



Habitat Conservation Plan
for Lundrigan's Marsh, City of St. John's

Prepared with Assistance from
Staff of the NL Wildlife Division
2010

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PREFACE

In Newfoundland and Labrador, some of the waterfowl and wildlife that are in greatest danger of being negatively impacted are those influenced by residential, commercial and industrial activities within the vicinity of municipalities. In this province, the primary focus of the Eastern Habitat Joint Venture is to conserve valuable waterfowl habitat (wetlands and associated upland) through Stewardship Agreements. The City of St. John's was identified as having just such ecologically valuable and unique wetland habitat located within its municipal planning boundary.

In 2000, a group of local naturalists approached the Nature Conservancy of Canada (NCC) and requested that the NCC purchase the private wetland property within Lundrigan's Marsh to prevent development and degradation of the area. The Lundrigan's Marsh Conservation and Stewardship Committee then formed and worked on the conservation project for 18 months. The committee included the NCC, City of St. John's, Ducks Unlimited Canada (DUC), Department of Environment and Conservation's Wildlife Division (through staff of the Eastern Habitat Joint Venture (EHJV)), Virginia River Conservation Society, and the Department of Works Services and Transportation. In total, the Nature Conservancy of Canada and Ducks Unlimited purchased 25.5 acres of wetland in Lundrigan's Marsh.

In October of 2004, the City of St. John's signed two Agreements which would ensure the protection and preservation of Lundrigan's Marsh for future generations. Firstly, an Implementation Agreement was signed between the City, the NCC, and DU, whereby these two non-governmental organizations entrusted the care and preservation of the 25 purchased acres of marshland to the City. Through this action, the City of St. John's committed to maintain and administer the land for long-term conservation and management. The deed transfer, and associated restricted covenant to the land title, was later finalized (i.e. in 2008) after the incorporation of Lundrigan's Marsh into the city's Municipal Plan as an 'environmentally valuable area'. Secondly, in October of 2004 the City of St. John's signed a Municipal Wetland Stewardship Agreement with the Government of Newfoundland and Labrador which protects a designated Management Unit encompassing the majority of Lundrigan's Marsh including the subset purchased property. In accordance with this Stewardship Agreement, the City of St. Johns manages this wetland area with technical advice provided by the provincial Wildlife Division, in part via this Conservation Plan.

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Section 1: Conservation Plan Overview

Plan Purpose: The City of St. John's will use this Conservation Plan as a guide to govern activities which impact wetlands and waterfowl in order to minimize negative impacts within the areas designated for conservation.

Plan Goals: (1) To conserve and promote wise use of wetlands located within the designated Management Unit.

(2) To maintain and/or increase wildlife use of this area, particularly by waterfowl and other avian species.

(3) To increase public awareness of the importance of wetland habitats for conserving waterfowl and other wildlife.

Plan Objectives: (1) To present a general assessment of the wetland habitats and waterfowl or wildlife species designated for protection.

(2) To recommend protection, conservation and enhancement strategies for the Management Unit.

(3) To describe potential initiatives for education and awareness among the public in order to increase support and cooperation of the City's citizens.

Section 2: Wetland Conservation in Newfoundland and Labrador

Introduction

Human development has resulted in the destruction of many types of habitats all over the world. Wetlands are among the areas most critically affected by this development and are, in fact, one of the most sensitive ecosystems on the planet. Wetlands are unique ecosystems that often occur at the edge of aquatic (water, fresh or salty) or terrestrial (upland) systems. They may be wet year-round, wet during certain seasons, or wet during part of the day. In general, “wetland” refers to land that has the water table at, near, or above the land’s surface and refers to land which is saturated for a long enough period to promote wetland processes. In addition to bogs and swamps, wetlands include tidal marshes, forested wetlands, fens, estuaries and shallow open water (at a depth less than two meters). Healthy wetlands and associated uplands contain fresh, brackish or salt water and are some of the most biologically diverse and productive ecosystems on earth.

Wetlands play a major role in the status of continental ecosystem health, as well as regional and local ecosystem health. Wetlands serve as important buffers to flooding, function as enormous sinks for carbon, and as natural reservoirs for the holding, purifying and recharging of water resources. From an economic stance, wetlands are associated with a range of values from recreational and subsistence opportunities for hunting, fishing, trapping for food and fur, the gathering of fruit and berries and for non-extractive activities such as wildlife viewing, ecotourism, paddling sports and hiking. Wetlands also provide for the seasonal resource requirements of many waterfowl species and serve as important habitat for waterfowl throughout breeding, feeding, staging and over-wintering. All migratory waterfowl, many other migratory birds, and half of all threatened and endangered species depend on wetlands and associated upland habitat for their existence.

The number and diversity of North America’s wildlife species has been declining over the latter half of the twentieth century. At least a portion of this decline can be directly attributed to the loss of natural habitats to urban, industrial and agricultural expansion. Wetlands have historically been among those areas most critically impacted by human development. Today, as technological advances make the alteration of wetlands a reality, wetlands around the globe and within Newfoundland and Labrador are being looked at as viable options for development by a variety of industries and natural resource based sectors. Canada, the United States and Mexico have signed the North American Waterfowl Management Plan (NAWMP), thereby committing themselves to a long-term program of partnership projects aimed at assuring the survival and increase of waterfowl populations and protecting the wetland habitat on which their survival depends. A total of 21 joint ventures, ranging from species to regional-specificity, have been established to achieve and implement the objectives of the NAWMP. The province of Newfoundland and Labrador, through the provincial Wildlife Division, became a partner of the Eastern Habitat Joint Venture in 1989.

Eastern Habitat Joint Venture

The premise behind the EHJV is to conserve, enhance and restore wetlands for waterfowl in the six eastern Canadian provinces including Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. Each province deals with wetland and waterfowl issues slightly differently, depending on the unique requirements of each province and individual habitat concerns. Each provincial program, coordinated by a separate program manager, involves the cooperation of international partners, including government agencies and non-government groups, each working to forward specific goals and objectives of the NAWMP. In Newfoundland and Labrador the program is administered through the provincial Wildlife Division of the Department of Environment and Conservation. Its local contributors, other than the province, include Ducks Unlimited Canada, Canadian Wildlife Service, Nature Conservancy of Canada and Wildlife Habitat Canada. While each province may function independently, the Eastern Habitat Joint Venture works towards attaining common goals of influencing wetland habitat quality and quantity in Eastern Canada through conservation, enhancement and/or restoration initiatives.

NL EHJV Wetland Stewardship Program

Wetlands have historically been affected by heavy development pressure. In Newfoundland and Labrador, development pressure occurs regularly and most often within municipal boundaries. As such, wetlands that exist within municipal boundaries are often at the greatest risk of destruction or alteration and often in greatest need of conservation and/or management. The Wetland Stewardship Program is perhaps the most successful program of the Eastern Habitat Joint Venture in Newfoundland and Labrador. Its principle goal is to help make municipalities, corporations, developers, landowners and other wetland habitat stakeholders more aware of the value of wetlands within their jurisdiction and to empower them to take action to conserve these areas. This leads to more informed development decision-making and works towards minimizing negative impacts on wetland areas and local ecosystems as a whole.

The program focuses largely upon signing Wetland Stewardship Agreements with municipalities, corporations and individual landowners who own or manage significant wetland habitat. A Wetland Stewardship Agreement represents a formal public commitment by a community, corporation, or individual and the province to act together to conserve wetlands for waterfowl. By signing a Wetland Stewardship Agreement, communities, corporations and individuals become an important link in a continental chain of conservation areas. To date, twenty-four municipalities in the province have signed Stewardship Agreements including Bay Roberts, Carmanville, Channel-Port aux Basques, Come By Chance, Flower's Cove, Gambo, Gander, Grand Falls-Windsor, Happy Valley-Goose Bay, Hawke's Bay, Labrador City, Mary's Harbour, Port aux Choix, Red Bay, Spaniard's Bay, Springdale, St Anthony, St John's, St Lewis, Stephenville Crossing, Torbay, Wabush, Whitbourne, and Winterland. Corporate agreements have also been signed and include the Iron Ore Company of Canada and Corner Brook Pulp and Paper Limited. In addition, private landowners in several of the

communities surrounding the Grand Codroy Estuary (an estuary of international significance) and Burgeo have been involved with the signing of “good steward” wetland agreements, demonstrating a commitment to local wetlands and waterfowl habitat.

The Process

Initial contacts are generally sought by both EHJV staff and local community leaders who wish to take action to conserve wetland and/or upland habitat. A determination is made between the parties of whether there exists mutual interest in pursuing a Stewardship Agreement. At the same time, surveys of the wetlands and associated uplands within a certain area of interest are carried out by EHJV staff to confirm a significant relationship exists between wetland or upland habitat and local waterfowl/wildlife use in the area.

Following these positive assessments, more intensive field investigations are carried out to determine and agree on formal boundaries for Management Unit(s). Specific “Management Units” are significant wetland areas that have been identified as important to waterfowl during nesting, brood-raising, feeding and/or staging times. When incorporated into a Stewardship Agreement, these areas are set aside by a community, individual or corporation in an effort to prevent habitat alteration and diminished wetland function or degradation that might be caused by development.

When sufficient information has been gathered, a preliminary proposal is presented to a community, individual or corporation for review, with suggested boundaries for Management Unit(s) clearly indicated. After the Management Unit(s) have been agreed to, a formal Wetland Stewardship Agreement is signed between the presiding body (town, corporation, or landowner) and the province. Under this agreement, the town, corporation or landowner maintains ultimate control over all areas under its jurisdiction, but are asked to abide by the details of a Wetland Stewardship Agreement. Specifically, a Wetland Stewardship Agreement is signed with the hope that when land use decisions are made, the value of wetlands for wildlife will not be forgotten and that future land-use activities will not have a negative impact upon these values.

After the signing of a formal agreement, NL Wildlife Division staff will assist the community, corporation or individual in preparing a Habitat Conservation Plan. This plan will serve to offer wetland-related best management practices and will provide recommendations and advice for conserving, enhancing and/or managing the wetlands and associated upland habitat contained within a body’s area of authority. Once the Habitat Stewardship Agreement has been accepted by council, it is expected that it will be then incorporated into the town’s municipal plan, operating plan or master plan for use during future development decisions. If the Town lacks such a plan, the agreement must be incorporated into any future Municipal Plan. Management Units are expected to be incorporated into the Municipal Plan as environmentally “sensitive areas”, “conservation areas” or sometimes formal “protected areas” as governed by the Urban and Rural Planning Act (2000).

Roles of Stewardship Agreement Signatories

“The Province”- The Minister of Environment and Conservation is generally the designated signatory on behalf of the province. The Wildlife Division administers the Eastern Habitat Joint Venture in Newfoundland and Labrador. As such, staff of the Wildlife Division is assigned to implement, on a provincial basis, the EHJV partnership program.

As a result of signing a wetland stewardship agreement, the staff of the NL Wildlife Division are expected to:

- Provide the Town with technical advice and assist in the development of a Habitat Conservation Plan.
- Review developments within the Management Unit(s) that have the potential to impact wetlands or wildlife.
- Assist the Town in carrying out education and information initiatives to raise awareness of wetland related issues, and
- Support community conservation groups in implementing the Stewardship Agreement and Conservation Plan.

As a result of signing a Wetland Stewardship Agreement, the Town or Municipality and its designated Mayor/Council are expected to:

- Ensure that significant wetland and upland areas designated as Management Unit(s) are protected from destruction or degradation and to contact staff of the NL Wildlife Division in a timely manner when activities are proposed that may impact that habitat.
- Incorporate the Wetland Stewardship Agreement and Habitat Conservation Plan into its next Municipal Plan draft or revision with the assistance of staff of the NL Wildlife Division.
- Educate residents and development planners, with the assistance of NL Wildlife Division staff, about the stewardship program and their responsibilities.
- Implement, over time, the Conservation Plan recommendations in the community at large.
- Participate in the Stewardship Association of Municipalities Inc (SAM), a province-wide organization made up of municipalities which have signed Stewardship Agreements.

Section 3: The Wetlands and Waterfowl of Lundrigan's Marsh

Overview of Lundrigan's Marsh Conservation Efforts

Lundrigan's Marsh is located in the east end of the City of St. John's and is the largest cattail (*Typha latifolia*) marsh in eastern Newfoundland. The marsh is bounded by Logy Bay Road, Harding Road, Robin Hood Bay Road, and the Outer Ring Road / East White Hills Road. The surrounding lands have been landfilled and most of these areas have been converted almost entirely to commercial/industrial uses. While some private land adjacent to Lundrigan's Marsh has not yet been developed upon, such as land between the marsh and East White Hills Road, the potential for future development on these lots is very high.

There has been a long history of conservation efforts within Lundrigan's Marsh. In the 1990's, the Province planned for the Outer Ring Road to be routed through the middle of Lundrigan's Marsh and obtained land for the right of way. After lobbying by various environmental groups including the Virginia River Conservation Society, government changed these plans and diverted the highway around the wetland to preserve the habitat. The road is now well removed from this wetland with a substantial buffer to avoid any infilling or adverse impact on Lundrigan's Marsh.

In 2000, a group of local naturalists approached the Nature Conservancy of Canada and requested that NCC purchase the private wetland property to prevent development and degradation of the area. The Lundrigan's Marsh Conservation and Stewardship Committee then formed and worked on the conservation project for 18 months. The committee included the: NCC, City of St. John's, Ducks Unlimited Canada (DUC), Department of Environment and Conservation's Wildlife Division (through staff of the Eastern Habitat Joint Venture), Virginia River Conservation Society and Department of Works Services and Transportation. In total, the NCC and Ducks Unlimited purchased 25.5 acres of wetland in Lundrigan's Marsh.

In October of 2004, the City of St. John's signed onto two Agreements which would ensure the protection and preservation of Lundrigan's Marsh for future generations. Firstly, an Implementation Agreement was signed between the City, the NCC, and DU, whereby these two organizations transferred their ownership of land within Lundrigan's Marsh and entrusted the care and preservation of 25 acres of purchased marshland to the City (see Appendix 1). Through this action, the City of St. John's committed to maintain and administer the land for long-term conservation and management. The deed transfer, and associated restricted covenant to the land title, was later finalized (i.e. in 2008) after the incorporation of Lundrigan's Marsh into the city's Municipal Plan as an 'environmentally valuable area'. Secondly, in October of 2004 the City of St. John's signed onto a Municipal Wetland Stewardship Agreement with Province which protects a designated Management Unit encompassing 56.8 acres (i.e. ~23 hectares) within Lundrigan's Marsh (see Appendix 2). This management unit includes the purchased 25

acres within its boundaries. Management Units are areas of critical importance to waterfowl which provide prime habitat for nesting, feeding, and brood rearing. In accordance with this Stewardship Agreement, the City of St. Johns manages this wetland area with technical advice provided by the provincial Wildlife Division. By signing this agreement, the city and its residents became stewards of the Lundrigan's Marsh wetland and have committed to using a stewardship ethic in all decisions involving existing habitat and to seek to minimize and eliminate the effects of human activity on wetlands within the city. In addition, a lookout site and viewing platform providing views of Lundrigan's Marsh were opened on East White Hills Road in October of 2004. This platform is a popular spot for birdwatchers hoping to catch site of rare and uncommon species inhabiting the marsh.

In 2008, in response to vandalism of this viewing platform, the Nature Conservancy of Canada (NCC) engaged a locally-based company (Lotek Wireless Inc.) to help repair the viewing platform as well as the walking path, which was overgrown. A day of volunteering to repair the platform and clear the trail was successful in restoring the viewing area, and re-visits to the area in 2009 by NCC staff revealed that these repairs remained intact. It is important that regular maintenance of the trail and platform be continued in the future by the City of St. John's.

Lundrigan's Marsh is currently designated as an 'Environmentally Valuable Area' in the City of St. John's Municipal Plan, defined as an area where important elements or features of the natural environment will be protected, maintained, and enhanced. As a result of the urban setting of Lundrigan's Marsh within the City of St. John's, this protected wetland acts as an important haven for wildlife amid adjacent commercial and industrial lands and serves as a symbol of the importance of balance between conservation and development activities.

Description of the Management Unit: Lundrigan's Marsh

Lundrigan's Marsh was created from what was originally a black spruce bog. Human intervention, primarily through a slow influx of lime and sediment from an adjacent cement company, increased pH and water levels and eventually resulted in the formation of a lime-enriched cattail marsh containing open-water pools. Outside of the Codroy Valley, cattail marshes are uncommon in Newfoundland and this is particularly true on the island's east coast. Cattails are well-known for their ability to remove nutrients and chemicals from the water and thus act as filters.

Lundrigan's Marsh is connected to the Virginia River Watershed by a small stream that flows westerly out of the wetland through an underground conduit. The area acts as a catchment basin and filtering system that slowly cleanses organic material, suspended particles and silt from the water draining through it before entering the Virginia River, which flows through the north-east part of the city to Quidi Vidi. Therefore, Lundrigan's Marsh acts as a biological filter by substantially reducing the amount of nutrients flowing into the Virginia River and improving water quality within the City. Since it has a large catchment area, Lundrigan's Marsh also plays a critical role in water level regulation of

the Virginia River System and helps to prevent flooding problems in the City. This wetland represents a significant habitat within the region of the Avalon Peninsula.

The vegetation within Lundrigan's Marsh is characterized by dense growths of sedge, low shrubs, stunted trees and small open-water pools surrounded by cattails and containing water-lilies and pondweed. The marsh provides high-quality habitat for a variety of species of fish, waterfowl, songbirds, and shorebirds. Many waterfowl and marsh bird species use this wetland for feeding, shelter, and breeding (Appendix 5). Those species include several rare and uncommon birds to eastern Newfoundland (see General Status ranks in Appendix 5), such as the sora (*Porzana carolina*), which can often be heard calling from within the boundaries of the marsh, as well as the snowy egret (*Egretta thula*), great blue heron (*Ardea herodias*), red-winged blackbird (*Agelaius phoeniceus*), killdeer (*Charadrius vociferous*), alder flycatcher (*Empidonax alnorum*), rusty blackbird (*Euphagus carolinus*), and peregrine falcon (*Falco peregrinus*). The marsh provides significant nesting and feeding habitat for a variety of waterfowl species, such as the northern pintail (*Anas acuta*), blue-winged teal (*Anas discors*), northern shoveler (*Anas clypeata*), garganey (*Anas querquedula*), green-winged teal (*Anas crecca*), wood duck (*Aix sponsa*), and American black duck (*Anas rubripes*). Moose (*Alces alces*), muskrat (*Ondatra zibethicus obscurus*), and other mammals also utilize the urban marsh.

The Management Unit protected from development by the Wetland Stewardship Agreement encompasses 56.8 acres (i.e. ~23 hectares) within Lundrigan's Marsh. In addition, the City of St. John's designates a 15 meter buffer around the boundary of this Management Unit which shall not normally be developed. In the City's Municipal Plan, a buffer is described as an area left in its natural state or landscaped with various plants, trees, shrubs, or grasses, in order to assist in conserving a natural resource or to mitigate the impacts of one land use upon another. Council may only permit certain types of development within a buffer area provided that the impacts and/or extent of such developments are determined by Council to be minimal. Further details on regulations within buffer zones are shown within Part III, Section 8.2.4 of the City of St. John's Municipal Plan.

Existing Land Use and Its Potential Impact on Wetlands and Waterfowl

Encroachment and Infilling by Adjacent Landowners:

The Lundrigan's Marsh Management Unit is protected from destruction and degradation by regulations of the City of St. John's and the Province of Newfoundland and Labrador. No in-filling, dumping, or development is permitted within the marsh. However, encroachment into the marsh by adjoining landholders and infilling of the outer boundaries of the Management Unit for expansion of parking lots has been an ongoing concern. If these practices persist, the valuable inhabitable areas for wildlife in Lundrigan's Marsh will continue to decline.

Commercial Activity and Continuing Development:

In past decades, Lundrigan's Marsh has been considerably impacted by adjacent land developments through processes such as nutrient enrichment and subsequent decreases in pH and water levels. Sediment run-off from these developed areas has buried a substantial portion of the wetland. The potential for harmful leachates from neighboring industrial activities and the nearby dump to enter the Lundrigan's Marsh catchment basin also poses a threat to ecosystem integrity within the wetland. Risks posed by extensive commercial development include noise disturbance, spillage of fuel, lubricant and hydraulic fluid, and increased airborne emissions from construction equipment. Increased development may also cause silt and other sediment to enter the watercourse, potentially impacting fish and other wildlife species.

Illegal Dumping of Waste:

A major potential threat within Lundrigan's Marsh is waste oil dumping. For example, in May of 2002 several oil drums were discovered scattered along its banks along with one large tank containing 1200 gallons of oil.

Section 4: General Policies for Wetland Conservation

The City's Commitment to Stewardship

In signing a Wetland Stewardship Agreement, the City of St. John's has made a public commitment to join an international network of important wetland habitat areas contributing to waterfowl presence and abundance in North America. Further, the City should use this Conservation Plan as a guide to best management practices in its Management Unit. It is hoped that a stewardship ethic will be fostered within the community since the conservation of wetlands depends not wholly on conservation plans or regulations, but on the conservation/stewardship ethic of residents and of visitors to the City.

The Management Unit will be managed to ensure the maintenance and possibly enhancement of wetland habitat and waterfowl populations. Managing bodies will include City Council/Designated Staff and the Department of Environment and Conservation, Wildlife Division.

Benefits for Residents

The strategies outlined in this Habitat Conservation Plan can provide many long term recreational and "quality-of-life" benefits for local residents. Wetland habitats are ideally suited to a variety of consumptive and non-consumptive recreational activities, including hiking, photography and bird-watching. The City may wish to use these opportunities to increase tourism in the region. In developing recreational and tourism opportunities, careful consideration for the wildlife populations must be included in the planning process. Otherwise, human activities may result in negative impacts to the very resource that is providing the attraction.

Surely the most important benefit that people receive from stewardship is the opportunity to increase their knowledge of wetlands and nature in general. Programs such as the Wildlife Division's "Project Wild" foster an increased environmental ethic in youth and adults alike. Many of the enhancement and restoration strategies outlined in this Plan can be easily conducted by local community interest groups, thereby allowing "hands on" involvement in conservation efforts.

Management of the Management Unit

Activities within the Management Unit will be managed on a sustainable use basis, whereby permitted activities do not result in the loss of wetland or waterfowl populations. As such, wetland habitat will be at the forefront of management decisions. Efforts will be made to reduce pre-existing habitat degradation within the Management Unit. Only activities that have no negative or adverse impact upon wetland habitat and waterfowl/wetland-associated wildlife using those habitats should be permitted within the Management Unit. **Development proposals which, in the view of council, may impact habitat within the Management Unit should be forwarded to staff of the NL Wildlife Division (EHJV) for comment with a thirty day notice period.**

Incorporation of Management Units in Municipal Plans

City Councils that have entered into a Wetland Stewardship Agreement shall incorporate the agreement into any subsequent Municipal Plans or Municipal Plan Reviews. Specifically, the Management Unit(s), and any future Management Unit(s) as may be desirable from time to time, shall be declared or zoned “conservation areas”, or if outside municipal planning boundaries, may seek to have them designated “Protected Areas” under subsection 31(1) (f) of the Urban and Rural Planning Act, 2000.

In passing regulations or by-laws related to the area’s designation within a Municipal Plan, or any amendments to a future Municipal Plan, which could affect the Management Unit(s), the Council will consult with staff of the NL Wildlife Division (EHJV) providing a 30 day window of notice for comment.

Riparian Buffers in the Management Unit

Riparian buffers are generally strips of untouched vegetation occurring between upland areas and wetlands, lakes, rivers, ponds and streams. They are composed of trees, shrubs, grasses, cattails and sedges and possess a high level of wildlife use, generally as “corridors” for travel, for protection from predators and against inclement weather. These areas filter and reduce surface water runoff from upland areas, trapping sediment and filtering out excess nutrients, pesticides and bacteria. Vegetation in riparian areas also affects how readily water enters soil and has a positive effect over the replenishing of local groundwater. They also serve to anchor soil with its roots, helping to build stream banks and prevent erosion. They are often important in controlling flood levels and are critical to a variety of plants and animals. Fish habitat quality is also influenced by the amount of riparian edge left along shorelines. Treed buffers provide shade and serve to keep water temperatures down. They also impact water quality and provide spawning and rearing areas for fish species as well as nesting areas for waterfowl. They serve as a food source for a variety of wildlife when leaves and insects/insect larvae drop into the water body off of surrounding trees and shrubs.

The province, via the provincial Lands Act – Section 7(1), requires a crown land reserve or easement of 15 meters along all water bodies greater than 1 meter in width and the

maintenance of permanent riparian areas next to watercourses within the province. It is important that the city ensures adherence to this crown land reserve designation by all of its residents. The vegetated (untouched) buffer exists as the minimum protection around all waterbodies and marsh areas and is considered critical within the designated Management Unit.

Management by Committee

It is recommended that Towns seek to manage their agreement and the implementation of this conservation plan via a formal committee of council. This may take the form of an “Environmental Advisory Committee” or be housed within an existing committee but is generally chaired by a member of council or staff member, with volunteers from the local community making up the remainder of its membership. It has been our experience that such, often dedicated and dynamic, committees often have greater success in raising the profile of the environment and the wetland protected areas within the larger community thereby increasing public understanding and support over the long-term. By involving local individuals a greater sense of ownership is fostered, thereby strengthening the conservation commitment. In the past the Virginia River Conservation Society was a precursor to such a potential committee.

Section 5: Wetland Conservation and Education Strategies

This section seeks to outline specific conservation actions and education strategies which can be implemented by the City of St. John's with the partners of the NL EHJV to conserve and enhance wetland habitat in Lundrigan's Marsh. In particular, the first section entitled 'Reducing Encroachment and Infilling by Adjacent Landowners' is critical to the long-term maintenance of this wildlife habitat. In comparison, all the subsequent sections thereafter describe other wetland conservation and education strategies that can be implemented within Stewardship Communities as opportunity may arise. The level of involvement in these and other enhancement/education activities is at the discretion of the City of St. John's.

Reducing Encroachment and Infilling by Adjacent Landowners

Encroachment into the marsh by adjoining landholders and infilling of the outer boundaries of the Management Unit for expansion of parking lots has been an ongoing concern. It is important that these adjacent landowners (Figure 1) be educated on the importance of maintaining the valuable wildlife habitats within Lundrigan's Marsh and that they adhere to the regulations in place, as defined by the Municipal Wetland Stewardship Agreement (Appendix I) and the City of St. John's Municipal Plan. It is recommended that the City of St. John's inspect the private lands adjoining Lundrigan's Marsh every 6 months to one year to monitor infilling of the marsh and to enforce compliance to the regulatory buffer. It is recommended that the City of St. John's prepare an internal report of this site inspection at regular intervals.

Mitigating Effects of Commercial Activity / Development

As previously outlined, Lundrigan's Marsh has been considerably impacted by adjacent land developments in past decades through processes such as nutrient enrichment and subsequent decreases in pH and water levels. Sediment run-off from these developed areas has buried a substantial portion of the wetland. Currently, the potential for harmful leachates (such as petroleum, oil, and lubricants) from neighboring industrial activities to enter the Lundrigan's Marsh catchment basin also poses a threat to ecosystem integrity within the wetland. For these reasons, it is crucial that any future developments in the vicinity of Lundrigan's Marsh and its watershed be closely regulated, and vegetative buffers be maintained around Lundrigan's Marsh. Maintenance of a buffer will reduce the potential risks of noise disturbance, spillage of fuel and lubricants, and airborne emissions from construction equipment and also will reduce the amount of silt and other sediment which enters the marsh. It is important that appropriate fuel storage and clean-up kits be present on adjacent commercial sites to reduce any harmful effects of accident spills. In addition, there is currently no drainage system (culverts etc) in place to divert water runoff from the nearby dump and industrial areas away from the marsh.

Corps Green Team, could be initiated to clean up the area affected and remove any foreign materials. Littering and dumping of garbage could potentially contribute to environmental degradation and damage to local fish and wildlife habitat. Improved signage may again help to decrease/eliminate any potential problems with litter.

Waterfowl Monitoring Program

EHJV staff have devised an easy to use Community-Based Waterfowl Monitoring Protocol (see Appendix 6) and will assist community partners in its implementation. It is hoped that Towns, local community interest groups and interested volunteers (often bird-watchers) will establish a Waterfowl Monitoring Program within designated Management Units. The program could even be incorporated into portions of the regular school class curriculum or into the objectives of local natural heritage organizations. Data collection can provide information on changes that are occurring within the wetland area and can indicate problems or progress towards a desired goal of waterfowl populations. Monitoring can also provide data on whether a site is developing in a way that is conducive to achieving a community's goal. Regular monitoring (Figure 2) can also be a way to flag potential problem areas (i.e. early indicators of water quality issues). Additionally by involving local residents, the profile of the area is enhanced to the long-term benefit of conservation.



Figure 2 – Waterfowl Monitoring Survey in Codroy Valley. *Photos by EHJV Staff*

Recreational Use Development

Recreational walking and bird watching have become some of the most popular non-consumptive outdoor activities that occur across Canada. In many Management Units, there may be potential to develop a trail system and/or interpretive signage to allow public access to the community's significant wetlands (see Appendix 7). This will also help raise the profile of the habitat in the community and bring attention to the existence

of the Stewardship Agreement. Trails or other developments should be undertaken in consultation with staff of the EHJV. One of the most effective ways for people to learn is through doing. Bringing young people and members of the general public into special areas (in a natural setting) for the purposes of applied learning would be a critical part of any educational programming planned for the area.

Sustainable recreational use of wetlands can be encouraged with the designation of a walking trail whereby foot traffic can be controlled and access to any activities such as nature-viewing can still be facilitated. Care must be taken during any trail construction so as not to degrade the quality of habitat. Trail maintenance will be required and this responsibility should also be clearly understood from the outset. Potential signage, other than interpretation, might include critical times for waterfowl nesting and brood-rearing could be posted at areas along a walking trail and at a potential parking area to raise awareness of the sensitive nature of the area and to identify the best times to utilize the area to minimize disturbance.

Several stewardship communities have taken the concept of recreational use of their stewardship areas a step further, actually building “Interpretation Centres” in strategic locations targeted to bring residents and visitors into the conservation area to enjoy and learn about the wetlands and wildlife (see Appendix 8). These buildings, shelters or amphitheatres can serve as wonderful, natural locations for certain educational programs and seasonal community activities where a more permanent venue is appropriate. This type of project would lend itself to specific sources of funding or grants (i.e. Commercial Building Incentive Program). Other venues of this sort have been funded and assisted in core-funding by industry leaders like Petro Canada (Fluvarium) and Irving Oil (the Irving Eco-Centre).

Conservation Corps Green Teams

The Newfoundland and Labrador Conservation Corps annually sponsors summer “Green Teams” and “Interns” generally comprised of university and high school students, to work within communities on worthwhile environmental projects. In the past, such teams have been placed in communities with Wetland Stewardship Agreements. Examples of potential projects could include constructing and installing waterfowl nest boxes followed by subsequent monitoring throughout summer waterfowl breeding/brood-rearing seasons. Green Team members could be tasked with training local high school students or community members in appropriate monitoring protocol and could develop brochures and educational material designed to raise awareness for conservation and stewardship initiatives. This project could be extended to bird houses and would serve to provide data on birds using various habitats within the stewardship areas.

Artificial Nesting and Loafing Structures

Nest Boxes for Cavity Nesting Waterfowl:

Cavity nesters such as the Common Goldeneye have certain habitat requirements for nesting and when available they use abandoned woodpecker holes or natural tree cavities caused by disease, fire or lightning. In the absence of these natural cavities, they will use constructed nest boxes (Figure 3). These shelters, however, need to be installed correctly and placed in a location that is inhabited with waterfowl.

When installing nest boxes, there are important guidelines that are to be followed. These guidelines will help increase the success of nest box usage. When nest boxes are to be installed, the EHJV staff often includes a map where the nest boxes should be placed to encourage use by the target duck species. It will also help ensure that the placement of nest boxes will enhance wetlands that are included in the Stewardship Agreement signed by the community.

As a general rule, we ask that the location of the nest boxes be marked using a global positioning system (GPS). If the community requires assistance they can contact the EHJV staff or the local conservation officer. It is very important that we receive coordinates for nest boxes for reporting purposes.

Nest boxes can be mounted on tree trunks (preferably dead but solid trees) that extend slightly over the water's surface. Nest boxes may be placed on metal poles close to the edge of a pond, but we advise extreme caution in this situation so that snowmobilers do not run into your poles during winter months. If there is even a slim chance that someone could run into the metal pole, we suggest that you find another way to install your nest box.

Good placement would involve a dead tree standing along a shore. Better placement would be on a solid tree standing in water. Suitable placement would also be on a metal pole in a safe area (with no danger of being hit by motorized vehicles), on a shoreline next to a dead or flooded tree, firmly planted into the pond or marsh bottom. Boxes can be placed on live spruce or larch, but may loosen as the tree continues to grow. If using a live tree, remember to clear away limbs from just on top of the box so that squirrels and marten don't end up jeopardizing the lives of your ducklings. Keep in mind that beaver may chew live hardwoods like birch, so placement on these trees should be avoided, as you will soon be wondering where your nest box went!

Boxes should be placed above typical high water levels at a height that still allows you to clean (annually) and monitor the boxes. Ideally, boxes will be placed as high as possible, but at least 4 to 6 feet above the water's surface. Boxes should be placed on trees that bend slightly over the water's surface. When ducklings are ready, the adult will force them out of the entrance of the nest box and it is important that the box be positioned appropriately or the duckling may not fledge successfully and an ill-placed box has been known to actually jeopardize lives of ducklings.

Try to keep your nest box close to water and clear a path (of any small branches, etc.) so that ducks have a direct line of access from the water. The entrance hole should face the water. Do not place boxes so close together that competition will occur. As a rule, boxes should be placed no closer than 50 meters apart (one nest box per acre is considered acceptable) and shouldn't be placed where ducks can see each other from neighboring boxes.

Boxes must be maintained every year (with winter months being the preferred time for maintenance) by scraping out old planar shavings and replacing with new, clean, planar shavings. It is very important not to use sawdust as the pieces are too small and can actually suffocate ducklings. A garden store or sawmill would be an easy source for planar shavings or mulched wood. Approximately 8 to 10 cm of clean wood shavings should be placed in the bottom of the box before breeding season. Hens will actually reject nest boxes that do not have shavings, and eggs could freeze if there are not enough shavings in the bottom of the box.

Common Goldeneyes will raise multiple broods in a well-maintained and suitably placed nest box. If you are lucky, you will actually get to see ducklings leaving the box (although you should avoid approaching the nest box to check on its use during important times like hatching and fledging), but mostly you will find signs left over in the box when you prepare for its annual maintenance. You should look for light coloured duck down, bits of egg shell or shell-membrane (like a piece of paper) left behind when ducklings hatch, and mixed up wood shavings. Ducklings in the area indicate there are ducks and it is quite possible that they have used the nest boxes provided. It is also a great idea to keep in mind that other birds and small mammals may have used the nest boxes as well.

Constructing and installing nest boxes (see Appendix 9) is a very exciting activity to help enhance waterfowl in the conservation areas around your community. It does, however, take time, commitment, and maintenance. If any technical advice or help is needed it is advised to contact the EHJV staff at the Wildlife Division.



Figure 3 - Cavity Nest Box in Cobb's Pond, Gander. *Photo by Charmaine Barney*

Educational Programs

Public education is essential in the development of a greater sense of wetland stewardship among community residents. There are several well developed wetland education programs that span every season and every age group including “Wetlands in Winter” (Tantramar Wetlands Centre), “Marsh Bingo” and “Creatures of the Night” (Oak Hammock Marsh Interpretive Centre), “Junior Naturalists” (Wye Marsh Wildlife Centre), and “Project Webfoot” (Ducks Unlimited Canada). A number of night programs also exist that would be appropriate for Girl Guide and Scout troops. Certain programs may qualify for external funding through various private enrichment grants (i.e. Mountain Equipment Co-op or the Canadian Wildlife Federation).

Project Wild:

Project Wild is an educational program conducted by the Newfoundland and Labrador Wildlife Division and is aimed at youth from kindergarten to grade six. Its goal is to develop awareness, knowledge, skills and commitment resulting in informed decisions, responsible behavior and constructive actions concerning wildlife and the environment upon which all life depends. Project Wild is not just "wildlife" education. It is a broad environmental education program focusing on wildlife. Wildlife is used as a tool that naturally captures student interest and as a symbol for the fragility of the environment, providing a means to also educate youth about the value of wetlands for waterfowl.

Waterscapes:

This activity guide is produced by the Eastern Habitat Joint Venture and is a guide for helping youth appreciate and understand wetlands within Newfoundland and Labrador. The guide is complete with lesson plans, case studies and outreach projects intended to work on a conceptual framework to guide teachers and students through an understanding of basic ecology and to direct experience with wetlands and stewardship. The guide is provided free of charge to stewardship communities and is formatted for use with learners in grades 4-8.

Backyard Habitat for Canada's Wildlife:

This habitat awareness initiative is made available by the Canadian Wildlife Federation and is administered in conjunction with the Wildlife Division's Salmonier Nature Park. This program enables the average towns person to become an active participant in helping wildlife and in enhancing habitat for wildlife use. Backyard Habitat for Canada's Wildlife is a program that offers immediate, specific and inexpensive suggestions on how to make life better for wildlife in a particular habitat.

Project Webfoot:

Recognizing that the next generation of conservationists are already in grade school, Ducks Unlimited Canada (DUC) developed a partnership-based education program that brings Grade 4 children out of the classroom and engages them directly in the great outdoors. Project Webfoot promotes hands-on learning about wetland ecosystems, and first-hand experiences on how these amazing places provide significant natural values for society. Helping young people acquire the understanding of the importance of wetlands instills in them a sense of responsibility and confidence. Through curriculum-linked resources and field trips to local wetlands, Project Webfoot helps to inform and increase the conservation awareness and ethics of the people of Newfoundland and Labrador and the rest of Canada.

Nature and Art:

Some stewardship communities have used the wetlands and associated wildlife as opportunities to also serve as a natural location to bring together nature and art. This is made much simpler if a central building or interpretation area is present on site. Local art classes and drama groups use the freedom afforded by an outdoor theatre for educational exercises. This could involve field trips whereby students could interpret the beauty of wetlands - and nature in general - through various mediums (chalk, paint, etc.) or a day of sketching to the sound of nature or music. Being innovative in efforts to assemble art supplies might include visiting websites like Crayola.com which offer special resource grants to educators.

Similarly, drama classes could develop a play or a series of dramatic readings based upon wetlands or nature with evening delivery within a lighted amphitheatre. Several amphitheatres in Eastern Canada utilize the open-air concept to show nature-related videos or videos with an environmental message outdoors in the evening. Videos could be tailored to various ages and could include nature-related craft projects. A good starting

point for videos and educational nature-oriented craft projects for children may include websites like hookedonnature.org and planetpals.com.

Habitat Enhancement

In some wetland areas, the surrounding habitat has already been degraded or lost and could benefit from the planting of wetland and waterfowl “friendly” plants. A number of aquatic plant species have the ability to remove large quantities of pollutants from water. These plants improve water condition by “uptaking” excessive amounts of nitrogen, phosphorous and carbon – substances associated with the occurrence of algal blooms – by storing them in plant tissues. Many “classic” beneficial plant species have limited distribution in Newfoundland, and should not be introduced to the sensitive ecosystem of the estuary without consideration of the potential consequences, including the possibility of invasive plants out-competing native plant species.

Often, the natural balance within an ecosystem can be changed when new species are introduced. The relationships that develop between plants and animals may also change within a particular habitat. Introduced species are referred to as “exotic” species if they are not native to an area. Competition naturally exists between organisms within an ecosystem but the introduction of exotic, or non-native, species can alter the balance within the ecosystem and have negative effects upon the natural populations within the region and the ecosystem as a whole.

Certain species of willow (*Salix discolor*) and alder (*Alnus crispa*) are native to the island of Newfoundland, are found in areas of the Avalon Peninsula, and are renowned for their hardiness, their ability to withstand tidal inundation and their extensive network of roots. Their ability to uptake excess nutrients from the water column would make these native species an important addition to coastal shorelines. In addition to bank stabilizing properties and nutrient uptake characteristics, willow and alder buds and shoots are an important food source for small mammals like muskrat and snowshoe hare, and bird species like Ruffed Grouse and Grosbeaks.

In terms of wetland plants that would be of dietary importance to waterfowl populations, three-square bulrush (*Scirpus americanus*), Salt Water Cord Grass (*Spartina alterniflora*), Wild Rye (*Elymus virginicus*) and Blue-joint Grass (*Calamagrostis canadensis*) are all native to the island portion of Newfoundland and would all supply food to a number of estuary inhabitants. Tall stands of established Cord Grass and Wild Rye also offer a great deal of shade and cover to waterfowl and may lower water temperature to prevent algal blooms from occurring.

In terms of bank or shoreline stabilizing properties, Blue-joint Grass and Dune Grass (*Ammophila breviligulata*) may be appropriate choices. Once established, these grasses would provide a great deal of cover and concealment to waterfowl species. Low-growing native shrubs may be interspersed with either grass species to enhance the desired effect.

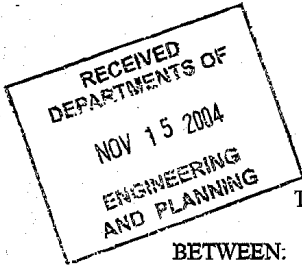
Water Control Structures

A community may wish to enhance a wetland area by changing the water flow or controlling the water depth to attract waterfowl (Figure 4). Ducks Unlimited Canada (DUC), a partner of the Easter Habitat Joint Venture, has a great deal of experience in this area. Staff of the EHJV can put you in touch with DUC to assess the possibilities, costs and issues in this area.

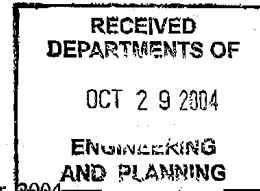


Figure 4 – Water Control Structure installed by Ducks Unlimited Canada at the Glynmill Inn Marsh, Corner Brook. *Photo by Charmaine Barney*

APPENDIX 1: Implementation Agreement for Lundrigan's Marsh



IMPLEMENTATION AGREEMENT



THIS AGREEMENT made this 15th day of October, 2004

BETWEEN:

The City of St. John's, a municipal government in the Province of Newfoundland and Labrador, having its office at New Gower Street, St. John's.

(hereinafter referred to as "THE CITY")

-AND-

NATURE CONSERVANCY OF CANADA, a corporation having its head office at 110 Eglinton Avenue West, Suite 400, Toronto, in the Province of Ontario

(hereinafter referred to as "NCC")

-AND-

DUCKS UNLIMITED CANADA, a corporation having its head office at Oak Hammock Marsh, in the town of Stonewall, Rural Municipality of Rockwood, in the Province of Manitoba.

(hereinafter referred to as "DU")

WHEREAS the Governments of Canada and the United States entered into a bilateral agreement dated the 6th day of May, A.D., 1986 known as the North American Waterfowl Management Plan ("NAWMP"), the objectives of which include long term waterfowl management and conservation;

AND WHEREAS the Eastern Habitat Joint Venture ("EHJV") has been established under an agreement signed the 15th day of November, A.D., 1989 between the Government of Canada, the Province of Ontario, the Province of Quebec, the Province of New Brunswick, the Province of Nova Scotia, the Province of Prince Edward Island, the Province of Newfoundland, Ducks Unlimited Canada and Wildlife Habitat Canada and is committed to the furtherance of the NAWMP and the achievement of habitat protection goals in the Eastern Regions of Canada.

AND WHEREAS THE CITY has entered into an agreement to take possession of and manage certain land situate in St. John's NL (hereinafter referred to as "the Land), PURSUANT TO THE Eastern Habitat Joint Venture program (hereinafter called the "Plan").

AND WHEREAS under the terms of agreements signed or to be signed with the U.S. Fish and Wildlife Service and Ducks Unlimited Canada, DU is to receive and administer in accordance with the express terms and conditions of the said agreements, certain funds ("the Funds") to be made available under the NAWMP.

AND WHEREAS, in addition to these Funds, DU may receive additional funds from other sources both in the United States and Canada, including U.S. and Canadian Federal Governments, various state governments and private organizations, for use in conjunction with the NAWMP (hereinafter called the "Funds");

AND WHEREAS THE CITY has agreed to preserve THE LAND as habitat for waterfowl and other wildlife in furtherance of the NAWMP;

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the premises and the mutual benefits to be derived as a result of this agreement, the parties covenant and agree that THE CITY will hold the lands and premises described in Schedule "A" (hereinafter referred to as "the Land") on the following terms and conditions:

Article 1 – Title and Encumbrances

- 1.01 Title to THE LAND shall be registered and held in the name of THE CITY as the registered owner of an estate in fee simple subject only to such encumbrances, rights-of-way, easements and interests as may be approved and consented to in writing by NCC and DU and exist at the time THE CITY takes title to THE LAND;
- 1.02 THE CITY shall not sell, transfer, hypothecate, dispose of, mortgage, encumber, lease or grant any interest in or enter into any agreement respecting all or any part of THE LAND, without obtaining the prior consent of NCC and DU.
- 1.03 Consents required from NCC and DU in accordance with this article shall be in writing and in a form suitable for registration at the appropriate Registry of Deeds.
- 1.04 Upon the registration of any deed acquired in conjunction herewith THE CITY agrees to record a further document which states that the Land may only be used in conformity with this Agreement and to achieve the objectives of the NAWMP.
- 1.05 The parties agree that notice of this Agreement shall be registered on title to THE LAND at THE CITY's expense.

Article II – Administration and Access

- 2.01 THE CITY shall maintain and administer THE LAND, subject to the terms of this agreement, for the long-term conservation and management of waterfowl, wildlife, plants and ecological communities, and in accordance with a plan, hereinafter referred to as "the Management Plan", which shall set out the manner in which each part of THE LAND shall be managed, protected and monitored so as to conserve and enhance their ecological values. THE MANAGEMENT PLAN shall specifically state that THE LAND will not be infilled, developed, or used for dumping wastes. THE MANAGEMENT PLAN shall be prepared in cooperation with the members of EHV, for the approval of NCC, DU and the City of St. John's, and once completed shall form part of this agreement. THE MANAGEMENT PLAN shall be completed and executed within one year of the date hereof. THE CITY shall maintain and administer THE LAND in accordance with the Parks Act and the Migratory Birds Convention Act.
- 2.02 THE CITY will provide for and permit such public access to and use of THE LAND, as may be agreed upon between the parties and as may be consistent with the objectives and goals of the NAWMP and in accordance with THE

MANAGEMENT PLAN referred to in paragraph 2.01 herein. NCC, DU and their agents may enter upon THE LAND from time to time and may conduct biological inspections and evaluations, site visits with donors (or potential donors), monitor and inspect actions taken under this Agreement and THE MANAGEMENT PLAN or for the purpose of studies carried out by authorized researchers acting with the permission of THE CITY, NCC and DU. It is understood that THE LAND contains a viewing platform, built and owned by THE CITY, that will be accessed by the public without prior notice to THE CITY, NCC and DU.

- 2.03 THE CITY hereby agrees and undertakes to pay all rates and assessments, including all municipal, provincial or federal taxes whatsoever levied against THE LAND as and when same become due and payable.

Article III – Use of Funds and Repayment

- 3.01 THE CITY agrees that in the event that THE LAND, or any portion thereof, acquired by THE CITY is transferred or otherwise disposed or encumbered, or ceases, in the opinion of NCC and DU, to be used in whole or in part for the purposes for which it was acquired, NCC and DU may, at their sole option, demand from THE CITY and THE CITY agrees to pay to NCC and DU within sixty (60) days of demand either:
- a. an amount equivalent to the fair market value of THE LAND at the time it is disposed of or encumbered, or has ceased to be used for the purposes for which it was acquired, or,
 - b. in the event that the above described actions are the result of the negligent acts or omissions of THE CITY or its agents, employee or contractors, an amount equal to the purchase price of THE LAND.
- 3.02 THE CITY acknowledges that in the event of the breach by it of any of the terms of this agreement or of any of its covenants hereunder, THE CITY shall repay to NCC and DU the Funds used to purchase the said LAND within ninety (90) days of demand by NCC and DU, PROVIDED HOWEVER that THE CITY may within such ninety (90) day period begin to undertake to remedy the breach to the satisfaction of NCC and DU, and if the breach shall be fully remedied within one (1) year, the Funds so demanded shall not be repayable;
- 3.03 Any Funds required to be paid or repaid by THE CITY to NCC and DU pursuant to this Article III shall be paid or repaid in lawful money of the United States of America or the equivalent in lawful money of Canada determined as at the date of repayment.

Article IV – Release and Indemnities

- 4.01 THE CITY hereby releases and discharges NCC and DU its officers, employees, servants and agents from and against any and all actions, causes of action, suits, claims, accounts, demands, or injuries, which THE CITY now has or may have, or which may arise or other exercise of the said rights howsoever arising, EXCEPTING, actions, claims, accounts, demands, or injuries occasioned by the negligence of NCC and DU, their officers, employees or servants for which NCC and DU agree to indemnify and save harmless THE CITY.

- 4.02 THE CITY hereby indemnifies and saves harmless NCC and DU from and against any and all actions, causes of action, claims, accounts, suits, demands or injuries of any kind whatsoever or howsoever arising as a result of THE CITY acquiring and holding title to the said Land, whether by itself or by or on behalf of any person, firm or corporation and arising from any negligence on the part of THE CITY, its officers, employees, servants or agents, or as a result of any breach of any of the terms of the agreement.

Article V – Term

- 5.01 The parties hereto agree that this agreement shall remain in full force and effect in perpetuity and shall be binding upon the parties hereto and their respective successors and assigns.

Article VI – Notice

- 6.01 Any notice required or permitted to be given pursuant to this agreement shall be deemed to be sufficiently given if delivered personally or if mailed by prepaid registered mail to the following addresses:

To: The Nature Conservancy of Canada
110 Eglinton Avenue West
Suite 400
Toronto, Ontario
M4R 1A3

and

John Foley
Director of Land Conservation
The Nature Conservancy of Canada, Atlantic Region
924 Prospect St., Suite 2
Fredericton, NB
E3B 2T9

and

To: Mark Gloutney
Ducks Unlimited Canada
Manager of Atlantic Operations– Atlantic Canada
P.O. Box 430, Unit 64, Highway 6
Amherst, Nova Scotia
B4H 3Z5

To: Geraldine King
Manager, Environmental Initiatives
Engineering Department
City of St. John's
P.O. Box 908
St. John's NL A1C 5M2

In the event that notice shall be given by prepaid registered mailing as aforesaid, the notice shall be deemed to have been received upon the third business day following the date of the mailing.

Article VII – General

- 7.01 This agreement shall run with THE LAND.
- 7.02 Each provision of this agreement is separate and severable from the others and if any provision of this agreement is determined to be unenforceable, such determination shall not affect the enforceability of any other provision;
- 7.03 This agreement shall inure to the benefit of and be binding upon the parties and their respective successors and assigns;
- 7.04 The indemnity and release set forth in this agreement shall survive the expiry or terminate of this agreement or the exercise of the option to purchase hereunder and a conveyance of THE LAND under such option and shall continue to be binding upon the parties notwithstanding such expiry, termination or exercise of option.
- 7.05 This agreement shall be governed by and interpreted according to the laws of the Province of Newfoundland and Labrador.

IN WITNESS WHEREOF the parties hereto have duly affixed their respective seals, over the signatures of their proper officers duly authorized in that behalf as of the day and year first above written.



THE CITY OF ST. JOHN'S

Phyllis Bartlett
Witness

Mayor Andy Wells
Mayor Andy Wells
City of St. John's

Phyllis Bartlett
Witness

Neil Martin
Neil Martin
City Clerk

PHYLLIS BARTLETT
A Commissioner for Oaths in and for
the Province of Newfoundland and Labrador.
My commission expires on December 31, 2007



NATURE CONSERVANCY OF CANADA

John Foley
Witness

Deneen Cull
Deneen Cull
Program Coordinator,
Newfoundland and Labrador
for John Foley
Director of Land Conservation,
Atlantic Region

DUCKS UNLIMITED CANADA



Carol Mull
Witness

Kelly Sandoval
Kelly Sandoval
District Fundraising Manager,
Newfoundland & Labrador

Kenn Walton
Witness

Mark [Signature]
DUCKS UNLIMITED CANADA
MANAGER OF ATLANTIC OPERATIONS

APPENDIX 2:

**St. John's Municipal Wetland Stewardship Agreement
for Lundrigan's Marsh**

THIS AGREEMENT made at St. John's, in the province of Newfoundland and Labrador,
this 18th day of October, 2004

BETWEEN: HER MAJESTY THE QUEEN IN RIGHT
OF NEWFOUNDLAND, as represented
by the Honourable the Minister
of Environment and Conservation

(hereinafter called the "Minister")

of the one part

AND: THE CITY COUNCIL OF THE CITY OF ST. JOHN'S
a municipal corporation organized
and existing pursuant to the provisions of the *City of St. John's Act R.S.N. 1990, c.C-7*, as
amended

(hereinafter called the "City")

of the other part

WHEREAS the Government of Newfoundland and Labrador has entered into an
Agreement with others for the implementation, management and enhancement of the
North American Waterfowl Management Plan through the Eastern Habitat Joint Venture;

AND WHEREAS the parties hereto recognize that the proper protection and management
of both wetlands and uplands habitats are fundamental tools in maintaining and
enhancing waterfowl populations in the province;

AND WHEREAS the Minister proposes that certain important wetlands and associated
wildlife habitat within the City be protected and enhanced through and with the
cooperation of the City in accordance with this Agreement and the Habitat Management
Plans developed hereafter;

AND WHEREAS the City has agreed to enter into the Agreement for the purpose of
protecting and enhancing those areas of important wetland habitat within its jurisdiction.

NOW THEREFORE IT IS AGREED BY THE PARTIES AS FOLLOWS:

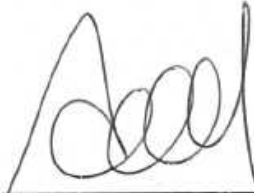
1. The lands herein delineated and designated as a Management Unit (being the lands outlined on a certain Schedule annexed hereto and marked "A" shall be set aside, preserved and managed in accordance with terms and conditions of this agreement and subject to the terms and conditions of a Habitat Management Plan developed hereunder for better protection and enhancement of the wetlands for waterfowl and other wildlife.
2. Within the limits of its jurisdiction, the City will take any and all steps possible to ensure that only those activities that have no negative impact on the wetlands are permitted within the Management Unit.
3. The Habitat Management Plan shall be developed in cooperation with the Minister and the Minister agrees to provide such advice and expertise necessary or advisable for the development of the Habitat Management Plan.
4. The City agrees that in the preparation of a Municipal Plan for the City or any amendments to any existing Municipal Plan, the area designated as a Management Unit shall be recommended by the City to be appropriately declared a protected area under SUBSECTION 13(3) of the *Urban and Rural Planning Act, 2000* (or such other legislation in amendment or substitution therefore as may be brought into effect from time to time). The City in passing regulations or by-laws related to the protected area (Management Unit) so designated under the Municipal Plan or amendments thereto and which may affect the Management Unit shall do so in consultation with the Minister and in keeping with the principals of this Agreement.
5. The parties to this agreement, their consultants, servants, or agents, shall have and exercise reasonable rights of access to the Management Unit for all purposes necessary or incidental to this Agreement and in particular, but without limiting the generality of the foregoing, for the purpose of developing and carrying out the Habitat Management Plan.
6. Each of the parties hereto agrees that they will exercise their best efforts to further develop management measures for the more effectively carrying out of their mutual intentions as expressed in this agreement.


IN WITNESS WHEREOF the parties have caused these presents to be executed in accordance with their respective rules and regulations the day and year first before written.


SIGNED SEALED AND DELIVERED
by the Honourable the Minister
of Environment and Conservation
in the presence of:


Witness

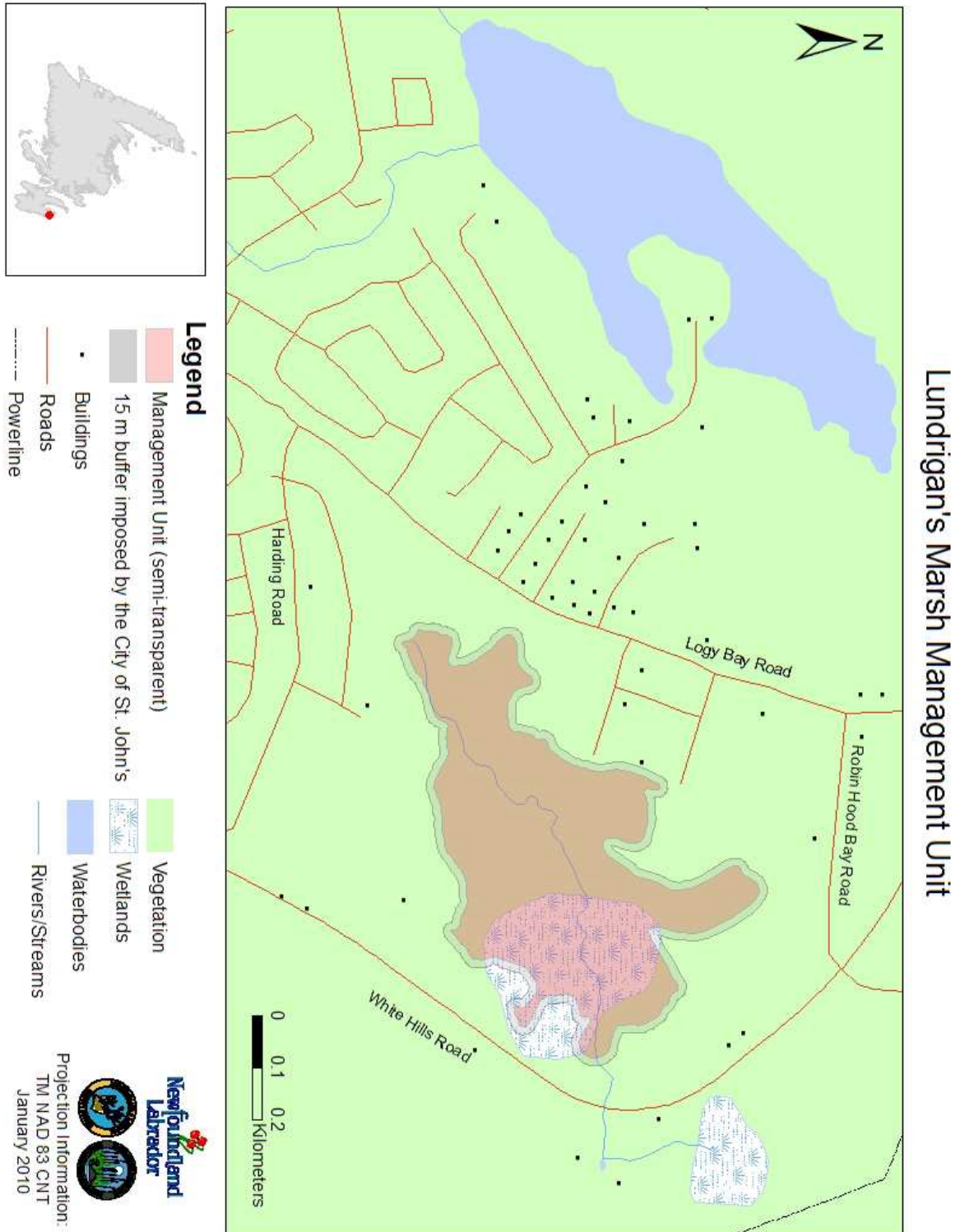
**THE HONOURABLE THE MINISTER
OF ENVIRONMENT AND CONSERVATION**


THE SEAL OF the City Council of
the City of St. John's was
hereunto affixed in the
presence of:

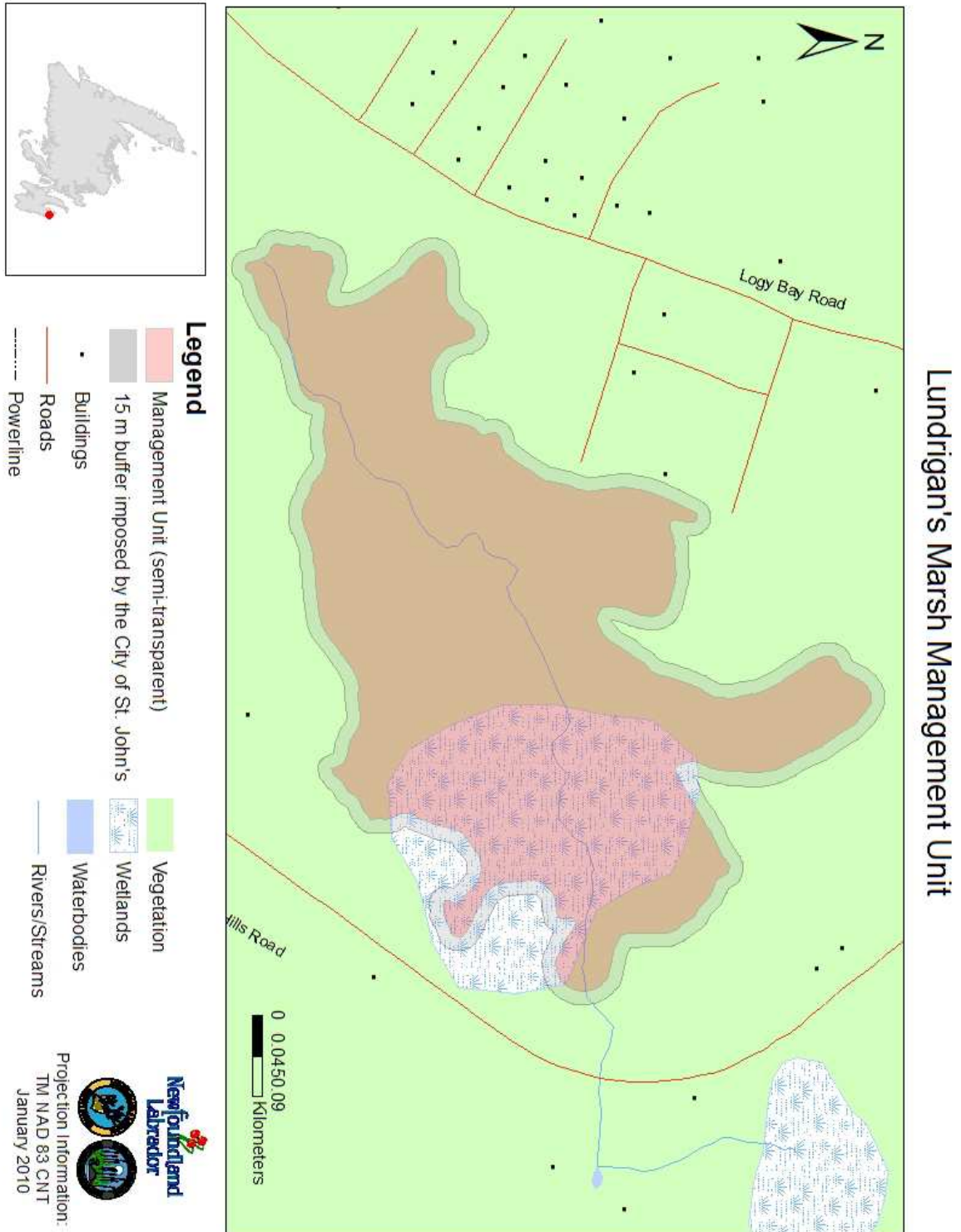

Witness

NEIL A. MARTIN
A Commissioner for Oaths in and for
the Province of Newfoundland and Labrador.
My commission expires on December 31, 2007.

APPENDIX 3: Map of Lundrigan's Marsh Management Unit, St. John's



APPENDIX 4: Detailed Map of Lundrigan's Marsh Management Unit, St. John's



**APPENDIX 5:
Avian Species of Lundrigan's Marsh**

Group	Common Name	Scientific Name	General Status Rank*
Waterfowl	Northern pintail	<i>Anas acuta</i>	S3-B
	Green-winged teal	<i>Anas crecca</i>	S5-B
	Blue-winged teal	<i>Anas discors</i>	S2-B
	Mallard	<i>Anas platyrhynchos</i>	S3-B
	American black duck	<i>Anas rubripes</i>	S5-B, S5-N
	Northern shoveler	<i>Anas clypeata</i>	S1-B
	Garganey	<i>Anas querquedula</i>	SA-N
	Wood duck	<i>Aix sponsa</i>	S1-N
Other	Great blue heron	<i>Ardea herodias</i>	S2-B
	American bittern	<i>Botaurus lentiginosus</i>	S4-B
	Snowy egret	<i>Egretta thula</i>	SA-N
	Wilson's snipe	<i>Gallinago delicata</i>	S5-B
	Swamp sparrow	<i>Melospiza georgiana</i>	S5-B
	Sora	<i>Porzana carolina</i>	S1-B
	Killdeer	<i>Charadrius vociferus</i>	S2-B
	Alder flycatcher	<i>Empidonax alnorum</i>	S3-B
	Yellow warbler	<i>Dendroica petechia</i>	S5-B
	White-crowned sparrow	<i>Zonotrichia leucophrys</i>	S4-B
	American goldfinch	<i>Carduelis tristis</i>	S4
	Rusty blackbird	<i>Euphagus carolinus</i>	S3-B
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	S1-B, S2-B
	Common grackle	<i>Quiscalus quiscula</i>	S5-B
	Greater yellowlegs	<i>Tringa melanoleuca</i>	S4-B, S5-M
	Sharp-shinned hawk	<i>Accipiter striatus</i>	S3-B
	Peregrine falcon	<i>Falco peregrinus</i>	S2-M
	Ivory gull	<i>Pagophila eburnea</i>	S2-N

*** Definitions of Provincial SRANKS:**

S1 – Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.

S2 – Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.

S3 – Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in some locations (21 to 100 occurrences).

S4 – Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the element is of long-term concern (e.g. watch list) (100+ occurrences).

S5 – Demonstrably widespread, abundant, and secure throughout its range in the province.

SA – Accidental or casual in the province (i.e., infrequent and far outside usual range). Includes species recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.

**** Breeding Status Qualifiers:**

B – Breeding: Basic rank refers to the breeding population of the element in the province.

N – Non-breeding: Basic rank refers to the non-breeding (usually wintering) population of the element in the province.

M – Migratory: Basic rank refers to the migratory stopover population in the province.

APPENDIX 6

Community – Based Waterfowl Monitoring Project Protocols and Data Sheets

Generally within a community's wetland Management Units, a set number of locations for viewing waterfowl are chosen and outlined on a detailed map. These sites are chosen, for ease of access and ability to view waterfowl over a wide area, but they are also relatively evenly distributed around the wetland. Sites can be chosen to sample productive, historically productive and potentially non-productive waterfowl locations to give a representative snapshot of inhabitants of the estuary.

Each site location should be visited during a single day, within a two-three hour period, which will mean, in most towns, that more than one person will need to be involved. The survey should occur, at least once within a two week period in both the spring and fall. You are most welcome to complete and record as many observations as your schedules permit but the above indicates that, at a minimum, at least two surveys would occur annually.

These surveys should occur **during the last two weeks of June and during the first two weeks of October and should occur either in the early morning (starting at dawn and up to ~ 3 hours afterwards) or in the early evening (starting ~3 hours before dusk).**

If you are not already familiar with the area it would be advantageous for you to become familiar with the sample locations identified on the map prior to the day of your survey. It may also be prudent to seek private landowner permission in advance of your intended survey day. In addition, identify access points (ex. determine whether best approached by foot or by boat) well in advance so that your survey can be completed in a single morning or evening.

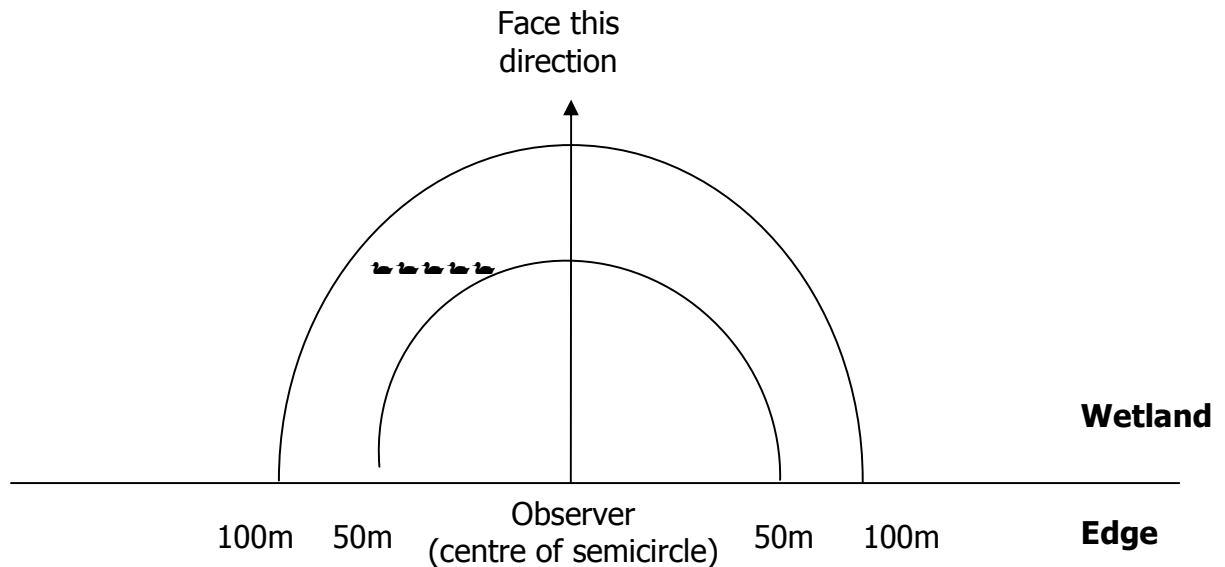
Survey Locations

The intended survey sites should be relatively easy to access (off roads or meadows) and are intended to follow the shoreline of the wetland. **Observations should be made within a semi-circle** oriented towards the wetland instead of attempting to watch in a full circle all around you which could form an unnecessarily difficult amount of survey area in a short period. Orient yourself so that you can maximize the amount of wetland being observed (i.e. your view should not encompass a large swath of open field or roadway) **out to a distance of ~100m on either side of you.** It may be prudent to become familiar with what a 100m distance roughly looks like before setting up your survey.

Some sites may be more easily accessed by non-motorized water craft such as canoe or kayak. If you choose to use canoe or kayak, the centre of the semicircle will become your boat and you will orient your semicircle accordingly. It will be especially important to

approach your survey site slowly and quietly by boat or kayak since your odds of flushing waterfowl will be increased.

Consider the following drawing as your sample area:



Tools you should consider having include the following:

- A keen eye!
- Field notebook or data sheet (attached)
- Pencil - record findings
- Watch - keep track of time (10 minutes per survey site)
- Bird field guide
- Pair of binoculars and/or a spotting scope (binoculars may be sufficient)
- Appropriate outdoor clothing
- Cellular phone in case of an emergency

Conducting the Survey

Surveys should only be conducted under suitable or good weather conditions.

This includes good visibility out to 100m, reasonably warm air temperature, little or no precipitation and little or no wind. If poor conditions develop and last for an extended period, it is suggested that you reschedule your survey for another day. **Once you have reached the survey site and oriented yourself so that you have maximal view of the area, sit quietly and begin timing for 10 minutes.** It is advised that you record any waterfowl that may be flushed out of the sample area during your approach and/or set up

period in the space provided at the bottom of your record sheet, indicating that waterfowl left the area just prior to the survey.

Record all waterfowl species seen within the survey area during the 10 minute period. Distinguish between male and female adults where possible and the numbers seen (including individual ducklings making up broods) in the appropriate space on the attached record sheet. Use a separate column for each sample site, identifying the site # at the top of the column. Also note any ducks that fly over, through, or out of, your sample area at the bottom of the reporting sheet.

Do not guess! It is entirely acceptable to record a species as unknown. You should be certain of the identity of a species before recording it. Birding workshops and informal bird watching excursions in your local area will make you proficient at identifying species common to your area in no time! If you find that you are recording several unknowns....that is perfectly acceptable. As years go by, you will become more and more adept at identification.

Additional Information to Record

If you are able to identify other, non-waterfowl, species of birds either by call or site in the vicinity of your survey area, please enter those in the space provided at the bottom of the appropriate column on the reporting sheets.

Excessive disturbance or noise from a number of sources (people talking, vehicles, farm equipment, boat traffic, etc.) could influence the behavior and movement of waterfowl that you are monitoring. Please take time to record any type of disturbance at the bottom of your reporting sheet (under the appropriate column corresponding to your survey site).

General / Safety Considerations

It is important to be mindful of the wetland (damp, soft, slippery) habitat that you may be asked to survey near, making personal safety your top priority. Further, if survey locations fall on private property, first seek permission from the land owner to access the property.

It is important throughout your survey that you aim to cause as little disturbance as possible to the birds that you are viewing, considering that many ducks will either be raising broods at the time of your survey or preparing for long migrations and a high level of disturbance could mean an impact on waterfowl foraging. If you approach an area and it seems to be causing a hen to separate from her ducklings, leave the area. If you approach an area and an adult seems at all aggressive (i.e. Canada goose hissing), leave the area. Common sense is important; don't put yourself or the birds that you are watching in jeopardy.

Finally, **have fun!** The intent behind this survey is to have an enjoyable community waterfowl-monitoring effort. **Not every person has to commit to monitoring all of the**

same survey locations every year, but your birding group may find it more manageable to have the same person (or group) monitor the same few sample locations year after year. If certain people in your community live close to certain survey sites, have special knowledge of certain sample sites or have a strong desire to sample certain sites year after year.....feel free to organize your survey group accordingly. Similarly, if you would like to rotate the groups of sites making up your larger survey area amongst your birding group that is acceptable, as long as the non-productive sites are factored into how you distribute the sites amongst volunteers.

What Will Happen to The Data?

Each year data sheets will be returned to EHJV staff who will compile the information to maintain a database on the diversity and abundance of waterfowl usage of the wetlands in question. This information is available on request but summary results will be forwarded to participants each year to keep you up to date on how your wetland and waterfowl are doing.

Feedback

We would appreciate learning more about any problems that you might have encountered with this protocol and would welcome any suggestions for improvement. The Eastern Habitat Joint Venture can be contacted anytime using the contact information enclosed.

The Completed Survey Sheets Should Be Returned To:

NL Eastern Habitat Joint Venture
Wildlife Division - Department of Environment and Conservation
P.O. Box 2007 • 117 Riverside Drive
Corner Brook, NL • A2H 7S1
Phone: (709) 637-2006
Fax: (709) 637-2032

APPENDIX 7 Interpretive Signage and Trail Systems

Interpretive signage in Winterland:



Photo by EHJV Staff

Lundrigan's Marsh Lookout, St. John's:



Photo by EHJV Staff

APPENDIX 8 Interpretation Centers and Other Structures

The Wetland Interpretation Centre in the Grand Codroy Valley during the 1st annual Feather and Folk nature festival:



View from the Wetland Interpretation Centre rear deck:



Photos by Charmaine Barney

Ecomuseum Shelter and Amphitheatre in Winterland:



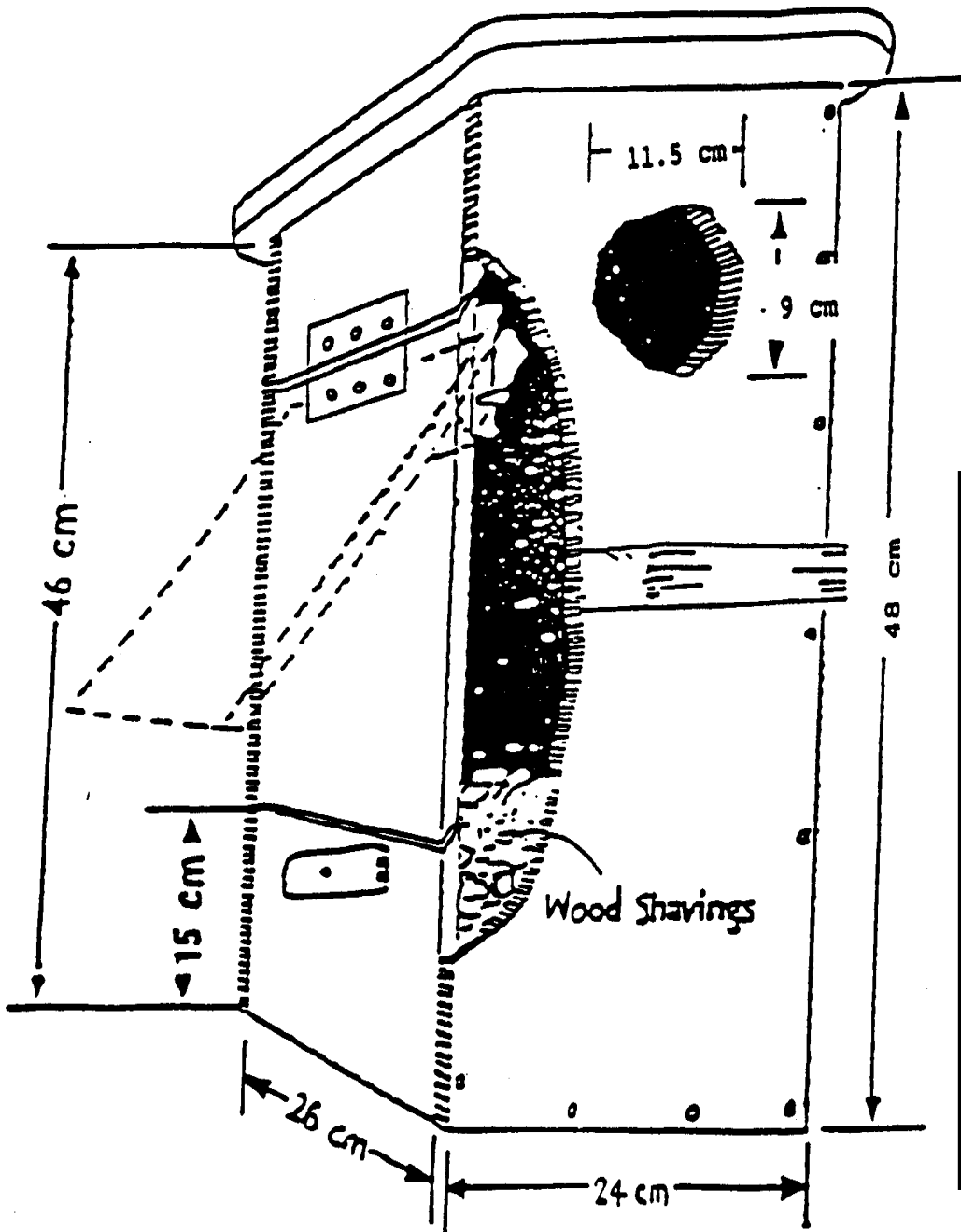
Photo by EHJV Staff

The Fluvarium in St. John's:



Photographer Unknown

APPENDIX 9 Design and Dimensions for Cavity Nest Boxes



APPENDIX 10 Construction of Bird Blinds

Image of inside and outside of bird blind in Grand Falls-Windsor:



Photo Courtesy of Corduroy Brook Trail Association



Photo Courtesy of Corduroy Brook Trail Association

APPENDIX 11 Construction of a Viewing Deck

Image of viewing deck with interpretive panel in Glovertown:



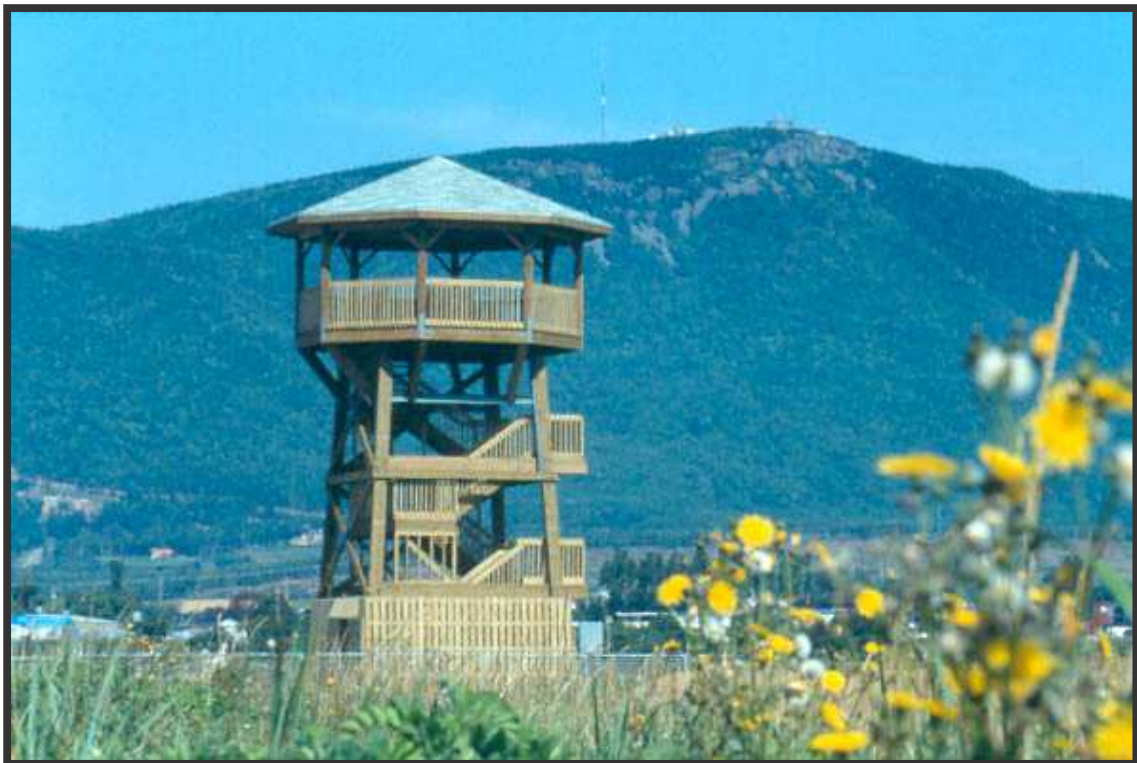
Photo by EHJV Staff

APPENDIX 12 Bird-watching (Viewing) Towers

Bird-watching (Viewing) Towers overlooking estuary in Carleton, Quebec built in 1990 for \$50,000 by local construction companies:



Photographer Unknown



Photographer Unknown