south shore of Burlington Bay, about 1910. The many inlets, lagoons, and creeks along the south shore have now been filled in or diverted. In addition, there has been much infilling of areas that were previously open water. The water surface of Burlington Bay has been reduced by approximately 23% since this photo was taken. Photo: Special Collections, Hamilton Public Library.



**Figure 7**

Looking southwest over the east end of Burlington Bay in the early 1970s. The beach strip is in the foreground, Tollgate Ponds in the centre, and the steel factories in the background. Tollgate Ponds (with the tollbooths on the QEW visible at the left side of the photo) was an area immensely attractive to water birds. It has now been mostly filled in but (in the 1980s and 1990s) provides nesting habitat for gulls, night-herons, Caspian Terns, and cormorants. Photo: Brian Clark, Special Collections, Hamilton Public Library.



## Information sources

Research for this project was carried out at the following institutions in southern Ontario: the Royal Botanical Gardens, the Hamilton Public Library, the Royal Ontario Museum, the Ontario Archives, the McLaughlin Library at the University of Guelph, the Thomas Fisher Rare Book Library at the University of Toronto, and the Canadian Wildlife Service, Burlington.

A major source of information was the ornithological records of the Hamilton Naturalists' Club. Their newsletter, *Wood Duck*, provided extensive records from 1948 to present. Scrapbooks of the Hamilton Bird Protection Society (the forerunner of the Hamilton Naturalists' Club), located in the Ontario Archives, provided records from the 1920s and 1930s. The ornithological records of the late George North (a prominent Hamilton naturalist), located at the Royal Ontario Museum, included many records of water birds in the Hamilton area from 1925 to 1972. Several early publications and field notes by the late Thomas McIlwraith, located in the Thomas Fisher Rare Book Library, University of Toronto, supplied ornithological records from the latter half of the 19th century. A major reference source was "A Bibliography of the Natural History of Hamilton to the year 1950" by Judd (1960). All references that were consulted for information on bird status but were not specifically cited in the text are included in Appendix 1.

## Methods of evaluation

Records were collected for all water birds, including loons, grebes, cormorants, herons, waterfowl, Osprey, Bald Eagle, rails, shorebirds, gulls, terns, and kingfisher. These records were summarized for three separate areas: Hamilton Harbour, which includes Tollgate Ponds (now known as Eastport or Piers 26 and 27), Cootes Paradise, and Windermere Basin.

The records were summarized for four periods of history: pre-1900, 1900–1947, 1948–1969, and 1970–1990. The year 1947 was used as a break point, because after this year the Hamilton Naturalists' Club printed its bird records in *Wood Duck* along with specific locational information. The year 1969 was used as another break point, because at this time breeding failures were being noticed among fish-eating colonial water birds on Lake Ontario (Edwards 1970). The year 1990 was another convenient break point. However, a few specific records from 1991 are mentioned.

For each species within each area and each time period, the records were assigned to a frequency or abundance category. The highest number of individuals recorded for a species during each period was used to determine its abundance. A species was considered to be of regular occurrence if records for only three years or fewer were missing, because of the scarcity or inconsistency of some records. The categories used are as follows (adapted from James et al. 1976):

### *Regular occurrence (occurring every year):*

- Abundant (Abu)
  - 500 or more individuals in a single day
- Common (Com)
  - 26–499 individuals in a single day
- Uncommon (Unc)
  - 6–25 individuals in a single day
- Rare (Rar)
  - 1–5 individuals in a single day

### *Irregular occurrence (not occurring every year and always rare):*

- Occasional (Occ)
  - species does not occur every year, but occurs at least once every 20 years
- Casual (Cas)
  - species occurs less than once every 20 years, but there is more than one record
- Accidental (Ace)
  - species recorded only once

#### Hypothetical (Hyp)

- record without adequate documentation

#### Seasonal occurrence:

##### Resident

- summer, winter, or permanent resident

##### Migrant

- spring or autumn migrant

##### Vagrant

- of unexpected occurrence at any time of year

#### Breeding status:

##### Breeder

- currently breeding in area (since 1980)

##### Former breeder

- formerly bred in area (not since 1980)

##### Possible former breeder

- reference to possible breeding but not confirmed

Unfortunately, because George North's extensive field notes did not include specific locational information, his records from 1925 to 1947 were summarized with the general Hamilton area data. Because of the excellent water bird habitat of Burlington Bay at that time, it is presumed that most of the records are from the bay. However, some records may have occurred from the Lake Ontario shoreline. After 1948, his records appeared in *Wood Duck* with locations and were summarized with the rest of the records from that source.

No records were found for the years 1900–1919. The results for the 1900–1947 period were derived from records between 1920 and 1947, and the criteria for the frequency categories were applied to those years. Regular records did not appear in *Wood Duck* for Windermere Basin until 1982; therefore, the data for this area are incomplete. The status of birds in 1857–1899 was derived largely from previous descriptions by McIlwraith (1860, 1894) and by other records that reinforced those descriptions.

Ornithological field notes by Thomas McIlwraith and his son Kennedy C. McIlwraith (1890) were summarized by George North at an unspecified date. Similar to his own field notes, North did not include locational information in his summary of the McIlwraiths' notes. Examination of the original notes proved very difficult because of the largely illegible handwriting of the authors and unfamiliar place names, most being the properties of friends and neighbours.

All records of the Eurasian Teal have been included with those of the Green-winged Teal (see annotated list for Latin names), as the two forms are considered conspecific (American Ornithologists' Union 1983). All records of Kumlien's Gull have been included with those of the Iceland Gull for similar reasons.

For species considered rare in Ontario, the appropriate annual report of the Ontario Bird Records Committee is referenced for records that have been reviewed and accepted by the Committee. However, most records prior to 1982 have not been considered by the Ontario Bird Records committee, as no written documentation exists.

To determine the present status of each species, the same abundance and frequency categories were used as above. However, the present status of species of regular occurrence was determined from records in the five years 1986–1990. For those species whose status has changed consistently and dramatically in the last few years, their

abundance in 1990 is considered to be their present status (e.g., Double-crested Cormorant). Breeding status is considered current if a species has been confirmed as breeding since 1980.

## Results

Records were found for a total of 151 species of water birds for the areas and periods of this report (Table 1). The earliest record was from 1857; therefore, the pre-1900 period comprises records from 1857 to 1899. No records were found for Windermere Basin for the 1857–1899 and 1900–1947 periods. Most of the other records from these periods did not have specific locational information and were summarized under a general Hamilton area grouping (Table 1).

There were records for 115 species for the 1857–1899 period, 117 for 1900–1947, 125 for 1948–1969, and 134 for 1970–1990. These numbers represent between 67 and 78% of the 171 species of water birds recorded in all of Ontario (James 1991). Of the species listed in Table 1, nine are considered to be of hypothetical status, because records of their occurrence in Burlington Bay remain unconfirmed: Yellow-billed Loon, Sooty Shearwater, Great Cormorant, Black Rail, Long-billed Curlew, Roseate Tern, Least Tern, Common Murre, and Black Guillemot. Of the 30 species of water birds known to have bred at Burlington Bay, 26 have bred since 1980 (Table 2). The four species that formerly bred in the bay are Pied-billed Grebe, American Bittern, King Rail, and American Coot. Lesser Scaup and Common Snipe are possible former breeders.

When comparing the total number of species of water birds assigned to each frequency and abundance category (Table 3) between the different time categories, it is very difficult to make any generalizations about changes in bird populations. This is mostly due to the fact that records in the earlier time categories were much more scarce because of fewer observers in the field and limited means of reporting sightings. The total number of water bird species reported in each time category has increased gradually (Table 3). It is not clear if this represents an actual increase in the number of species utilizing Burlington Bay. A factor confusing any comparison across time periods is the heavy reliance of the second time period on North's personal records, which did not provide locational information. The resulting designation, "Hamilton area," does not necessarily contain records from Burlington Bay alone.

## Discussion

The records from the general Hamilton area for 1857–1899 and 1900–1947 are probably the best indicators of water bird populations for Burlington Bay at that time. Although these records include birds that were sighted on Lake Ontario and the Hamilton Beach strip, these same birds would have been just as likely to be found on Burlington Bay, depending on the wind, wave, or ice conditions. For 1948–1969 and 1970–1990, records of birds on Lake Ontario and the Hamilton Beach strip were not summarized because of the adequate number of records from Burlington Bay itself.

More species were recorded during the last two time periods than during the first two time periods. This is largely due to the fact that fewer people observed birds and recorded notes in the earlier periods than in more recent periods. Recently, bird-watching has become one of the fastest growing outdoor activities in North America, and many journals are dedicated to documenting bird sightings and improving bird identification skills. Early naturalists also did not have use of the many field guides available today. The most important equipment for bird observers today is binoculars and/or telescopes. For the pre-1900 naturalists, the most important equipment was a shotgun—when a bird was seen in the distance, it was usually shot to obtain the specimen for identification.

There is a major increase in the number of species reported at Windermere Basin in the 1970–1990 category compared with the 1948–1969 category. This is most likely due to two factors: (1) very scattered reports of birds seen between 1948 and 1969, and (2) recent dredging and landfilling activity, which provided breeding habitat for colonial nesters as well as foraging habitat for shorebirds. Twenty-six of the shorebird species recorded from 1970 to 1990 at Windermere Basin were not recorded between 1948 and 1969.

From the records available, many more species were of irregular occurrence during the later periods than before 1948 (Table 3). This is largely due to the increased observer effort in recent years.

On an individual basis, many species showed changes in abundance over the time periods. A description and an interpretation of the changes in the frequency and abundance of water birds since the mid-1800s and their present status are presented in the following comprehensive list of water birds recorded in Burlington Bay.

Table 1

Frequency of occurrence of water birds recorded in Hamilton Harbour (HH), Cootes Paradise (CP), the general Hamilton area (HA), and Windermere Basin (WB), 1857-1990. Status categories include: Abundant (Abu); Common (Com); Uncommon (Unc); Rare (Rar); Occasional (Occ); Casual (Cas); Accidental (Acc); and Hypothetical (Hyp). Refer to text for definitions. Breeding status is indicated by an asterisk (\*).

Species	1857-1899			1900-1947			1948-1969			1970-1990		
	HH	CP	HA	HH	CP	HA	HH	CP	HA	HH	CP	HA
Red-throated Loon	Unc	-	Com	-	-	Occ	Occ	Occ	-	Unc	Occ	Cas
Pacific Loon	Cas	-	-	-	-	-	Occ	-	-	Cas	-	-
Common Loon	Com	-	Cas	-	-	Com	Occ	Occ	-	Com	Occ	Occ
Yellow-billed Loon	-	-	-	-	-	-	Hyp	-	-	-	-	-
Pied-billed Grebe	*Unc	-	Occ	-	Cas	*Com	Occ	Occ	-	Unc	Occ	Occ
Horned Grebe	-	-	Com	Cas	-	Abu	Com	Occ	-	Abu	Occ	Occ
Red-necked Grebe	-	-	Unc	-	-	Com	Occ	Occ	-	Com	Occ	Cas
Eared Grebe	-	-	-	-	-	-	Occ	Occ	-	Occ	Occ	-
Western Grebe	-	-	-	-	-	Cas	-	-	-	Cas	-	-
Sooty Shearwater	-	-	-	-	-	Hyp	-	-	-	-	-	-
Northern Gannet	Cas	-	-	-	-	Occ	Occ	Occ	-	-	-	-
American White Pelican	Occ	-	-	Cas	Occ	Occ	-	Cas	-	Occ	Cas	-
Brown Pelican	-	-	-	Acc	-	-	-	-	-	-	-	-
Great Cormorant	Hyp	-	-	-	-	-	-	-	-	-	-	-
Double-crested Cormorant	Occ	-	-	Occ	Cas	Com	Occ	Occ	-	*Abu	Com	Rar
American Bittern	*Com	*Com	Com	-	Occ	Unc	Cas	Occ	Cas	Occ	Rar	-
Least Bittern	*Com	*Com	Unc	-	-	*Unc	Occ	*Occ	-	Cas	*Occ	-
Great Blue Heron	-	-	Com	Cas	Occ	Com	Occ	Com	Cas	Com	Com	Occ
Great Egret	-	-	Cas	-	Cas	Occ	Occ	Unc	Cas	Unc	Unc	Cas
Snowy Egret	-	-	Occ	-	-	-	Cas	Occ	-	*Occ	Occ	-
Little Blue Heron	-	-	-	-	-	Cas	-	Occ	-	-	Occ	-
Tricolored Heron	-	-	-	-	-	-	-	Cas	-	-	Cas	-
Cattle Egret	-	-	-	-	-	-	-	Cas	-	Occ	Occ	Cas
Green-backed Heron	-	-	Occ	-	Occ	Unc	Occ	Occ	-	Occ	*Unc	-
Black-crowned Night-Heron	-	-	Occ	-	Occ	*Com	*Occ	Occ	-	*Com	Com	Rar
Yellow-crowned Night-Heron	-	-	-	-	-	Cas	-	Occ	-	-	Cas	-
Glossy Ibis	Cas	-	-	-	-	-	Cas	Cas	-	Occ	Occ	-
Fulvous Whistling-Duck	-	-	-	-	-	-	-	-	-	Acc	-	-
Tundra Swan	Occ	-	Occ	Occ	Occ	Occ	Abu	Com	-	Com	Com	-
Trumpeter Swan	-	-	-	-	-	-	-	-	-	Occ	-	-
Mute Swan	-	-	-	-	-	Occ	Occ	Occ	-	*Unc	*Rar	Occ
Greater White-fronted Goose	-	-	-	-	-	Cas	-	-	-	-	Cas	-
Snow Goose	Cas	-	Cas	-	Cas	Occ	Occ	Occ	-	Occ	Occ	Occ
Brant	-	-	Cas	-	-	Occ	Occ	Occ	Occ	Occ	Occ	Occ
Canada Goose	Com	-	Occ	Cas	-	Occ	Occ	Occ	-	*Com	*Abu	*Com
Wood Duck	-	*Com	Occ	-	Occ	Occ	Occ	*Com	-	Occ	*Com	Cas
Green-winged Teal	-	-	Com	Cas	Occ	Abu	Occ	*Abu	Cas	*Com	Com	Abu
American Black Duck	Com	-	Com	Occ	Com	*Abu	Com	Com	-	*Com	Com	Com
Mallard	Com	-	Occ	Occ	Com	Com	Com	Com	-	*Com	*Abu	*Com
Northern Pintail	-	-	Com	Cas	Occ	Abu	Occ	Com	-	Com	Com	Com
Blue-winged Teal	-	-	Com	-	Occ	Abu	Occ	*Occ	*Cas	*Unc	*Com	Com
Cinnamon Teal	-	-	-	-	-	-	-	-	-	-	Acc	-
Northern Shoveler	-	-	Unc	-	Cas	Com	Occ	Com	-	*Com	*Com	Com
Gadwall	Occ	-	Occ	Occ	Cas	Unc	Occ	Unc	-	*Com	Com	*Com
Eurasian Wigeon	-	-	-	-	Cas	Occ	Occ	Occ	-	Cas	Cas	-
American Wigeon	-	-	Com	Cas	Com	Com	Occ	Com	-	Unc	*Com	Occ
Canvasback	-	-	Occ	Occ	Cas	Abu	Com	Occ	-	Com	Occ	Occ
Redhead	-	-	Abu	Occ	Occ	Abu	Com	Occ	-	Com	Occ	Occ
Ring-necked Duck	-	-	Com	Cas	Cas	Com	Com	Occ	-	Com	Com	Occ
Tufted Duck	-	-	-	-	-	-	Cas	-	-	Cas	-	Occ
Greater Scaup	Abu	-	Abu	Occ	Cas	Abu	Abu	Occ	-	Abu	Occ	Com
Lesser Scaup	Abu	-	Abu	Occ	Cas	Abu	Com	Occ	-	Abu	Occ	Abu
Common Eider	Cas	-	-	-	-	-	-	-	-	-	-	-
King Eider	-	-	Occ	-	-	Occ	Occ	Cas	-	-	-	-
Harlequin Duck	-	-	Cas	-	-	-	-	-	-	Cas	-	-
Oldsquaw	Abu	-	Abu	-	Cas	Abu	Com	Cas	-	Com	Occ	Occ
Black Scoter	-	-	Occ	Cas	-	Occ	Occ	Occ	-	Occ	Cas	Cas
Surf Scoter	-	-	Occ	-	-	Occ	Occ	Cas	-	Occ	Cas	Occ
White-winged Scoter	Com	-	Occ	Occ	-	Com	Com	Occ	-	Com	Occ	Cas
Common Goldeneye	Unc	-	Occ	Com	-	Abu	Com	Occ	-	Com	Occ	Occ

Table 1 (Continued)

Frequency of occurrence of water birds recorded in Hamilton Harbour (HH), Cootes Paradise (CP), the general Hamilton area (HA), and Windermere Basin (WB), 1857-1990. Status categories include: Abundant (Abu); Common (Com); Uncommon (Unc); Rare (Rar); Occasional (Occ); Casual (Cas); Accidental (Acc); and Hypothetical (Hyp). Refer to text for definitions. Breeding status is indicated by an asterisk (\*).

Species	1857-1899			1900-1947			1948-1969			1970-1990		
	HH	CP	HA	HH	CP	HA	HH	CP	HA	HH	CP	HA
Barrow's Goldeneye	-	-	Cas	-	-	-	-	-	-	Occ	Cas	-
Bufflehead	Com	-	Occ	-	-	Com	Com	Occ	-	Com	Occ	Com
Hooded Merganser	Com	-	Occ	Occ	-	Com	Com	Occ	-	Com	Com	Occ
Common Merganser	-	-	Occ	Occ	-	Abu	Abu	Occ	-	Abu	Occ	Occ
Red-breasted Merganser	Occ	-	Occ	Occ	Cas	Abu	Abu	Occ	-	Abu	Occ	Occ
Ruddy Duck	Occ	-	Occ	Cas	Occ	Com	Com	Occ	-	Com	Occ	Com
Osprey	Occ	-	Occ	-	-	Rar	Occ	Occ	-	Occ	Unc	-
Bald Eagle	Unc	-	Rar	Occ	Cas	Occ	Occ	Occ	-	Rar	Rar	-
Yellow Rail	-	Occ	-	-	-	Cas	-	Occ	-	-	Occ	-
Black Rail	-	Hyp	-	-	-	-	-	Hyp	-	-	Hyp	-
King Rail	-	Cas	Occ	Cas	-	*Occ	-	*Occ	-	Cas	Occ	-
Virginia Rail	Com	Com	Unc	Cas	-	*Unc	Occ	Occ	-	-	*Occ	-
Sora	*Abu	*Abu	Unc	-	Cas	Unc	Occ	Occ	-	Occ	*Occ	Cas
Purple Gallinule	-	-	-	-	-	-	-	Acc	-	-	-	-
Common Moorhen	Unc	Unc	Unc	Cas	Occ	*Com	Occ	*Occ	Cas	Occ	*Occ	*Occ
American Coot	Unc	Unc	Unc	Cas	Occ	Com	Occ	*Com	-	*Com	*Com	Occ
Sandhill Crane	-	-	-	-	-	-	-	-	-	-	Occ	-
Black-bellied Plover	-	-	Unc	Occ	-	Unc	Occ	Occ	-	Occ	Com	Occ
Lesser Golden-Plover	-	-	Unc	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Wilson's Plover	-	-	-	-	-	-	-	-	-	-	-	Acc
Semipalmated Plover	-	-	Com	Cas	-	Com	Occ	Occ	-	Occ	Com	Occ
Piping Plover	-	-	Occ	-	-	Occ	Occ	Cas	-	Cas	-	-
Killdeer	-	-	Unc	-	Occ	*Com	Occ	*Occ	-	Com	*Com	*Unc
American Oystercatcher	-	-	-	-	-	-	-	-	-	Acc	-	Acc
American Avocet	-	-	-	-	-	-	-	Occ	-	Occ	-	Occ
Greater Yellowlegs	-	-	Occ	Cas	Cas	Com	Occ	Occ	-	Occ	Rar	Cas
Lesser Yellowlegs	Com	-	Com	Cas	Cas	Com	Occ	Occ	Cas	Unc	Com	Occ
Solitary Sandpiper	-	-	Occ	-	-	Occ	-	Occ	-	Occ	Occ	-
Willet	-	Occ	-	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Spotted Sandpiper	*Com	-	Com	Cas	Cas	*Com	Occ	Occ	-	*Occ	Unc	Occ
Upland Sandpiper	-	-	Occ	-	-	Occ	Occ	Cas	-	Occ	-	Occ
Eskimo Curlew	-	-	Acc	-	-	-	-	-	-	-	-	-
Whimbrel	-	-	Occ	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Long-billed Curlew	-	-	Hyp	-	-	-	-	-	-	-	-	-
Hudsonian Godwit	Cas	-	Occ	-	-	Cas	Occ	Occ	-	Occ	Occ	Occ
Marbled Godwit	-	-	Occ	-	-	Occ	Occ	Occ	-	Cas	Occ	Cas
Ruddy Turnstone	-	-	Unc	Occ	-	Com	Occ	Occ	-	Com	Occ	Occ
Red Knot	Occ	-	Unc	Occ	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Sanderling	Com	-	Com	Cas	-	Com	Occ	Occ	-	Occ	Occ	Occ
Semipalmated Sandpiper	Abu	-	Abu	Cas	Cas	Abu	Occ	Occ	-	Com	Com	Occ
Western Sandpiper	-	-	-	Cas	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Least Sandpiper	-	-	Com	Cas	-	Com	Occ	Occ	Cas	Occ	Com	Occ
White-rumped Sandpiper	-	-	Cas	-	-	Occ	Occ	Occ	Cas	Occ	Unc	Occ
Baird's Sandpiper	-	-	Occ	-	-	Occ	Occ	Occ	Cas	Occ	Occ	Occ
Pectoral Sandpiper	Occ	-	Unc	Cas	Cas	Cas	Occ	Occ	Cas	Occ	Com	Occ
Sharp-tailed Sandpiper	-	-	-	-	-	-	-	-	-	-	Acc	-
Purple Sandpiper	-	-	Occ	Cas	-	Cas	Occ	-	-	Cas	-	-
Dunlin	-	-	Abu	Cas	-	Com	Occ	Occ	-	Occ	Abu	Occ
Curlew Sandpiper	-	-	Occ	-	-	-	-	Cas	-	-	-	-
Silt Sandpiper	-	-	Occ	-	-	Occ	Occ	Occ	-	Occ	Com	Occ
Buff-breasted Sandpiper	-	-	Occ	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Ruff	-	-	-	Cas	-	Cas	-	Cas	-	Occ	Occ	Occ
Short-billed Dowitcher	-	-	Cas	Cas	-	Occ	Occ	Occ	Occ	Com	Occ	Occ
Long-billed Dowitcher	-	-	Occ	-	-	Cas	Occ	Occ	-	Occ	Occ	Occ
Common Snipe	-	-	Com	-	-	Com	Occ	Occ	-	Com	Occ	-
American Woodcock	-	-	Unc	-	-	Unc	Cas	Occ	-	Cas	Occ	-
Wilson's Phalarope	-	-	Occ	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Red-necked Phalarope	Occ	-	Occ	-	-	Occ	Occ	Occ	-	Occ	Occ	Occ
Red Phalarope	Cas	-	-	-	-	Occ	Occ	Cas	-	Cas	-	-
Pomarine Jaeger	-	-	Occ	-	Cas	Occ	Cas	Cas	-	Occ	Cas	Occ

Table 1 (Continued)

Frequency of occurrence of water birds recorded in Hamilton Harbour (HH), Cootes Paradise (CP), the general Hamilton area (HA), and Windermere Basin (WB), 1857–1990. Status categories include: Abundant (Abu); Common (Com); Uncommon (Unc); Rare (Rar); Occasional (Occ); Casual (Cas); Accidental (Acc); and Hypothetical (Hyp). Refer to text for definitions. Breeding status is indicated by an asterisk (\*).

Species	1857–1899			1900–1947			1948–1969			1970–1990		
	HH	CP	HA	HH	CP	HA	HH	CP	HA	HH	CP	HA
Parasitic Jaeger	–	–	Cas	–	–	Occ	Occ	Occ	–	Occ	Cas	Occ
Long-tailed Jaeger	–	–	–	–	–	Cas	–	Occ	–	Cas	Cas	–
Laughing Gull	–	–	–	–	–	Occ	Occ	Occ	–	Occ	Occ	–
Franklin's Gull	–	–	Occ	–	–	Occ	Occ	Occ	–	Occ	Occ	–
Little Gull	–	–	–	Cas	Cas	Occ	Occ	Occ	–	Occ	Occ	Occ
Common Black-headed Gull	–	–	–	–	–	Cas	Cas	Cas	–	Occ	Occ	–
Bonaparte's Gull	Unc	–	Cas	Occ	Occ	Abu	Occ	Occ	–	Com	Com	Occ
Mew Gull	–	–	–	–	–	–	–	–	–	–	Acc	–
Ring-billed Gull	Com	–	–	Occ	Occ	Abu	Com	Com	–	*Abu	Abu	*Com
Herring Gull	Com	–	Unc	Cas	Abu	Abu	Abu	Abu	–	*Abu	Abu	*Unc
Thayer's Gull	–	–	–	–	–	Occ	–	–	–	Occ	Cas	Cas
Iceland Gull	–	–	–	–	–	Occ	Rar	Occ	–	Unc	Occ	Occ
Lesser Black-backed Gull	–	–	–	–	–	–	–	–	–	Occ	Occ	Occ
Glaucous Gull	–	–	Occ	Occ	–	Unc	Unc	Occ	–	Unc	Occ	Occ
Great Black-backed Gull	Occ	–	Unc	Occ	–	Com	Com	Rar	–	Com	Unc	Occ
Black-legged Kittiwake	Occ	–	Occ	Cas	–	Occ	Occ	Occ	–	Occ	Occ	–
Sabine's Gull	–	–	–	–	–	Occ	Occ	Occ	–	–	Cas	–
Ivory Gull	Occ	–	–	–	–	–	Occ	Cas	–	–	–	–
Caspian Tern	Unc	–	Cas	Cas	Cas	Com	Occ	Occ	–	*Com	Occ	Occ
Sandwich Tern	–	–	–	–	–	–	–	–	–	Acc	–	–
Roseate Tern	–	–	–	–	–	Hyp	–	–	–	–	–	–
Common Tern	Com	–	Com	Occ	Occ	*Com	*Occ	Occ	–	*Occ	Occ	*Occ
Arctic Tern	–	–	–	–	–	–	–	–	–	–	–	Acc
Forster's Tern	–	–	Occ	–	–	Occ	Occ	Occ	–	Occ	Unc	Occ
Least Tern	Hyp	–	–	–	–	–	–	–	–	–	–	–
Black Tern	Unc	–	Rar	–	Occ	*Com	Occ	*Occ	–	*Occ	Occ	Occ
Common Murre	–	–	Hyp	–	–	–	–	–	–	–	–	–
Thick-billed Murre	Cas	–	–	–	–	Occ	–	–	Cas	–	–	–
Razorbill	–	–	Cas	–	–	–	–	Cas	–	Cas	–	–
Black Guillemot	Hyp	–	–	–	–	–	–	–	–	–	–	–
Belted Kingfisher	Com	–	Rar	Cas	Cas	*Unc	Rar	Occ	–	Rar	Unc	Cas

Table 2  
Water bird species known to have bred at Burlington Bay since 1980

Double-crested Cormorant	Gadwall
Least Bittern	American Wigeon
Snowy Egret	Virginia Rail
Green-backed Heron	Sora
Black-crowned Night-Heron	Common Moorhen
Mute Swan	Killdeer
Canada Goose	Spotted Sandpiper
Wood Duck	Ring-billed Gull
Green-winged Teal	Herring Gull
American Black Duck	Caspian Tern
Mallard	Common Tern
Blue-winged Teal	Black Tern
Northern Shoveler	Belted Kingfisher

Annotated list of water birds

Red-throated Loon *Gavia stellata*

Uncommon spring and autumn migrant; occasional winter resident.

The many records of Red-throated Loon for Hamilton Harbour in spring and autumn are mostly from Woodland Cemetery, Carroll's Point, and LaSalle Marina. There are fewer records for Cootes Paradise and only one record for Windermere Basin, on 23 March 1985. Red-throated Loon was described by McIlwraith (1894) as being more common in spring migration than in autumn migration in southern

Ontario. Its status does not appear to have changed significantly.

Pacific Loon *Gavia pacifica*

Casual spring and autumn migrant.

There are only four records of Pacific Loon for Hamilton Harbour: one by McIlwraith (1886) during April of an unspecified year, one on 25 October 1952, another on 12 April 1964 at LaSalle Marina (Wormington 1986), and one from 8 to 20 November 1980 at the Burlington Canal (Wormington 1987).

Common Loon *Gavia immer*

Common spring and autumn migrant; occasional summer and winter resident.

McIlwraith (1860) noted that the Common Loon was often seen on Burlington Bay, and Durand (1897) called it abundant on Cootes Paradise in the early 1800s. At present, it is recorded in most years on Hamilton Harbour, sometimes in large numbers during migration and occasionally as a summer resident. It has been recorded only occasionally at Cootes Paradise and rarely at Windermere Basin. It is possibly less abundant now than it was in the mid-1800s. No breeding records have been reported.

Table 3

Summary of the total number of species assigned to each abundance and frequency category for each study area, 1857–1990

Area/Abundance categories		Time periods			
		1857–1899	1900–1947	1948–1969	1970–1990
Hamilton Harbour (HH)					
Regular occurrence	Abundant	5	0	5	8
	Common	17	1	15	30
	Uncommon	9	0	1	9
	Rare	0	0	2	2
	Total	31	1	23	49
Irregular occurrence	Occasional	13	22	79	54
	Casual	8	32	7	14
	Accidental	0	1	0	3
	Hypothetical	3	0	1	0
	Total	24	55	87	71
Cootes Paradise (CP)					
Regular occurrence	Abundant	1	1	2	5
	Common	4	3	10	24
	Uncommon	2	0	2	9
	Rare	0	0	1	4
	Total	7	4	15	42
Irregular occurrence	Occasional	2	19	87	59
	Casual	1	24	15	13
	Accidental	0	0	1	3
	Hypothetical	1	0	1	1
	Total	4	43	104	76
General Hamilton area (HA)					
Regular occurrence	Abundant	6	17	–	–
	Common	17	30	–	–
	Uncommon	16	10	–	–
	Rare	3	1	–	–
	Total	42	58	NA	NA
Irregular occurrence	Occasional	42	44	–	–
	Casual	12	12	–	–
	Accidental	1	0	–	–
	Hypothetical	2	2	–	–
	Total	57	58	NA	NA
Windermere Basin (WB)					
Regular occurrence	Abundant	–	–	0	2
	Common	–	–	0	11
	Uncommon	–	–	0	1
	Rare	–	–	0	2
	Total	NA	NA	0	16
Irregular occurrence	Occasional	–	–	2	60
	Casual	–	–	12	12
	Accidental	–	–	0	3
	Hypothetical	–	–	0	0
	Total	NA	NA	14	75
Total no. of species		115	117	125	134

Yellow-billed Loon *Gavia adamsii*

Hypothetical vagrant.

The only record of a Yellow-billed Loon for Hamilton Harbour was from 5 to 7 December 1964 at LaSalle Marina, reported by Howard Clase in *Wood Duck*.

Pied-billed Grebe *Podilymbus podiceps*

Uncommon spring and autumn migrant; occasional summer and winter resident; former breeder.

The Pied-billed Grebe has been recorded in most years on Hamilton Harbour and Cootes Paradise, although less frequently during the 1950s and 1960s than at present. It was described as a breeder in Hamilton Harbour and Cootes Paradise during the 1800s (McIlwraith 1894) and by North during the 1930s. However, no recent breeding records are known.

Horned Grebe *Podiceps auritus*

Common spring and autumn migrant; occasional summer and rare winter resident.

The Horned Grebe is recorded regularly on Hamilton Harbour, where it can be seen in some years throughout the summer and until freeze-up in winter. It occurs only occasionally on Cootes Paradise and Windermere Basin. Its status has probably not changed significantly. No breeding records exist.

Red-necked Grebe *Podiceps grisegena*

Common spring and autumn migrant; occasional summer and winter resident.

During the 1800s, the Red-necked Grebe was described as occurring only rarely in the spring at Hamilton Harbour (McIlwraith 1860). It was later described as a spring and autumn transient visitor (McIlwraith 1894). Saunders (1947) mentioned that Red-necked Grebes bred at Burlington Harbour at one time: "One of the great surprises for the birders of our region in the last two years has been

the discovery (by G.W. North) that these lovely birds were breeding at this very spot (Burlington Harbour)." However, Spiers et al. (1944) clearly indicated that Red-necked Grebes nested at the western end of Lake Ontario near Burlington in 1943 and 1944 probably at what is now Spencer Smith Park. The Red-necked Grebe has been recorded regularly on Hamilton Harbour since 1970 and only occasionally before then. It has been recorded occasionally and uncommonly on Cootes Paradise but only once at Windermere Basin on 20 October 1989.

**Eared Grebe *Podiceps nigricollis***  
Occasional spring and autumn migrant.

The Eared Grebe had been recorded occasionally on Hamilton Harbour and Cootes Paradise between 1959 and 1975, with only one record previous to this, by North in the Hamilton area on 28 April 1948. The only records since 1975 were of one at Tollgate Ponds, Hamilton Harbour, from 3 September to 12 October 1989 and one at the same location from 28 August to 1 September 1990.

**Western Grebe *Aechmophorus occidentalis***  
Casual spring migrant.

North had two records of Western Grebe: one on 13 May 1945 and another on 8 June 1947 in the Hamilton area, which may have been from Hamilton Harbour or Cootes Paradise. There is a recent record at Woodland Cemetery, Hamilton Harbour, on 30 April 1989 (Wormington and Curry 1990).

**Sooty Shearwater *Puffinus griseus***  
Hypothetical vagrant.

The only record of a Sooty Shearwater was by North on 20 September 1929. Sooty Shearwater has not been recorded elsewhere in the province and is not included in any bird checklists for Ontario (Wormington and James 1984; James 1991).

**Northern Gannet *Sula bassanus***  
Occasional autumn vagrant.

McIlwraith (1894) mentioned one Northern Gannet that was found on Hamilton Harbour "many years ago in a state of extreme exhaustion, after a severe northeaster". North had three records of gannets in the Hamilton area during the 1940s. There are several records for Hamilton Harbour between 1948 and 1967 but only a single record of two adults over Cootes Paradise on 21 August 1967. The only recent records are from Lake Ontario near Hamilton.

**American White Pelican *Pelecanus erythrorhynchos***  
Occasional autumn vagrant.

North (1971) summarized all the known records of the American White Pelican for the Hamilton area. McIlwraith (1886) reported five birds seen on Hamilton Harbour in May 1864. He also reported five birds in March 1884. Other records for the harbour were in 1935, 1970, and 1971, and records for Cootes Paradise were in 1935 (a different bird from the one on the harbour), 1937, 1956

(North 1971), and 1978 (Wormington 1986). Formerly listed as threatened in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), this species was delisted in 1987 because of its increasing populations.

**Brown Pelican *Pelecanus occidentalis***  
Accidental vagrant.

The only record of a Brown Pelican was by North (1971) on 28 August 1937 on Hamilton Harbour near the Burlington Canal. This record was unknown to James (1991).

**Great Cormorant *Phalacrocorax carbo***  
Hypothetical vagrant.

Prior to 1991, the only records of Great Cormorant for Burlington Bay were of unspecified observations described by McIlwraith (1894): "in spring and fall they are occasionally seen in Hamilton Bay, and other points in southern Ontario." The only confirmed record in the immediate Hamilton area before 1991 is of one at Van Wagner's Beach, western Lake Ontario, from 13 to 14 March 1988 (Coady and Wormington 1989). Although beyond the period of this report, one adult and two immature Great Cormorants were present on Hamilton Harbour and Windermere Basin from 9 February to 8 May 1991.

**Double-crested Cormorant *Phalacrocorax auritus***  
Abundant summer and rare winter resident; breeder.

The Double-crested Cormorant has been a breeder at Tollgate Ponds (Pier 27), Hamilton Harbour, only since 1984 (Dobos et al. 1988). However, by 1990, 250 breeding pairs were present. In recent years, several birds have overwintered on Hamilton Harbour and Windermere Basin. The overall Great Lakes population has increased in frequency and abundance since the 1970s, when it was at a low, suffering from reproductive failure induced by toxic chemical contamination (Price and Weseloh 1986). McIlwraith (1894) indicated the Double-crested Cormorant was an occasional summer resident. Snyder (1951) noted that "in fact, the species now seems to be undergoing a period of expansion and prosperity." It appears as though populations of Double-crested Cormorants increased from the 1930s to the 1950s, then declined with the increased use of pesticides, and finally increased again in the late 1970s after the banning of DDT use.

**American Bittern *Botaurus lentiginosus***  
Rare spring and fall migrant; occasional summer resident; former breeder.

The American Bittern was described by McIlwraith (1860) as being abundant in all the marshes of Hamilton Harbour and Cootes Paradise. It has decreased in occurrence and abundance since the 1940s because of the loss of suitable wetland habitat. At present, it occurs most frequently at Cootes Paradise, where it was described as a possible breeder in 1985 (Lamond and Austen 1986).

**Least Bittern *Ixobrychus exilis***  
Rare summer resident; breeder.

McIlwraith (1894) described the Least Bittern as being a regular summer resident and breeder in the marshes of Hamilton Harbour. In Hamilton Harbour and Cootes Paradise, it has decreased in occurrence and abundance since the 1940s, with the loss of suitable wetland habitat. Its status was assigned as rare in 1988 by COSEWIC (Sandilands and Campbell 1988). At present, it occurs occasionally on Hamilton Harbour but most frequently at Cootes Paradise, where it has bred in recent years, including a single pair in both 1984 and 1985 (Lamond and Austen 1986). More recently, birds have been present during the breeding season in 1989 and 1990.

**Great Blue Heron *Ardea herodias***  
Common summer and rare winter resident.

At present, the Great Blue Heron regularly feeds around Hamilton Harbour and Cootes Paradise and may be seen in rather large numbers (40-70) at Cootes Paradise during the summer. It is not known to breed at Burlington Bay. A few individuals may overwinter if open water can be found. McIlwraith (1860) considered it to be rather common in the Hamilton area. Its status has probably not changed significantly over the last century.

**Great Egret *Casmerodius albus***  
Rare spring, summer, and autumn vagrant.

The Great Egret occurs regularly at Cootes Paradise, Grindstone Creek mouth, Tollgate Ponds, and, rarely, Windermere Basin. Although mainly an autumn visitor, it may occur throughout the summer months, but it is not known to nest. It is more frequent now than in the late 1800s, when McIlwraith (1894) considered it to be an accidental visitor. It has become more frequent since the 1950s.

**Snowy Egret *Egretta thula***  
Occasional summer resident; breeder.

The Snowy Egret has occurred infrequently since the 1970s and rarely before then. It was described by McIlwraith (1894) as an occasional visitor to Ontario. In 1986, one pair nested at the Tollgate Ponds heronry, being the first recorded nesting for this species in Canada (Curry and Bryant 1987). The Snowy Egret has been expanding its breeding range northward in recent years. It is most often seen at Cootes Paradise.

**Little Blue Heron *Egretta caerulea***  
Occasional spring and autumn vagrant.

There are only six records of Little Blue Heron for Burlington Bay. These include one immature recorded by North from 15 to 26 August 1934, one immature at Dundas Marsh on 14 August 1949, one from 7 to 9 August 1965 at Bull's Point, one adult from 3 to 4 April 1974 at Dundas Marsh (Wormington 1986), one adult on 2 May 1975 at Bull's Point, and one adult on 2 May 1983 at Cootes Paradise (Wormington and James 1984).

**Tricolored Heron *Egretta tricolor***  
Casual vagrant.

There are only two records of Tricolored Heron for Burlington Bay: one on 13 June 1967 and one on 17 April 1976, both at Cootes Paradise.

**Cattle Egret *Bubulcus ibis***  
Occasional spring, summer, and autumn vagrant.

The Cattle Egret was first recorded at Cootes Paradise in 1961. Since then, it has occurred occasionally on Cootes Paradise, Tollgate Ponds, Hamilton Harbour, and Windermere Basin, although nesting has not been reported. This species has undergone a tremendous range expansion worldwide and was first reported in Canada in 1952 (Goodwin 1987).

**Green-backed Heron *Butorides striatus***  
Uncommon summer resident; breeder.

The status of the Green-backed Heron seemed uncertain during the late 1800s, when it was described as being "occasionally seen near Hamilton" (McIlwraith 1894). Since the 1950s, it has been recorded in most years at Cootes Paradise and less regularly on Hamilton Harbour. It has bred at Cootes Paradise as recently as 1985 (Lamond and Austen 1986) and at the mouth of Redhill Creek. It appears to be more common at present than in historical times.

**Black-crowned Night-Heron *Nycticorax nycticorax***

Common summer and occasional winter resident; breeder.

The Black-crowned Night-Heron has increased in frequency of occurrence and abundance since the 1800s, when it was described as being an accidental migrant (McIlwraith 1860). Snyder (1951) noted that "it is too rare in Ontario to deserve more than passing mention." At present, it breeds on Hamilton Harbour at Tollgate Ponds and Neare Island. It was first recorded breeding in the Hamilton area in 1936 at Van Wagner's Beach (Sheppard 1944). Dobos et al. (1988) summarized the breeding records for Hamilton Harbour.

**Yellow-crowned Night-Heron *Nyctanassa violacea***  
Occasional summer and autumn vagrant.

There are only five records of Yellow-crowned Night-Heron for Burlington Bay: 2 September 1934 by North, 27 July 1953 at Dundas Marsh, 5 September 1962 at Princess Point, an immature on 25 August 1974 at Dundas Marsh, and 24 June 1988 at Valley Inn.

**Glossy Ibis *Plegadis falcinellus***  
Occasional spring, summer, and autumn vagrant.

One of the first records of Glossy Ibis for Ontario was reported by McIlwraith (1894), who obtained two stuffed birds shot by a farmer in May 1857 by the Hamilton Waterworks, near present-day Windermere Basin. Since 1958, Glossy Ibis has occurred occasionally on Cootes Paradise and Hamilton Harbour. This species is probably

expanding its breeding range in North America. The following records were all at Dundas Marsh: two adults from 24 to 30 May 1971 (Coady 1988); six *Plegadis* sp. on 24 September 1976 and one immature *Plegadis* sp. on 14 September 1977 (Wormington 1986); one *Plegadis* sp. on 14 October 1989 and one adult on 6 October 1990 (Curry 1991). As White-faced Ibis *Plegadis chihi* juveniles are inseparable in the field from juvenile Glossy Ibis and as the occurrence of White-faced Ibis in Ontario is a definite possibility, records of dark ibis not clearly distinguishing Glossy Ibis are treated as *Plegadis* sp.

**Fulvous Whistling-Duck *Dendrocygna bicolor***  
Accidental vagrant.

The only record of a Fulvous Whistling-Duck is from 28 May to 5 June 1976 at the east end of Hamilton Harbour (McLaughlin 1976; Wormington 1986).

**Tundra Swan *Cygnus columbianus***  
Common spring and autumn migrant; occasional winter resident.

Historically, the Tundra Swan occurred in large numbers during migration. Durand (1897) referred to this species as abundant in the early 1800s. McIlwraith (1894) described the Tundra Swan as being "never at any point abundant . . . [and] are seldom seen in Ontario." Since the 1950s, Tundra Swan has occurred regularly on Hamilton Harbour and Cootes Paradise, primarily in spring migration and often in large numbers. Locally, it is apparently more regular and abundant currently than it was historically.

**Trumpeter Swan *Cygnus buccinator***  
Introduced permanent resident.

The Trumpeter Swan is being reintroduced to western Lake Ontario because it is thought that historical populations existed here (Hansen 1973; Lumsden 1984b). Tagged birds have been reported on Hamilton Harbour and at Windermere Basin over the last several years.

**Mute Swan *Cygnus olor***  
Uncommon permanent resident; breeder.

The Mute Swan is an introduced species that has become locally established as a breeder on Burlington Bay. Recent nestings have occurred at Carroll's Point at the west end of Hamilton Harbour and at Cootes Paradise (Ontario Nest Records Scheme). It is seen regularly at Windermere Basin. This species was first recorded in the Hamilton area in 1934 by North.

**Greater White-fronted Goose *Anser albifrons***  
Casual spring and autumn migrant.

The only record of Greater White-fronted Goose for Burlington Bay was a flock of 13 birds recorded at Dundas Marsh on 27 March 1970. North recorded one juvenile bird, present from 20 October to 24 November 1945 in the Hamilton area, which was likely from Burlington Bay.

**Snow Goose *Chen caerulescens***  
Uncommon spring and autumn migrant; occasional winter resident.

The Snow Goose has been recorded more frequently since the 1950s than historically. McIlwraith (1860) called it accidental on Hamilton Harbour and later a "casual visitor during the season of migration" (McIlwraith 1894). At present, it occurs in most years on Hamilton Harbour and Cootes Paradise and may linger into the winter months. It has not been seen as regularly at Windermere Basin. Any summer records are most likely of domesticated birds (escapees) rather than wild birds, which normally breed in the Arctic.

**Brant *Branta bernicla***  
Occasional spring and autumn migrant; occasional winter resident.

McIlwraith (1894) described the Brant as "a casual visitor to the waters of Ontario." There are many records for Hamilton Harbour and Cootes Paradise and only two records for Windermere Basin: one on 1 June 1953 and another from 11 October to 5 November 1990. The Brant has occurred in large flocks (1200 recorded on 22 October 1981 at Cootes Paradise). The Brant is possibly more abundant at present than a century ago.

**Canada Goose *Branta canadensis***  
Abundant permanent resident; breeder.

Historically, the Canada Goose occurred in large numbers during migration. Durand (1897) called it abundant on Cootes Paradise during the early 1800s. However, it had become much more scarce by the late 1800s, probably because of overhunting and disturbance of its staging areas. McIlwraith (1894) described this decline as such: "In former years the flocks used to settle in Hamilton Bay . . . for rest and refreshments; but now their haunts have been invaded by trolley cars, electric lights, telegraph wires and other innovations, which cause them to fly high and to pass on with fewer stoppages." After reintroductions during the 1960s, the Canada Goose gradually built up population levels. At present, it occurs as a permanent resident on Burlington Bay in large numbers. Many pairs breed around Hamilton Harbour, Cootes Paradise, and Windermere Basin.

**Wood Duck *Aix sponsa***  
Common summer and rare winter resident; breeder.

Historically, the Wood Duck bred regularly in the marshes of Cootes Paradise and Hamilton Harbour, but it had become uncommon by the late 1800s, as described by McIlwraith (1894): "Twenty-five years ago I used to see them leading out their young from one of the inlets of the Dundas Marsh. They were known at that time to breed near Gage's Inlet also, but of late years they have been observed only as passing migrants in spring and fall." The Wood Duck remained uncommon until the 1950s. However, it has gradually increased since then and at present occurs as a regular breeder in Cootes Paradise, where nesting boxes have provided artificial nesting sites. A few individuals may overwinter, usually at Desjardin's Canal, Dundas.

**Green-winged Teal *Anas crecca***  
Abundant spring and autumn migrant; uncommon summer and winter resident; breeder.

The Green-winged Teal has been historically and is currently an abundant migrant, especially during the autumn. It is found in large numbers at Cootes Paradise and Windermere Basin. In the 1800s, it was not known to breed in southern Ontario (McIlwraith 1894). However, in 1970 and 1971, it had been found nesting at Tollgate Ponds (Ecologistics Ltd. 1976). It was a possible breeder at Windermere Basin in 1987 (Canadian Wildlife Service, unpubl. data).

**American Black Duck *Anas rubripes***  
Common summer and abundant winter resident; breeder.

In the late 1800s, the American Black Duck was considered to be an occasional migrant to Hamilton Harbour, having decreased in numbers from earlier times. This is evidenced by McIlwraith (1894): "We are told that long ago the Black Duck was a regular visitor to the marshy inlets around Hamilton Bay, but now their visits are few and far between." At present, it occurs in large numbers as a migrant and winter resident, especially at Windermere Basin and Tollgate Ponds. It has occasionally nested around Burlington Bay. The American Black Duck appears to be more abundant currently than historically.

**Mallard *Anas platyrhynchos***  
Abundant permanent resident; breeder.

Apparently the Mallard had decreased in abundance from the mid- to late 1800s. In 1860, McIlwraith called it a common migrant at Hamilton. However, McIlwraith (1894) stated that "In Hamilton Bay it occurs sparingly during the migratory season." It has since increased in abundance and is at present an abundant permanent resident breeding all around Hamilton Harbour, Cootes Paradise, and Windermere Basin.

**Northern Pintail *Anas acuta***  
Common spring and autumn migrant; uncommon summer and common winter resident.

In the mid-1800s, McIlwraith (1860) described the Northern Pintail as "occasional, not numerous"; by the late 1800s, however, McIlwraith (1894) reported it as "common in southern Ontario in spring and fall." In the early 1900s, North recorded it regularly and in large numbers. At present, it occurs regularly during migration and as a common winter resident, mostly at Windermere Basin. It occurs uncommonly in the summer, but it is not known to breed. Its status does not appear to have changed significantly.

**Blue-winged Teal *Anas discors***  
Common summer and occasional winter resident; breeder.

During the late 1800s, the Blue-winged Teal was described by McIlwraith (1894) as being uncommon in the spring but occurring in large flocks in the autumn. At present, it occurs commonly on Hamilton Harbour, Cootes

Paradise, and Windermere Basin in the summer, with larger numbers at Cootes Paradise and Windermere Basin during the autumn migration. It has occurred during the winter several times. The Blue-winged Teal was confirmed breeding at Cootes Paradise during surveys for the Breeding Bird Atlas (1981-1985).

**Cinnamon Teal *Anas cyanoptera***  
Accidental vagrant.

The only record of a Cinnamon Teal was from 15 to 19 April 1973 at the West Pond of Cootes Paradise.

**Northern Shoveler *Anas clypeata***  
Common spring and autumn migrant; uncommon summer and winter resident; breeder.

At present, the Northern Shoveler occurs commonly at Cootes Paradise, Windermere Basin, and Tollgate Ponds, Hamilton Harbour, in migration, and it may overwinter at Windermere Basin. It has nested occasionally at Cootes Paradise and Hamilton Harbour since the early 1900s (Phillips 1925). It is apparently more common at present than in the past. McIlwraith described it in 1860 as being rather rare in Hamilton and in 1894 as "not common in Ontario." North recorded it regularly during the early 1900s.

**Gadwall *Anas strepera***  
Common permanent resident; breeder.

The Gadwall is more abundant currently than historically. McIlwraith (1860, 1894) described it as being rare, with only two birds being found at Hamilton Harbour in the 1800s. By the 1930s, it had become regular. At present, it occurs in large numbers during migration and as a summer and winter resident around Hamilton Harbour, Windermere Basin, and Cootes Paradise. Several pairs breed at Windermere Basin and Tollgate Ponds, Hamilton Harbour.

**Eurasian Wigeon *Anas penelope***  
Occasional vagrant.

There are several records of Eurasian Wigeon for Hamilton Harbour and Cootes Paradise. It appeared to be more frequent during the 1930s and 1940s. The only record within the last 15 years was on 7 April 1985 at Cootes Paradise (Wormington 1986).

**American Wigeon *Anas americana***  
Common spring and autumn migrant; uncommon summer and winter resident; breeder.

McIlwraith (1894) mentioned that the American Wigeon was "often seen in flocks of 50-100," but he did not give any specific locations. It has decreased in abundance since the late 1800s. At present, it occurs in greatest numbers during migration, with only a few birds sometimes remaining throughout the summer or winter. It is seen more often at Cootes Paradise than at Hamilton Harbour or Windermere Basin.

**Canvasback *Aythya valisineria***

Common spring and autumn migrant; occasional summer and common winter resident.

At present, the Canvasback occurs regularly and in large numbers at Hamilton Harbour during migration and less often at Cootes Paradise. A few individuals may occur in the summer as nonbreeders or overwinter at Windermere Basin or Hamilton Harbour until freeze-up. It is apparently more common currently than historically. McIlwraith (1860) called it accidental and later occasional and in limited numbers (McIlwraith 1894). North recorded it regularly during the early 1900s.

**Redhead *Aythya americana***

Common spring and autumn migrant; uncommon summer and winter resident.

The Redhead occurs more often on Hamilton Harbour than on Cootes Paradise and is more common in the spring. It may overwinter at Windermere Basin or on Hamilton Harbour until freeze-up. It occurs during some summers, but nesting has not been reported. Its numbers may have decreased somewhat since historical times, as McIlwraith (1894) described it as abundant during migration.

**Ring-necked Duck *Aythya collaris***

Common spring and autumn migrant; occasional summer and rare winter resident.

At present, the Ring-necked Duck occurs more regularly on Hamilton Harbour than in Windermere Basin and Cootes Paradise, and it is more abundant in spring migration. A few individuals may occur in winter or summer, but it is not known to breed. Its status has apparently not changed since historical times. McIlwraith (1894) mentioned that it is "not so common as either Lesser or Greater Scaup."

**Tufted Duck *Aythya fuligula***

Occasional vagrant.

There are five records of the Tufted Duck from Burlington Bay: one bird from 10 to 11 March 1956 at Willow Point, one male from 24 January to 8 March 1981 at the east end of Hamilton Harbour (Wormington 1985), one from 27 February to 24 April 1983 (James 1984), one from 26 December 1983 to 25 March 1984 (Wormington 1985), and one from 17 November 1984 to 7 April 1985 at Windermere Basin (Wormington 1986). The bird recorded during 1984-85 is believed to be the same individual that occurred during 1983-84.

**Greater Scaup *Aythya marila***

Abundant spring and autumn migrant; rare summer and abundant winter resident.

The status of the Greater Scaup has apparently not changed substantially since the late 1800s. McIlwraith (1894) described its occurrence as such: "In the fall they remain in Hamilton Bay till they are frozen out, and in the spring, even before the bay is open, they appear outside on Lake Ontario, and make frequent excursions inward. . . . In spring many remain in the bay till about the first of May.

. . . I have no record of their having been found breeding." At present, it overwinters in large numbers at Windermere Basin (Gebauer et al. 1992). A few nonbreeding individuals have remained there throughout the summer in recent years. It occurs less regularly on Cootes Paradise.

**Lesser Scaup *Aythya affinis***

Abundant spring and autumn migrant; uncommon summer and common winter resident; possible former breeder.

The historical status of the Lesser Scaup is similar to that of the Greater Scaup, with the exception that it is more abundant and usually remains longer in the spring. Large numbers currently overwinter at Windermere Basin, where a few nonbreeding individuals may spend the summer as well. It has been recorded less regularly on Cootes Paradise. Nash (1908) noted that they "formerly bred regularly in the marsh near Hamilton."

**Common Eider *Somateria mollissima***

Accidental vagrant.

The only reference to the Common Eider on Burlington Bay was from McIlwraith (1894), who described it as a casual visitor in winter on Lake Ontario. He obtained a bird from the Burlington Canal around 1890 and mentioned that a few birds were seen occasionally all that winter. There are no recent records of it on the bay.

**King Eider *Somateria spectabilis***

Occasional winter resident.

McIlwraith (1894) noted that the King Eider is "occasionally seen near . . . Hamilton during the winter." It has been recorded occasionally on Hamilton Harbour during the winter from the late 1800s until the 1960s. The last record for Hamilton Harbour was in 1962. It has not been recorded at Cootes Paradise or Windermere Basin.

**Harlequin Duck *Histrionicus histrionicus***

Casual winter resident.

There are only two records of the Harlequin Duck for Burlington Bay: one from 24 March to 15 April 1979 at LaSalle Marina and Willow Point and another on 10 November 1984 at the Burlington Canal. It does occur occasionally on Lake Ontario, near Hamilton.

**Oldsquaw *Clangula hyemalis***

Common winter resident.

The status of the Oldsquaw has apparently not changed much since the late 1800s. McIlwraith (1894) mentioned that it assembled in large flocks in the spring on Hamilton Harbour after spending the winter on Lake Ontario. He also wrote that "great numbers get tangled in the gill nets. Passing along the beach in winter, strings of drowned, bedraggled cowheens [Oldsquaws] may be seen dangling from the clothes lines about the fishermen's outhouses." Despite years of this form of killing, the Oldsquaw currently still occurs in substantial numbers on Hamilton Harbour. It has occurred occasionally on Cootes Paradise and Windermere Basin.

**Black Scoter *Melanitta nigra***

Occasional spring and autumn migrant.

The status of the Black Scoter has apparently not changed much since the late 1800s, when McIlwraith (1894) noted that it was often seen in the fall at the western end of Lake Ontario with other scoters. It was recorded occasionally by North in the 1930s and 1940s. It has been recorded less frequently on Cootes Paradise and Windermere Basin than on Hamilton Harbour.

**Surf Scoter *Melanitta perspicillata***

Uncommon spring and autumn migrant.

The Surf Scoter is currently more regular and more numerous than the Black Scoter and is seen most frequently on Hamilton Harbour. It has been recorded only twice on Cootes Paradise, in 1955 and 1980, and twice at Windermere Basin, in 1984 and 1986. Its status has probably not changed much since the late 1800s. McIlwraith (1894) noted that "it is never numerous, though more frequently seen than the Black Scoter; and has been observed at . . . Hamilton."

**White-winged Scoter *Melanitta fusca***

Common spring and autumn migrant; uncommon winter resident.

The White-winged Scoter occurs regularly during both spring and autumn migrations on Hamilton Harbour but much less regularly on Cootes Paradise and Windermere Basin. Its status has apparently not changed much since the late 1800s. McIlwraith (1894) described it as being a regular spring visitor. He also wrote that "soon after their arrival, they are affected by some malady which results in many of their numbers being washed up dead on the shore . . . . Whether they bring the seeds of disease with them when they come, or whether the emptying of the city sewage and refuse from the oil refineries into the bay has anything to do with their trouble, has not yet been determined." The White-winged Scoter was recorded regularly by North during the 1930s and 1940s.

**Common Goldeneye *Bucephala clangula***

Common spring and autumn migrant; occasional summer and common winter resident.

The Common Goldeneye occurs less regularly on Cootes Paradise than on Hamilton Harbour. Some individuals overwinter at Windermere Basin and Hamilton Harbour while the harbour remains unfrozen. A few nonbreeding individuals may spend the summer as well. Its status has apparently not changed much since the late 1800s, when McIlwraith (1894) considered it to be a regular visitor to the harbour during the spring and fall migrations. North recorded it regularly during the 1930s and 1940s.

**Barrow's Goldeneye *Bucephala islandica***

Casual winter resident.

McIlwraith (1894) wrote of three Barrow's Goldeneye being obtained at Hamilton during the late 1800s. There are only two records of this species in the 1900s, both at the east end of Hamilton Harbour: two males from 26 December 1980 to 25 January 1981 and one bird

from 3 January to 28 February 1982. The only record for Cootes Paradise is of one bird from 2 to 6 February 1982 at the Desjardins Canal in Dundas.

**Bufflehead *Bucephala albeola***

Common spring and autumn migrant; occasional summer and common winter resident.

The Bufflehead occurs less regularly at Cootes Paradise than on Hamilton Harbour. It overwinters at Windermere Basin and Hamilton Harbour while the harbour is ice-free, and a few nonbreeding individuals may remain throughout the summer. Its status has apparently not changed much since the late 1800s, when McIlwraith (1860) considered it to be abundant in both the spring and the fall. North recorded it regularly in the 1930s and 1940s.

**Hooded Merganser *Lophodytes cucullatus***

Common spring and autumn migrant; rare summer and uncommon winter resident.

The status of the Hooded Merganser has apparently not changed significantly since the late 1800s. McIlwraith (1894) considered it to be a regular spring migrant to Hamilton Harbour and more numerous than the other mergansers (McIlwraith 1860). North recorded it regularly during the 1930s and 1940s. At present, it occurs regularly at the west end of Hamilton Harbour, Cootes Paradise, and Windermere Basin, where it may overwinter. Although a few may summer, breeding has not been reported.

**Common Merganser *Mergus merganser***

Abundant spring and autumn migrant; uncommon summer and abundant winter resident.

The Common Merganser has apparently increased in abundance since the late 1800s, when McIlwraith (1860) wrote that "it is never plentiful being a bird of the seacoast, but it is usually seen singly, or in pairs among the flocks of waterfowl which crowd up from the south as soon as the ice begins to move in the lakes and rivers in spring." However, North recorded it regularly during the 1930s and 1940s. At present, it occurs in large numbers during the late autumn and winter at the west end of Hamilton Harbour while it is ice-free (Gebauer et al. 1992). It occurs less regularly at Cootes Paradise and rarely at Windermere Basin. The few individuals that remain for the summer are not known to nest.

**Red-breasted Merganser *Mergus serrator***

Abundant spring and autumn migrant; occasional summer and common winter resident.

The Red-breasted Merganser has apparently increased in abundance since the late 1800s, when McIlwraith (1860) considered it to be not very plentiful but more numerous than the Common Merganser (McIlwraith 1894). It was "often seen in spring and fall in flocks of 6 or 8 fishing about the mouths of the inlets on Hamilton Bay" (McIlwraith 1894). North recorded it regularly during the 1930s and 1940s. At present, it may occur in large numbers at Hamilton Harbour and usually in higher numbers during the spring migration. It will overwinter on Hamilton Harbour while it remains ice-free. It occurs less regularly on

Cootes Paradise and Windermere Basin. The few summering birds are not known to nest.

**Ruddy Duck *Oxyura jamaicensis***

Common spring and autumn migrant; rare summer and common winter resident.

The Ruddy Duck occurs in large numbers on Hamilton Harbour in migration, with fewer numbers at Cootes Paradise. Many overwinter at Windermere Basin. The few birds remaining for the summer are not known to nest. Its status has apparently not changed much since the late 1800s. McIlwraith (1894) described it as a regular migrant in spring and autumn. He also wrote: "The greatest number I ever saw at one place was in a fisherman's wagon in the Hamilton market . . . early in May. A large flock . . . , numbering about 150, had become entangled in the gill nets, and been drowned in Lake Ontario." North recorded it regularly during the 1930s and 1940s.

**Osprey *Pandion haliaetus***

Uncommon spring and autumn migrant; occasional summer resident.

The abundance of the Osprey has changed twice over the last century. McIlwraith (1860) described it as being seen in spring and fall, and McIlwraith (1866) stated that it was not observed to breed. North recorded it regularly during the 1930s and 1940s. It had become less abundant during the mid-1900s, probably because of a decrease in reproductive success as a result of toxic chemical contamination (Weir 1987). Its occurrence was occasional on Hamilton Harbour and Cootes Paradise during the 1950s and 1960s. Since the 1970s, however, it has occurred regularly at the west end of the harbour and Cootes Paradise, usually in late summer and early autumn. A few birds have on occasion remained throughout the summer, although nesting has not been reported.

**Bald Eagle *Haliaeetus leucocephalus***

Rare spring and autumn migrant; rare winter resident.

The status of the Bald Eagle has changed significantly since the early 1800s, when it was described as being abundant at Cootes Paradise around 1817 (Durand 1897). During the mid-1800s, it was a regular and common winter resident on Hamilton Harbour (McIlwraith 1861). McIlwraith (1894) wrote that "as many as twelve were said to have been in view at one time." He also wrote that "Bald Eagles are, during some winters, common at Hamilton Beach, where they pick up any dead fish and cowheens that are shaken out of fishermen's nets . . . the fishermen often capture them by placing a poisoned carcass near the edge of the ice. The bait is sure to be taken by the first eagle that comes along, and usually the bird dies before leaving the spot." North recorded it regularly during the 1930s and 1940s, and since then it has occurred rarely on Hamilton Harbour and Cootes Paradise, usually in late autumn and winter until the harbour freezes. It is not known to have bred locally.

**Yellow Rail *Coturnicops noveboracensis***

Occasional spring and autumn migrant.

The Yellow Rail may have occurred regularly at Cootes Paradise during the 1800s. In early autumn of 1874, Nash (1894a) reported that he had "shot a few Yellow Rails and saw many" at Cootes Paradise. There are only five reports during the 1900s: two birds on 21 September 1932 by North, one bird from 23 May to 29 August 1964 at Cootes Paradise, one bird on 22 May 1966 at University Landing, one bird on 17 May 1982 at Cootes Paradise, and one bird from 4 to 7 October 1984 at Cootes Paradise. The Yellow Rail was probably more abundant in the past than at present because much of the marsh habitat has been destroyed.

**Black Rail *Laterallus jamaicensis***

Hypothetical vagrant.

The Black Rail was recorded at Cootes Paradise in the late 1800s by Nash (1894b), who wrote that on "August 18, 1874, — shot 4 of these birds this evening at the end of Dundas Marsh. My dogs put them up where the rushes had been mowed . . . after this date I saw several others about the same place." There are two recent unsubstantiated reports for Cootes Paradise listed in *Wood Duck*: one bird on 25 May 1967 at Rat Island and one bird on 6 September 1980. This species was not included on the "Checklist of the Birds of Ontario" (Wormington and James 1984) but was added to the Ontario list in 1991 when a documented record was considered (Curry 1991).

**King Rail *Rallus elegans***

Occasional summer resident; former breeder.

In the mid-1800s, the King Rail was considered to be an accidental visitor to the marshes of Cootes Paradise (McIlwraith 1860). However, it was being misidentified as the Clapper Rail *Rallus longirostris* until the late 1800s (McIlwraith 1883); when it was considered to be an occasional visitor. Throughout the 1900s, it has been infrequently recorded. North recorded it in three years during the 1930s and 1940s and indicated that it nested then. Although it nested at Cootes Paradise during the 1960s, it has not been recorded there since 1981. This rail is near the northern limit of its normal breeding range in southern Ontario and has declined in recent years because of the reduction of suitable wetland habitat (McCracken and Sutherland 1987).

**Virginia Rail *Rallus limicola***

Uncommon summer resident; breeder.

The Virginia Rail has become less regular and less abundant since the early 1800s, when McIlwraith (1860) reported it as plentiful in the marshes of Hamilton Harbour. North recorded it regularly during the 1930s and 1940s and also recorded it nesting. It currently breeds at Cootes Paradise in reduced numbers in the remaining wetland areas. Its population has suffered from the loss of wetland habitat in Burlington Bay.

**Sora *Porzana carolina***

Uncommon summer resident; breeder.

The Sora has become less regular and less abundant since the late 1800s, when McIlwraith (1860) wrote that it was "extremely abundant in all the marshes during summer." North recorded it regularly during the 1930s and 1940s. However, it has been recorded only occasionally since then. Its population has suffered from the loss of wetland habitat in Burlington Bay. It currently breeds at Cootes Paradise in reduced numbers.

**Purple Gallinule *Porphyryla martinica***

Accidental vagrant.

The only record of a Purple Gallinule is of a juvenile present from 7 to 14 October 1967 at Cootes Paradise (Wormington 1987).

**Common Moorhen *Gallinula chloropus***

Uncommon summer resident; breeder.

The Common Moorhen has become less regular and less abundant since the late 1800s. McIlwraith (1894) described it as quite common and breeding in Cootes Paradise. It was recorded regularly by North during the 1930s and 1940s but since then has been recorded uncommonly on Hamilton Harbour and Cootes Paradise. At present, it breeds at Cootes Paradise, Carroll's Point on Hamilton Harbour, and Windermere Basin.

**American Coot *Fulica americana***

Common spring and autumn migrant; rare summer and winter resident; former breeder.

The American Coot was occasionally recorded as breeding on Hamilton Harbour at Tollgate Ponds and at Cootes Paradise since the 1950s but not in recent years. A few individuals may overwinter at Windermere Basin, LaSalle Marina, or the Lax Landfill, where large numbers congregate in the autumn. Its status has apparently not changed significantly since the late 1800s, when McIlwraith (1894) noted that it was a spring and autumn migratory visitor at Hamilton. North recorded it regularly during the 1930s and 1940s.

**Sandhill Crane *Grus canadensis***

Occasional spring and autumn migrant.

There have been only three reports of Sandhill Crane from Burlington Bay: one bird on 23 April 1975 flying over Cootes Paradise, one bird on 27 September 1984 at the West Pond, Cootes Paradise, and one bird from 20 to 24 October 1989 on the mudflats at Dundas Marsh. This species has increased in Ontario in recent years (Lumsden 1987).

**Black-bellied Plover *Pluvialis squatarola***

Common spring and autumn migrant; occasional summer resident.

The Black-bellied Plover is found most frequently and in largest numbers at Cootes Paradise and has been recorded at Windermere Basin only since 1988. Its status has apparently not changed much since the 1800s, when McIlwraith (1894) noted that "at Hamilton it visits the beach

in spring and fall in limited numbers." It was recorded regularly by North during the 1930s and 1940s.

**Lesser Golden-Plover *Pluvialis dominica***

Occasional autumn migrant.

The Lesser Golden-Plover is most often seen at Cootes Paradise and at Windermere Basin, where a high number of 25 individuals was seen on 24 September 1990. Predominantly an autumn migrant in this area, its status appears unchanged since the mid-1800s. McIlwraith (1894) wrote that "small flocks of immature birds are seen passing south in the fall occasionally but not regularly." It was recorded regularly by North during the 1930s and 1940s.

**Wilson's Plover *Charadrius wilsonia***

Accidental vagrant.

The only record of a Wilson's Plover for Burlington Bay is from Windermere Basin from 26 May to 2 June 1990 (Curry 1991). There is one questionable report by North on 24 August 1941. There is also a record of a bird that remained from 17 to 20 May 1966 on the Hamilton Beach strip near the Burlington Canal (McLaughlin 1990).

**Semipalmated Plover *Charadrius semipalmatus***

Common spring and autumn migrant; occasional summer resident.

The largest numbers of Semipalmated Plover have been reported from Cootes Paradise, and it has been recorded regularly at Windermere Basin since 1988. In some years, nonbreeding individuals remain during the summer. Its status appears unchanged since the mid-1800s, when McIlwraith (1860) considered it to be numerous in spring and autumn migrations.

**Piping Plover *Charadrius melodus***

Occasional spring and autumn migrant.

The Piping Plover was recorded in Burlington Bay by McIlwraith (1860), who also saw it on two occasions at Hamilton Beach (McIlwraith 1894), where it bred at one time. It was seen occasionally during most of the 1900s at Hamilton Harbour. Since 1975, however, there has been only one record at Tollgate Ponds, Hamilton Harbour, from 1 to 2 June 1986 (Wormington 1987). Piping Plover populations have drastically decreased in Ontario in recent years (Lambert 1987). Its status was designated as endangered by COSEWIC in 1985.

**Killdeer *Charadrius vociferus***

Common summer and rare winter resident; breeder.

The Killdeer is possibly more common now than in the mid-1800s, when McIlwraith (1860) determined it as being occasional and never numerous. In the 1900s, it was recorded regularly and in high numbers, especially during autumn migration at Cootes Paradise. At present, it breeds locally throughout Hamilton Harbour, Cootes Paradise, and Windermere Basin.

**American Oystercatcher *Haematopus palliatus***  
Accidental vagrant.

The only record of an American Oystercatcher for Burlington Bay was two reports of the same bird at Windermere Basin and at LaSalle Marina on 2 November 1985 (Wormington 1987).

**American Avocet *Recurvirostra americana***  
Occasional spring and autumn migrant.

McIlwraith (1894) made no reference to any records of the American Avocet. Previous to 1980, it was recorded on only three occasions: one record of two birds on 2 September 1949 at Dundas Marsh and two records of one individual on 29 September and 24 October 1962 at Strathearn Docks, Hamilton Harbour. It has been reported most frequently during the 1980s, with five records, the most recent at Windermere Basin on 28 May 1990 (Curry 1991).

**Greater Yellowlegs *Tringa melanoleuca***  
Common spring and autumn migrant; occasional summer resident.

The highest numbers of Greater Yellowlegs have been reported at Dundas Marsh and the marshes at the west end of Hamilton Harbour. Nonbreeding individuals remain throughout the summer in some years. Its status appears unchanged since the mid-1800s, when it was recorded regularly by McIlwraith (1860).

**Lesser Yellowlegs *Tringa flavipes***  
Common spring and autumn migrant; occasional summer resident.

The Lesser Yellowlegs is seen most commonly at Cootes Paradise and in recent years at Windermere Basin. Some nonbreeding individuals may summer. It appears to be more numerous recently than was reported historically. McIlwraith (1894) noted that "alone, or in company with the [Greater Yellowlegs], this species pays a passing visit to the shores of Hamilton Bay in spring and fall."

**Solitary Sandpiper *Tringa solitaria***  
Uncommon spring and autumn migrant.

The Solitary Sandpiper has been most frequently reported at Cootes Paradise in migration. It has never been recorded in large numbers. McIlwraith (1885) suggested that it bred at Hamilton along with Spotted Sandpiper and Killdeer. However, there is no evidence of it breeding anywhere in southern Ontario (Peck and James 1983). Its status appears not to have changed since the mid-1800s.

**Willet *Catoptrophorus semipalmatus***  
Occasional spring and autumn migrant.

The Willet may be encountered in small numbers, more often in autumn than in spring migration. The largest number recorded was a flock of 16 individuals at LaSalle Marina on 4 May 1987. There is a recent record at Windermere Basin from 15 to 18 July 1990. Its status probably has not changed much since the 1860s, but it has been recorded more frequently in the last 40 years.

McIlwraith (1894) noted that "very little is known of this species in Ontario. On two occasions I have seen it brought in by gunners from the marsh, but have not met with it alive." North reported this species on several occasions in the 1930s and 1940s.

**Spotted Sandpiper *Actitis macularia***  
Common summer resident; breeder.

The Spotted Sandpiper is a common breeder throughout Hamilton Harbour, Windermere Basin, and Cootes Paradise. Its status appears not to have changed significantly since the mid-1800s, when McIlwraith (1860) noted that it "breeds near all the muddy creeks around the Bay."

**Upland Sandpiper *Bartramia longicauda***  
Occasional spring and autumn migrant.

There were no confirmed records of the Upland Sandpiper for Burlington Bay until 1957. Since then, it has been reported occasionally, with the two most recent sightings on 18 August 1988 at Woodland Cemetery and 26 August 1990 (four individuals) at Windermere Basin. The small numbers reported are probably because of its preference for grassy fields and pasture. In suitable habitat in Ontario, it is of uncommon abundance. McIlwraith (1894) noted that it "is now very seldom seen in Ontario . . . though the older sportsmen tell us that in former times it was often observed in the pasture fields in spring and fall."

**Eskimo Curlew *Numenius borealis***  
Accidental vagrant.

The only mention of this species comes from McIlwraith (1894): "I once found myself, unexpectedly, in close proximity to a solitary individual on the shore of the beach near Hamilton, and secured it, but that is the only record I have of its occurrence in Ontario." Other than a few recent records, it appears that this species is very close to extinction (Gollop et al. 1986). It is nonetheless listed as endangered by COSEWIC.

**Whimbrel *Numenius phaeopus***  
Occasional spring and autumn migrant.

The status of the Whimbrel appears to be unchanged since the mid-1800s. It has been seen most frequently at Hamilton Harbour and Cootes Paradise. The only record at Windermere Basin is from 18 July to 12 August 1990.

**Long-billed Curlew *Numenius americanus***  
Hypothetical vagrant.

McIlwraith (1860) found the Long-billed Curlew to be "accidental on the lakeshore." In 1894, he noted that it was "occasionally seen along the shores of the lakes in Ontario as an irregular visitor, not in large numbers. . . . Among the veteran sportsmen near Hamilton it is spoken of as one of the kinds which have been scared away by the railroads." There are no confirmed records for Hamilton Harbour, Windermere Basin, or Cootes Paradise. Only one accepted record by the Ontario Bird Records Committee is listed for Ontario (Wormington 1987).

**Hudsonian Godwit *Limosa haemastica***  
Uncommon autumn and hypothetical spring migrant.

The Hudsonian Godwit has been recorded regularly since the 1950s. Previous to that, it was seldom recorded and considered rather rare by McIlwraith (1860). The only mention of a spring record comes from McIlwraith (1894): "I have seen it in the spring . . . on the shores of Hamilton Bay, where the specimen in my collection was obtained."

**Marbled Godwit *Limosa fedoa***  
Occasional autumn migrant.

The Marbled Godwit has occurred most frequently at Cootes Paradise and in some years at Hamilton Harbour. There is only one record at Windermere Basin, from 7 to 8 September 1985. Its status appears unchanged since the mid-1800s, when it was considered to be occasional and not numerous by McIlwraith (1860). McIlwraith (1894) also mentioned that stragglers were seen occasionally on the shores of Lake Ontario. It was recorded by North on three occasions during the 1930s and 1940s.

**Ruddy Turnstone *Arenaria interpres***  
Common spring and autumn migrant; occasional summer resident.

McIlwraith (1894) noted that "at Hamilton Beach it is a regular visitor in spring and fall, but there are seldom more than two to three found together." North recorded the Ruddy Turnstone regularly during the 1930s and 1940s. It has been most frequently seen at Hamilton Harbour and is possibly more abundant now than in the late 1800s. Nonbreeding individuals remain through the summer in some years.

**Red Knot *Calidris canutus***  
Uncommon spring and autumn migrant; occasional summer resident.

Small numbers of Red Knot are observed each spring and autumn at Hamilton Harbour, Cootes Paradise, and Windermere Basin. Nonbreeding individuals remain through the summer in some years. Historically, it was not recorded as regularly as at present. McIlwraith (1894) wrote: "The specimen in my collection I killed many years ago on the muddy shores of one of the inlets of the Bay."

**Sanderling *Calidris alba***  
Common spring and autumn migrant; uncommon summer resident.

The Sanderling is recorded regularly at Hamilton Harbour, Cootes Paradise, and Windermere Basin. Some nonbreeding individuals remain through the summer. Historically, it was considered to be quite common at Hamilton Beach (McIlwraith 1860). As well, McIlwraith (1894) noted that "in spring, their visits to Hamilton Bay are uncertain and of short duration, but on the return trip they appear about the end of August and are found all through the fall." Its status does not appear to have changed.

**Semipalmated Sandpiper *Calidris pusilla***  
Common spring and autumn migrant.

The Semipalmated Sandpiper has been recorded in greatest abundance at Cootes Paradise, but it is also commonly found at Hamilton Harbour and Windermere Basin. Its status appears to be unchanged since the mid-1800s. McIlwraith (1860) considered it to be "very abundant in spring and fall."

**Western Sandpiper *Calidris mauri***  
Rare autumn migrant.

McIlwraith (1894) made no reference to the Western Sandpiper, which is difficult to distinguish from other calidrids. Possibly more common currently than historically, it has been reported regularly at Cootes Paradise and Hamilton Harbour since the 1930s and 1940s. It was first recorded at Windermere Basin on 5 August 1988. An increased number of observers with improved skills and better optical equipment may reflect the more regular sightings of the Western Sandpiper in recent years.

**Least Sandpiper *Calidris minutilla***  
Common spring and autumn migrant; occasional summer resident.

The Least Sandpiper is found in greatest numbers at Cootes Paradise, but also commonly at Hamilton Harbour and Windermere Basin during migration. Nonbreeding individuals remain through the summer in some years. Its status has not changed significantly since the mid-1800s. At that time, McIlwraith (1894) noted that it was a common species in southern Ontario and found in all suitable places in the spring and fall.

**White-rumped Sandpiper *Calidris fuscicollis***  
Rare spring and uncommon autumn migrant.

Generally, the White-rumped Sandpiper is found uncommonly in the fall, with most birds being seen at Cootes Paradise. An unprecedented influx of White-rumped Sandpipers occurred in the last week of October 1989, with 65 individuals reported on 27 October and 35 on 28 October. There was not much mention of this species prior to 1930, with the exception of McIlwraith (1894), who noted that "a few are usually seen associated with others during the season of migration." North reported it regularly during the 1930s and 1940s.

**Baird's Sandpiper *Calidris bairdii***  
Occasional spring and uncommon autumn migrant.

The Baird's Sandpiper is possibly more common now than historically. It has been recorded regularly at Hamilton Harbour, Cootes Paradise, and Windermere Basin since 1985. The most recent spring record is from Windermere Basin on 3 June 1989. McIlwraith (1885) mentioned that a bird he shot on 25 August 1885 at Hamilton Bay was the only Ontario record of which he was aware.

**Pectoral Sandpiper *Calidris melanotos***  
Common spring and autumn migrant.

At present, the Pectoral Sandpiper is most numerous during the autumn migration and at Cootes Paradise and Windermere Basin. It is rather uncommon and occasional at Hamilton Harbour. However, it appears to have become more regular in this century. McIlwraith (1894) noted that "near Hamilton they are not of regular occurrence though they occasionally appear in the fall in goodly numbers. . . . here they frequent the grassy meadows and muddy inlets near the Bay."

**Sharp-tailed Sandpiper *Calidris acuminata***  
Accidental vagrant.

The only record of a Sharp-tailed Sandpiper is of an immature bird at Dundas Marsh, Cootes Paradise, from 19 November to 5 December 1975 (Curry 1976; Wormington 1986). The normal breeding range of this species is northern Siberia. This record was one of only a few for North America away from the Pacific coast.

**Purple Sandpiper *Calidris maritima***  
Occasional autumn migrant.

McIlwraith (1894) noted a few early records of the Purple Sandpiper: one on "31 October 1885 when one individual was killed at Hamilton Beach by Dr. K.C. McIlwraith. . . . since then, one or two more specimens have been found at Hamilton." Five more recent dates are 5 September 1948, 31 May to 1 June 1949, 22 December 1952, 26 September 1962, and 5 November 1983 at Hamilton Harbour. Purple Sandpipers are generally more frequently recorded along the Lake Ontario shoreline.

**Dunlin *Calidris alpina***  
Abundant spring and autumn migrant; occasional summer resident.

The Dunlin is most abundant at Cootes Paradise, where flocks of 1500 and 2000 individuals have been recorded in migration. In some years, nonbreeding individuals remain through the summer. It appears to have been an abundant migrant since the mid-1800s, when McIlwraith (1894) noted that it was a "regular visitor in Ontario in the season of migration, appearing on the shores of Lake Ontario in large flocks."

**Curlew Sandpiper *Calidris ferruginea***  
Casual vagrant.

The Curlew Sandpiper was mentioned by McIlwraith (1860) as occasional and not numerous. There are only two recent records: one at Dundas Marsh, Cootes Paradise, on 13 October 1954 and another in the Hamilton area on 2 October 1959 (Andrie and Axtell 1966). It may have been more abundant historically than currently.

**Stilt Sandpiper *Calidris himantopus***  
Occasional spring and common autumn migrant.

The Stilt Sandpiper is seen regularly each autumn in good numbers at Hamilton Harbour, Cootes Paradise, and Windermere Basin. It was recorded regularly by McIlwraith

(1860) and by North during the 1930s and 1940s. It is possibly more common now than historically.

**Buff-breasted Sandpiper *Tryngites subruficollis***  
Occasional autumn migrant.

The Buff-breasted Sandpiper has never been seen in large numbers either historically or recently. McIlwraith (1894) wrote that "in the early fall I have several times met with these interesting birds running among the short grass on the sandy knolls, north of the canal at the beach, but have not seen them elsewhere." North recorded it on four occasions during the 1940s. It has been recorded occasionally at Hamilton Harbour and Cootes Paradise in recent years. The only records for Windermere Basin were on 2 September 1989 and from 25 August to 9 September 1990.

**Ruff *Philomachus pugnax***  
Occasional vagrant.

The first Ruff was recorded in the Hamilton area from 30 June to 3 July 1936 by North. Since then, it has been seen only occasionally at Hamilton Harbour, Cootes Paradise, and Windermere Basin. An unprecedented number of different birds (two females, three males) were recorded at Windermere Basin between 25 June and 13 July 1990.

**Short-billed Dowitcher *Limnodromus griseus***  
Common spring and autumn migrant; occasional summer resident.

The Short-billed Dowitcher is found commonly at Hamilton Harbour, Cootes Paradise, and Windermere Basin in migration. In some years, nonbreeding individuals remain through the summer. It appears to be significantly more common now than historically. McIlwraith (1860) made no mention of it. Later, however, McIlwraith (1894) noted that "the specimen in my collection is the only one I have found near Hamilton." North recorded it as regular but uncommon during the 1930s and 1940s. As the two dowitcher species were considered as a single species during the early 1900s (Jaramillo et al. 1991), there is some uncertainty regarding the historical status of the dowitchers.

**Long-billed Dowitcher *Limnodromus scolopaceus***  
Rare autumn migrant.

McIlwraith (1894) did not mention the Long-billed Dowitcher. Fleming (1906) noted that "there is a full plumaged bird from Hamilton . . . , August 21, 1891." The first documented record for Hamilton Harbour was of up to two individuals reported by North between 24 September and 22 October 1939. In recent years, it has been reported more frequently, possibly because of greater numbers of observers with improved skills and equipment. Most of these reports are from Cootes Paradise and Windermere Basin. Given that McIlwraith made little mention of either species of dowitcher, it appears that dowitchers in general are more abundant currently than historically.

**Common Snipe *Gallinago gallinago***  
Common spring and autumn migrant; occasional summer resident; possible former breeder.

The Common Snipe has been seen regularly at Hamilton Harbour and Cootes Paradise. It appears to have decreased in abundance since the mid-1800s, when McIlwraith (1860) considered it to be abundant. North also recorded it commonly during the 1930s and 1940s. The Common Snipe breeds locally away from Burlington Bay and previously may have bred in the bay area at a time when more wetland habitat was available.

**American Woodcock *Scolopax minor***  
Rare summer resident.

The status of the American Woodcock appears to be unchanged since the late 1800s. It was recorded frequently by North during the 1930s and 1940s in the Hamilton area, most likely in areas away from Burlington Bay. Its preference for deciduous woodland habitat reflects its rare status at Hamilton Harbour and Cootes Paradise; however, it is a common breeder locally away from the bay.

**Wilson's Phalarope *Phalaropus tricolor***  
Uncommon summer resident.

The Wilson's Phalarope was mentioned by McIlwraith (1894) as being occasionally seen as a migrant visitor. It was seen occasionally and in small numbers by North during the 1930s and 1940s. In recent years, it has been seen more regularly in all areas of Hamilton Harbour, but it is not known to breed.

**Red-necked Phalarope *Phalaropus lobatus***  
Casual spring and rare autumn migrant.

McIlwraith (1860) noted that the "hyperborean lobefoot," as the Red-necked Phalarope was called then, was occasionally seen in small ponds near Burlington Bay. McIlwraith (1894) mentioned that "the two in my collection were found in the fall, on one of the inlets of Hamilton Bay." It was recorded only occasionally by North during the 1930s and 1940s. In the 1980s, it was seen regularly, with most records from Cootes Paradise. There are at least two spring records: one on 11-18 June 1977 at the east end of the bay and one at Windermere Basin between 31 May and 6 June 1990.

**Red Phalarope *Phalaropus fulicaria***  
Occasional autumn migrant.

The Red Phalarope was never very regular in autumn migration. It has been seen occasionally at Hamilton Harbour and only once at Cootes Paradise at the Dundas Hydro Station on 16 September 1954, and it has not been recorded at Windermere Basin. It is generally more frequently recorded along Hamilton Beach on Lake Ontario. The earliest mention of this species in the Hamilton area was by McIlwraith (1894): "On the 17th November 1882, Mr. Brooks of Milton shot a single bird [Red Phalarope], which he found swimming alone on Hamilton Bay, a little out from Dyne's place."

**Pomarine Jaeger *Stercorarius pomarinus***  
Occasional autumn migrant.

The four records of Pomarine Jaeger are of single individuals at Hamilton Harbour on 24 October 1954 and at Cootes Paradise on 2 November 1935, 18 August 1968, and 22 September 1979. It is generally most often seen at Hamilton Beach, Lake Ontario. McIlwraith (1894) observed that it is "occasionally seen in company with the large gulls, which spend a short time during the fall around the west end of Lake Ontario, following the fishing boats and picking up the loose fish that are shaken out of the nets."

**Parasitic Jaeger *Stercorarius parasiticus***  
Occasional autumn migrant.

There is no mention of the Parasitic Jaeger historically. It was seen occasionally by North during the 1930s and 1940s in the Hamilton area. North's observations are most likely from Hamilton Beach, where most Parasitic Jaegers are recorded. On Burlington Bay, it has been seen most regularly at Hamilton Harbour, on only three occasions at Cootes Paradise, and never at Windermere Basin. It appears to be more regular at present than in the past.

**Long-tailed Jaeger *Stercorarius longicaudus***  
Casual autumn migrant.

There are only five records of the Long-tailed Jaeger for Burlington Bay. There is one record from Hamilton Harbour of three adults flying west over the High Level Bridge on 20 September 1970. The three records for Cootes Paradise are of one adult on 18 August 1968, one on 20 June 1969, and one adult flying over Dundas Hydro Station on 30 September 1970. One juvenile was recorded by North on 7 September 1934.

**Laughing Gull *Larus atricilla***  
Occasional vagrant.

Most records of the Laughing Gull are from Hamilton Harbour. There are only two records from Cootes Paradise. It has been seen much more regularly in recent years than in the past, with the most recent record being an adult at LaSalle Marina on 1 May 1989 (Curry 1991). It was not mentioned by McIlwraith (1894) but was seen regularly by North during the 1930s in the Hamilton area.

**Franklin's Gull *Larus pipixcan***  
Occasional spring and autumn migrant.

The Franklin's Gull has been recorded much more frequently in recent years, although only occasionally at Hamilton Harbour and Cootes Paradise. It has not been recorded at Windermere Basin. McIlwraith (1894) noted two records in the Hamilton area: "He (John Dyne) told me of a Franklin's Gull . . . which he had sometimes seen in the fall, and finally in October 1865 he brought me one. . . . subsequently I shot another in April." It was recorded in four years by North during the 1930s and 1940s.

**Little Gull *Larus minutus***

Occasional spring and autumn migrant; occasional summer resident.

The first record of a Little Gull was of an adult on 3 July 1938 by North at the foot of Depew Street on Hamilton Harbour. One week later North saw a juvenile bird at the same location. Since then, the Little Gull has been seen more frequently, especially at Hamilton Harbour and Cootes Paradise. It was first recorded at Windermere Basin on 26 May 1990. Individuals observed during the summer are nonbreeding.

**Common Black-headed Gull *Larus ridibundus***

Occasional vagrant.

The Common Black-headed Gull was first recorded by North on 8 August 1935 in the Hamilton area. In 1964, it was recorded at Cootes Paradise on 14 April and at Tollgate Ponds, Hamilton Harbour, on 24 April. Since then, it has been seen occasionally, with the most recent record of a first-summer bird at Dundas Marsh on 16 April 1989. As the breeding population continues to expand on the east coast, greater numbers are expected at Burlington Bay.

**Bonaparte's Gull *Larus philadelphia***

Abundant spring and autumn migrant; uncommon summer and occasional winter resident.

The Bonaparte's Gull is seen commonly at Hamilton Harbour and Cootes Paradise and uncommonly at Windermere Basin. Summering individuals do not breed. Its status appears to be unchanged since the mid-1800s. McIlwraith (1860) noted it as being common during the fall. McIlwraith (1894) later noted that in the middle of May it arrived in small flocks, remained for a week or two around Hamilton Bay, and returned in the fall, staying until the weather got colder.

**Mew Gull *Larus canus***

Accidental vagrant.

There have been only two records of Mew Gull for Burlington Bay. North reported one from Woodland Cemetery on 4 December 1949. The other record of one adult was on 22 July 1988 at Cootes Paradise (Curry 1988; Wormington 1989).

**Ring-billed Gull *Larus delawarensis***

Abundant permanent resident; breeder.

McIlwraith (1894) noted that the Ring-billed Gull assembled on the edge of ice in Hamilton Bay near the Burlington Canal. North recorded it in abundance during the 1930s and 1940s. It has been much more abundant in recent years with the increase in the breeding colony at Tollgate Ponds, now numbered at over 37 000 nesting pairs. Smaller numbers breed at Windermere Basin. Its breeding history in Hamilton Bay is summarized by Dobos et al. (1988).

**Herring Gull *Larus argentatus***

Abundant permanent resident; breeder.

The Herring Gull currently breeds at Hamilton Harbour and Windermere Basin. Much larger concentrations

are observed in winter than in summer. Hundreds of Herring Gulls can be seen along the edge of the ice in Hamilton Harbour. Its winter status appears unchanged since the 1800s. McIlwraith (1894) reported that in southern Ontario it is seen only in winter, arriving at the end of October and leaving in early April. Bastin (1947) noted that several thousand birds arrived in winter but left for nesting areas in spring, with the few that remained throughout the summer probably being immature or nonbreeding birds. Resident summer populations have increased since the mid-1900s.

**Thayer's Gull *Larus thayeri***

Occasional winter resident.

The Thayer's Gull was recorded only occasionally by North during the 1930s at Hamilton Harbour. It has been seen more frequently in the 1970s and 1980s, with most recorded at Hamilton Harbour. There are no records for Windermere Basin. The Thayer's Gull was considered as a distinct species only in the early 1930s, and it is currently considered by many to be a subspecies of the Iceland Gull (e.g., Godfrey 1986).

**Iceland Gull *Larus glaucoideus***

Uncommon winter resident.

The Iceland Gull was recorded occasionally by North during the 1930s and 1940s. Since then, there have been many records, and it appears to be more common at present than in historical times, occurring at Hamilton Harbour, Windermere Basin, and Cootes Paradise in winter.

**Lesser Black-backed Gull *Larus fuscus***

Rare winter resident.

The Lesser Black-backed Gull was first recorded at Windermere Basin on 21 November 1971. Since the second record on 25–28 October 1978 at Dundas Marsh, it has been recorded almost every year. There are several records from Hamilton Harbour and some from Windermere Basin as well.

**Glaucous Gull *Larus hyperboreus***

Uncommon winter resident.

The Glaucous Gull has been recorded regularly at Hamilton Harbour and Cootes Paradise. The only record at Windermere Basin is from 6 to 7 May 1987. Its status appears to be unchanged since the late 1800s, when McIlwraith (1894) noted that in winter it could be seen roaming around the shores of Lake Ontario. During the 1930s and 1940s, North recorded it regularly in the Hamilton area. A high count of 70 birds at the west end of Hamilton Harbour was made on 26 December 1990.

**Great Black-backed Gull *Larus marinus***

Uncommon summer and common winter resident.

McIlwraith (1894) noted that the Great Black-backed Gull could be seen roaming around the western end of Lake Ontario until the end of March. It has been seen regularly since that time but more commonly in recent years at Hamilton Harbour, Windermere Basin, and Cootes Paradise (Baillie 1957). It is not known to breed.

**Black-legged Kittiwake *Rissa tridactyla***

Occasional autumn migrant.

The Black-legged Kittiwake is possibly less common in recent years than in historical times. McIlwraith (1883) indicated that it was quite common around Burlington Bay for a few weeks every fall. North recorded it on only two occasions during the 1930s and 1940s. Since then, it has been recorded occasionally at Hamilton Harbour and Cootes Paradise but not at Windermere Basin. It appears more regularly on Lake Ontario at Hamilton Beach.

**Sabine's Gull *Xema sabini***

Occasional autumn migrant.

The Sabine's Gull was recorded in the Hamilton area on 4 October 1934 and 27 August 1944 by North. There are only two records for Hamilton Harbour: one of two individuals on 14 September 1952 and one of an immature at the High Level Bridge on 19 October 1969. The only two records for Cootes Paradise include one on 10 September 1960 and one of an immature on 22 September 1983. There are no records for Windermere Basin.

**Ivory Gull *Pagophila eburnea***

Casual vagrant.

The Ivory Gull was first recorded in 1890 by McIlwraith (1894). There is one record for Hamilton Harbour from 31 December 1952 to 1 January 1953. The only record for Cootes Paradise is from 15 to 20 April 1962. There are no records for Windermere Basin.

**Caspian Tern *Sterna caspia***

Common summer resident; breeder.

McIlwraith (1886) noted that the Caspian Tern visited Hamilton Bay in small numbers in both spring and fall. North recorded it commonly in the 1930s and 1940s. This species began breeding at Tollgate Ponds, Hamilton Harbour, in 1985 (Dobos et al. 1988). It is seen commonly in summer at Hamilton Harbour, Windermere Basin, and Cootes Paradise. It is much more common locally at present than during the late 1800s and early 1900s.

**Sandwich Tern *Sterna sandvicensis***

Accidental vagrant.

The only record of a Sandwich Tern is from Tollgate Ponds, Hamilton Harbour, on 24 April 1988. This record was the first for Ontario since 1881 (Wormington and Curry 1990).

**Roseate Tern *Sterna dougallii***

Hypothetical vagrant.

The only record of a Roseate Tern is by North in the Hamilton area on 13 May 1942. He also had a questionable sighting of one on 23 September 1931. This species is listed as hypothetical in Ontario (James 1991).

**Common Tern *Sterna hirundo***

Abundant summer resident; breeder.

The Common Tern was reported by McIlwraith (1894) only as a migrant in the spring and the fall, whereas North reported it commonly during the 1930s and 1940s. It first bred at Hamilton Harbour in 1946 (Dobos et al. 1988). In 1990, its breeding population consisted of approximately 1000 pairs from colonies at Windermere Basin and Hamilton Harbour (Canadian Wildlife Service, unpubl. data).

**Arctic Tern *Sterna paradisaea***

Accidental vagrant.

The only record of an Arctic Tern for Burlington Bay is at Windermere Basin on 27 May 1990. McIlwraith (1894) noted that "considering the range of this species it is likely that it is here with the others, but among the few I have killed I have not found an Arctic."

**Forster's Tern *Sterna forsteri***

Uncommon spring and autumn migrant; occasional summer resident.

The Forster's Tern is seen regularly at Hamilton Harbour and Cootes Paradise during migration. Birds observed in summer are nonbreeding individuals. It was first recorded at Windermere Basin on 26 May 1990. McIlwraith (1894) reported it as a migrant in spring and fall. It was seen regularly but in small numbers by North during the 1930s and 1940s. Its status appears to be unchanged.

**Least Tern *Sterna antillarum***

Hypothetical vagrant.

The only mention of the Least Tern comes from McIlwraith (1894): "I shot an immature specimen as it rose from a piece of driftwood in Hamilton Bay, during a southerly blow of several days' duration, and that is the only time I have seen the species here." However, no specimen survives, and only one record from Ontario (at Niagara) is considered valid (James 1991).

**Black Tern *Chlidonias niger***

Uncommon summer resident; breeder.

The Black Tern is a very rare breeder, currently nesting only near the mouth of Redhill Creek. It has been reported from Hamilton Harbour, Cootes Paradise, and Windermere Basin. It is probably less abundant in recent years than in historical times, as a result of habitat destruction. McIlwraith (1894) reported it as a regular migrant in spring and fall. It formerly bred at Cootes Paradise up to 1978.

**Common Murre *Uria aalge***

Hypothetical vagrant.

The only mention of the Common Murre comes from McIlwraith (1860), who claimed it was sometimes found on Burlington Bay after a storm. It has not been recorded elsewhere in the province, and the species is not mentioned by James (1991).

**Thick-billed Murre *Uria lomvia***  
Casual vagrant.

McIlwraith (1894) mentioned five records of the Thick-billed Murre. Of these, he mentioned three being found on Hamilton Bay in an exhausted state. Wintle (1895) and Brown (1894) described in detail the unusually high numbers of this species in 1893 and 1894 on the Great Lakes. North recorded this species in eight different years in the 1930s and 1940s. The most recent record was of one adult and one juvenile on 21 December 1952 in the Hamilton area (North 1982). It seems likely that this species was more common historically than at present (Mowat 1984), as it has not been seen for more than 35 years in Ontario (James 1991).

**Razorbill *Alca torda***  
Casual vagrant.

The two most recent records of the Razorbill were of one on 19 June 1957 at Dundas Marsh and one on 31 March 1972 at the "Bay off Hamilton Beach." McIlwraith (1894) mentioned a specimen "shot off the beach at the west end of Lake Ontario in November 1891."

**Black Guillemot *Cephus grylle***  
Hypothetical vagrant.

The only mention of this species is by McIlwraith (1860), who considered it accidental after easterly storms. McIlwraith (1894) noted that there was an old record of one being found in Hamilton Bay in a state of exhaustion about 25 years before the date of writing. James (1991) stated that there have been no records of this vagrant in southern Ontario since 1954.

**Belted Kingfisher *Ceryle alcyon***  
Uncommon permanent resident; breeder.

The Belted Kingfisher was perhaps more common in the mid-1800s than at present. McIlwraith (1860) noted that it was common along the shores of Burlington Bay. It was seen regularly by North during the 1930s and 1940s. It has been recorded at Hamilton Harbour, Cootes Paradise, and Windermere Basin.

**Changes in status of individual species**

Of the 151 species documented from Burlington Bay, 50 appear to have increased in regularity and abundance since the mid-1800s (Table 4; Appendix 2). However, certain species may have experienced marked declines prior to the mid-1800s because of shooting (Mowat 1984). Early references indicate that water bird populations were much lower by the end of the 19th century than earlier. A quote by McIlwraith (1861) indicates this:

The older settlers tell us that when Hamilton was but a village, and the farm houses but thinly set along the lake shore, the flocks of waterfowl, which frequented Burlington Bay, were so great as frequently to darken the light of the sun by day, and make the night hideous with their discordant cries. . . . there is no reasonable doubt, that

Table 4  
Summary of change in status of different water bird groups of Burlington Bay (numbers refer to species in group)

Water bird group	Increase	Decrease	No change	Total
Loons and grebes	0	2	7	9
Pelicans	0	0	2	2
Cormorants	1	0	1	2
Hérons	6	2	4	12
Waterfowl	15	3	21	39
Raptors	0	2	0	2
Rails	0	5	3	8
Cranes	1	0	0	1
Shorebirds	14	4	24	42
Gulls and jaegers	11	1	7	19
Terns	2	1	5	8
Alcids	0	1	3	4
Kingfisher	0	1	0	1
Other	0	0	2	2
Total	50	22	79	151

Burlington Bay has long been a resting place for the vast flocks of ducks, geese and swans which periodically pass to and from their great nursery at the north, of which of late years occur at more uncertain periods, and in much reduced numbers . . . we have on one side of the Bay an establishment for making gunpowder, and on the other a city of 25,000 inhabitants, among whom are a fair proportion of amateur sportsmen.

Twenty-two species appear to have decreased since the mid-1800s (Appendix 3). Some shorebird and waterfowl species and the families Ardeidae and Laridae have increased overall. Other families, such as the Rallidae, have decreased drastically (Table 4).

**Increased status**

With the exception of the Ring-billed Gull, the increase in Double-crested Cormorant populations has been more rapid than that of any other species in Burlington Bay (Weseloh 1987; Dobos et al. 1988). Increased population levels are reported in most locations in North America (Tate 1986). Apparently, biomagnification of organochlorines in fish and eventually cormorants was the biggest cause of their decline in the 1950s to 1970s (Weseloh et al. 1983). The recent increase in population is a response to the decrease of these contaminants in the food chain (Scharf and Schugart 1981; Ludwig 1985; Price and Weseloh 1986), the availability of suitable breeding habitat at Tollgate Ponds (Dobos et al. 1988), and the increase of forage fish (Holmes and Whillans 1984).

Five species of herons that have increased in Burlington Bay in recent years are Great Egret, Snowy Egret, Cattle Egret, Green-backed Heron, and Black-crowned Night-Heron. The apparent northward expansion of the breeding ranges of Great, Snowy, and Cattle egrets may be a result of their wandering tendency (Peck 1987) and their (Great and Snowy egrets) recovery from the effects of shooting and the bird plume trade in a previous era (Mowat 1984; Godfrey 1986). As well, all of the above species, with the exception of the Green-backed Heron, are often associated with Double-crested Cormorants, which have increased rapidly in the last few years.

The increase in waterfowl species in general (Appendix 2) follows an initial decline in the late 1800s and

early 1900s, likely due to excessive hunting. Since the establishment of the Migratory Birds Convention Act in 1916, waterfowl populations have rebounded but are probably still substantially below pre-record population levels. The increase in occurrence of some waterfowl species such as Mallard, Northern Shoveler, and Gadwall in Burlington Bay is a result of these species expanding their breeding ranges (Bellrose 1976; Goodwin et al. 1977; Ross et al. 1984; Sandilands 1987). The rapid increase of Mallard can be explained in part by its replacing the closely related American Black Duck (Cringan 1960; Collins 1974; Johnsgard and DiSilvestro 1976), whose North American population is on the decline (Alison 1976; Bellrose 1976; Goodwin et al. 1977; Dennis 1987). Interbreeding between Mallards and American Black Duck is potentially reducing the viability of the American Black Duck population (Heusmann 1974; Tate 1981, 1986; Ankney et al. 1987). Some authors suggest that habitat loss and overhunting may play a significant role in the North American decline of American Black Duck populations (Conroy et al. 1987). However, at least locally, the American Black Duck appears to be more abundant at present than in the late 1800s. Mallard populations also have benefited from the hundreds of thousands of hand-reared Mallards released to the wild (Collins 1974; Sandilands 1987).

A species that has benefited from introductions is the Mute Swan, now common in urbanized areas (Lumsden 1981). The Mute Swan has gradually increased in abundance since it first began breeding in the wild in Ontario in 1958 (Peck 1966). Through reintroductions and stocking, the Canada Goose has increased from a population of 50 000 birds in 1950 to well over a million after 1985 in Ontario (Lumsden 1987). Being a grazer, the Canada Goose has responded to the extensive food resources of golf courses and green parks along the shores of Burlington Bay (Gebauer et al. 1992).

The increase in Wood Duck populations in Ontario in the last 40 years reflects an increasing continental population. Factors affecting this increase include improved breeding habitat because of the recovery of beaver populations, restricted hunting, and the placing of nesting boxes in suitable habitat (Beard 1953; Cringan 1971; Collins 1974; Bellrose 1976; Biro 1987).

The overall increase in occurrence in Burlington Bay of Tundra Swan, Snow Goose, and Brant is seemingly in response to the tighter controls on hunting in the latter half of this century. Recovery began with protection provided by the Migratory Birds Convention Act of 1916 (Lumsden 1987). In addition, Snow Geese have benefited from agricultural development on their spring staging grounds and on their wintering grounds on the coastal prairies of Louisiana and Texas (Lumsden 1987). Stabilization of the Brant population is also partly due to the increased abundance of eelgrass, its principal food (Bellrose 1976).

Many shorebird species have been reported with increasing frequency at Burlington Bay in recent years. Shorebird populations have increased in North America since the creation of the Migratory Birds Convention Act in 1916, which helped put an end to the massive market shooting of shorebirds (Mowat 1984). The creation of extensive mudflats in Cootes Paradise and Windermere Basin is a more recent phenomenon, as a result of increased erosion and sedimentation in the Burlington Bay watershed from urbanization and agricultural practices (Remedial

Action Plan for Hamilton Harbour 1989). Historically, shorebird habitat was largely in marshes after vegetation die-offs resulting from water level fluctuations.

For some shorebird species, their apparent increase in status is likely due to the increased numbers of proficient observers with better optical equipment and reference books. Species that fall into this category include Western Sandpiper, Long-billed Dowitcher, and Baird's Sandpiper. Shorebird species whose breeding populations have expanded in Ontario include Killdeer and Wilson's Phalarope (Cadman 1987; Nol 1987). However, Wilson's Phalarope does not breed at Burlington Bay.

Of all water bird groups, the gulls and terns appear to have fared the best in Hamilton Harbour, with the rapid industrialization and population growth around Burlington Bay. For a species such as the Ring-billed Gull, the presence of garbage dumps, agricultural fields, and a plentiful new food source in the form of alewives *Alosa pseudoharengus* (Scott and Crossman 1973; Holmes and Whillans 1984) meant a readily available food supply during the breeding season (Ludwig 1974; Blokpoel and Tessier 1986). In addition, the creation of island-like habitat, such as the dikes around Tollgate Ponds, provided suitable breeding habitat (Dobos et al. 1988). The increase in numbers of Great Black-backed Gull is a reflection of the rapid expansion of their breeding population on the east coast (Anghern et al. 1979). Little and Common Black-headed gulls have increased since establishing breeding populations in Canada and the United States (Scott 1963; McRae 1984; Montevecchi et al. 1987). An increased number of sightings is expected as breeding populations expand.

Caspian Tern populations have increased gradually in the Great Lakes area (Kress et al. 1983; Blokpoel and Harfenist 1986). The increase in Common Tern abundance in Burlington Bay may be a temporary flux in the local population as breeding birds are attracted to the very suitable breeding habitat at Windermere Basin. The overall population of this species has decreased in Ontario, mostly because of habitat loss and disturbance through human development, but also because of the large numbers of early-nesting Ring-billed Gulls that compete for limited nesting space (Courtney and Blokpoel 1983; Kress et al. 1983; Blokpoel and Harfenist 1986). Other factors that have limited reproductive success have been food availability, pollution, encroachment of vegetation on breeding sites, predation, and direct human disturbance (Blokpoel and Harfenist 1986).

**Decreased status**

Two species of the heron family that have gradually decreased in abundance are American and Least bitterns (Tate 1981, 1986). Both common breeders at one time, their numbers decreased with the elimination of most of the wetland and cattail marsh in Burlington Bay (Bucknell 1987; Woodliffe 1987; Sandilands and Campbell 1988).

Waterfowl species that have decreased in abundance are Common Loon and American and Eurasian wigeons. The decrease in numbers of Common Loon is likely a reflection of the Canada-wide decrease in their population as a result of disturbance on breeding lakes by powerboaters and anglers, as well as the reduced suitability of many of their breeding lakes in Ontario and Quebec because of acid precipitation (Tate 1981; Heimberger et al. 1983; McNicol

et al. 1987a, 1987b; Alvo et al. 1988; DesGranges and Houde 1989; Wayland and McNicol 1990). It is not clear why wigeon numbers appear to be reduced at present (Bellrose 1976); however, interspecific competition with Canada Goose, which has increased rapidly in response to reintroductions and development of artificial grazing areas (e.g., golf courses and parks), may be a factor.

The Osprey and Bald Eagle are currently at reduced population levels. The factors most likely responsible are persecution by hunters in the 1800s and early 1900s, the detrimental effects of DDT and DDE on breeding success of these fish-eating species, and habitat destruction (Henny et al. 1977; Evans 1982). With the banning of DDT over 20 years ago, populations of both species are on the increase (Spitzer et al. 1978; Evans 1982; Grier 1982; Noble and Elliot 1990), which has been evidenced by more regular sightings in the Hamilton area in the last few years. There is some concern that the increase in acidification of lakes in northern Ontario may be affecting Osprey populations (Eriksson 1987).

Of the nine species of the family Rallidae recorded from Burlington Bay, the five that have decreased in abundance are Yellow Rail, King Rail, Virginia Rail, Sora, and Common Moorhen. The decrease in these species can be linked directly to the destruction of suitable breeding habitat in Burlington Bay (McCracken 1987; McCracken and Sutherland 1987). As with the American and Least bitterns, the destruction of cattail marsh and marshy areas meant the destruction of breeding habitat (Mayfield 1989).

Of the four shorebird species that have decreased in abundance in Burlington Bay, the Piping Plover has declined because of destruction and disturbance of its breeding habitat on sandy shores of lakes or oceans (Russell 1983). The recreational use of beaches made it difficult for even this relatively tolerant species to maintain historical population levels (Bell 1978; Cairns and McLaren 1980; Haig and Oring 1985). The increase in the number of summering gulls and associated predation has also contributed to its decline (Cartar 1976; Brooks and Nol 1979; Tate 1981; Lambert 1987). The apparent extinction of the Eskimo Curlew is clearly a result of excessive hunting (Bodsworth 1963; Greenway 1967; Bell 1978; Mowat 1984; Gollop et al. 1986), habitat loss on wintering grounds and migration stops, and possibly weather pattern changes (Lambert 1987; Faanes and Senner 1991). Common Snipe has decreased in number primarily because of the wetlands lost to agriculture and urban development (Harris 1987). It is not known why the Curlew Sandpiper occurs less commonly at present than in the late 1800s.

Two species that appear to have shown a definite decrease in occurrence are Black Tern (Tate 1986) and Black-legged Kittiwake. Again in the case of the Black Tern, the destruction of its breeding habitat (cattail marsh) and human disturbance have resulted in a decrease in its abundance and occurrence both in Burlington Bay, New York State, and on a national level (Gerson 1988; Muller et al. 1992). The lower number of Black-legged Kittiwakes is possibly still a reflection of the destruction and disturbance of its breeding habitat on islands in the Atlantic Ocean (Mowat 1984). As kittiwake populations continue to recover (Chapdelaine and Brousseau 1989), more sightings are expected at Burlington Bay.

#### Unchanged status

Seventy-nine of the 151 water bird species recorded from Burlington Bay have apparently not changed in status, even though habitats have been considerably altered. Most of these species (48) are those that were historically and are currently of irregular occurrence in Burlington Bay. Another 14 of these species are migratory waterfowl (e.g., loons, grebes, diving ducks) that are associated with open water pelagic habitats in Hamilton Harbour. The overall volume of pelagic habitat and fish biomass (cold-water fish species replaced by warm-water fish species) probably has not changed significantly (Holmes and Whillans 1984). Overall densities of benthic organisms have also apparently not changed drastically, with pollution-tolerant oligochaetes replacing more sensitive organisms (Remedial Action Plan for Hamilton Harbour 1989). The status of fish-dependent species such as the Great Blue Heron, Forster's Tern, and Bonaparte's Gull would not be expected to change. Great Blue Heron use a wide range of foraging areas, such as mudflats and shallows, and are not restricted to cattail marshes, which have declined.

Eleven species of regularly occurring shorebirds did not change in status. Losses in marsh habitat were likely offset by formation and creation of mudflats (e.g., Cootes Paradise and Windermere Basin), which provided suitable foraging habitat. Dabblers such as Green-winged Teal and Northern Pintail also likely benefited from the creation of mudflat habitat.

#### Effects of contaminants

The levels and potential effects of toxic chemicals in fish-eating birds in Hamilton Harbour were first studied more than 20 years ago (Gilbertson and Reynolds 1972). At that time, eggs of Common Terns contained elevated concentrations of DDE, PCBs, HCB, and dieldrin. Evidence showed that much of the contamination was obtained locally (Gilbertson 1974). The terns also displayed widespread eggshell thinning, reducing the hatchability of the eggs, and the greatest rate of birth defects ever recorded in any wild bird population (Government of Canada 1991). These chemical conditions may have been at least a contributing factor to the fluctuating numbers of Common Terns nesting in Hamilton Harbour during the late 1960s and early 1970s. They could have had similar effects on other species feeding in the aquatic food web of Hamilton Harbour.

Recent studies of fish-eating birds in Hamilton Harbour and other Great Lakes sites show that contaminant levels are greatly decreased over what they were 20 years ago. The diversity and numbers of birds have increased (Dobos et al. 1988), and Common and Caspian terns, Herring Gulls, cormorants, and night-herons appear to be breeding normally (Canadian Wildlife Service, unpubl. data).

## Summary and recommendations

Of the 151 species recorded from Burlington Bay, 33% appear to have increased in regularity, 15% appear to have decreased in regularity, and the remaining 52% are unchanged. Species that have increased in abundance are those that have expanded the northern or eastern limits of their distribution into the Burlington Bay area, responded to creation of artificial breeding and feeding sites, or increased their breeding populations because of protection of nesting areas and reduced hunting pressure. Those species that have decreased in abundance have done so because of the destruction of suitable breeding habitat both within and outside Burlington Bay, persecution and disturbance by hunters and other recreationists, or the reduction of suitable feeding and resting habitat during migration.

All species of water birds that had a specific requirement for cattail marsh and wetland areas as breeding habitat are at present absent or in drastically reduced numbers.

Several steps must be taken to ensure the long-term well-being and proliferation of water bird species at Burlington Bay:

- 1) Protect and manage remaining wetland and cattail marsh areas.
- 2) Control urban and agricultural runoff and erosion.
- 3) Create wetland and cattail marshes in suitable areas such as Cootes Paradise, the northwest corner of Hamilton Harbour, and Windermere Basin.
- 4) Continue to improve water quality and clarity in Burlington Bay by improving treatment of sewage effluent and reducing toxic contaminants in discharge from industries around the bay.
- 5) Maintain and provide suitable breeding habitat, such as islands for herons, cormorants, terns, and waterfowl.
- 6) Increase public awareness of the diverse and rich wildlife and natural resources that Burlington Bay provides.

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Appendix 2. Water bird species that appear to be more regular in Burlington Bay at present than in the late 1800s

Double-crested Cormorant	Lesser Yellowlegs
Great Egret	Hudsonian Godwit
Snowy Egret	Ruddy Turnstone
Cattle Egret	Red Knot
Green-backed Heron	Western Sandpiper
Black-crowned Night-Heron	Baird's Sandpiper
Glossy Ibis	Pectoral Sandpiper
Tundra Swan	Stilt Sandpiper
Trumpeter Swan	Ruff
Mute Swan	Short-billed Dowitcher
Snow Goose	Long-billed Dowitcher
Brant	Wilson's Phalarope
Canada Goose	Parasitic Jaeger
Wood Duck	Laughing Gull
American Black Duck	Franklin's Gull
Mallard	Little Gull
Blue-winged Teal	Common Black-headed Gull
Northern Shoveler	Ring-billed Gull
Gadwall	Herring Gull
Canvasback	Thayer's Gull
Common Merganser	Iceland Gull
Red-breasted Merganser	Lesser Black-backed Gull
Sandhill Crane	Great Black-backed Gull
Killdeer	Caspian Tern
American Avocet	Common Tern

Appendix 3. Water bird species that appear to be less regular in Burlington Bay at present than in the late 1800s

Common Loon	Virginia Rail
Pied-billed Grebe	Sora
American Bittern	Common Moorhen
Least Bittern	Piping Plover
Eurasian Wigeon	Eskimo Curlew
American Wigeon	Curlew Sandpiper
Redhead	Common Snipe
Osprey	Black-legged Kittiwake
Bald Eagle	Black Tern
Yellow Rail	Thick-billed Murre
King Rail	Belted Kingfisher

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