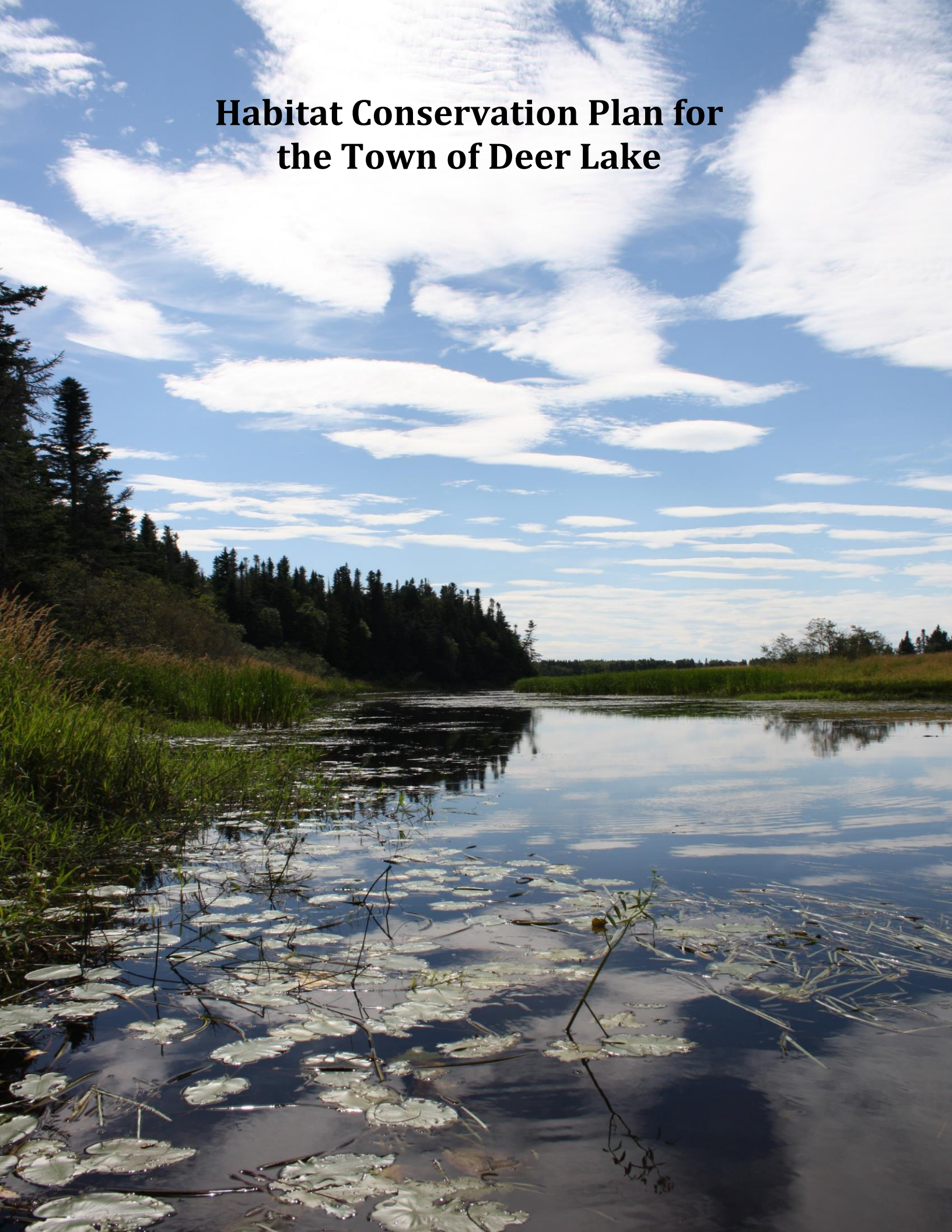
# Habitat Conservation Plan for the Town of Deer Lake



# Habitat Conservation Plan for the Town of Deer Lake

Prepared with assistance from the provincial
Department of Environment and Conservation - Wildlife Division

Prepared 2013, last updated January 5th 2017


**Town of Deer Lake**
6 Crescent Street
Deer Lake, NL A8A 1E9
(709) 635-2451
deerlake@nf.aibn.com
town.deerlake.nf.ca
facebook.com/townof.deerlake

**NL Eastern Habitat Joint Venture (EHJV)**
Department of Environment and Conservation - Wildlife Division
117 Riverside Drive, P.O. Box 2007
Corner Brook, NL A2H 7S1
(709) 637-2006
ehjv.ca
@EHJVNews
facebook.com/EasternHabitatJointVenture

**Stewardship Association of Municipalities (SAM)**
St. John's NL
samconservation@gmail.com
samnl.org
@SAM_Stewardship
facebook.com/Stewardshipassociationofmunicipalities

# PREFACE

In the province of 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 municipalities. In this province, the primary focus of the Eastern Habitat Joint Venture (EHJV) is to conserve valuable habitat through Stewardship Agreements. The Town of Deer Lake was identified as having just such ecologically valuable, and unique, wetland habitat located within its municipal planning boundary.

The Town of Deer Lake signed an agreement on June 13th, 2011 pledging their commitment to conservation and protection of wetlands within their Municipal Boundaries. On October 21st, 2013 they amended their existing agreement to include additional wetland habitat known as the Island. In accordance with these agreements, Deer Lake manages these areas with technical advice provided by the provincial Wildlife Division, in part via this Habitat Conservation Plan. With the signing of this plan, the agreement parties officially accept this Habitat Conservation Plan and agree to use it as a guide to govern activities within these areas.

**The following signatories agree to work towards the implementation of the following *Habitat Conservation Plan* for the Town of Deer Lake:**

_____ _____

**Mayor** **Witness**

_____ _____

**Date** **Date**

_____

**Director, Wildlife Division**
**Department of Environment and Conservation**

_____

**Date**

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# Section 1: Plan Overview

**Plan Purpose:** The Town of Deer Lake will use this Conservation Plan as a guide to govern activities which impact wildlife habitat in order to minimize negative impacts within the areas designated for conservation.

**Plan Goals:** (1) To conserve habitat located within the designated Management Units.

(2) To maintain and/or increase wildlife use of the Management Units, particularly by waterfowl and other bird species.

(3) To increase public awareness of the importance of wetland habitats for conserving 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 Units.

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

# Section 2: Wetland Conservation in Newfoundland and Labrador

## Introduction

Human development has resulted in the destruction of many types of habitat 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).

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 like 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. Canada, the United States and Mexico have signed the North American Waterfowl Management Plan (NAWMP), thereby committing 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 number of 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 (EHJV) in 1989.

## Eastern Habitat Joint Venture (EHJV)

The premise behind the EHJV is to conserve, enhance and restore wildlife habitat for birds, in particular 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 wildlife habitat conservation 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 EHJV works towards attaining common goals of influencing wildlife 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. Municipal Wetland Stewardship is perhaps the most successful component 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.

This component of the program focuses largely upon signing Stewardship Agreements with municipalities, corporations and individual landowners who own or manage significant wetland habitat. A Stewardship Agreement represents a formal public commitment by a community, corporation, individual and the province, to act together to conserve wetlands for waterfowl. By signing a Stewardship Agreement, communities, corporations and individuals become an important link in a continental chain of conservation areas. Nearly forty municipalities in the province have signed Municipal Wetland Stewardship Agreements. Corporate Stewardship Agreements have also been signed by the Iron Ore Company of Canada and Corner Brook Pulp and Paper Limited. Private

landowners in several of the communities surrounding the Grand Codroy Estuary (an estuary of international significance) as well as Burgeo have also been involved with the signing of Landowner "Good Steward" Agreements, demonstrating individual commitment to local wetlands and waterfowl habitat. (Figure 1)

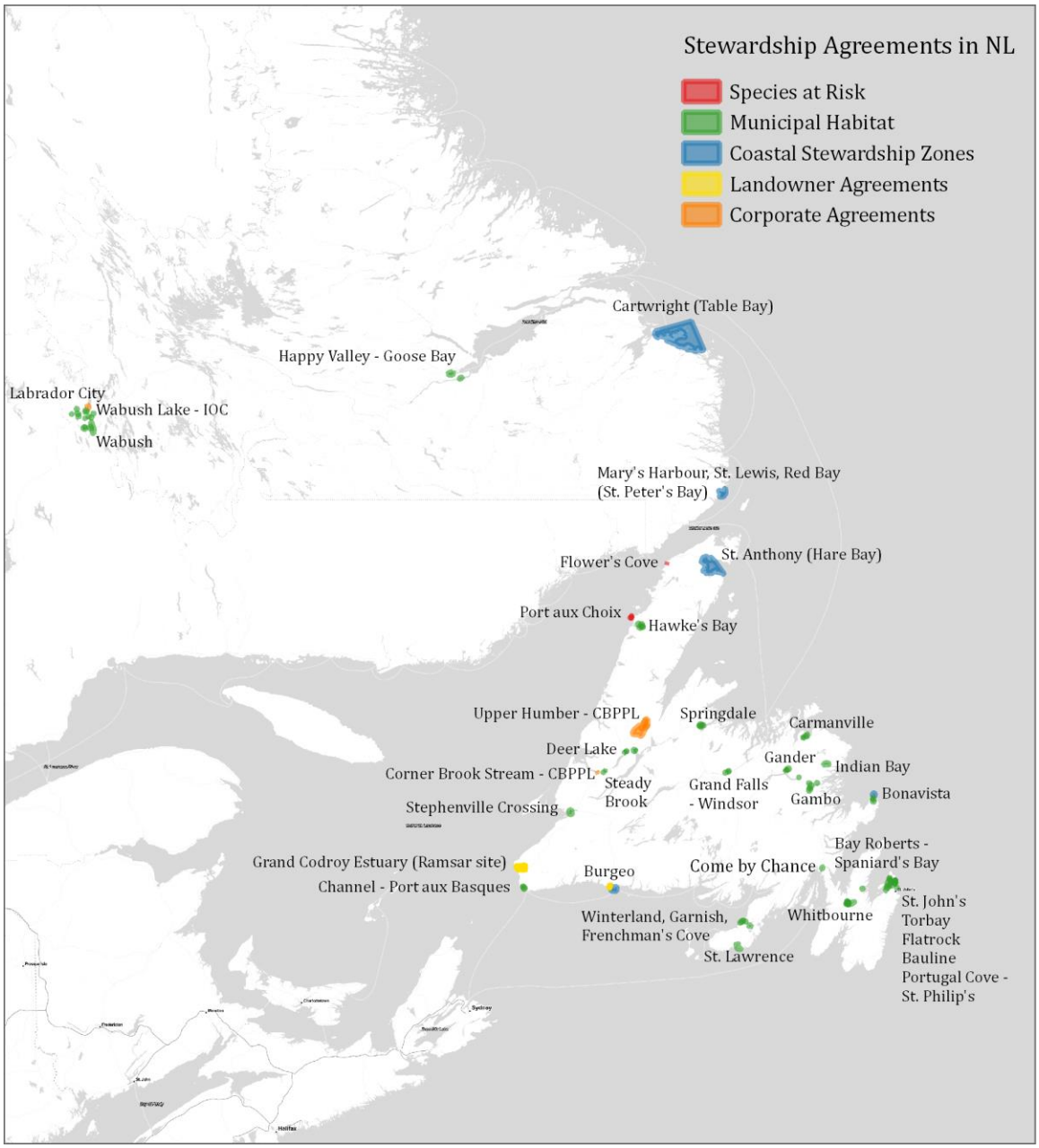



*Figure 1 – Map of Habitat Stewardship Agreements signed in Newfoundland and Labrador*

## The Stewardship Agreement Process

Initial contacts are generally sought by both Wildlife Division staff and local community leaders who wish to take action to conserve coastal, wetland and/or upland habitat. A determination is made between the parties of whether there exists mutual interest in pursuing a Stewardship Agreement (Deer Lake agreement shown in Appendix 1). Surveys within a certain area of interest are carried out by the Wildlife Division to confirm that a significant relationship exists between coastal, wetland or upland habitat and local wildlife using those areas.

Following these positive assessments, more intensive field investigations will be carried out to determine and agree on formal boundaries for "Management Units". Management Units are significant habitat areas that have been identified as important to wildlife. Management Units are intended to be incorporated as environmentally "sensitive areas", "conservation areas" or "protected areas" within municipal planning documents as governed by the Urban and Rural Planning Act (2000). These areas are, consequently, set aside by a community, individual or corporation in an effort to prevent habitat alteration and diminished ecological 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 Units clearly indicated. After the Management Units have been agreed upon by all parties, a formal Stewardship Agreement will be 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 the Stewardship Agreement.

After the signing of a formal agreement, Wildlife Division staff will assist the community, corporation or individual in preparing an area specific Habitat Conservation Plan. This plan will serve to offer best management practices and will provide recommendations and advice for conserving, enhancing and/or managing the wildlife habitat contained within a body's area of authority. In the case of a municipal agreement, once the Habitat Conservation Plan has been accepted by council it is intended that it will be then incorporated into the town's existing or future municipal plan, operating plan or master plan for use during future development decisions. More generally, a Stewardship Agreement is signed with the idea that when land use decisions are made, the value of wildlife habitat will not be forgotten and that future land-use activities will not have a negative impact upon these values.

## 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 in partnership with the Stewardship Association of Municipalities (SAM).

As a result of signing a Stewardship Agreement, staff of the Wildlife Division and/or SAM are expected to:

- Provide the agreement signatory with technical advice and assist in the development of a Habitat Conservation Plan.
- Review proposed developments within the Management Units that have the potential to impact that wildlife habitat.
- Assist in carrying out, where appropriate, education and information initiatives to raise awareness of wildlife, wetland and coastal related issues, and
- Support community conservation groups in implementing the Stewardship Agreement and Habitat Conservation Plan.

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

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

# Section 3: Wetlands and Waterfowl in the Town of Deer Lake

## The Town of Deer Lake

The Town of Deer Lake, on the west coast of Newfoundland, is nestled where the Humber River flows into the northern end of a long lake known as Deer Lake. The town, and the lake, are said to have originally gotten their name from the significant number of caribou, then thought to be deer, seen crossing the lake.

In 1922, a work camp was established to support the International Pulp and Paper Company which would later become the Town of Deer Lake, although not incorporated until 1950. The Town has grown extensively in recent years and is home to some 5000 people. A significant quantity of wetland habitat for waterfowl and other wildlife exists within the planning boundaries of the Town. Wetlands, which include riparian marshes, shallow open water, bogs, and fens, offer feeding sites, staging areas and sheltered habitats for waterfowl breeding and brood rearing. Surrounding uplands (terrestrial areas) associated with these wetland habitat types also play an important role in maintaining wetland integrity.

## Description of the Management Units

The three management units comprise approximately 874 hectares (354 acres, Figure 2).

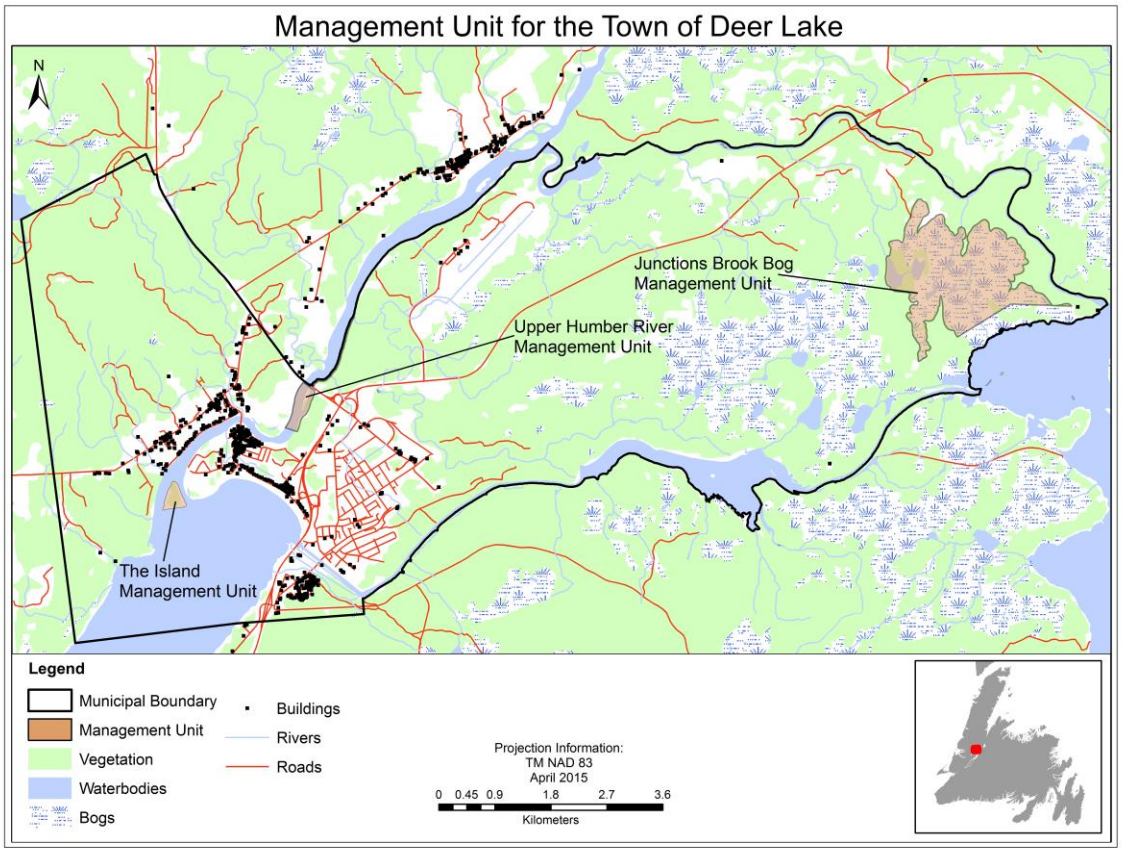



*Figure 2 - Overview of Management Units for Town of Deer Lake* (updated April 2015 to reflect changes to The Island Management Unit boundaries)

## Upper Humber River Management Unit (52 acres, 21 hectares)

On the Humber River, just south of the bridge on Highway 430 (Viking Trail) (Figure 3), is a lush riparian area and small island (Figure 4). The area has abundant emergent and submergent vegetation and offers an exceptional refuge for waterfowl in the area. A variety of waterfowl species including Green-winged Teal (*Anas crecca*), American Black Duck (*Anas rubripes*) and Northern Pintail (*Anas acuta*) make use of the area and the floating mats of vegetation associated with it for nesting, brood raising, and feeding.

The island itself provides protection and shelter to the small channel of shallow water on the eastern side of the island. Beaver (*Castor canadensis*) use this sheltered area to build lodges, while Black-capped Chickadee (*Poecile atricapilla*), Blue Jay (*Cyanocitta cristata*), and Hairy Woodpecker (*Picoides villosus*) have been observed in the surrounding uplands. The island and adjacent shoreline are dominated by emergent herbs such as Cattails (*Typha sp.*), Reed Canary Grass (*Phalaris arundinaceae*), and Rushes (*Juncus* sp.) as well as low shrubs (Figures 5, 6).

The Management Unit includes the small island and a 30 meter buffer on the adjacent eastern shoreline of the Humber River, as well as the surrounding shallow open water habitat.

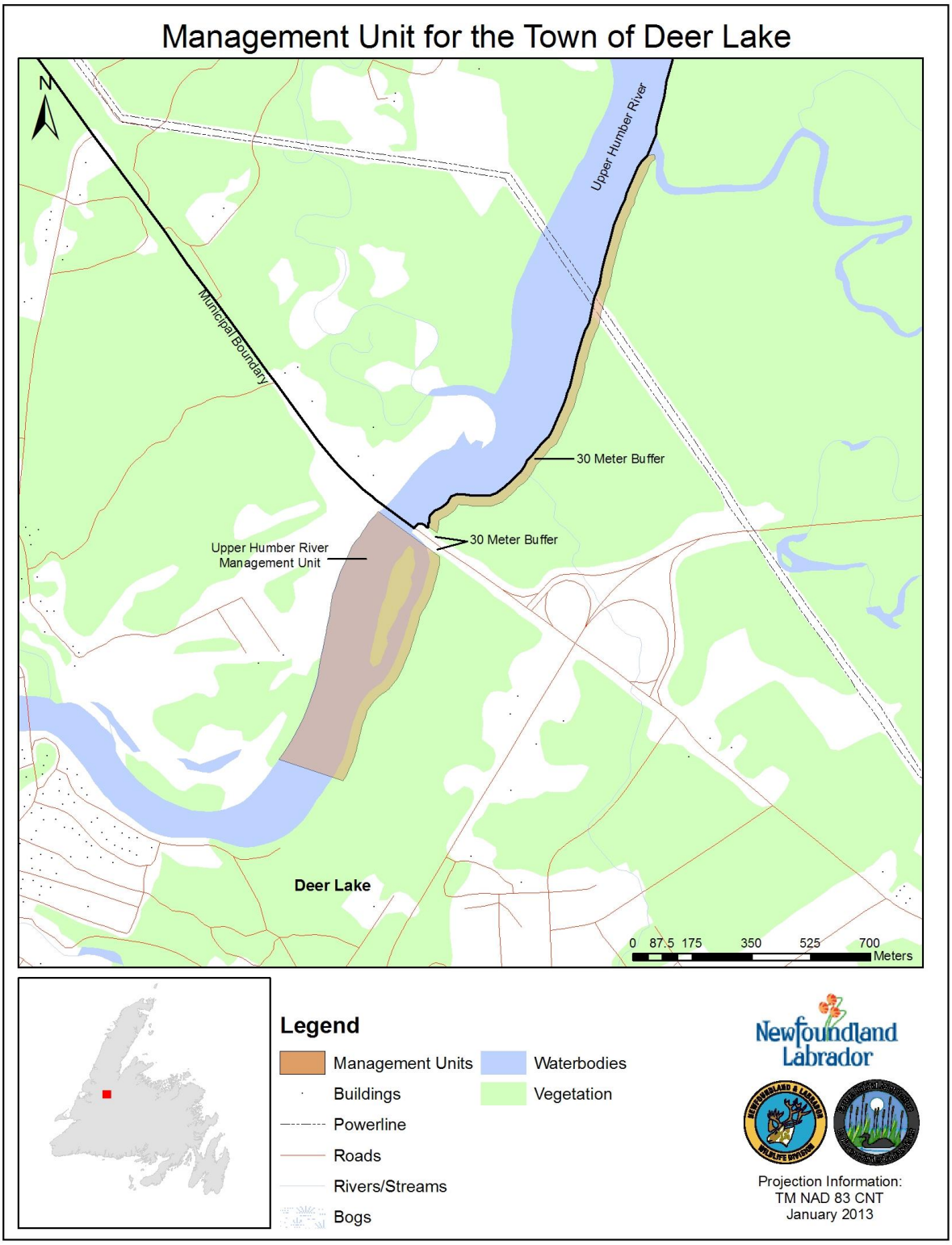



*Figure 3 - Map of Upper Humber River Management Unit*


*Figure 4 - Aerial photo of the Upper Humber River Management Unit*

*Figure 5 - View of the shoreline south of Highway 430 on the Humber River in the Upper Humber River Management Unit. Photo by NL Wildlife Division*

*Figure 6 - View of the small island, adjacent shoreline, and surrounding shallow water of the Upper Humber River Management Unit. Photo by NL Wildlife Division*

**Junction Brook Bog Management Unit (796 acres, 322 hectares)**

The eastern boundary of the Town of Deer Lake (Figures 7, 8) contains a mosaic of diverse wetland types which, across the landscape, provide important habitat for waterfowl and other wildlife for breeding, feeding and staging. A complex of marshes, ponds, bogs, sloped fens, and wet forest exist here in relative seclusion (Figures 9, 10). Species including Canada Geese (*Branta canadensis*), Common Loon (*Gavia immer*), Ring-necked Duck (*Aythya collaris*), and Green-winged Teal (*Anas crecca*) are known to frequent this area throughout the year and likely move between habitat types.

This wetland complex is expansive, but a discrete wetland area (with a 30 meter buffer along its outer boundaries), was conserved via the Town's Stewardship Agreement.

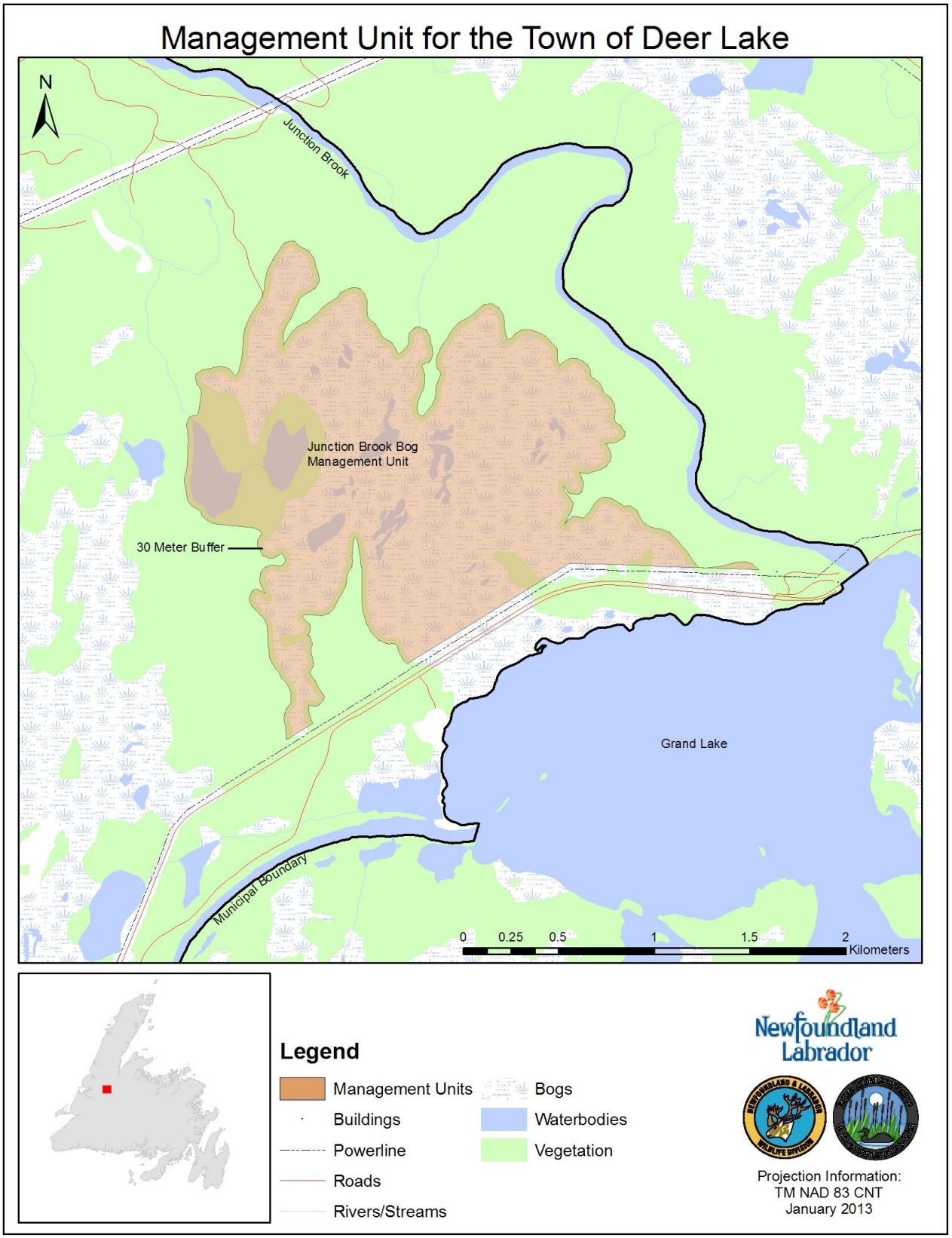



*Figure 7 – Map of Junction Brook Bog Management Unit*


*Figure 8 – Aerial photo of wetland areas comprising Junction Brook Bog Management Unit*

*Figure 9 – View of the wetland complex (Junction Brook Bog Management Unit) at eastern end of Deer Lake Planning Boundaries. Photo by NL Wildlife Division*

*Figure 10 – View of the wetland complex (Junction Brook Bog Management Unit) at eastern end of Deer Lake Planning Boundaries. Photo by NL Wildlife Division*

**The Island Management Unit (26 acres, 11 hectares)**

The Island, located at the junction of the Upper Humber River and Deer Lake (Figures 11, 12) is known to be a hotbed of waterfowl activity. During field surveys, staff of the Wildlife Division noted over 100 individuals of various waterfowl species to be concurrently present in the area. Waterfowl species frequenting this area are comprised predominantly of American Black Duck (*Anas rubripes*), American Wigeons (*Anas americana*), and Ring-necked Duck (*Aythya collaris*). Various shorebirds, including the Spotted Sandpiper (*Actitis macularius*), also inhabit the island's shoreline and surrounding river banks.

The Island includes a variety of vegetation types including marshes, sandy beaches, low shrubs, and mixed forest. The surrounding shallow water with its dense submergent and floating vegetation (Figure 13, 14) provides high quality feeding habitat for waterfowl. The emergent herbaceous vegetation surrounding the island is dominated by Cattails (*Typha latifolia*) at the northern end of the island, and grasses, rushes, and Yellow Pond Lilies (*Nuphar variegata*) at the southern end. These emergents provide suitable protection and refuge for adult ducks and broods. Noise disturbance exists in this area as this section of the Upper Humber is known to be of high value as a recreational area; it is frequented by motorized watercraft in addition to small float planes. Discussions with council have indicated a desire to mitigate the level of human disturbance and boating traffic in the area, particularly on the eastern side of the island.

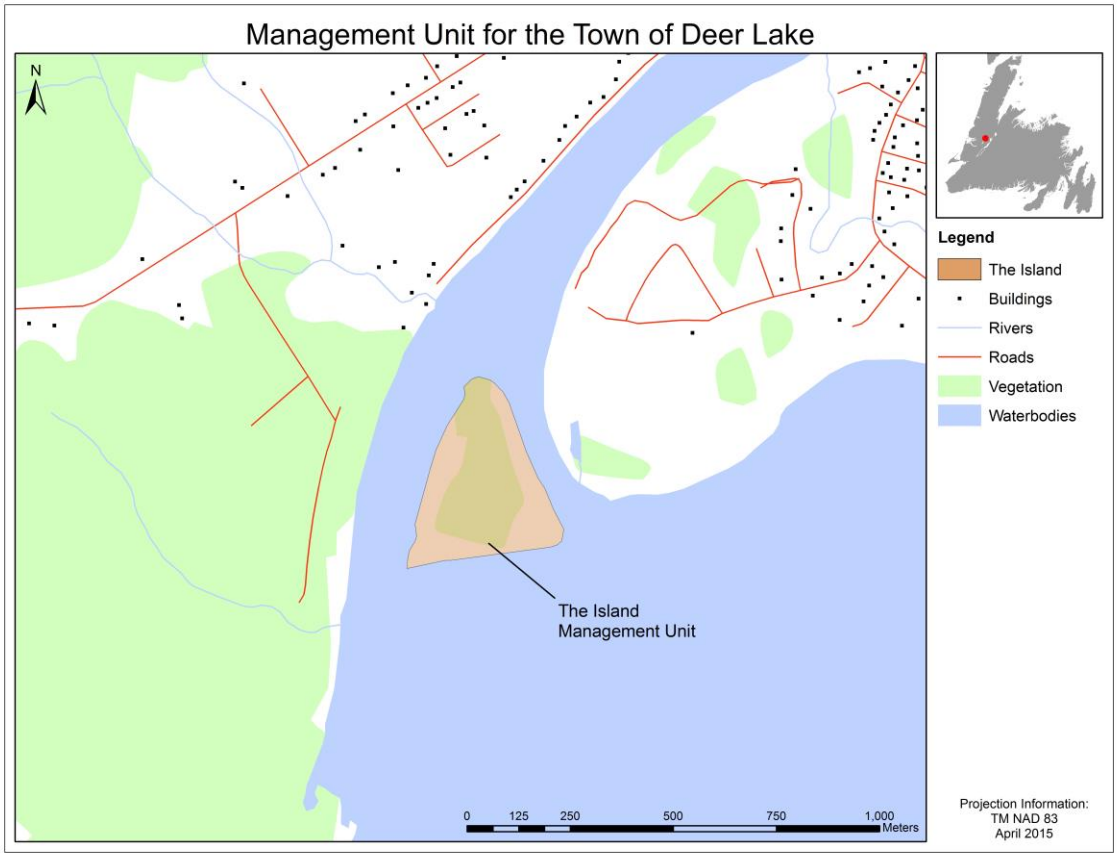



*Figure 11 – Map of The Island Management Unit (updated April 2015)*

*Figure 12 – Aerial view of The Island Management Unit. Photo by NL Wildlife Division*

*Figure 13 – View of The Island Management Unit and surrounding aquatic habitat. Photo by NL Wildlife Division*

*Figure 14 – Alternate view of the habitat surrounding the Management Unit. Photo by NL Wildlife Division*

# Section 4: General Policies for Habitat Conservation

## The Town's Commitment to Stewardship

In signing a Municipal Habitat Stewardship Agreement, the Town 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 Town of Deer Lake has committed to using this Habitat Conservation Plan as a guide to best management practices in and around wetlands, and associated uplands, significantly within the Town's Management Units. Perhaps most significantly, it is hoped that a stewardship ethic will be fostered within the community since the conservation of wildlife habitat depends not wholly on Habitat Conservation Plans or regulations, but on the conservation and stewardship ethic of Town residents and of visitors.

The Management Units will be managed to ensure the maintenance and possibly the enhancement of wetland habitat and waterfowl populations. Managing bodies will include the Town Council 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 often ideally suited to a variety of consumptive and non-consumptive recreational activities, including fishing, hiking, canoeing, photography and bird-watching. The Town may wish to use these opportunities to increase tourism to the region. In developing employment, recreational and tourism opportunities, careful consideration for 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.

One important benefit that people receive from stewardship is the opportunity to increase their knowledge of wetlands and nature in general. Programs such as the Canadian Wildlife Federation'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.

## Activities in Management Units

Activities within the Management Units will be managed whereby permitted activities do not result in the loss of wildlife habitat or wildlife populations. As such,

wildlife will be at the forefront of management decisions. Should they be necessary, efforts will be made to reduce pre-existing habitat degradation within Management Units. Only activities that have no negative or adverse impact upon wetland and associated upland habitat, and on the associated wildlife using those habitats, should be permitted in these areas. Development proposals which impact habitat or wildlife within the Management Units should be forwarded to staff of the Wildlife Division for comment with a thirty (30) day notice period.

## Incorporation of Management Units in the Municipal Plans

During the preparation of a draft Municipal Plan, or during the process of Municipal Plan Review, the Town Council shall incorporate the Stewardship Agreement into any resulting Municipal Plan or related "Master Plan". Specifically, the Management Units, and any future Management Units as may be desirable, shall be declared "conservation areas" or some similar consistent zoning designation. If such areas are outside municipal planning boundaries, the town could seek to have them designated "Protected Areas" under subsection 31 of the Urban and Rural Planning Act, 2000.

In approving permits, 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 Units, the Town Council will consult with staff of the Wildlife Division providing a thirty (30) day window of notice for comment.

## Riparian Buffers in the Management Units

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 often 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, also impact water quality; they provide spawning and rearing areas for fish species, and nesting areas for waterfowl. They also 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. Restoration projects can seek to rebuild riparian areas; Appendix 4 provides suggestions for possible plant species to be used.

The province, via the provincial Lands Act – Section 7(1), generally requires a crown land reserve or easement of 15 metres along all water bodies greater than 1m in width and the maintenance of permanent riparian areas next to watercourses within the province. It is important that the town ensures awareness and 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 Units. Agriculture and cabin development seem like the two most likely disturbances to riparian vegetation.

## Management by Committee

It is recommended that Town's 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 "Environment Committee" or "Wetlands Committee" generally chaired by a member of council 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, working with council, 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.

## Stewardship Association of Municipalities (SAM)

When a municipality signs a Municipal Habitat Stewardship Agreement, it becomes eligible to become a member of the Stewardship Association of Municipalities Inc., also known as SAM. SAM is an incorporated, non-profit organization whose membership is comprised of nearly 40 Newfoundland and Labrador municipalities. Each member municipality has also made a formal commitment to the conservation of habitat and biodiversity within their municipal planning boundaries by signing a Municipal Habitat Stewardship Agreement with the provincial Department of Environment and Conservation.

SAM member municipalities together seek to secure, enhance and restore important wildlife habitat in the province while balancing municipal development with conservation. SAM also represents its members on issues of common concern related to provincial wildlife habitat conservation. Additionally, as part of the implementation of their individual Municipal Plans, Stewardship Agreements and associated Habitat Conservation Plans, member municipalities seek to educate and engage residents, particularly youth, in environmental stewardship and conservation. This is in recognition that the involvement and support of local people can and has, had a significant positive impact on a wide variety of conservation issues.

SAM meets bi-annually with meetings rotating among member communities. We encourage you to become an active member of SAM by identifying a representative of your town to attend at least one of these meetings per year. This will serve as a significant connection for your town to provincially like-minded municipalities and link you to resources and training related to ongoing provincial conservation initiatives.

# Section 5: Habitat Conservation and Education Strategies

The following section presents some ideas for community education, engagement, and habitat enhancement that could be implemented over time in and around Management Units. They are not requirements of being involved but we encourage council to engage its Habitat or Environment Committee or local conservation organizations such as the Stewardship Association of Municipalities (SAM) in the implementation of activities which meet your needs and interests. Indeed community engagement and partnership over the long-term is the true strength of any stewardship agreement.

Many communities across the province who have signed stewardship agreements have had great success becoming involved in exactly these types of projects and will also been resources for you to connect with, especially at SAM meetings. Many of these activities and programs are free or can be funded through small community grants and via partnerships. SAM provides a listing of many relevant grants at **samnl.org/funding-opportunities**

## Bird Monitoring

Local community interest groups and interested volunteers can watch and monitor waterfowl within all areas of the Town but, particularly, within Management Units. Data collection can provide information on changes that are occurring within a wetland or other area and can indicate problems or progress towards a desired goal of waterfowl and other bird populations. By involving local residents, the profile of the area is enhanced to the long-term benefit of conservation.

eBird is a free, easy-to-use website to record your sightings and provide valuable information to help us gain a better understanding about our birds. In Newfoundland and Labrador in 2016, over 280 species of bird were recorded on eBird and over 11,000 individual lists were submitted!

Adding your bird and other animal sightings to eBird helps bird conservation and simplifies record keeping. It provides a great opportunity for beginners and experts alike to improve their identifications and provides data in a format that can be easily used.

Explore all bird sightings in Newfoundland and Labrador:
http://ebird.org/ebird/canada/subnational1/CA-NL?yr=all

Start contributing to eBird here:
https://secure.birds.cornell.edu/cassso/account/create

## Tools for successful bird monitoring:

- A keen eye
- Field notebook & pencil
- Bird field guide
- Binoculars and/or a spotting scope
- Appropriate outdoor clothing
- Phone

**When entering data into eBird, do not guess the species - it is entirely acceptable to record a species as unknown**. Birding workshops and lots of practice in your local area will make you proficient at identifying species common to your area. As years go by, you will become more and more adept at identification.

Be mindful of tides and wetland (damp, soft, slippery) habitat, making personal safety your top priority. Common sense is important; aim to cause as little disturbance as possible to the birds, considering that a high level of disturbance could impact foraging.

## Conservation Corps Green Teams

The Newfoundland and Labrador Conservation Corps (**ccnl.ca**) annually sponsors summer Green Teams and Interns, generally post-secondary and high school students, to work within communities on environmental projects. Such teams have been placed in communities with Stewardship Agreements. Examples of potential projects could include constructing and installing waterfowl nest boxes and nesting platforms (for geese) followed by subsequent monitoring throughout waterfowl breeding/brood-rearing seasons ('Bird Monitoring', above). Green Team members could train local high school students or community members in monitoring and could develop 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.

## Artificial Nesting and Loafing Structures

### Ospreys

Ospreys are fish eating raptors that are frequently observed hunting in wetland habitats, particularly areas along the coast. Unfortunately, populations plummeted in North America during the 1950's and 1960's due to the wide spread use of pesticides and other pollutants which have a tendency to bioaccumulate in birds of prey, like the osprey. For many osprey populations, bioaccumulation results in frequent reproductive failures. With the banning of many pesticides in the early 1970's, many osprey populations have made a comeback.

Osprey prefer to nest on tall, often dead, trees on the shoreline of lakes and bays that are at least 2 metres deep but make nests in a multitude of locations (e.g. telephone poles, communication towers, etc.) as long as the area is wide open with an adequate food supply. Preferred natural sites are scarce due to timber harvesting and shoreline developments.

In many parts of Canada, the installation of artificial nest structures (Figure 15, Appendix 2) by concerned citizens and community groups have facilitated the comeback of the osprey. Osprey nest structures have been installed at several sites in Newfoundland, including many municipal stewardship communities. Many people take great pleasure in watching these majestic birds raise their family and fish the shallow waters of nearby lakes and bays.

It may be advisable to install a single osprey platform at a carefully chosen location to determine whether the ecosystem can sustain a single breeding pair of osprey, with subsequent platforms planned accordingly. In conjunction with an observation tower, area residents could potentially enjoy a "bird's eye view" of osprey daily life high atop an artificial nesting structure. Artificial nesting platforms should be located in areas with minimal human use and where human impact would be least. Involvement of schools, youth groups and community organizations in the construction/maintenance/observation of the nesting structure could instill a sense of pride and awareness that would go far in fostering a community stewardship ethic.

*Figure 15 – Osprey nesting platform in Stephenville Crossing, NL. Photo by NL Wildlife Division*

**Island Construction**

Many wildlife species, such as terns and waterfowl, nest and loaf on islands due to a reduced risk of predation from land-based predators. Many species in wetlands would benefit from the construction of artificial islands. These structures can be constructed simply from wooden cribs (Tamarack Larch would be an appropriate choice for building material), measuring approximately 4 $m^2$ that have been filled with rock and soil. The islands must be positioned so that they are higher than the highest water mark. Hardy shrubs and herbaceous plants (e.g. alder, willow) must be planted on the islands to provide cover and to prevent occupancy from gulls. Care must be taken to prevent the use of toxic construction materials (e.g. treated wood, contaminated soils) and disturbance to plant and animal communities. One must also consider the potential for increased predation on certain avian species that may use the islands. Annual removal and reinstallation of islands may be necessary in response to ice conditions in tidal influenced areas.

Other forms of artificial islands involve planting native marine plant species into landscaping fabric, which is then fixed to floating structures made of plastic piping or empty gabion baskets. This type of floating island requires careful placement in areas that do not have widely fluctuating salinity levels and require placement such that disturbance would be minimal when roots are establishing. Floating islands may be beneficial in terms of oxygenating the water column, as algal blooms would not smother the highly perched plants. The floating plants should, ideally, continue photosynthesizing despite the presence of algae, and may be of benefit in absorbing excess nutrients to deter algae growth. These islands would also likely require annual removal and reinstallation.

*Figure 16 – Nest box at Cobb's Pond, Gander NL*

**Cavity Nesting Waterfowl**

Cavity nesting ducks such as Common Goldeneye use abandoned woodpecker holes or natural tree cavities caused by disease, fire or lightning. In the absence of these natural cavities, they will also use constructed nest boxes (Figure 16, Appendix 2). These shelters need to be installed and placed correctly to increase the success of nest box usage.

When nest boxes are to be installed, the Wildlife Division 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.

Please mark the location of the nest boxes using GPS on your phone or with a GPS unit; for assistance, contact the Wildlife Division or a local conservation officer. It is important that we receive coordinates for nest boxes for reporting and maintenance 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.

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 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 4-6 feet (1.2-1.8 m) 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.

Place 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 (164 feet) 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. Eight to ten centimeters 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 Goldeneye can 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 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 duckling 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. Other birds and small mammals may have used the nest boxes as well.

Installing nest boxes is a very exciting activity to help enhance waterfowl in the conservation areas around your community. It does, however, take time, commitment and maintenance and if any technical advice or help is needed please contact the staff of the Wildlife Division.

**Roosting and nesting structures for non-waterfowl species**

There are a variety of roosting and nest structures which can be built, installed and monitored/maintained for non-waterfowl species such as those that might be appropriate for birds like Tree Swallows, Northern Flicker, for owls like the Great Horned and for bats (Figure 17). This would prove beneficial to local farmers in that many bird species (and bats) feed on insects and may serve as natural pest control. In addition, providing nests for certain birds may also help reduce (or keep in check) species that may not be desirable to farmers such as crows, starlings, and rodents, while increasing biodiversity on the agricultural landscape.

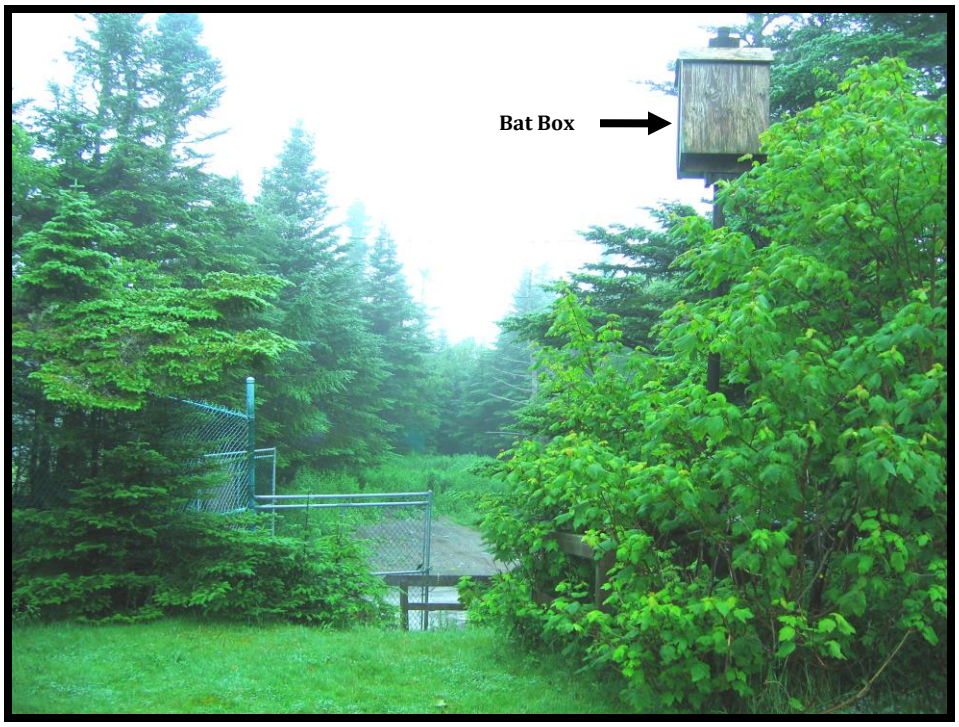



*Figure 17 – Bat Roosting Box in Salmonier Nature Park. Photo by NL Wildlife Division*

## Educational Programs

Public education can help foster a greater sense of habitat stewardship among town residents. Even interpretive signs (including the ones provided by SAM, Appendix 3) can contribute to an increased understanding and appreciation of local wildlife. There are several well developed wetland education programs that span every season and age group including *Wetlands in Winter* (Tantramar Wetlands Centre, **weted.com**), *Marsh Bingo* and *Creatures of the Night* (Oak Hammock Marsh Interpretive Centre, **oakhammockmarsh.ca**), *Junior Naturalists* (Wye Marsh

Wildlife Centre, **wyemarsh.com**), *Project Webfoot* (Ducks Unlimited Canada, **ducks.ca**). A number of night programs also exist that would be appropriate for guide and scout troupes.

**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.

**Backyard Habitat for Canada's Wildlife**
This habitat awareness initiative by the Canadian Wildlife Federation is administered in conjunction with the Wildlife Division's Salmonier Nature Park. This program enables you 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.

**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 can be 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 natural beauty 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 sites 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 evenings. Videos could be tailored to various ages and could include nature-related craft projects within the Eco-museum shelter as a follow up. Good starting points for videos and educational nature-oriented projects for children include **hookedonnature.org**, **planetpals.com**, and **hctfeducation.ca/resource-room**

**Ducks Unlimited Canada's Youth Programs**
***Project Webfoot***

Educating youth about wetlands and waterfowl is a major part of Ducks Unlimited Canada's mission. The award-winning Project Webfoot Wetland Education Program is a comprehensive program linked to the senior elementary curriculum in grades 4 to 6 (habitats & communities, biodiversity, food webs and adaptations). Learning resources and field trips to a local wetland are available to sponsored classes. There are also many teacher and student resources for Grade 4 through high school at **ducks.ca** which provide great links with the school curriculum.

***Wetland Heroes***

Another program offered through Ducks Unlimited includes Wetland Heroes which take action to protect wetlands for wildlife and people in their local community. Whether you're one person, a group of friends, a class, club or school there are many ways you can make a difference from letter writing to fundraising and habitat enhancement projects and more. To become an official Wetland Hero register at **ducks.ca** and describe the great conservation work you're doing to help protect wetlands. Wetland Heroes receive a certificate and a special token of appreciation from Ducks Unlimited Canada. With permission, selected Wetland Heroes may be featured online or in publications.

## 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 absorbing excessive amounts of nitrogen, phosphorous, and carbon – substances associated with the occurrence of algal blooms. Many 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. Appendix 4 provides a guide to many potentially useful 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 nonnative, 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.

Eelgrass is an aquatic grass is known to have significant value for waterfowl and providing habitat for many aquatic species such as juvenile salmon and trout. It is possible to encourage the growth of eelgrass beds through an inexpensive project of habitat management and shoot transplantation from a nearby donor site. A thorough site evaluation would have to be initiated in consultation with staff of the

Wildlife Division to assess the topography of the coastal area, water salinity and substrate suitability before proceeding with the project. However, encouraging eelgrass bed establishment is a project that has been successfully completed in a number of areas across Canada.

Some species of Willow (*Salix* sp.) and Alder (e.g. Green Alder, *Alnus viridis 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 (*Ondatra zibethicus*) and Snowshoe Hare (*Lepus americanus*), and bird species like Ruffed Grouse (*Bonasa umbellus*) and Evening Grosbeaks (*Coccothraustes vespertinus*).

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 including waterfowl. 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.

Blue-joint Grass (*C. canadensis*) and Dune Grass (*Ammophilia breviligulata*) can stabilize banks and shorelines. Once established these grasses provide a great deal of cover and concealment to waterfowl. Low growing native shrubs may be interspersed with either grass species to enhance the desired effect of seclusion.

## Litter Removal

Community interest groups and individual residents can work cooperatively to remove the large quantity of litter in and around all portions of the community on a regular basis, while avoiding times when waterfowl may be disturbed during breeding, staging or brood rearing periods (May to August). Programs such as the Marine Institute's Ocean Net (**mi.mun.ca**) and the Great Canadian Shoreline Cleanup (**shorelinecleanup.ca**) assist communities in organizing litter cleanups.

# APPENDIX 1

## STEWARDSHIP AGREEMENT

**THIS AGREEMENT** made at Deer Lake, in the province of Newfoundland and Labrador, this 15th day of June, 2011.

**BETWEEN:** **HER MAJESTY THE QUEEN IN RIGHT OF NEWFOUNDLAND AND LABRADOR,** as represented by the Honourable the Minister of Environment and Conservation (herein called the "Minister")

- of the one part -

**AND:** **THE TOWN COUNCIL OF THE TOWN OF DEER LAKE,** a municipal corporation pursuant to Section 15 of the *Municipalities Act, 1999* (herein called the "The Town")

-of the other part-

**WHEREAS** the Government of Newfoundland and Labrador has entered into an Agreement with others for the implementation 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 wetland and upland habitats are fundamental tools in maintaining and enhancing the waterfowl populations in the province;

**AND WHEREAS** the Minister proposed that certain important wetlands and associated wildlife habitats within the Town be protected and enhanced through and with the cooperation of the Town in accordance with this Agreement and a Habitat Conservation Plan developed hereafter;

**AND WHEREAS** the Town has agreed to enter into this Agreement for the purpose of protecting and enhancing those areas of important 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 managed in accordance with the terms and conditions of this Agreement including any Habitat Conservation Plan developed hereunder for better protection of the wetlands for waterfowl and other wildlife.

2. Within the limits of its jurisdiction, the Town shall permit only those activities within the Management Units that have no negative or adverse impact upon the wetland habitat or the waterfowl or other wildlife which utilize those habitats.

3. The parties may establish other Management Units as may be desirable from time to time. The Management Units shall be subject to the terms and conditions of the Habitat Conservation Plan developed to enhance and protect the wetland habitats, the waterfowl and other wildlife which utilize those habitats.

4. The Habitat Conservation Plan shall be developed in cooperation with the Town and the Minister agrees to provide such advice and expertise necessary or advisable for the development of the Habitat Conservation Plan.

5. The Town agrees that in the preparation of a Municipal Plan for the Town or any amendments to any existing Municipal Plan, the areas designated as Management Units shall be recommended by the Town to be appropriately declared protected areas under subsection 13(3)(f) 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 Town in passing regulations or by-laws related to the protected areas so designated under the Municipal Plan or amendments thereto and which may affect the Management Unit(s) shall do so in consultation with the Minister and in keeping with the principles of this Agreement.

6. The parties to this Agreement, their consultants, servants or agents, shall have and exercise reasonable rights of access to the Management Unit(s) 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 Conservation Plan.

7. Each of the parties hereto agree that they will exercise their best efforts to further develop management measures for 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 Town Council of the
Town of Deer Lake hereunto
affixed in the presence of:

Witness

**THE TOWN COUNCIL OF THE TOWN OF DEER LAKE**

# APPENDIX 2

## Materials and Design for Artificial Nesting and Loafing Structures

**Osprey Platforms** (Courtesy of Government of Ontario)

EXTENSION NOTES

Ontario

# BUILDING NESTING PLATFORMS FOR OSPREYS

Although they were once scarce in Ontario, ospreys have made a striking comeback in recent years. Thanks to concerned people working together to build and install special nesting platforms, these large brown and white fish hawks are now a familiar sight along many waterways.

This Extension Note provides information on how to construct and install two types of nesting structures — the single-poled platform and the quadropod platform.

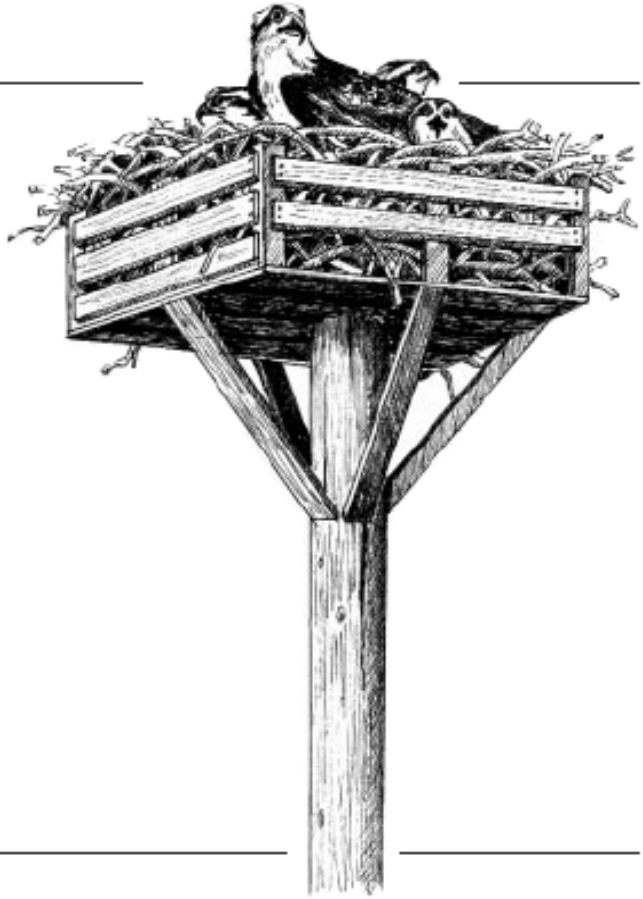
## THE OSPREY STORY

Ospreys are found across Canada and in most parts of the world. In Ontario, they nest in regions as far north as Algonquin Park.

During the 1950s and '60s, osprey populations dropped dramatically in the province. Pollutants, such as the insecticide DDT, had contaminated many waterways and were accumulating in fish. Because fish are an important source of food for ospreys, they too were affected. Fortunately, the use of DDT was banned in Ontario in 1974.

Today, ospreys are returning, but only to face another obstacle. Ospreys generally build their nests in tall, isolated trees that are close to shallow bodies of water. During their 20-year absence, many of these natural nesting sites were destroyed, forcing some ospreys to nest on hazardous structures such as hydro poles and television towers.

For the past few years, the Ministry of Natural Resources, along with groups of concerned citizens from Georgian Bay to the St. Lawrence River, have embarked on a campaign to build nesting structures specially designed for ospreys.



## BEFORE YOU START

Erecting platforms in lakes and rivers may require a permit. Before you begin, contact the Ministry of Natural Resources for more information. Other agencies, such as Parks Canada and local conservation authorities, may also have to be informed.

## NESTING PLATFORMS

There are different types of nesting platforms for different site conditions. The quadropod is designed to be placed directly in the water, while the single-poled structure is designed for use on land.

When choosing a site for a nesting platform, consider the following:

- Ospreys feed almost exclusively on fish. Sites should be no more than three kilometres from shallow bodies of water — 50 metres is ideal.
- Platforms should be erected in open areas, giving the osprey room to build a nest as well as to protect it from predators, such as raccoons and owls.
- Sites should be sheltered from prevailing winds and major ice movement. They should also be at least 100 metres from human activity.
- When building several nesting platforms on one site, they should be placed at least 300 metres apart.

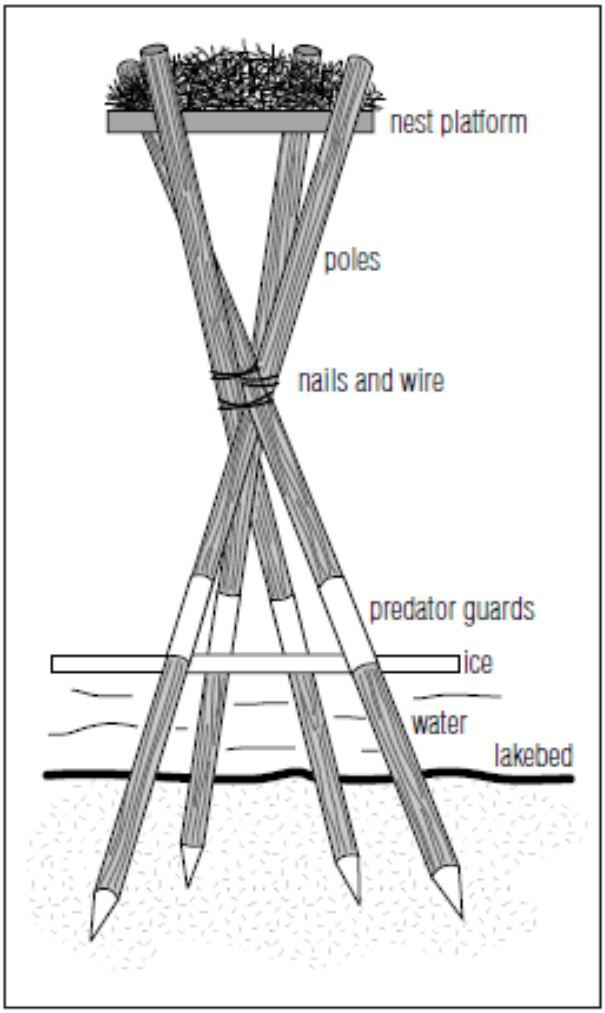
## THE QUADROPOD PLATFORM

As the name implies, this platform has a four-legged base. Because it's left in the water year-round, it's important to choose a location where it won't be a hazard to boaters, and where winter ice won't disrupt it. Good locations include quiet bays or isolated marshes.

Install the quadropod during winter months when ice conditions make it easier to get around. You'll need three or four people to carry equipment, position poles and erect the platform.

**EQUIPMENT**

- four cedar poles, six metres in length (sharpen thick end)
- 1.2 by 1.2 metre skid or pallet
- eight-inch ice auger
- 2 eight-inch spikes
- 30 two-inch roofing nails
- 12 four-inch spiral spikes/nails
- 12 six-inch spiral spikes/nails
- six metres of black fencing wire
- pliers, claw hammer, sledge hammer, saw and ice pick
- four pieces of one-metre-square sheet metal or children's plastic roll-up toboggans for predator guards
- 1.2 metres of chain
- hardwood block (about 10 x 10 x 25 centimetres)
- five-metre ladder




Quadropod platforms are designed for use in water. Quiet bays and marshes are ideal locations.

### INSTALLATION

Follow these steps to install the quadropod platform.

1. Drill four holes into the ice at a 45 degree angle. The holes should be approximately two metres apart, forming a square.
2. Ram the sharpened poles down into the ice holes and then use the sledge hammer to knock them at least one metre into the ground below the ice. To make the job of hammering easier, attach the block of hardwood to the side of each pole using a length of chain. To hold the chain in position, notch a small V into the pole using the saw (see Figure 1).
3. Place the wood pallet or skid in a level position between the tops of the poles. The platform should be at least 2.4 metres above the ice. Using the six-inch spikes, nail and wire the platform to the poles.
4. Wire and nail the poles together using the eight-inch spikes where they cross near the centre of the structure.
5. Wrap the predator guards (sheet metal or plastic toboggans) around each leg of the structure. Nail them in place with roofing nails, ensuring that they are pounded in flush and can't provide toe-holds for predators.
6. Wire a few "starter" sticks onto the bottom of the platform to attract an osprey. An extra perch can be installed off to the side or above the platform. This provides a place for the male to roost during the nesting season.

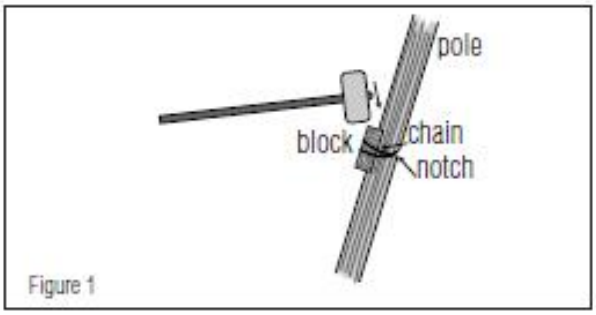


Figure 1

## SINGLE-POLED PLATFORM

The single-poled platform is better suited for use on land. It's adaptable to areas with deep soil, as well as areas with no soil. Your first challenge may be to find a long and sturdy pole. Old hydro poles are ideal. Try contacting your local utility company or Bell Canada office to inquire about obtaining poles for this purpose.

### EQUIPMENT

- one pole, six to nine metres in length
- 1.2 by 1.2 metre skid or pallet with 10-inch high retaining fence
- four wood or metal braces
- power auger (for deep soil sites)
- rock drill and mounting set (for rocky sites)

The single-poled platform is designed for use on land. It can be erected in deep soil or on rock.

BUILDING NESTING PLATFORMS FOR OSPREY

- six-inch spikes
- two-inch roofing nails
- steel guy wire
- four eye bolts (minimum two-inch thread)
- cement
- pliers, claw hammer and sledge hammer
- one piece of one-metre square sheet metal or children's plastic roll-up toboggans

**DEEP SOIL**

Follow these steps to install a single-poled platform in deep soil:

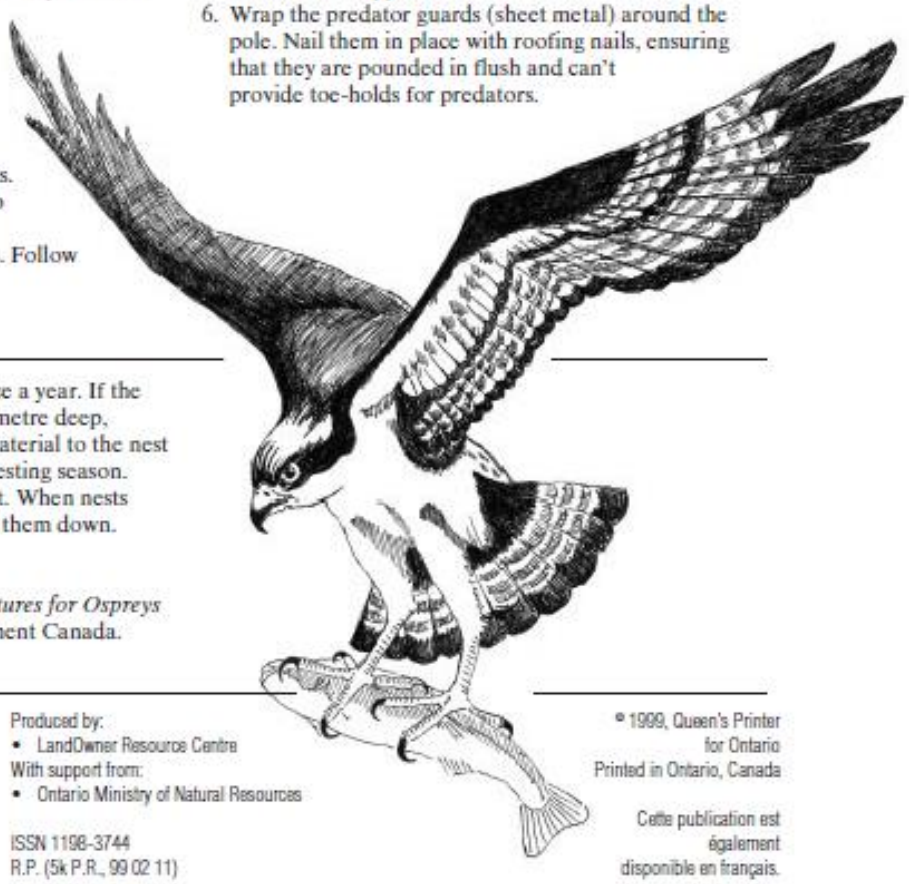
1. Attach the nesting platform (skid or pallet) to the pole. Wire a few "starter" sticks to the platform.
2. Use the power auger to drill a hole one to two metres deep.
3. Place the pole in the hole and secure it with cement, sand or rock.
4. If necessary, attach guy wires to add extra support.
5. Wrap the predator guards (sheet metal or roll-up toboggans) around the pole. Nail them in place with roofing nails, ensuring that they are pounded in flush and can't provide toe-holds for predators.

**ROCK**

While a little more involved, it is still easy to erect nesting poles in rocky areas. The most difficult piece of equipment to come across may be the rock drill and mounting sets used by utility companies. Follow these steps to install a single-poled platform on rock.

1. Attach the nesting platform (skid or pallet) to the pole. Wire a few starter sticks to the platform.
2. Use the rock drill to make the holes to accommodate the mounting set.
3. Set the bracket inside the holes. Pour in cement for additional support.
4. Raise and anchor the pole in place using the mounting set.
5. If necessary, attach guy wires prior to raising the pole to add extra support.
6. Wrap the predator guards (sheet metal) around the pole. Nail them in place with roofing nails, ensuring that they are pounded in flush and can't provide toe-holds for predators.

The pole is anchored with a mounting set.



## MAINTENANCE

Inspect the nesting platform at least once a year. If the material in the nest is more than half a metre deep, remove a layer of sticks. Ospreys add material to the nest at the beginning and at the end of the nesting season. Although nests look sturdy, they are not. When nests become too large, windstorms can blow them down.

Further reading:


- Ewins, P.J. 1994. *Artificial Nest Structures for Ospreys — A Construction Manual.* Environment Canada. Toronto, Ontario. 41p.



For more information contact:
**LandOwner Resource Centre**
P.O. Box 599, 5524 Dickinson Street
Manotick, Ontario K4M 1A5
Tel 613 692 2390 or 1 800 387 5304
Fax 613 692 2806
E-mail: lrc@sympatico.ca
Product Ordering: 1 888 571 INFO (4636)
Internet: http://www3.sympatico.ca/lrc

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# Bird House Dimension and Placement

(Courtesy of Ohio's Division of Wildlife – Wildlife Diversity and Endangered Species Program)

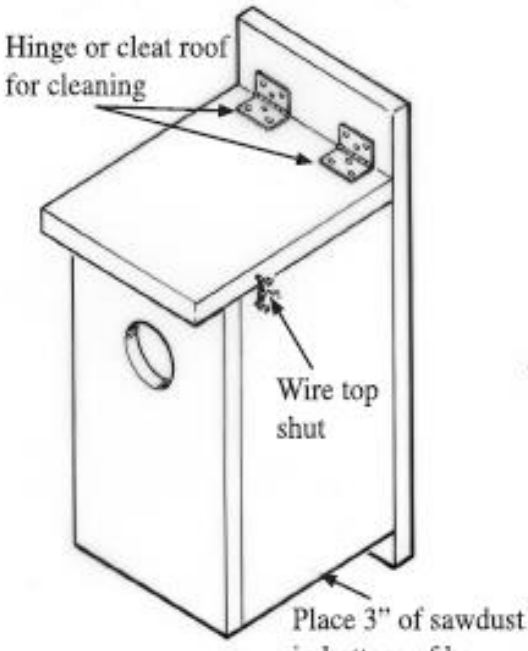
| Species | Specifications | | | | | |
|---|---|---|---|---|---|---|
| | Inches | | | | Feet Above Ground | Preferred Habitat |
| | Entrance | | Floor Dimensions | House Depth | | |
| | Diameter | Above Floor | | | | |
| Bluebird | 1 ½ | 6-7 | 5 x 5 | 8-9 | 5-10 | Open field with perches |
| Chickadee, black capped | 1 ⅛ | 6-8 | 4 x 4 | 8-10 | 5-15 | Woodland with perches |
| " Carolina | 1 ⅛ | 6-8 | 4 x 4 | 8-10 | 6-15 | Woodland |
| Flicker | 2 ½ | 14-16 | 7 x 7 | 16-18 | 6-20 | Woodland |
| Fly catcher, great crested | 2 | 6-8 | 6 x 6 | 8-10 | 8-20 | Woodland |
| Kestrel | 3 | 9-12 | 8 x 8 | 12-15 | 10-30 | Open field |
| Martin, purple | 2 ½* | 18 | 6 X 6* | 6* | 15-20 | Open fields AWAY from trees & near water |
| Nuthatch, white-breasted | 1 ¼ | 6-8 | 4 x 4 | 8-10 | 12-20 | Woodland |
| Owl, barred | 7 x 7 arch | 12 | 12 x 12 | 23 | 20-23 | Woodland |
| " screech- | 3 | 9-12 | 8 x 8 | 12-15 | 10-30 | |
| " barn | 6 x 6 | 6 | 12 x 36 | 15-18 | 20-25 | Open field |
| Phoebe | Open front & sides | | 7 x 7 | 8 | 8-12 | Backyard |
| Robin | Open front & sides | | 7 x 7 | 8 | 8-12 | Backyard |
| Swallow, tree | 1 ½ | 1-5 | 5 x 5 | 6 | 6-10 | Open field near water |
| Titmouse, tufted | 1 ¼ | 6-8 | 4 x 4 | 8-10 | 6-15 | Woodland edge & interior |
| Warbler, prothonotary | 1 ½ | 6 | 5 x 5 | 8 | 5-10 | Over and near water |
| Woodpecker, downy | 1 ¼ | 6-8 | 4 x 4 | 8-10 | 6-20 | Woodland interior |
| " hairy | 1 ½ | 9-12 | 6 x 6 | 12-15 | 12-20 | |
| " red-bellied | 2 ½ | 10-12 | 6 x 6 | 12-14 | 12-20 | |
| " red-headed | 2 | 9-12 | 6 x 6 | 12-15 | 12-20 | |
| Wren, Carolina | 1 ½ | 4-6 | 4 x 4 | 6-8 | 5-10 | Near brushy areas & backyards |
| " house | 1 ¼ | 4-6 | 4 x 4 | 6-8 | 5-10 | |

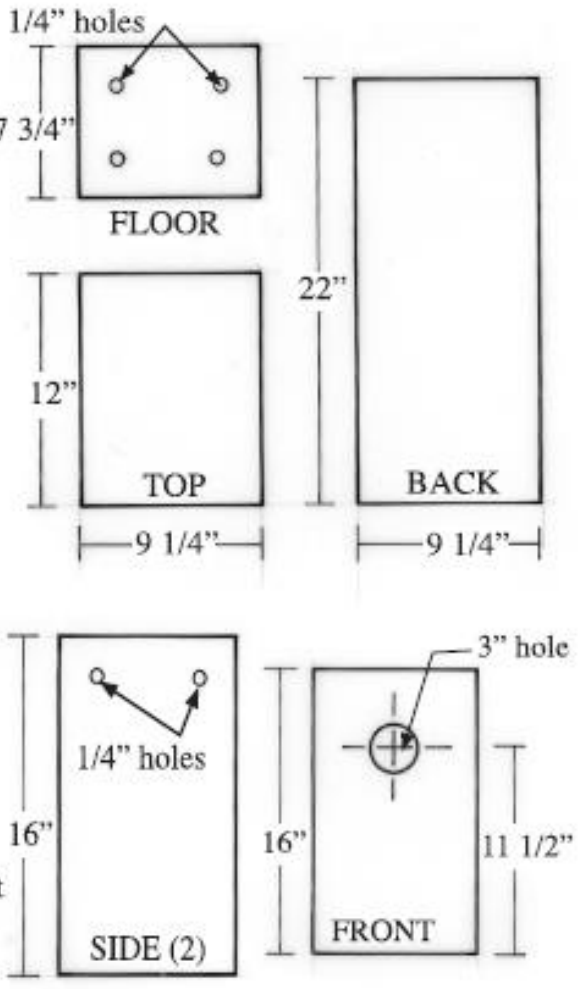
*These are the dimensions for one compartment. Martins nest in colonies; therefore, martin houses should have a minimum of six self-contained apartments.

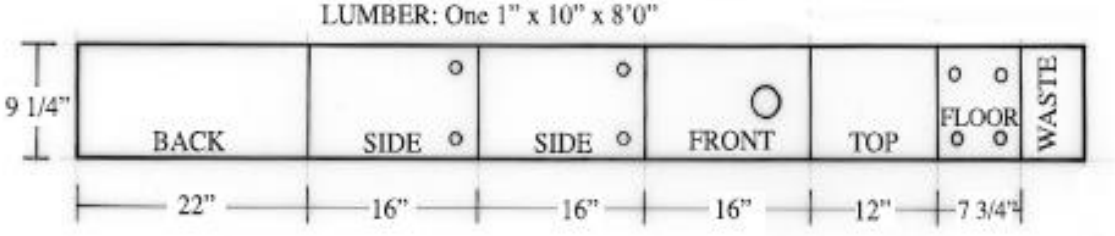
Removing unwanted species such as starlings and house sparrows will increase your chances for nesting success.

# AMERICAN KESTREL, EASTERN SCREECH-OWL NEST BOX

Preferred habitat for owls includes mixed stands of deciduous forest on the edge of woods adjacent to fields or wetlands. Kestrels prefer more open country. To prevent use by squirrels, the box for owls can be placed on a pole with a predator guard. Boxes should be placed at least 10 feet high for owls, and 10 to 30 feet high for kestrels



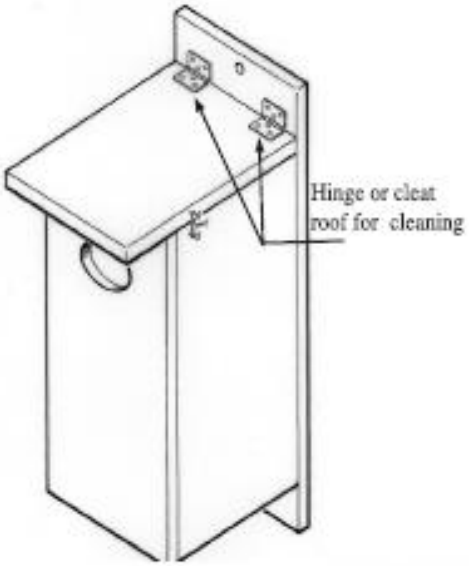



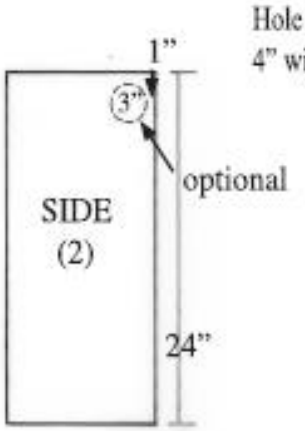



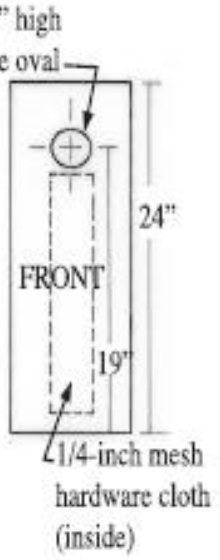
# WOOD DUCK NEST BOX

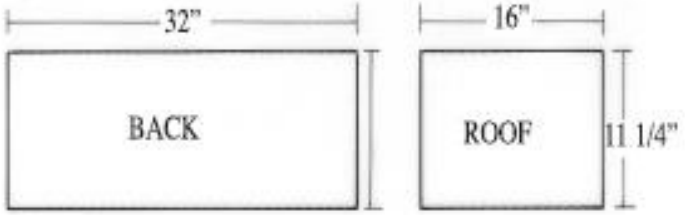
Boxes placed on posts in water should be six to eight feet above the water. Wood duck boxes can also be placed in woodland habitat up to a half mile from lakes, ponds, marshes, and rivers. Since the hen must lead her ducklings to water after they hatch, the habitat between the house location and the water's edge should be free of major obstacles, such as fences, highways, mesh wire, or curbing.

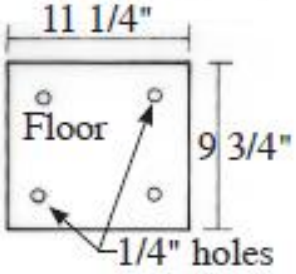
Cavity nesting ducks do not carry nesting materials. It is important to help them out by placing 2-4 inches of wood shavings (not sawdust) in the bottom of the box. Also, some type of predator guard should be used.

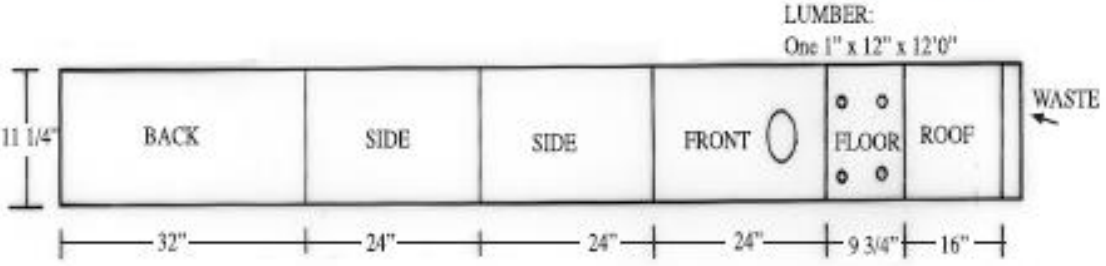


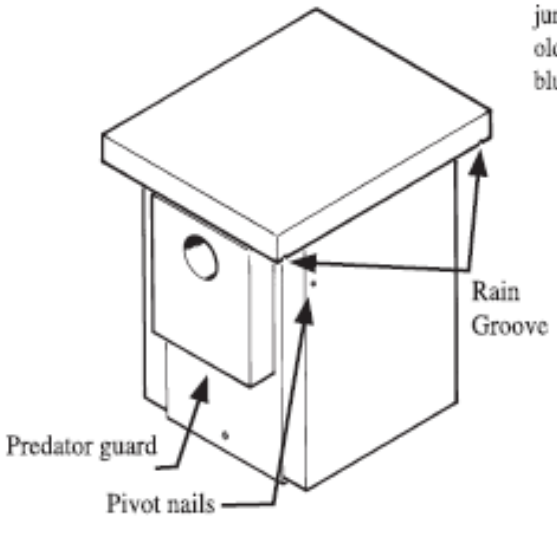



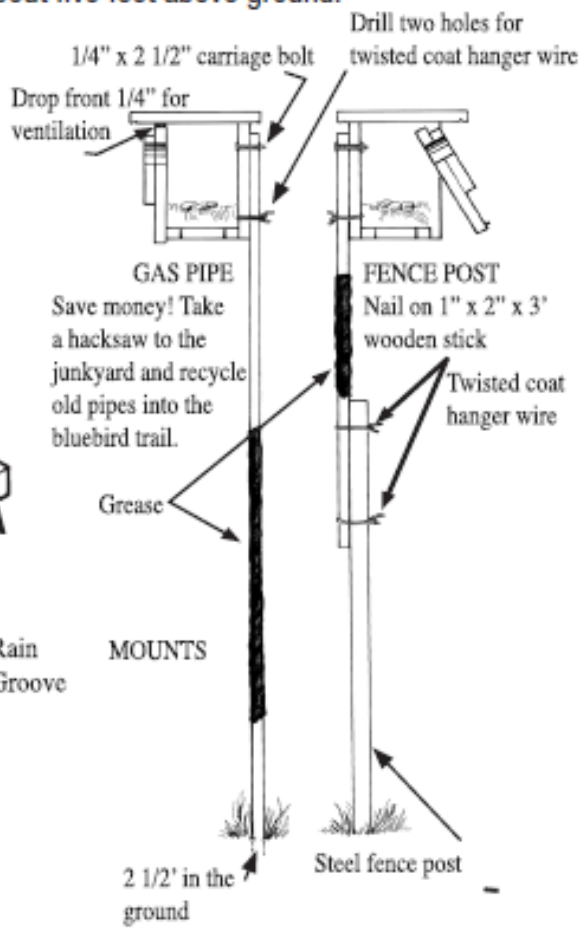



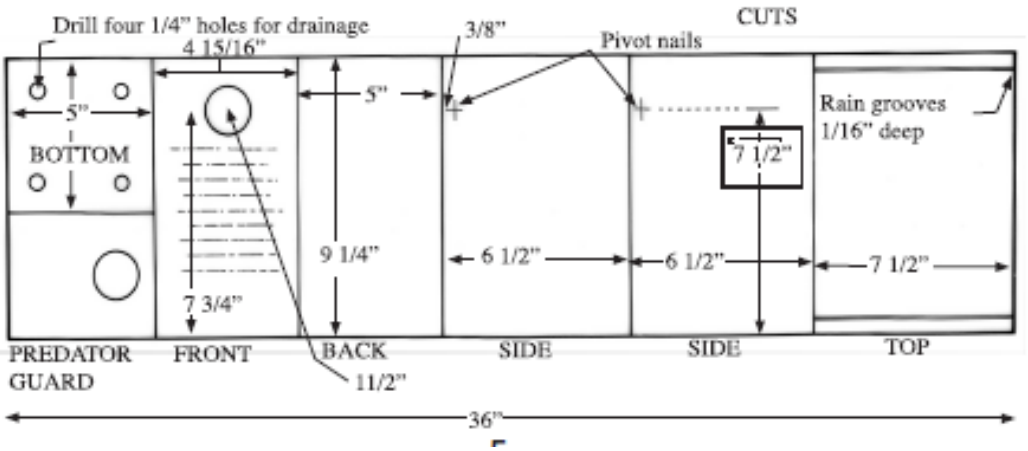



# EASTERN BLUEBIRD, TREE SWALLOW NEST BOX

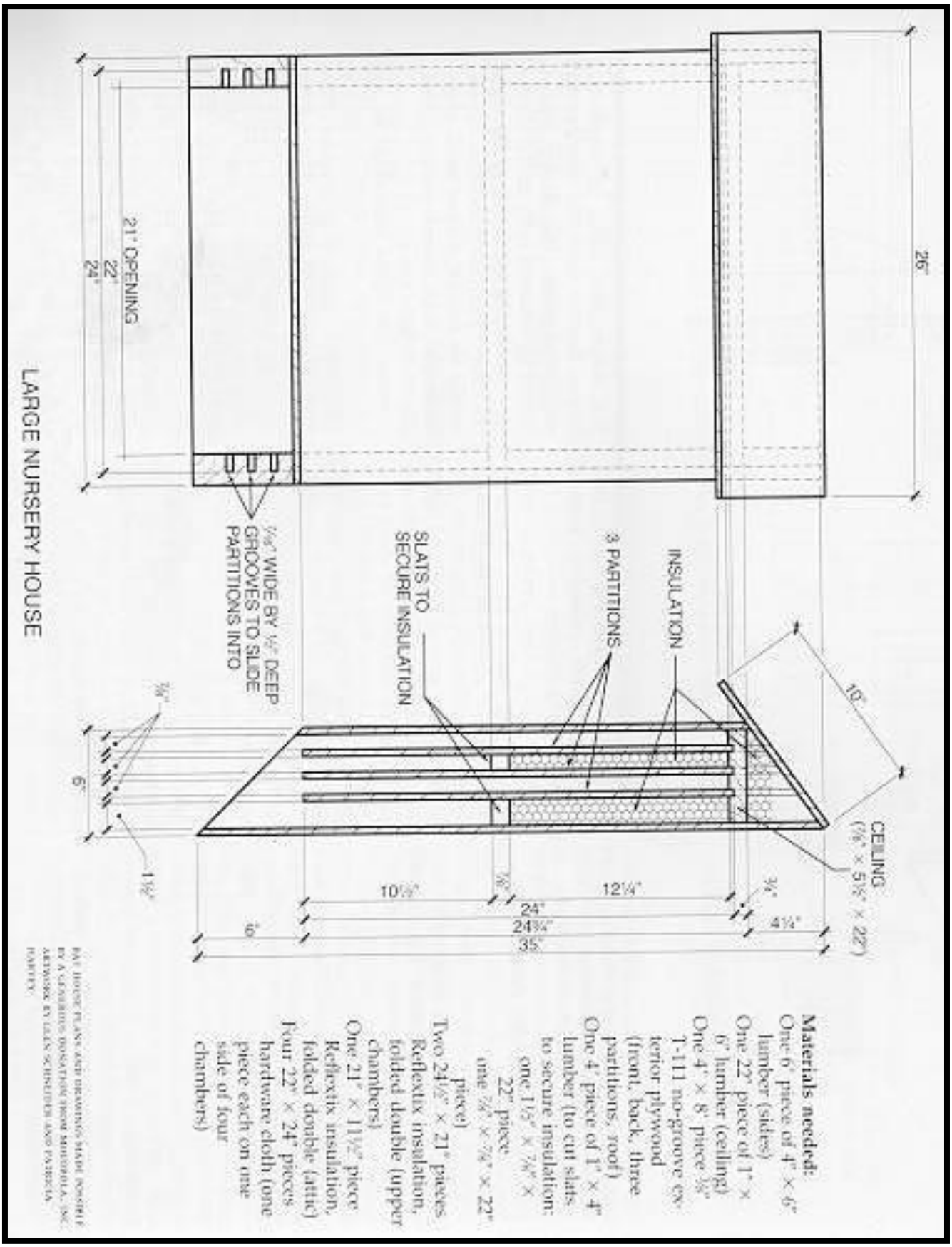
Ideal bluebird habitat is mixed hardwood forest and grasslands. The grassy areas may be meadows, pastures, yards, cemeteries, highway rights-of-way, or prairies. The most desirable grass for bluebirds and tree swallows is short or sparse, mowed or grazed. The area must be also provide enough feeding perches. There can be power lines, fence posts, or scattered trees. Boxes should be mounted on posts, about five feet above ground.



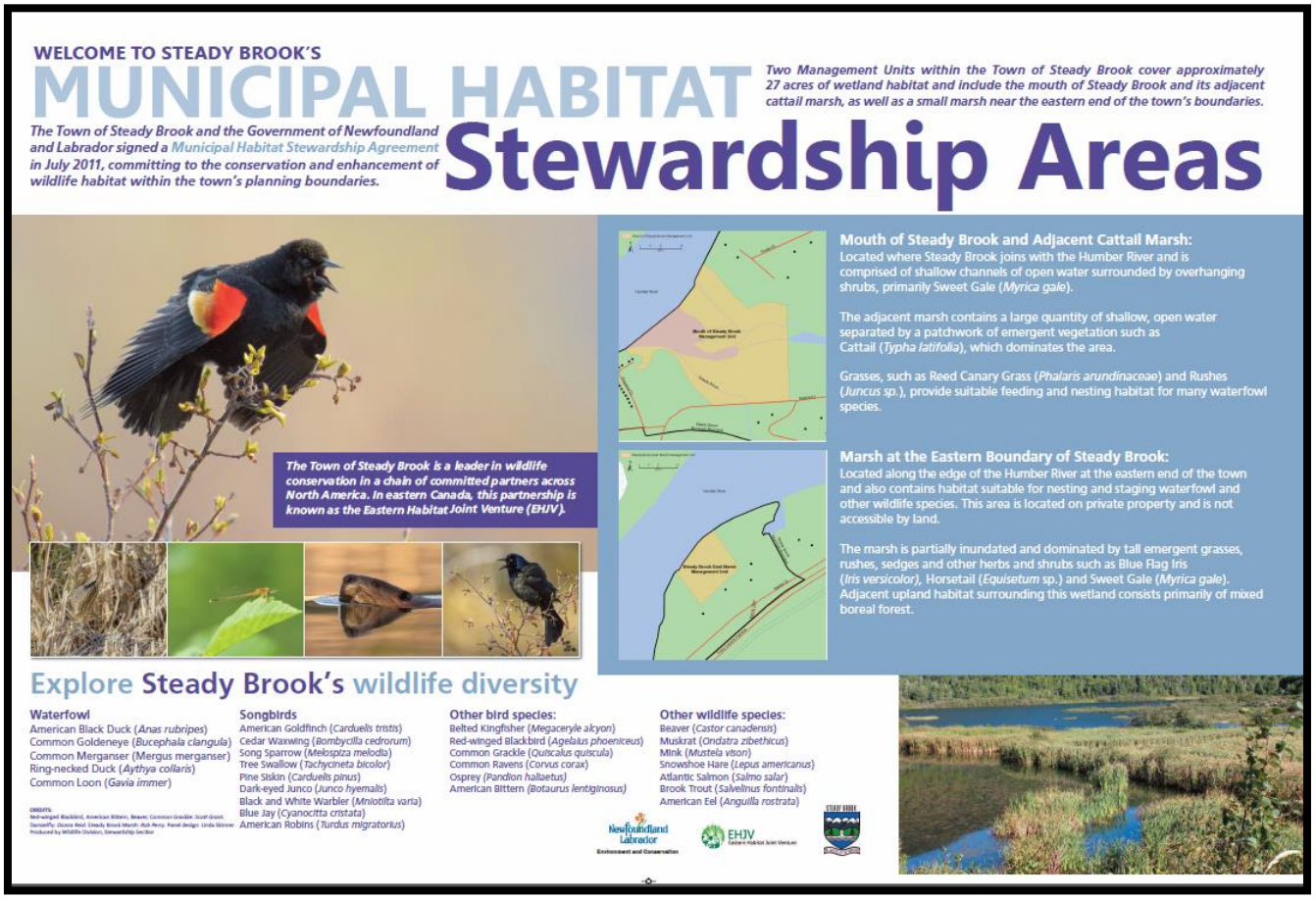
# Bat Roosting Boxes



**Bat Box in Pynn's Brook, Western Newfoundland.** Photo by NL Wildlife Division

# APPENDIX 3

## Example of a Trail Entrance Interpretive Sign (Steady Brook, NL)



# APPENDIX 4
## Shoreline Vegetation and Site Requirements

| Species | Range | Site Requirements | Conservation Value |
|---|---|---|---|
| **Shrubs and Small Trees** | | | |
| American mountain ash | Coast to coast | Full sun; wide range of soils | Vegetation buffer; wildlife food, cover, and nesting sites |
| Balsam-poplar | Coast to coast | Full sun to partial shade; prefers most soils on shorelines | Erosion control; vegetation buffer; wildlife food, cover, and nesting sites |
| Blackberry | Coast to coast | Moist, well-drained soils | Vegetation buffer; fence row; food and cover for birds and mammals; butterfly nectar source |
| Elderberry | Coast to coast | Full sun to full shade; rich, moist soils | Food and cover for shoreline birds and mammals; butterfly nectar source |
| Highbush cranberry | AB, SK, MB, ON, QC, NB, NS, PEI, **NL** | Stream banks and lake shores; wide range of soils; shade tolerant | Erosion control; vegetation buffer; fence row; food for birds and mammals |
| Pussy-willow | Coast to coast | Full sun; deep, rich shoreline soils; moist to wet conditions | Vegetation buffer; fence row; nectar source for pollinators |
| Raspberry | YT, NWT, BC, ON, QC, NB, NS, PEI, **NL** | Wide range of soils; shade tolerant; flood tolerant; stream banks and lake shores | Erosion control; vegetation buffer; fence row; food and shelter for birds and mammals |
| Red-osier dogwood | Coast to coast | Full sun to partial shade in moist to wet soils; stream banks; lake shores; wetlands | Vegetation buffer; fence row; food, cover, and nesting sites for birds and mammals |
| Wild black currant | YT, NWT, AB, SK, MB, ON, QC, NB, NS, PEI, **NL** | Wide range of soils; moist to wet shorelines | Erosion control; vegetation buffer; fence row; wildlife |

| | | | |
|---|---|---|---|
| | | | food and cover; butterfly nectar source |
| **Trees** | | | |
| Ash | Coast to coast | Alongside stream banks and lake shores; wet sites alongside wetlands; full sun to partial shade | Erosion control; vegetation buffer; fence row; wildlife food, cover, and nesting sites |
| Balsam-fir | YT, AB, SK, MB, ON, QC, NB, NS, PEI, **NL** | Wide range of moist, rich soils; drought resistant | Vegetation buffer; wildlife food, shelter, and nesting sites |
| Cedar | Coast to coast | Alongside stream banks and lake shores; wet sites alongside wetlands | Food and cover for marsh birds, songbirds, and mammals |
| Paper-birch | Coast to coast | Full sun to partial shade; wide range of moist soils | Erosion control; vegetation buffer; wildlife food and cover |
| Red maple | MB, ON, QC, NB, NS, PEI, **NL** | Wide range of shoreline soils; flood tolerant | Erosion control; vegetation buffer; wildlife food and cover |
| Shining Willow | SK, MB, ON, QC, NB, PEI, NS, **NL** | Moist to wet conditions | Erosion control; vegetation buffer; wildlife cover |
| Spruce | Coast to coast | Wet sites alongside lakes, streams, and wetlands | Vegetation buffer; wildlife food, cover, and nesting sites |
| Tamarack | YT, NWT, ON, QC, NB, NS, PEI, **NL** | Alongside stream banks and lake shores; wet sites alongside wetlands | Vegetation buffer; food and cover for shoreline birds and mammals |
| Trembling aspen | MB, ON, QC, NB, NS, PEI, **NL** | Full sun to partial shade; wide range of shoreline soils | Erosion control; vegetation buffer; food and cover for shoreline birds and mammals |
| White pine | YT, NWT, BC, AB, | Wide range of soils; | Food and cover for |

| | | | |
|---|---|---|---|
| | SK, MB, ON, QC, NB, NS, PEI, **NL** | dry sites alongside wetlands | shoreline birds and mammals |
| Yellow birch | ON, QC, NB, NS PEI, **NL** | Full sun to partial shade; moist shoreline soils | Erosion control; vegetation buffer; wildlife food and cover |
| **Grasses** | | | |
| Clovers | Coast to coast | Full sun; wet soils bordering on streams, lakes, and wetlands | Food and cover for upland birds and mammals; nectar source for pollinating insects |
| Rough fescue | YT, NWT, BC, AB, SK, MB, ON, QC, **NL** | Full sun; dry to moist soils bordering on streams, lakes, and wetlands | Erosion control; vegetation buffer; food and cover for upland birds, mammals, and insects |

# APPENDIX 5

## Photo of Bird-watching (Viewing) Tower

**Viewing Tower in Hankasalmi, Finland.** Photo from Wikipedia

# APPENDIX 6
## Photo of Bird Blinds

**Enclosed Bird Blind in Winterland.** Photo by NL Wildlife Division

**Bird Blind in Grand Falls – Windsor.**
Photo courtesy of Corduroy Brook Enhancement Association

# APPENDIX 7
## Photo of Viewing Deck

**Viewing deck in Winterland.** Photo by Wildlife Division