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Canada

CHIGNECTO NATIONAL WILDLIFE AREA

MANAGEMENT PLAN 2018

Acknowledgements
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Copies of this plan are available at the following addresses:

Environment and Climate Change Canada
Public Inquiries Centre
12th Floor, Fontaine Building
200 Sacré-Coeur Boulevard
Gatineau QC K1A 0H3
Telephone: 819-938-3860
Toll Free: 1-800-668-6767 (in Canada only)
Email: ec.enviroinfo.ec@canada.ca

Environment and Climate Change Canada
Canadian Wildlife Service
Atlantic Region
17 Waterfowl Lane
Sackville NB E4L 1G6

Environment and Climate Change Canada Protected Areas Website**:**
https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations.html

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About Environment and Climate Change Canada's Protected Areas and Management Plans

What are Environment and Climate Change Canada protected areas?

Environment and Climate Change Canada establishes marine and terrestrial National Wildlife Areas for the purposes of conservation, research and interpretation. National Wildlife Areas are established to protect migratory birds, species at risk, and other wildlife and their habitats. National Wildlife Areas are established under the authority of the *Canada Wildlife Act* and are, first and foremost, places for wildlife. Migratory Bird Sanctuaries are established under the authority of the *Migratory Birds Convention Act, 1994* and provide a refuge for migratory birds in the marine and terrestrial environment.

What is the size of the Environment and Climate Change Canada Protected Areas Network?

The current Protected Areas Network consists of 54 National Wildlife Areas and 92 Migratory Bird Sanctuaries comprising more than 12 million hectares across Canada.

What is a management plan?

A management plan provides the framework in which management decisions are made. They are intended to be used by Environment and Climate Change Canada staff to guide decision making, notably with respect to permitting. Management is undertaken in order to maintain the ecological integrity of the protected area and to maintain the attributes for which the protected area was established. Environment and Climate Change Canada prepares a management plan for each protected area in consultation with First Nations, the public and other stakeholders.

A management plan specifies activities that are allowed and identifies other activities that may be undertaken under the authority of a permit. It may also describe the necessary improvements needed in the habitat, and specify where and when these improvements should be made. A management plan identifies Aboriginal rights and allowable practices specified under land claims agreements. Further, measures carried out for the conservation of wildlife must not be inconsistent with any law respecting wildlife in the province in which the protected area is situated.

What is protected area management?

Management includes monitoring wildlife, maintaining and improving wildlife habitat, periodic inspections, enforcement of regulations, as well as the maintenance of facilities and infrastructure. Research is also an important activity in protected areas; hence, Environment and Climate Change Canada staff carries out or coordinates research in some sites.

The series

All of the National Wildlife Areas are to have a management plan. All of these management plans will be initially reviewed 5 years after the approval of the first plan, and every 10 years thereafter.

To learn more

To learn more about Environment and Climate Change Canada's protected areas, please visit our website at https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html or contact the Canadian Wildlife Service in Ottawa.

Chignecto National Wildlife Area

Chignecto National Wildlife Area (NWA) was formally designated in 1982. This NWA is situated 3 km west of the town of Amherst, Cumberland County, Nova Scotia. The ridge of land making up Chignecto NWA has a karst topography caused by deposits of gypsum, and has many sinkholes and rock outcrops. The 475 ha NWA consists of 213 ha (45% of the NWA) of controlled water-level freshwater impoundments, 110 ha (23%) of natural sinkhole ponds, 100 ha (21%) of forest habitat, and 52 ha (11%) of old fields in various stages of reforestation. One of the most unique features of Chignecto NWA is Layton's Lake, which has a maximum depth of 10.5 m and contains a saltwater layer 2 m in depth on its bottom.

Chignecto NWA supports an impressive diversity of bird species, with over 228 species of birds recorded, and over 100 species breeding within the NWA. Seven rare bird species (barn swallow, bobolink, Canada warbler, chimney swift, common nighthawk, least bittern and short-eared owl) and 1 rare fish species (American eel) are thought to occur within the NWA.

Community interest in the protection of Chignecto NWA has resulted in a legacy of public use for bird watching, recreation and relaxation. A parking lot and 3.5 km of access trails are maintained for summer use, including a short walk through the "Glen" and a longer loop around Layton's Lake. There are no roads or public buildings within Chignecto NWA, although the main access trail can support emergency vehicle access. There are no permanent staff stationed at Chignecto NWA, but the regional Environment and Climate Change Canada Canadian Wildlife Service office is only 15 minutes away. Ongoing site inspections and maintenance of trails and regulatory signage are conducted as required; most trail repairs are made with student assistance during the summer months.

Chignecto NWA is helping to Connect Canadians to Nature

This site has been selected as one of ten National Wildlife Areas to be part of the Connecting Canadians to Nature (CCtN) initiative. The initiative invests in selected sites over five years (2015-2020) and beyond to improve access infrastructure and to support the development of interpretive on-site programming delivered through collaborative partnerships. Its aim is to provide Canadians with more opportunities to recreate and connect to nature on federal lands managed on their behalf, where these activities will not interfere with the conservation of wildlife and are consistent with site objectives.

Chignecto NWA was selected as part of the initiative because of its existing appeal to visitors, proximity to nearby communities and larger urban areas, existing network of trails, and abundance of wildlife and other natural features.

Chignecto NWA was established to ensure that the area's habitat and associated wildlife are protected from outside disturbances, such that the potential for natural biological processes are maximized. With its establishment as a protected area, the site can provide secure protection for a complex of varied and unique habitats which are important to waterfowl and migratory birds, and at the same time provide the Canadian public with an opportunity to witness these unique habitats. These benefits align well with A Wildlife Policy for Canada, which requires us:

"… to maintain and enhance the health and diversity of Canada's wildlife, for its own sake and for the benefit of present and future generations."

At the international level, Chignecto NWA is classified under the International Union for the Conservation of Nature criteria for protected areas as a Category VI protected area. The site is protected for the preservation of species, genetic diversity, and scientific monitoring and research. Public visitation is not restricted, and access trails are maintained, however it is important to note that there are no staff or public facilities on site. Furthermore, the site's topography results in uneven terrain, and access trails follow these natural contours of the landscape.

For greater certainty, nothing in this management plan shall be construed so as to abrogate or derogate from the protection provided for existing Aboriginal or treaty rights of the Aboriginal peoples of Canada by the recognition and affirmation of those rights in section 35 of the *Constitution Act, 1982*.

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1 DESCRIPTION OF THE PROTECTED AREA

Chignecto National Wildlife Area (NWA) is situated 3 km west of the town of Amherst, Cumberland County, Nova Scotia, between the south hook of the Cumberland Basin and the confluence of the Nappan and Maccan Rivers (Figure 1). The ridge of land making up Chignecto NWA has a karst topography caused by deposits of gypsum, and has many sinkholes and rock outcrops. The 475 ha NWA consists of approximately 213 ha (45% of the NWA) of controlled water-level freshwater impoundments, 110 ha (23%) of natural sinkhole ponds, 100 ha (21%) of forest habitat, and 52 ha (11%) of old fields in various stages of reforestation (Figure 2). One of the most unique features of Chignecto NWA is Layton's Lake, which has a maximum depth of 10.5 m and contains a salt water layer 2 m in depth on its bottom (Foshay 1974; Howell 1981; Howell and Kerekes 1982).

The Chignecto NWA is contained within the boundaries of the Amherst Point Migratory Bird Sanctuary (MBS). Established in 1947, Amherst Point MBS/Chignecto NWA is an important breeding, staging and migration area for waterfowl and other wetland birds, including shorebirds (Morton and MacKinnon 1980; Barkhouse and Tingley 1982). The habitat diversity in such a comparatively small area supports the majority of woodland birds common to the region. Chignecto NWA is an International Union for Conservation of Nature Category VI Protected Area.

Chignecto NWA was proposed for acquisition in 1967, and after land acquisition and assembly, was designated an NWA on September 23, 1982. Chignecto NWA is administered under the *Wildlife Area Regulations* of the *Canada Wildlife Act* and managed by the Canadian Wildlife Service of Environment and Climate Change Canada (Table 1).

Table 1: Chignecto NWA summary information

Protected area (PA) designation	National Wildlife Area
Province or territory	Nova Scotia
Latitude and longitude	45º48′N 64º16′W
Size (ha)	475 ha (1173 acres)
PA designation criteria	Historic: protecting an area with concentration of birds. Current: Criteria 1(a), where “the area supports a population of a species or a subspecies or a group of a species which is concentrated, for any portion of the year”. The area also satisfies Criteria 2(b), where “the area has special value for maintaining the genetic and ecological diversity of a region because of the quality and uniqueness of its flora and fauna”.
PA classification system (Environment and Climate Change Canada 2005)	Species or critical habitat conservation
International Union for Conservation of Nature (IUCN) Classification	VI
Order in Council number	PC 1982-2854
Directory of Federal Real Property (DFRP) number	DFRP Number 03197
Gazetted	September 23, 1982
Additional designations	Ramsar Site, designated for significant concentrations of waterfowl and waterbirds (Environment and Climate Change Canada 1994).
Faunistic and floristic importance	Wide diversity of plants and animals supported by rich soils overlying gypsum deposits that form a karst topography.
Invasive species	Expansion of house site plants. Norway Maple and Glossy Buckthorn are of concern.
Species at risk	The National Wildlife Area supports five species at risk under the federal *Species at Risk Act* [common nighthawk (*Chordeiles minor*), Canada warbler (*Wilsonia canadensis*), chimney swift (*Chaetura pelagica*), least bittern (*Ixobrychus exilis*) and short-eared owl *(Asio flammeus)*]. Five species are legally protected under the Nova Scotia *Endangered Species Act* [barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*), common nighthawk (*Chordeiles minor*), Canada warbler (*Wilsonia canadensis*) and chimney swift (*Chaetura pelagica*)].
Management agency	Environment and Climate Change Canada, Canadian Wildlife Service, Atlantic Region

Table 1: Chignecto NWA summary information (cont.)

Public access and use	Walking trails are maintained for public use. Dogs must be under control and on leash at all times, and owners are responsible for cleaning up after their pets. Motorized vehicles and bicycles are allowed in designated roads and parking areas only. Horses, camping and open fire are prohibited.
Other appropriate information	Public access is allowed year-round. The trails and parking lot are maintained from May to September each year.

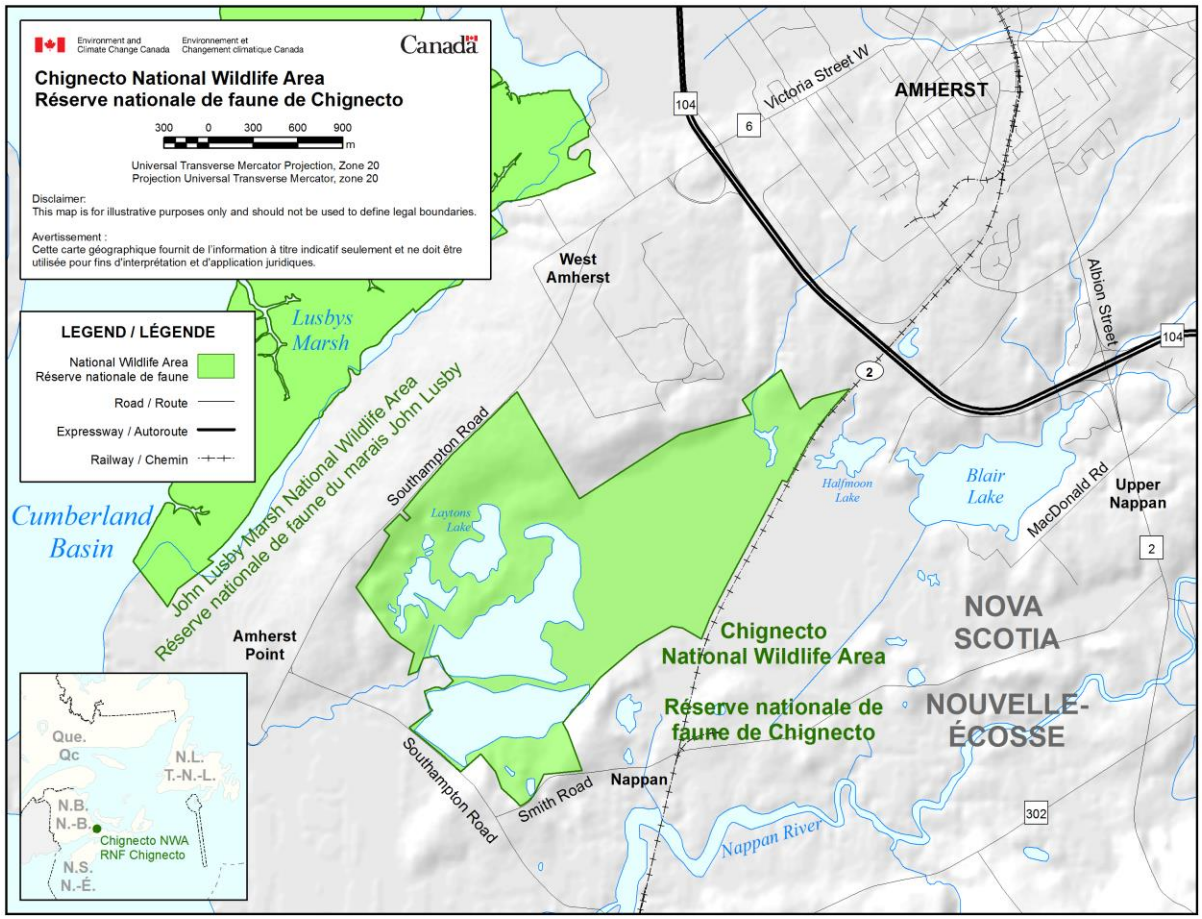

Figure 1: Chignecto NWA

Figure 2: A rich diversity of wetlands, woodlands and old fields make up the Chignecto NWA, Cumberland County, Nova Scotia
Photo: A. Macfarlane © Environment and Climate Change Canada

1.1 REGIONAL CONTEXT

The Chignecto NWA is located in Cumberland County, Nova Scotia, along the southern flank of the Chignecto Isthmus. The NWA is bounded by the West Amherst Ridge and Southhampton Road to the northwest, dyked agricultural lands to the west, and the Smith Road to the south. A complex of wetlands and the Canadian National Railway border the NWA to the east. Lands immediately northeast of the NWA are wooded with small patches of intermixed farmland and bog.

Residential development expanding from the town of Amherst has resulted in an increase in the number of dwellings around the periphery of the sanctuary.

Situated on the Amherst Point peninsula, Chignecto NWA is relatively isolated from the more wooded interior of Cumberland County. A forested corridor on private lands extends east towards Blair Lake but ends abruptly at the Trans-Canada Highway (Route 104) that connects Nova Scotia with New Brunswick (Figure 1).

The underlying geology consists of sedimentary formations laid down during the Carboniferous and Permian periods (Roland 1982). The most famous and visible of this series can be seen at the Joggins Fossil Cliffs, a UNESCO World Natural Heritage Site 18 km to the

west of the NWA. Besides the gypsum deposits underlying the Chignecto NWA, commercially viable salt deposits lie under the NWA and to the immediate south.

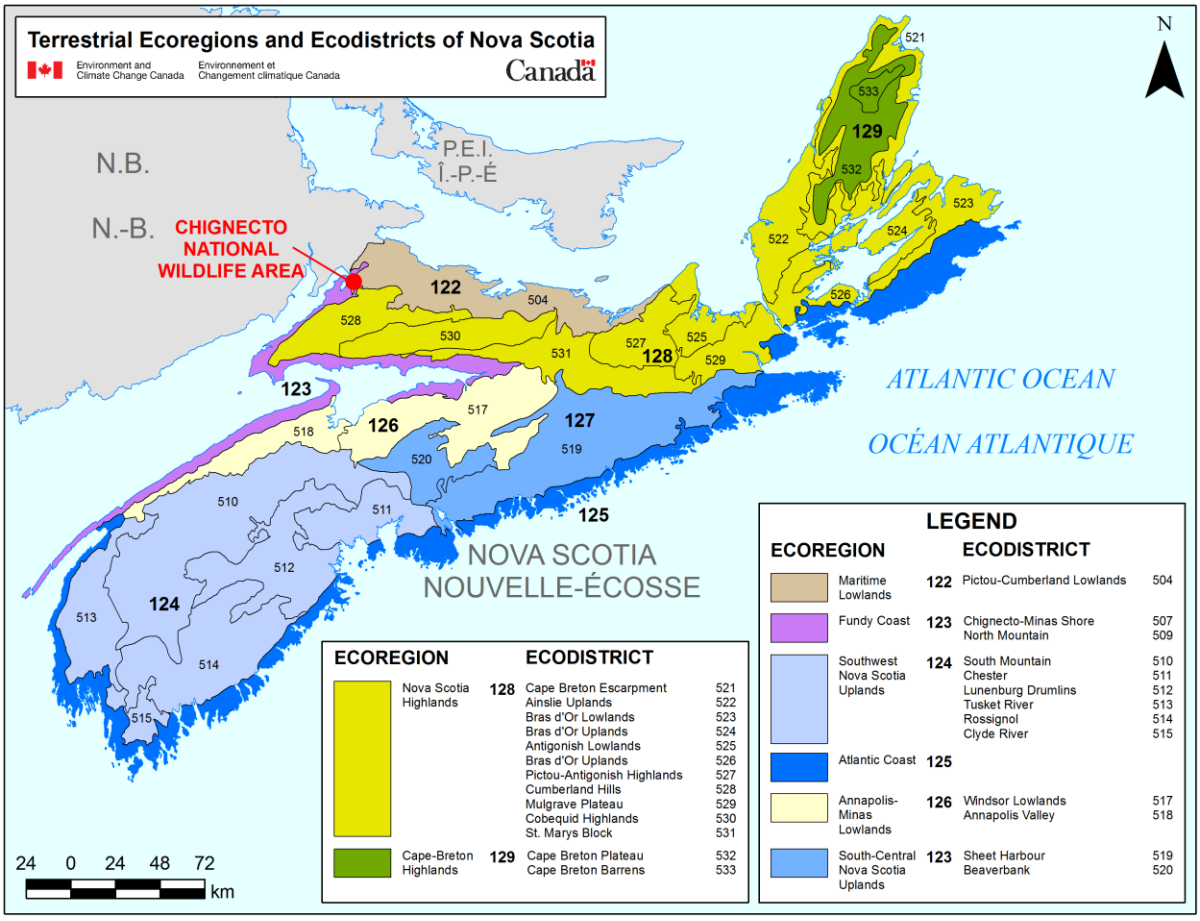

Figure 3: Terrestrial Ecoregions and Ecodistricts of Nova Scotia. Chignecto NWA overlaps Ecoregions No. 123 (Fundy Coast) and No. 122 (Maritime Lowlands), and Ecodistrict No. 507 (Chignecto-Minas Shore).

Chignecto NWA is situated within the Atlantic Maritime Ecozone. Within this ecozone, the NWA straddles the Maritime Lowlands and Fundy Coast Ecoregions, and is within the Chignecto-Minas Shore Ecodistrict (Webb and Marshall 1999) (Figure 3).

1.2 HISTORICAL BACKGROUND

The early 18th-century Acadian settlement on the ridge at Amherst Point was known as “Wehekage”; although the meaning is now lost, the name is presumably derived from a descriptive Aboriginal name for the area. Archaeological sites dating back over 3700 years indicate that the entire Chignecto Isthmus was likely important to the area’s First Peoples (MacKinnon 2003a and 2003b). The rich and diverse habitat within the Chignecto NWA,

combined with the unique geological features and confluence of rivers, would have made this an attractive hunting and fishing area.

By the late 1600s, French Acadian settlers had expanded outwards from the village of Beaubassin on the Fort Lawrence Ridge and settled numerous sites bordering the Chignecto isthmus. Much of Acadian farming expertise was based on dyking and draining salt marshes using one-way water discharge gates known as aboiteau (Hustvedt 1987). The marshes around Amherst Point would be a logical focal area for this activity and, although actual sites are not known, it is likely that some of the uplands within the NWA once contained Acadian farms. Following the Acadian deportation of 1755, New England planters settled the area. Amherst was one of three townships established on the Chignecto Isthmus in the 1760s (Trueman 1902).

By the mid-19th century, a surprising number of dwellings, mainly farms, followed the crest of the ridge from West Amherst to Amherst Point (Figure 4). A number of these farms were located within the bounds of the present NWA, and remnants of these dwellings and signs of extensive land clearing can be seen today. Large tracts of white spruce show evidence of what was once cleared and cultivated land, and introduced trees such as norway maple and Manitoba maple line old walkways and lanes. One of the more striking establishments that once stood on the ridge was the Logan homestead (Figure 5), the home of Hance James Logan (1869–1944). A lawyer and politician, Logan was a Member of Parliament for Cumberland from 1896 to 1911 and a Senator from 1929 to 1944. Even today, decayed remnants of the cannonball-topped fence posts can still be found in the vicinity of the old farm site.

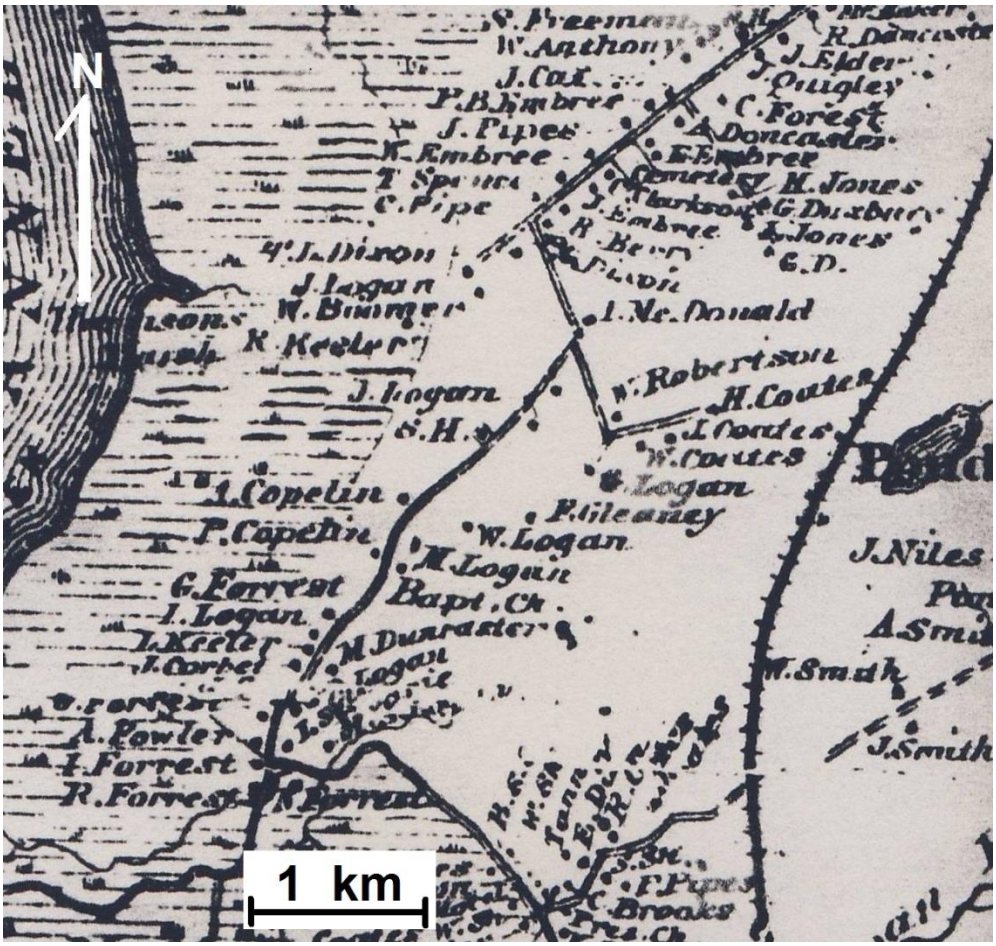

Figure 4: The mid-1900s West Amherst community in the environs of Chignecto NWA. At this time, the salt marsh was likely dyked and drained for agriculture. The present protected area is at the bottom centre of the map.
Photo: A portion of a map by Ambrose F. Church, 1873

Figure 5: The Logan homestead. Nothing remains of the farm, but remnants of a few of the cannonball-topped fence posts can still be seen within Chignecto NWA.
Photo: © Environment and Climate Change Canada

During the early 20th century, “the Cove” and “the Glen” were an important recreational area used by the Amherst Point community (Figure 1). Especially in winter, sinkholes such as at the Glen, surrounded by tall trees, provided an excellent area for socializing and outdoor skating. Senator Logan is credited with building the first walking trails. The site was used to such an extent that a house and cottage for changing was built on the site (Figure 6). In the early 1940s, changes in land ownership, and subsequent removal of some of the larger trees, prompted local landowners and residents to lobby for the protection of the area (Amherst Daily News 1946). As a result, Amherst Point MBS was established on October 1, 1947 (Order in Council P.C. 3966). Two leading figures were Rev. Harman C. Olsen and W. A. Fox. Mr. Fox was a charter member of the Nova Scotia Bird Society, while both he and Rev. Olsen were on the Executive of the Amherst Fish and Game Association. Rev. Olsen was Chairman of the Bird

Sanctuary Committee in 1944 (Atkins 1962; Kent and Steeves 1970; Desplanque 1973; McDormand 1980; Vergie).

Chignecto NWA was also the site of a short-lived mining operation. In 1905, a New York company formed the Maritime Gypsum Company and in that same year built a rail line connecting its quarry with a wharf on the John Lusby Marsh (Figure 7). A portion of this old rail line now forms part of the walking trail within the NWA.

Beginning in 1967, the federal government, under the National Habitat Protection Program administered by the Canadian Wildlife Service, began acquiring lands within the existing Amherst Point MBS (Watson 1965; Smith 1967; Whitman 1967). Following a subsequent transfer of 84 hectares from the Nova Scotia government in 1971, the site was formally declared an NWA on September 23, 1982.

Figure 6: The summer house in "the Glen," Chignecto NWA, circa 1940
Photo: © Environment and Climate Change Canada

Figure 7: The rail line that once connected the Amherst Point quarry to a wharf on the John Lusby Marsh, circa 1910. A portion of this rail bed is now used as a walking trail within the NWA.
Photo: © Environment and Climate Change Canada

1.3 LAND OWNERSHIP

Chignecto NWA is owned by the Government of Canada and administered by the Canadian Wildlife Service of Environment and Climate Change Canada under the *Canada Wildlife Act*. The property boundary is delineated with NWA boundary signs.

The federal government does not hold the subsurface mineral rights for Chignecto NWA (Nova Scotia Department of Natural Resources 2009).

1.4 FACILITIES AND INFRASTRUCTURE

Chignecto NWA contains a parking lot for 10 vehicles, 3.5 km of access trails, 5 foot bridges, 3 km of dykes and water control structures, and a maintenance yard (Table 2; figures 8 and 9). Maintenance requirements consist of annual site inspections for health and safety, ongoing trail repairs and upgrades, boundary line maintenance and repairs, and replacement of regulatory signage. Public notices are posted at all entrances, and larger NWA identification signage is located at the public parking area as well as along the South Hampton Road. Alternate entrance points are gated and are not for public access (Gauvin 1983).

Under the Connecting Canadians to Nature (CCtN) initiative (2015-2020), investments will be made to repair and improve the existing trail network, and to update and improve interpretive materials along the trails over the next few years.

Chignecto NWA has a significant area of controlled water-level freshwater wetlands. These are maintained by Ducks Unlimited Canada and managed collaboratively by Ducks Unlimited Canada and the Canadian Wildlife Service (tables 2 and 3). Water is maintained on these lands at a consistent level through a combination of earthen dykes and water control structures.

Table 2: Facilities and Infrastructure in the Chignecto NWA

Type of Facility or Infrastructure	Approximate Size (m, m², km, km² or m lin.)	Responsibility Holder or Owner
Property boundary	12	Environment and Climate Change Canada – Canadian Wildlife Service (ECCC–CWS)
Boundary signs	300	ECCC–CWS
NWA entry signs	2	ECCC–CWS
Public notice signs	10	ECCC–CWS
Steel entry gates	4	ECCC–CWS
Access trails (gravelled)	1.5 km	ECCC–CWS
Access trails (woodland)	2 km	ECCC–CWS
Foot bridges	5	ECCC–CWS
Observation deck (1)	2 m x 3 m	ECCC–CWS
Storage cabin (1)	3 m x 4 m	ECCC–CWS
Boat landing	3	ECCC–CWS
Parking lot (1)	30 m x 40 m	ECCC–CWS
Maintenance access points	3	ECCC–CWS
Impoundments (5)	229 ha	Ducks Unlimited Canada
Control structures	5	Ducks Unlimited Canada
Hydro-line easements (2)	1.5 km long, 30 m wide 2 km long, 60 m wide	Nova Scotia Power Commission

Table 3: Controlled Water-level Projects Maintained by Ducks Unlimited Canada in the Chignecto NWA

Project Name	Ducks Unlimited Canada Project No.	Year Built	Size (ha)
1	6128	1973	36
2A	6128	1973	29.6
2B	6128	1973	144
3	6205	1977	7.29
Cove	6205	1983	12.5
Total			**229.4**

Figure 8: The old-field portion of the popular Layton's Lake trail within Chignecto NWA
Photo: C. MacKinnon © Environment and Climate Change Canada, 2011

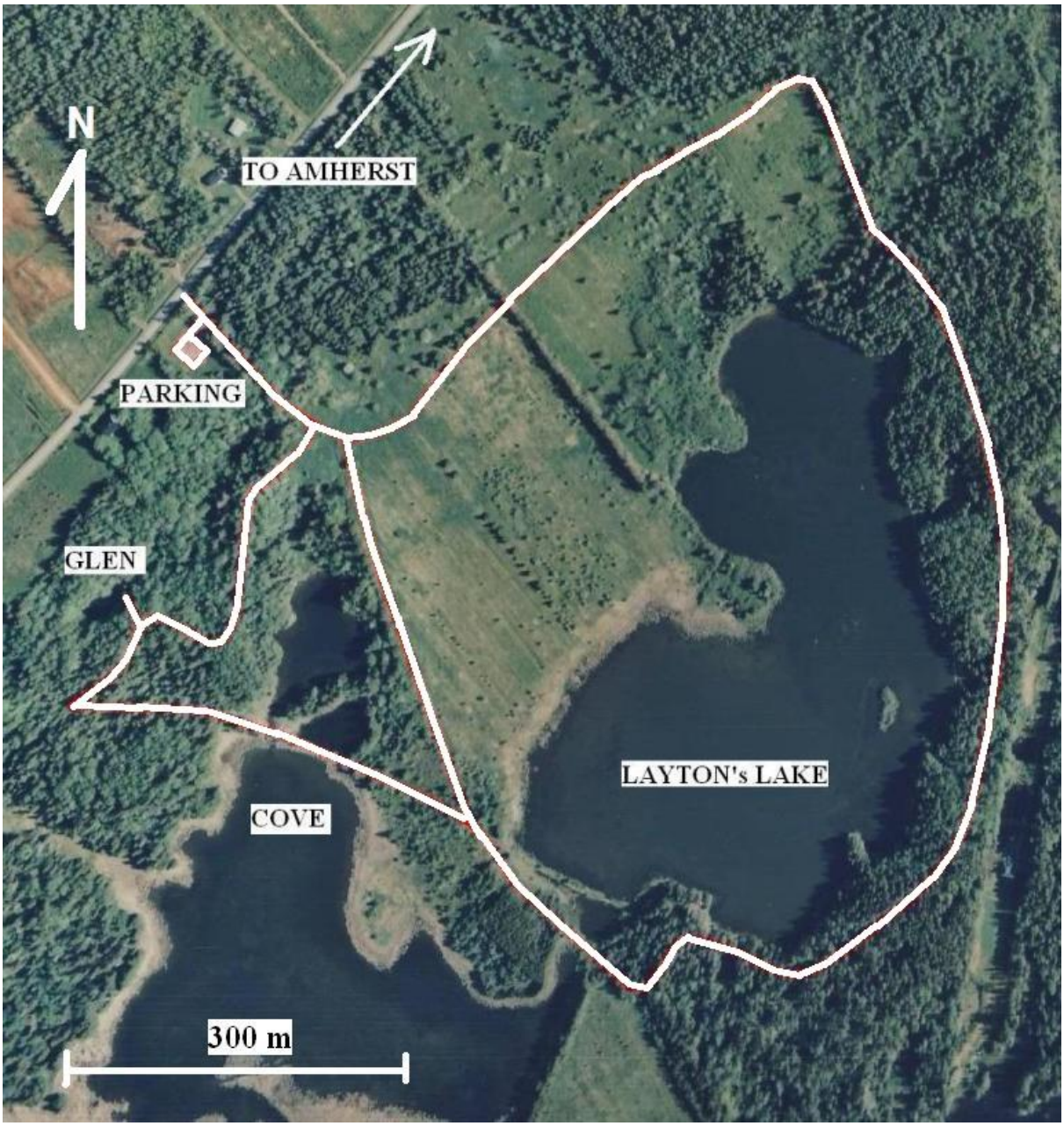

Figure 9: Location of access trails within Chignecto NWA (Layton's Lake trail, 2.5 km; the Glen and Cove trail, 1.0 km)

1.5 SOCIO-ECONOMIC ASSESSMENT

Although no specific socio-economic studies have been conducted regarding this protected area, more general surveys have highlighted the value that the Canadian public places on habitat set aside for wildlife (Environment and Climate Change Canada 1991).

Chignecto NWA is actively promoted as an ecotourism destination by the local community tourist association and is mentioned on various tourism websites. An estimated 10 000 people visit the site each year.

Humane trapping of furbearers is permitted within Chignecto NWA, and this resource provides a significant income to local trappers (Boyer 1954; Hounsell 1987).

2 ECOLOGICAL RESOURCES

2.1 TERRESTRIAL AND AQUATIC HABITATS

Chignecto NWA contains several different wetland types, including natural ponds and shallow, controlled water-level marshes. The area's wooded uplands and various plant communities range from open fields of grasses and forbs to dense thickets of shrubs and young trees (Harries 1969; Malone 1978a, 1978b; Spicer and MacKinnon 1999).

The most interesting feature of the landscape is its topography, characterized by steep-sided depressions of various sizes and depths called "sinkholes". These sinkholes are typical of locations where deposits of gypsum lie close to the surface of the land, as is the case at Amherst Point. Water seeping through these deposits creates underground caves; eventually, when the land surface above collapses, sinkholes are formed (Figure 10). Many of the ponds and small lakes within Chignecto NWA occupy sinkholes and consequently receive additional mineral richness from the underlying gypsum deposits (Figure 11).

The total wetland area of Chignecto NWA is 322 ha, of which 93 ha are natural ponds, small lakes and bogs. The remaining wetlands are shallowly flooded, controlled water-level impoundments, which were developed in collaboration with Ducks Unlimited Canada during 1972–1976 (Table 3). There are five separate units, all of which are located on abandoned agricultural marshland that had historically been tidal wetlands.

Cattails (*Typha* sp.) and bur-reed (*Sparganium* sp.) are the most plentiful emergent aquatic plants occurring around the margins of the ponds and lakes, while water milfoil, pondweeds and other submergent plants grow primarily in the deeper waters.

The wooded uplands of Amherst Point are dominated by conifers, particularly spruce, balsam fir (*Abies balsamea*) and eastern larch (*Larix laricina*). Eastern hemlock (*Tsuga canadensis*) grows on the slopes and ridges surrounding some of the sinkholes, while a few sugar maple (*Acer saccharum*) and yellow birch (*Betula alleghaniensis*) are all that remain of a formerly more prominent hardwood stand (Figure 12). Hawthorns (*Crataegus* sp.) and wild apple trees occur commonly along the woodland edges, and a few ornamentals, including silver maple (*Acer saccharinum*), Manitoba maple (*Acer negundo*) and scots pine (*Pinus sylvestris*), occur around the former homesteads.

A unique feature of Chignecto NWA is the 11.4 ha Layton's Lake. Named after a former landowner, this 10.5 m deep water body was formed from a sinkhole and has a rare feature known as a "chemocline." Prior to the 1960s, the lake had periodic intrusions of seawater and now, at a depth of 8.0–8.5 m, the lake salinity changes from freshwater to saltwater. This change is abrupt and occurs over a narrow 1 m depth of water (Kerekes 1975; Howell 1981; Howell and Kerekes 1982).

Figure 10: Karst topography in Chignecto NWA provides a rich mosaic of natural wetlands. Musquash Pond is shown in the foreground with "the Cove" in the background.
Photo: C. MacKinnon © Environment and Climate Change Canada, 1995

Figure 11: A significant outcrop of gypsum, adjacent to the "Glen" trail, exemplifies the area's unique geology
Photo: C. MacKinnon © Environment and Climate Change Canada, 2011

Figure 12: A relic from an earlier time: this Sugar Maple, with a circumference of over 4 m, is estimated to be over 300 years old; Chignecto NWA
Photo: C. MacKinnon © Environment and Climate Change Canada, 2011

2.2 WILDLIFE SPECIES

2.2.1 Birds

Chignecto NWA supports an impressive diversity of bird species, with over 228 species recorded and over 100 species breeding within the NWA (Tingley 1981). Several species of waterfowl, including Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), black

duck (*Anas rubripes*), northern pintail (*Anas acuta*), green-winged teal (*Anas carolinensis*), blue-winged teal (*Anas discors*), American wigeon (*Anas americana*), northern shoveler (*Anas clypeata*) and ring-necked duck (*Aythya collaris*) regularly breed here. These species commonly occur in the Atlantic provinces, but other waterfowl, including gadwall (*Anas strepera*), wood duck (*Aix sponsa*), redhead (*Aythya americana*) and ruddy duck (*Oxyura jamaicensis*), which are of limited distribution and occurrence in the region, also regularly breed in small numbers in the NWA. The attractiveness of Chignecto NWA to so many waterfowl species, particularly those of the latter group, is an exceptional feature of the area's wildlife resources (Barkhouse 1980; Barkhouse 1981a; Barkhouse and MacKinnon 1985).

The present level of waterfowl production, some 80–100 broods annually, has been achieved through habitat development projects in collaboration with Ducks Unlimited Canada. Besides the above-listed waterfowl, some unusual visitors have included snow goose (*Chen caerulescens*), eurasian green-winged teal (*Anas crecca*), european wigeon (*Anas penelope*), lesser scaup (*Aythya affinis*), bufflehead (*Bucephala albeola*) and black scoter (*Melanitta americana*) (Tingley 1981).

Various species of marsh birds are also found within the Chignecto NWA. Commonly encountered are pied-billed grebe (*Podilymbus podiceps*), American bittern (*Botaurus lentigonosus*), Virginia rail (*Rallus limicola*), Sora (*Porzana carolina*), common moorhen (*Gallinula chloropus*), American coot (*Fulica americana*), black tern (*Chlidonias niger*) and marsh wren (*Cistothorus palustris*) (Cash *et al.* 1981; Forbes 1983; Barkhouse *et al.* 1985). Black Terns are frequently found in small colonies, and small numbers of this species have been breeding within the NWA for many years. pied-billed grebes are particularly numerous, in the more open-water impoundments, with 1.7 nests/ha reported within Impoundment 1 in 1983. The *Species at Risk Act*–listed least bittern (*Ixobrychus exilis*) has also been recorded within the NWA.

Besides waterfowl and marsh birds, an impressive diversity of other birds is also found within the NWA. Woodland species, including a variety of warblers, make Chignecto NWA a frequent destination for birdwatchers. Primarily for this reason, the first inaugural field trip of the newly formed Chignecto Naturalist Club was to Amherst Point on April 28, 1973.

Large birds of prey are also frequently observed. Bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) nest within the area, and northern harrier (*Circus cyaneus*),

northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*Accipiter striatus*) and American kestrel (*Falco sparverius*) are common. Rough-legged hawk (*Buteo lagopus*) is a frequent winter visitor.

2.2.2 Mammals

Commonly occurring and frequently observed mammal species include White-tailed deer (*Odocoileus virginianus*), red Fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), striped Skunk (*Mephitis mephitis*), beaver (*Castor canadensis*) and muskrat (*Ondatra zibethicus*). The mammals found within the NWA are common and widely occurring throughout Nova Scotia with the exception of the Maritime shrew (*Sorex maritimensis*). This otherwise uncommon species is very abundant in some of the old-field habitat of the NWA (Banfield 1974; Gilhen and Scott 1981; Dawe 2004).

2.2.3 Reptiles and Amphibians

Reptiles and amphibians known or suspected within Chignecto NWA include green frog (*Rana clamitans*), northern spring peeper (*Hyla crucifer*), wood frog (*Rana sylvatica*), Mink Frog (*Rana septentrionalis*), northern leopard frog (*Rana pipiens*), yellow spotted salamander (*Ambystoma maculatum*) and Maritime garter snake (*Thamnophis sirtalis pallidula*) (Brannen 2004). The nutrient-rich wetlands and adjacent forested uplands combined with the karst topography make Chignecto NWA an exceptional area for this group. A nighttime visit to the ponds at the Cove and Glen following the first warm rains of spring provides a rare opportunity to see a variety of these species that are otherwise rarely seen.

2.2.4 Fish

Common fish species within the ponds and freshwater marshes included yellow perch (*Perca flavescens*), white perch (*Morone americana*), American eel (*Anguilla rostrata*) and brown bullhead (*Ameiurus nebulosus*). The ninespine stickleback is also a very common species, and it is an important food source for the abundant pied-billed grebe. The deeper waters and small lakes within the marsh support brook trout (*Salvelinus fontinalis*) and are frequented by anglers.

2.3 SPECIES AT RISK

A number of Threatened and Special Concern species may be found within the NWA (Table 4). Some are infrequent visitors, such as the chimney swift, while other species such as the short-eared owl (*Asio flammeus*) may breed within the NWA. The American eel (*Anguilla*

rostrata) is a catadromous species, laying its eggs in the saltwater sargasso sea, with young eels returning to fresh water to live.

Table 4: Species at Risk in Chignecto NWA

Common and Scientific Names of Species	Status			Presence or Potential of Presence[4]
	Canada		Nova Scotia	
	SARA[1]	COSEWIC[2]	Provincial Ranking[3]	
Fishes				
American eel *Anguilla rostrata*	-	Special Concern	No status	Confirmed
Birds				
Barn swallow *Hirundo rustica*	No Status	Threatened	Endangered	Confirmed
Bobolink *Dolichonyx oryzivorus*	No Status	Threatened	Vulnerable	Confirmed
Canada warbler *Wilsonia canadensis*	Threatened	Threatened	Endangered	Probable
Chimney swift *Chaetura pelagica*	Threatened	Threatened	Endangered	Probable
Common nighthawk *Chordeiles minor*	Threatened	Threatened	Threatened	Probable
Least bittern *Ixobrychus exilis*	Threatened	Threatened	No status	Confirmed
Short-eared owl *Asio flammeus*	Special Concern	Special Concern	No status	Confirmed

1 *Species at Risk Act*: Extinct, extirpated, endangered, threatened, special concern, not at risk (assessed and deemed not at risk of extinction) or no status (not rated)
2 Committee on the Status of Endangered Wildlife in Canada
3 Provincial ranking using provincial codes, if applicable
4 List as “confirmed,” “probable,” or “potential”

2.4 INVASIVE SPECIES

Due to a long history of human settlement in the area, a number of non-native plant species are found within Chignecto NWA. These are often found around, or adjacent to, old abandoned house sites (Figure 13). Some of these invasive species, such as Norway maple, were once planted along the edges of farm lanes that have become the foot trails within the NWA. Other problem species, including glossy buckthorn, phragmites (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*), may require control or removal as situations warrant (White *et al.* 1993).

Figure 13: A pretty, but unwelcome, visitor. This invasive glossy buckthorn was introduced to North America from Europe.
Photo: C. MacKinnon © Environment and Climate Change Canada, 2011

3 MANAGEMENT CHALLENGES AND THREATS

Activities that occur outside of the boundary of the NWA are beyond the scope of this management plan; however, many of these activities have direct bearing on the successful management of Chignecto NWA. A summary follows of the more salient issues.

3.1 RECREATION AND TOURISM

Recreation and tourism can provide valuable educational opportunities to the public, yet have the capacity to contribute additional pressure to protected areas that are specifically set aside as wildlife habitat. As local businesses and communities try to attract tourism dollars, public lands and protected areas such as Chignecto NWA are often advertised as ecotourism and adventure tourism destinations by external interests, often without a full understanding of the mandate and regulations of NWAs. Visitors to sites, such as Chignecto NWA, may not always be aware of the wildlife habitat conservation priority of NWAs or that there are limits placed on certain activities. Uninformed use of sensitive areas, or use at sensitive times of the year can have detrimental impacts on habitat and wildlife.

3.2 WIND POWER

The Chignecto isthmus is an important area for birds. Chignecto NWA, due to its significant coastal habitat and concentrations of wildlife, is recognized as a Wetland of International Importance under the Ramsar Convention. The development of wind farms to generate electricity has the potential to harm birds directly, but a greater unknown is potential changes to flight paths of birds around such farms. A wind farm has been developed on the dykeland west of the town of Amherst and immediately north of the NWA. Concern may be warranted should there be an expansion of wind farms in the immediate area around the NWA, as some migrating birds, such as common eider, are known to collide with existing human-made structures on the nearby Tantramar dyke-lands (MacKinnon and Kennedy 2011).

3.3 TIDAL POWER

Increasing energy needs have renewed interest in tidal power production in the Bay of Fundy. Research in the 1970s raised concerns about this technology, although earlier designs included full tidal barriers (Smith and Hicklin 1984). Current proposals are considered less invasive; however, the potential influence on tidal amplitude, mud flats and adjacent wetlands is largely unknown.

3.4 SEA-LEVEL RISE

The salt marshes at the head of the Bay of Fundy have developed over the past 4000 years by deposition of marine silts at the head of the bay in a fine balance between sea-level rise and coastal subsidence (Desplanque and Mossman 2004). For the past four millennia, this accumulation has been roughly 30 cm per century. Suspected sea-level rise brought on by climate change may increase this accumulation to 1.0 m over the next century. The freshwater wetlands in the Chignecto NWA have been occasionally inundated by seawater as a result of storm surges at high tide; severe flooding occurred in 1936 and 1949. As sea level rises, such flooding of the lower-lying areas of the NWA, as well as surrounding farms and farmland, may become even more frequent. Significant levels of saltwater intrusion into freshwater wetlands result in rapid death of flora and fauna that are not salt tolerant. Should the maintenance of the outer seawall dykes of Amherst Point become no longer economically viable, much of the present wetlands within Chignecto NWA could eventually revert back to salt marsh, with associated fen and bog habitat bordering the head of tide.

3.5 HABITAT MANAGEMENT

Chignecto NWA consists of impressive habitat diversity with a unique topography. The predominant natural wetlands and controlled water-level impoundments are interspersed with forested uplands and former fields used for numerous years, which support a wide diversity of plants and animals. Maintaining, managing and restoring such a mosaic of natural and human-controlled habitats in a small area remains a challenge.

4 GOALS AND OBJECTIVES

4.1 VISION

The long-term vision for Chignecto NWA is to conserve habitat for native wildlife and plants, with priority given to wetland habitat and flora associated with the area's karst geology, and to encourage public understanding and participation in their conservation. Important wildlife components include migratory birds, with an emphasis on waterfowl, waterbirds, and plant and animal species at risk.

4.2 GOALS AND OBJECTIVES

Goal 1: Existing populations of migratory birds, and resident flora and fauna, including species at risk, in restored and managed wetland habitat will be maintained.

a. Objective: Manage all wetlands to achieve a diversity of wetland vegetation and a hemi-marsh composition of vegetation (Sojda and Solberg 1993). Open water and vegetation to be maintained at a 50:50 ratio (with patches of vegetation interspersed with areas of shallow open water) within the next 5 years, and maintained over the long term for migratory birds, and resident flora and fauna, including species at risk.
b. Objective: Maintain and increase by 10% the area of riparian buffers along watercourses and vegetated buffers adjacent to the controlled water-level impoundments over the next 10 years.

Goal 2: Restore and manage old-field habitats in the early stages of old-field succession to benefit edge and open grassland migratory birds.

a. Objective: Maintain the existing 5 ha of open-field habitat for open grassland migratory birds through periodic mowing.

Goal 3: Forested habitats will be managed to maintain native upland vegetation so that populations of migratory birds, and resident flora and fauna, including species at risk, are sustained, and habitats and residences are created or maintained.

a. Objective: Over the next 10 years, monitor annually macro-habitat changes to the upland habitat for migratory birds, and resident flora and fauna, including species at risk.

Goal 4: Protect native plant species in all habitat types within the NWA.

a. Objective: Within the next 3 years, undertake appropriate surveys to determine areas of concern where cover by invasive and alien plant species is greater than

25% or expanding rapidly, and implement methods to reduce the extent and rate of expansion.

Goal 5: Promote the opportunities for responsible public access to enhance Canadians' connection to nature, while controlling unauthorized and prohibited activities in the NWA. Protect the NWA's overall ecological qualities and special habitat features from prohibited activities (such as camping and campfires).

a. Objective: Increase the number of annual visitors from 5,000 (current estimate for 2014) to 10,000 by the end of 2020.

b. Manage visitor activities and reduce unauthorized and prohibited activities within the NWA.

4.3 EVALUATION

Annual monitoring will be performed within the limits imposed by the availability of financial and human resources. The management plan will be reviewed 5 years after its initial approval, and reviewed and updated every 10 years thereafter. The evaluation will take the form of an annual review of monitoring data obtained from the monitoring and research projects outlined below. This monitoring will be used to establish priorities for action and to allocate resources.

5 MANAGEMENT APPROACHES

This section and the following table contain a description of some of the possible approaches that could be used in the management of the Chignecto NWA. However, management actions will be determined during the annual work planning process and will be implemented as human and financial resources allow.

Table 5: Management Approaches for Chignecto NWA

Management Challenge or Threat	Goal and Objective(s)	Management Approaches (actions, including level of priority)[1]
Recreational and tourism activities (some activities being illegal within the NWA), such as recreational beach use, camping, open campfires and boating, may have a cumulative environmental affect and present significant disturbances to nesting birds.	**Goal 5: Promote the opportunities for responsible public access to enhance Canadians connection to nature while controlling unauthorized and prohibited activities in the NWA. Protect the NWA's overall ecological qualities and special habitat features from prohibited activities (such as camping and campfires).** **Objective 5a:** Increase the number of annual visitors from 5,000 (current estimate for 2014) to 10,000 by the end of 2020. **Objective 5.b:** Manage visitor activities and reduce or eliminate unauthorized and prohibited activities within the NWA.	• Communicate with local tourism operators and the provincial tourism department concerning the protected status of Chignecto NWA and provide material demonstrating the ecological values of the area. **(1)** • Collaborate with conservation organizations to deliver a consistent message towards minimizing disturbance to habitat and wildlife. **(1)** • Restore and improve public access infrastructure as part of the CCtN initiative **(1)** • Promote public recognition and understanding of "cumulative environmental effects" and how repeated and seemingly routine activities may be harmful to migratory birds through direct communication to visitors and information posted on the Protected Areas website.**(1)** • Document and report the occurrence of illegal activities within the Chignecto NWA to Environment and Climate Change Canada's Wildlife Enforcement Division and, where evidence is sufficient, seek enforcement action, thereby reducing or eliminating occurrence of such activities in the NWA. **(1)**
Tidal power production is an anticipated activity in the Bay of Fundy that could change tidal dynamics. Although current proposals are considered less invasive, actual impacts on the mud flats or adjacent	**Goal 1: Maintain existing populations of migratory birds, and resident flora and fauna, including species at risk, in restored and managed wetland habitat.** **Objective 1.a:** Manage all wetlands to achieve a diversity of wetland vegetation and a hemi-marsh composition of	• Provide the industry with information as required to make sound decisions that minimize impacts on wildlife and wildlife movement. **(2)** • Support research directed towards understanding and anticipating potential impacts from tidal power. **(2)**

Management Challenge or Threat	Goal and Objective(s)	Management Approaches (actions, including level of priority)[1]
wetlands are largely unknown.	vegetation (Sojda and Solberg 1993). Open water and vegetation to be maintained at a 50:50 ratio (with patches of vegetation interspersed with areas of shallow open water) within the next five years, and maintained over the long term for migratory birds, and resident flora and fauna, including species at risk. **Objective 1.b:** Maintain and increase the area of riparian buffers along watercourses and vegetated buffers adjacent to the controlled water-level impoundments.	
Wind power development near the NWA may harm birds directly, but a greater unknown is potential changes to flight paths of birds.	**Goal 1: Maintain existing populations of migratory birds, and resident flora and fauna, including species at risk, in restored and managed wetland habitat.** **Objectives 1.a and 1.b**	• Provide the industry with information as required to make sound decisions that minimize impacts on wildlife and wildlife movement. **(2)** • Support research directed towards understanding and anticipating potential impacts from wind power. **(2)**
Predicted sea-level rise over the next century due to climate change is likely to result in increased flooding and possible breaches of dykes.	**Goal 1: Maintain existing populations of migratory birds, and resident flora and fauna, including species at risk, in restored and managed wetland habitat.** **Objectives 1.a and 1.b**	• Conduct long-term annual monitoring ortho-rectified aerial photography to retain a historical record of site changes as well as to document significant tidal and climatic events. **(1)** • Understand potential impacts of climate change and how the valued ecosystem components of the protected area can be maintained. **(2)**
Habitat management **Management Challenge or Threat** "(cont.)"	**Goal 1: Maintain existing populations of migratory birds, and resident flora and fauna, including species at risk, in restored and managed wetland habitat.** **Objective 1.a and 1.b**	• Control water levels in wetlands with impoundments to mimic an ecosystem driven by shallow, but stable, water levels. **(1)** • In collaboration with Ducks Unlimited Canada, establish a 30-year plan for the maintenance of infrastructure (dykes, water control structures and access roads) for habitat management within the areas controlled by water-level impoundments. **(1)** • Conduct ground-based monitoring (in collaboration with Ducks Unlimited

		Canada and Bird Studies Canada) to track water levels, water chemistry and wildlife
	Goal and Objective(s)	**Management Approaches (actions, including level of priority)[1]**
		response to management activities. **(2)** • Mechanically remove vegetation from wetlands if water manipulations cannot control emergent plant cover. **(2)** • Planting of vegetation as required. **(2)** • Acquire annually high-resolution aerial photography of the NWA and conduct annual analysis to monitor and track habitat changes. **(1)** • Conduct focused research projects, in collaboration with academic institutions, directed towards specific habitat management questions. **(2)**
	Goal 2: Restore and manage old-field habitats in the early stages of old-field succession to benefit edge and open grassland migratory birds. **Objective 2.a:** Over the next 10 years, maintain the habitat quality of existing 5 ha of open-field habitat for open grassland migratory birds.	• Acquire annually high-resolution aerial photography of the NWA and conduct annual analysis to monitor and track habitat changes. **(1)** • Conduct focused research projects, in collaboration with academic institutions, directed towards specific habitat management questions. **(2)** Periodically mow old fields. **(1)**
	Goal 3: Manage forested habitats to maintain native upland vegetation so that populations of migratory birds, and resident flora and fauna, including species at risk, are sustained, and habitats and residences are created or maintained. **Objective 3.a:** Over the next 10 years, monitor annually macro-habitat changes to the upland habitat for migratory birds, and resident flora and fauna, including species at risk.	• Acquire annually high-resolution aerial photography of the NWA and conduct annual analysis to monitor and track habitat changes. **(1)** • Conduct focused research projects, in collaboration with academic institutions, directed towards specific habitat management questions. **(2)**

"(cont.)"	**Goal 4: Protect native plant species in all habitat types within the NWA.** **Objective 4.a:** Within the next 3 years, undertake appropriate surveys to determine areas of concern where cover by invasive and alien plant species is greater than 25% or expanding rapidly, and implement methods to reduce the extent and rate of expansion.	• Acquire annually high-resolution aerial photography of the NWA and conduct annual analysis to monitor and track habitat changes. **(1)** • Removal of invasive plants in problematic areas, if necessary. **(2)** • Conduct focused research projects, in collaboration with academic institutions, directed towards specific habitat management questions. **(2)**

[1] Level of priority: 1 (from 0 to 3 years); 2 (from 4 to 6 years); 3 (from 7 to 10 years)

5.1 HABITAT MANAGEMENT

5.1.1 Forests

Actively managing the forests within Chignecto NWA is not anticipated. However, some early succession White Spruce, especially those overlooking Layton's Lake, will be managed to maintain open old-field habitat. Some plants, such as Norway Maple and Buckthorn, may be invasive (Figure 13); monitoring of expansion of these species may dictate some removal, although Buckthorn is extremely widespread throughout the area.

5.1.2 Fields

Habitat manipulation through mowing will be conducted to maintain some of the old-field grassland habitat (abandoned agricultural lands) in various stages of plant succession (Barkhouse 1981b). This will provide a greater variety of habitat within Chignecto NWA (Figure 14). This more open landscape is also beneficial as waterfowl nesting, and it provides foraging habitat for Northern Harrier and Short-eared Owl (a species of Special Concern).

Figure 14: Amherst Point in 1960, with Layton's Lake at left. Forest succession has greatly reduced the open vistas and mix of fields, forest and wetlands within the NWA
Photo: A.J. Erskine © Environment and Climate Change Canada

5.1.3 Freshwater Impoundments

The long human history at West Amherst has resulted in significant manipulations of the habitat. Uplands were once cut for timber. Wetlands have been separated from the sea by dykes and then ditched and drained for agriculture. Water is once again on these long-

abandoned wetland soils through collaboration with Ducks Unlimited Canada. A series of shallowly flooded freshwater wetlands has been developed to provide wetland habitat for a diversity of species. Maintenance of these water-level control structures (dykes and control gates) is the responsibility of Ducks Unlimited Canada; however, biological management decisions are reached collaboratively following yearly evaluations of water levels and habitat changes based on site inspections and a review of aerial photography. Management may include manipulation of water levels to control areas of overgrown vegetation. Vegetation may also be managed by mechanical removal if water manipulation alone cannot control emergent plant cover; predominantly of concern are overgrowths of cattail or phragmites. Generally, optimal wetland management strives for hemi-marsh conditions: an equal mix of vegetation and open water with a high degree of interspersion and plant species diversity (Sojda and Solberg 1993).

5.2 WILDLIFE MANAGEMENT

5.2.1 Species at Risk

Old fields will be held in early succession to provide rough cover foraging and nesting habitat for species such as Bobolink and Short-eared Owl. This habitat will also benefit open grassland predators such as Northern harrier, red-tailed hawk (*Buteo jamaicensis*) and, in winter, rough-legged hawk (*Buteo lagopus*). Managing wetlands for a 50:50 open water-vegetation ratio, with lots of cattail, will provide preferred habitat for Least Bittern. No specific habitat management activities are envisaged at this time for the aerial insectivores (barn swallow, chimney swift, common nighthawk), Canada warbler or American eel.

5.3 MONITORING

Most habitat monitoring within the NWA has consisted of periodic botanical inventories. Further habitat monitoring is carried out on the managed wetlands using aerial photography, conducted annually.

A summer banding station, using baited pens, for waterfowl within the NWA is maintained by Environment and Climate Change Canada’s Canadian Wildlife Service, and the site has also been used as a migration monitoring site for migrant songbirds.

Public visitation is quantified with trail counters.

Other studies, either by the Canadian Wildlife Service or in cooperation with university researchers, are conducted as required. Previous studies are referenced in the Literature Cited section.

Effective and efficient monitoring requires careful planning and a coordinated approach. Monitoring will be carried out in a manner that contributes to meeting species at risk recovery strategy and action plan objectives. Ongoing monitoring needs are as follows:

1. Spring and fall waterfowl use.
2. Periodic monitoring of songbird distribution and abundance within the wooded interior of the NWA including *Species at Risk Act*–listed birds.
3. Distribution and density of alien invasive species.
4. Frequency, time and duration of public use.

5.4 PUBLIC INFORMATION AND OUTREACH

One of the goals of the Connecting Canadians to Nature initiative is to increase public access to the selected NWAs while managing their visitation so that activities do not interfere with the conservation of wildlife. Indeed, one way of reducing damage caused by unauthorized recreational access is to create opportunities for authorized recreational access, and communicating this clearly to potential users. Section 6.2 lists authorized activities for Chignecto NWA, both with and without special restrictions.

On the Protected Areas website, the updated page for Chignecto NWA (https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations/chignecto.html) states that the site makes available a small network of trails where visitors can enjoy hiking and wildlife observation as well as photographic opportunities. It also makes it clear that hunting is not permitted within the Chignecto NWA (however trapping is allowed subject to provincial regulations), and that the only public facilities include a parking lot and walking trails.

On site, public notices listing the authorized activities within the wildlife area are posted at access points and signage directs visitors toward those areas where access is openly permitted, namely the 3.5 km trail network.

In addition, the unique character of Chignecto NWA (and nearby John Lusby NWA) and its significance as a Wetland of International Importance are featured in the national “Heritage to

Protect” poster series. These posters are available to educators, students and the general public on request.

6 AUTHORIZED ACTIVITIES AND PROHIBITIONS

In the interest of wildlife and their environment, human activities are minimized and controlled in NWAs through the implementation of the *Wildlife Area Regulations* under the *Canada Wildlife Act*. These regulations set out activities that are prohibited [subsection 3(1)] in wildlife areas and provide mechanisms for the Minister of the Environment and Climate Change to authorize certain activities to take place in an NWA that are otherwise considered prohibited. The regulations also provide the authority for the Minister to prohibit entry into NWAs.

Activities within an NWA are authorized where notices have been posted at the entrance to or along the boundaries of the NWA or when notices have been published in local newspapers. All activities in an NWA are prohibited unless a notice has been posted or published authorizing the activity to take place. However, in addition to notices, certain activities may be authorized by obtaining a permit from the Minister of the Environment and Climate Change.

6.1 PROHIBITION OF ENTRY

Under the *Wildlife Area Regulations*, the Minister may post notices at the entrance of any wildlife area or on the boundary of any part thereof prohibiting entry to any wildlife area or part thereof. These notices can be posted when the Minister is of the opinion that entry is a public health and safety concern and when entry may disturb wildlife and their habitat.

For Chignecto NWA, entry is not prohibited. However, visitors are asked to remain on the designated access trails.

6.2 AUTHORIZED ACTIVITIES

For Chignecto NWA, notices authorizing the following activities will be posted at all main entry points. An identification sign (2’ x 4’ NWA sign) is situated at the public parking lot.

Authorized activities for Chignecto NWA **without** special restrictions:

1. Wildlife observation
2. Canoeing

3. Hiking
4. Skiing
5. Skating
6. Snowshoeing
7. Photography

Authorized activities for Chignecto NWA **with** special restrictions:

1. Fishing[1]
2. Trapping[1]
3. Berry picking[2]

Note: As this site is also an MBS, **no hunting is permitted**. Furthermore, under MBS regulations, domestic animals are not permitted to run at large. Dogs must be on a leash and under full control at all times.

Note: If there is a discrepancy between the information presented in this document and the notice, the notice prevails, as it is the legal instrument prohibiting entry.

6.3 RESEARCH

Research activities will be considered for permitting when the results obtained through research have the potential to provide data and information on the following topics of interest:

1. Waterfowl, shorebirds and migratory bird population monitoring.
2. Habitat requirements.
3. Protection or recovery of species at risk.
4. Habitat restoration.
5. The effects of climate change and variability on water-level management.
6. The impacts of invasive species.

NWA permits are required under the *Wildlife Area Regulations* to conduct research and monitoring in Chignecto NWA.

To obtain a permit to conduct research in Chignecto NWA and to receive instructions on guidelines for research proposals, please contact:

National Wildlife Area – Research Request
Environment and Climate Change Canada, Canadian Wildlife Service

[1] Subject to federal and provincial regulations.
[2] Non-commercial berry picking only.

17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6

Permit requests should be directed to: ec.scfatlpermis-cwsatlpermits.ec@canada.ca

6.4 AUTHORIZATIONS

Permits and notices authorizing an activity may be issued only if the Minister is of the opinion that the activity is scientific research relating to wildlife or habitat conservation; or the activity benefits wildlife and their habitats or will contribute to wildlife conservation; or the activity is not inconsistent with the purpose for which the NWA was established and is consistent with the most recent management plan.

The Minister may also add terms and conditions to permits in order to minimize the impact of an activity on wildlife and wildlife habitat.

All requests for permits or authorizations must be made in writing to the following address:

National Wildlife Area – Permit Request
Environment and Climate Change Canada, Canadian Wildlife Service
17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6

For further information, please consult the Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated under the *Canada Wildlife Act* and *Migratory Birds Convention Act, 1994* (December 2011). This Environment and Climate Change Canada policy document is available on the Protected Areas website at https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html.

6.5 EXCEPTIONS

The following activities will be exempt from the requirements for permitting and authorizations:

- Activities related to public safety, health or national security that are authorized by or under another Act of Parliament or activities that are authorized under the *Health of Animals Act* and the *Plant Protection Act* to protect the health of animals and plants;

- Activities related to routine maintenance of NWAs, to the implementation of management plans, and enforcement activities conducted by an officer or employee of Environment and Climate Change Canada.

Note: As the Amherst Point MBS is included within the boundary of the Chignecto NWA, the *Migratory Bird Sanctuary Regulations* also apply. For an official and current version of the Regulations, please consult the Protected Areas website. Pertaining to Chignecto NWA, it is important to note that these regulations state that:

1. No person shall, in a migratory bird sanctuary,
    a. hunt migratory birds,
    b. disturb, destroy or take the nests of migratory birds, or
    c. have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird,

    except under authority of a permit therefor.
2. No person shall have in his possession in a migratory bird sanctuary
    a. any firearm; or
    b. any hunting appliance except as otherwise provided in these Regulations.
3. Subject to the Act and the *Migratory Birds Regulations*, the Minister may issue a permit authorizing any person to have firearms in their possession and to shoot and have in their possession migratory birds in such portion of a migratory bird sanctuary and during such time as are specified in the permit.
4. No person who owns a dog or cat shall permit the dog or cat to run at large in a migratory bird sanctuary.
5. A game officer may destroy any dog or cat found chasing or molesting migratory birds in a migratory bird sanctuary.

6.6 OTHER FEDERAL AND PROVINCIAL AUTHORIZATIONS

Depending on the type of activity, other federal or provincial permits may be required to undertake an activity in the Chignecto NWA.

Contact your regional federal and provincial permitting office for more information.

National Wildlife Area – Permit Request
Environment and Climate Change Canada, Canadian Wildlife Service, Atlantic Region

17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6

Province of Nova Scotia
Department of Natural Resources, Fish and Wildlife Division
136 Exhibition Street
Kentville NS B4N 4E5
Telephone: 902-679-6091
www.gov.ns.ca/natr/wildlife

7 HEALTH AND SAFETY

In the case of environmental emergencies, please contact the Canadian Environmental Emergencies Notification System at the following telephone number:

1-800-565-1633

Non-emergency issues related to security or health and safety issues for Chignecto NWA should be reported to:

National Wildlife Area Program
Environment and Climate Change Canada, Canadian Wildlife Service
17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6
Telephone: 506-364-5044

All reasonable efforts will be made to protect the health and safety of the public, including adequately informing visitors of any known or anticipated hazards or risks. Further, Environment and Climate Change Canada staff will take all reasonable and necessary precautions to protect their own health and assure safety as well as that of their co-workers. However, visitors (including researchers and contractors) must make all reasonable efforts to inform themselves of risks and hazards and must be prepared and self-sufficient. Natural areas contain some inherent dangers, and proper precautions must be taken by visitors, recognizing that Environment and Climate Change Canada staff neither regularly patrol nor offer services for visitor safety in NWAs.

Incidents or emergencies can be reported to the numbers listed in Table 6 below.

Table 6: Emergency Contacts for Chignecto NWA

Emergency Contacts for Chignecto NWA 946 Southhampton Road, Amherst, Nova Scotia (45º48′N 64º16′W)	
Emergency	**Contact**
Any life-threatening emergency	911
Police-Fire-Ambulance	911
Royal Canadian Mounted Police (RCMP), Amherst detachment 217 Victoria Street, Amherst, Nova Scotia, B4H 1Y8	1-902-667-3859
Rescue Coordination Centre to report air and marine emergencies (emergency only)	1-800-565-1582
Environmental emergencies (oil, pesticide, chemical spills and other environmental emergencies)	1-800-565-1633
Canadian Wildlife Service – Wildlife Enforcement Division	1-506-364-5036
Environment and Climate Change Canada – Canadian Wildlife Service, 17 Waterfowl Lane, P.O. Box 6227, Sackville, New Brunswick, E4L 1G6 (Fax: 506-364-5062)	1-506-364-5044
Nova Scotia Department of Natural Resources	1-800-565-2224
Nova Scotia Department of Natural Resources – Cumberland County Office, 4197 Main Street, Oxford, Nova Scotia (general inquiry)	1-902-447-2115
Nearest hospital – Cumberland Regional Health Care Centre, 19428 Highway #2, Amherst Regional Hospital, Amherst, Nova Scotia, B4H 1N6	1-902-667-3361

8 ENFORCEMENT

The management of NWAs is based on three Acts:

- *Migratory Birds Convention Act, 1994* and *Migratory Bird Sanctuay Regulations*
- *Canada Wildlife Act* and *Wildlife Area Regulations*
- *Species at Risk Act*

To promote compliance with the *Canada Wildlife Act* and *Wildlife Area Regulations*, Environment and Climate Change Canada's Canadian Wildlife Service posts signs along the NWA boundaries and at main access points that identify what activities are authorized within each NWA and any conditions on those activities.

Environment and Climate Change Canada's Wildlife Enforcement Division (ECCC–WED) is responsible for enforcement of federal and provincial wildlife laws, and will perform on-site inspections and investigations, patrol the NWA to promote compliance, and prevent prohibited activities within the NWA.

ECCC–WED officers monitor compliance with Acts and regulations on an ongoing basis and will initiate investigations when required. ECCC–WED officers will respond to violations and take appropriate enforcement actions. Canadian Wildlife Service Atlantic staff provides details from site inspections that may require investigation.

9 PLAN IMPLEMENTATION

The management plan will be implemented over a 10-year period. Annual work plans will be developed in accordance with priorities and budgets, and the details of management plan implementation will be developed through Environment and Climate Change Canada's annual work planning process and will be implemented as human and financial resources allow. An adaptive management approach will be favoured for the implementation of the management plan. The implementation of the plan will be evaluated 5 years after its publication, on the basis of the actions identified in Table 7.

Table 7: Implementation Strategy Timeline

Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Site Inspections (health and safety)	x	x	x	x	x	x	x	x	x	x
Facilities maintenance	x	x	x	x	x	x	x	x	x	x
Impoundment monitoring	x	x	x	x	x	x	x	x	x	x
Boundary line maintenance	x	x	x	x	x	x	x	x	x	x
Forest bird and *Species at Risk Act*–listed species monitoring					x					
Waterfowl use survey				x					x	
Waterfowl banding	x	x	x	x	x	x	x	x	x	x
Botanical survey								x		
Upland habitat management	x		x		x		x		x	
Public use monitoring	x	x	x	x	x	x	x	x	x	x
CCtN initiative implementation	x	x	x	x						

9.1 MANAGEMENT AUTHORITIES AND MANDATES

Environment and Climate Change Canada, Canadian Wildlife Service, Atlantic is responsible for site management of Chignecto NWA. The controlled water-level impoundments are maintained by Ducks Unlimited Canada.

9.2 MANAGEMENT PLAN REVIEW

This management plan will be reviewed 5 years after its formal approval by Environment and Climate Change Canada, Canadian Wildlife Service and every 10 years thereafter.

Additions of new information may be appended to the document as required to aid in site management and decision making.

10 COLLABORATORS

There are no formal arrangements pertaining to the management or administration of Chignecto NWA. However, there are five controlled water-level impoundments (Impoundments 1, 2a, 2b, 3 and the Cove) as well as associated lakes (Layton, Cove, Half Moon and Quarter Moon) within the NWA that are managed by Ducks Unlimited Canada in collaboration with Environment and Climate Change Canada's Canadian Wildlife Service under a land use agreement. Ducks Unlimited Canada is responsible for the maintenance of these impoundments.

The mosaic of habitats within the Chignecto NWA, enhanced by gypsum outcrops and related karst topography, provides a unique research opportunity to study and educate concerning the biological importance of such areas. As the past history of these marshes is well documented, the biological mechanisms that resulted in a rapid change from dyked agricultural lands to wetlands are of interest. The productive wetlands and unique limnology of Layton's Lake have been the focus of various studies by collaborators.

Close working relationships are also maintained with the Nova Scotia Department of Natural Resources, Wildlife Division, with frequent data and information sharing as it pertains to the Chignecto NWA.

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