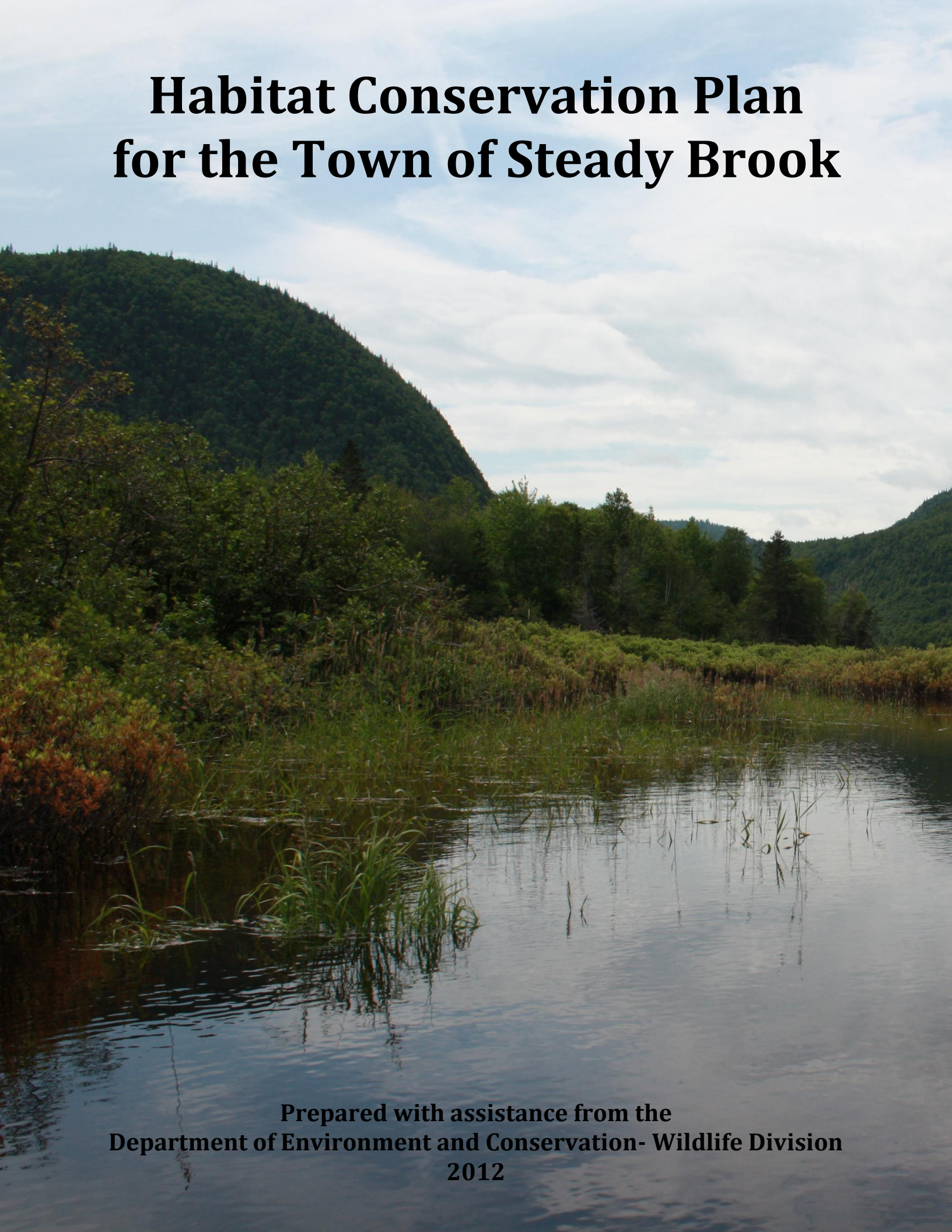
Habitat Conservation Plan for the Town of Steady Brook



Prepared with assistance from the
Department of Environment and Conservation- Wildlife Division
2012

Habitat Conservation Plan for the Town of Steady Brook

Date: December 04th, 2012

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Department of Environment and Conservation – Wildlife Division

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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 (EHJV) is to conserve valuable waterfowl habitat (wetlands and associated upland) through Stewardship Agreements. The Town of Steady Brook was identified as having just such ecologically valuable, and unique, wetland habitat located within its municipal planning boundary.

The Town of Steady Brook signed an agreement on July 1st 2011 pledging their commitment to conservation and protection of wetlands within their Municipal Boundaries. In accordance with this agreement, Steady Brook manages these wetland areas with technical advice provided by the provincial Wildlife Division, in part via this Conservation Plan. With the signing of this plan, the agreement parties officially accept this 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 Steady Brook:

Mayor

Oct 14, 15
Date

Witness

Oct 14, 15.
Date

Wildlife Division
Department of Environment and Conservation

Oct 21/15
Date

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Section 1: Plan Overview

Plan Purpose: The Town of Steady Brook 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 wetlands located within the designated Management Units.

(2) To maintain and/or increase wildlife use of those areas, 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 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). 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 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 all-bird species, 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. To date there are twenty municipalities in the province, including Whitbourne, Gander, Carmanville, Come By Chance, Stephenville Crossing, Spaniard's Bay, Bay Roberts, Torbay, Winterland, Springdale, Gambo, Grand Falls-Windsor, Channel-Port aux Basques, Happy Valley-Goose Bay, St. John's, Wabush, Labrador City, Hawke's Bay, Deer Lake and Steady Brook who 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.

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 (Steady Brook 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 (Current map found in Appendix 2). 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. As such, staff of the Wildlife Division are assigned to implement, on a provincial basis, the NL EHJV Stewardship program.

As a result of signing a Stewardship Agreement, staff of the Wildlife Division 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 Steady Brook

The Town of Steady Brook

The Town of Steady Brook, nestled within the Humber Valley on the west coast of Newfoundland, is a picturesque community surrounded by beautiful mountains bordering the great Humber River. Steady Brook is approximately ten kilometers east of the City of Corner Brook with a population of approximately 435 (Census 2006).

In 1929, the International Pulp and Paper Company opened a logging camp on the opposite side of the river from Steady Brook. The people in this camp were mostly temporary workers but this soon changed when, in 1930 Mr. John Caines moved from Corner Brook with his family and was later joined by Mr. Hedley Wilton and his family from Deer Lake. In the early 1950's a council was formed in Steady Brook and was later incorporated in 1953.

Steady Brook is a thriving community with established infrastructure and facilities and is also well known for its fun-filled activities, including winter skiing and snowboarding at Marble Mountain and hiking through the forests of the Humber Valley.

Steady Brook's Habitat

Steady Brook is part of the Corner Brook subregion, which is one of six subregions making up the Western Newfoundland Forest Ecoregion. The Western Newfoundland Forest Ecoregion is one of the largest ecoregions on the island and covers more then one million hectares in western Newfoundland. It stretches from Codroy Valley in the south to Bonne Bay in the north and extends from the west coast inland, including much of the Long Range Mountains.

The difference in the geography and biology of the area has led to the development of six subregions, Corner Brook subregion being the largest. It covers the inland area east of the Serpentine Range subregion, from Bonne Bay south to the Stephenville area. The sheltered valleys have long growing seasons with some of the warmest on the island and are characterized by forested, rolling hills, and an underlying limestone geology creating rich soils and lush forests.

Forests found around Steady Brook consist mostly of Balsam Fir (*Abies balsamea*) with Red Maple (*Acer rubrum*), White Pine (*Pinus strobus*), Trembling Aspen (*Populus tremuloides*) and White (*Betula papyrifera*) and Yellow Birch (*Betula alleghaniensis*). Some wildlife species found throughout this ecoregion include Moose (*Alces alces*), Mink (*Neovison vison*), Snowshoe Hare (*Lepus americanus*),

Lynx (*Lynx canadensis*), Black Bear (*Ursus americanus*), Red Fox (*Vulpes vulpes*), Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethicus*), Pine Marten (*Martes americana atrata*) and River Otter (*Lutra canadensis*). A variety of birds are found in this ecoregion including a variety of land birds like finches, warblers and thrushes and aquatic birds including ducks, shorebirds and geese.

Steady Brook's Management Units

Much of the two areas currently designated as Management Units within Steady Brook's planning boundaries would, generally, not be considered a priority area for development due to current "Designated Floodzone" zoning restrictions resulting from their proximity to the Humber River.

Mouth of Steady Brook and Adjacent Cattail Marsh Management Unit

The area surrounding the opening of Steady Brook into the Humber River, which lies near the western end of the municipal boundary for Steady Brook, contains productive wetlands for waterfowl and other wildlife species. During field surveys, American Black Ducks (*Anas rubripes*) and Common Loons (*Gavia immer*) have been noted to use this area for feeding. The area is also important for various other avian species and contains a high density and rich diversity of songbirds. During field surveys, staff of the Wildlife Division noted the presence of Belted Kingfisher (*Megaceryle alcyon*), American Goldfinch (*Carduelis tristis*), Cedar Waxwing (*Bombycilla cedrorum*), Song Sparrow (*Melospiza melodia*), Common Grackle (*Quiscalus quiscula*), Tree Swallow (*Tachycineta bicolor*), Common Raven (*Corvus corax*), Pine Siskin (*Carduelis pinus*), Dark-eyed Junco (*Junco hyemalis*), Black and White Warbler (*Mniotilta varia*), Blue Jay (*Cyanocitta cristata*) and American Robin (*Turdus migratorius*) in this area. Evidence of Muskrat (*Ondatra zibethicus obscurus*) activity is also present in this area. The area is also locally known as habitat for Red-Winged Blackbirds (*Agelaius phoeniceus*).

The region where Steady Brook joins with the Humber River is comprised of shallow channels (i.e. generally <1 m depth) of open water surrounded by overhanging shrubs, primarily Sweet Gale (*Myrica gale*) (Figure 1). Submerged grasses in the open channels provide suitable feeding habitat for ducks. Various edges of the stream opening contain tall emergent grasses (e.g. Reed Canary Grass [*Phalaris arundinaceae*]) and Rushes (*Juncus* sp.) that provide cover and potential nesting habitat for waterfowl and other wildlife.

The adjacent 'cattail marsh' (Figure 2) contains a large quantity of shallow open water separated by a patchwork of emergent vegetation. This marsh vegetation is dominated almost exclusively by dense Cattail (*Typha latifolia*) stands, which forms near-monocultures with a smaller quantity of Reed Canary Grass. These tall emergents provide suitable cover for various wildlife species. In addition, the water-holding capacity of this wetland site aids in flood protection for the surrounding community.

Shrubs, herbaceous vegetation, and trees fringe along the marsh and exist in pockets throughout the marsh. These include Fireweed (*Epilobium angustifolium*), Pearly Everlasting (*Anaphalis margaritacea*), Raspberry (*Rubus idaeus*), Alder (*Alnus* sp.), Red-osier Dogwood (*Cornus stolonifera*), Choke Cherry (*Prunus virginiana*), Beaked Hazelnut (*Corylus cornuta*), White Birch (*Betula papyrifera*), White Spruce (*Picea mariana*), Red Maple (*Acer rubrum*), and Highbush Cranberry (*Viburnum trilobum*).

Figure 1 – Management Unit at the mouth of Steady Brook. Photo by: Wildlife Division Staff

Figure 2 – Cattail marsh in the Steady Brook's Management Unit. Photo by: Wildlife Division Staff

Marsh at Eastern Boundary of the Town of Steady Brook

This small wetland (Figure 3) (Figure 4), existing along the edge of the Humber River at the eastern end of the Town of Steady Brook, contains habitat suitable for nesting and staging waterfowl. While no waterfowl species were noted to be using this riparian habitat during field surveys, local residents of the Town have noted that American Black Ducks frequently use this area. The marsh is partially inundated and dominated by tall emergent grasses, rushes, and sedges as well as other herbs (e.g. Blue Flag Iris [*Iris versicolor*], Horsetails [*Equisetum* sp.], etc.) and shrubs (e.g. Sweet Gale [*Myrica gale*]). Adjacent upland habitat surrounding this wetland consists primarily of mixed boreal forest characteristic of the Corner Brook subregion of the 'Western Newfoundland Forest' ecoregion.

Figure 3 – Management Unit at the eastern boundary of the Town of Steady Brook; Photo by: Wildlife Division Staff

Figure 4 – Alternate view of the Management Unit at the eastern boundary of the Town of Steady Brook; Photo by: Wildlife Division Staff

Section 4: General Policies for Wetland 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 Steady Brook 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.

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 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.

Management of the Management Unit(s)

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.

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 Unit(s). 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.

Section 5: Wetland Conservation and Education Strategies

Waterfowl Monitoring Project

Staff of the Wildlife Division has devised an easy to use community-based waterfowl monitoring protocol and are willing to assist community partners in its implementation (Appendix 4). It is hoped that Town's, local community interest groups and interested volunteers (often bird-watchers) will establish a waterfowl monitoring program within all areas of the Town but, particularly, within the 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 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.

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 and nesting platforms (for geese) followed by subsequent monitoring throughout waterfowl breeding/brood-rearing seasons (Appendix 5) (Appendix 6). 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 entire community.

Artificial Nesting and Loafing Structures

Geese

The use of artificial structures to provide nest sites for Canada geese began almost 70 years ago across North America (Figure 5). These structures are among the most widely used, and successful, goose management practice. Nesting structures are intended to increase nest success in the face of predation or flooding. Success usually reaches levels of 85-90% versus 65-75% on natural islands or marshes. Natural sites, generally, continue to be used by nesting pairs (they do not "switch" over to an artificial structure). Artificial structures work towards increasing a population's base from an established area outwards and towards increasing the average productivity of an area.

The advantages of using artificial nest structures for Canada geese are that occupancy is typically high, costs are generally low, structures are adaptable in terms of placement and results are usually rapid and tangible. One issue often overlooked is the basic maintenance required on an annual basis, to remove old nesting material and to check structure integrity. However, this is often easily accomplished by local school groups, conservation corps teams or local community groups. Selection of appropriate construction material and appropriate nest-building materials along with careful placement at appropriate locations will facilitate long-term durability, necessitate minimal maintenance, and ensure nest structure longevity. Geese with an established nest location generally use that area over and over. Artificial nest structures, like nesting rafts, provide nesting locations for the next generation of breeding individuals or for individuals who may have had nests destroyed or disturbed. Commercial goose platforms are also an option. Staff of the Wildlife Division is available to assist during all phases of the construction and placement process of the nesting raft.

Figure 5 – Canada Goose Artificial Nesting Island. Photo by Wildlife Division Staff

Geese are territorial when nest structures are placed closer than ~100 metres, and especially when structures are within sight of one another. Loafing sites should be provided close to the structures. Structures should be placed 10-15 metres from the shoreline so that predators cannot harass nesting birds and should be anchored firmly with enough slack to avoid flooding of the structure during periods of high water. Styrofoam or some sort of flotation device like "fenders" should be installed under the structure to ensure buoyancy and mitigate flooding potential. Given that goslings cannot negotiate a vertical rise of more than four inches, each 6 to 8 inch high nest box would require a ramp six inches wide and oriented at an approximately 45 degree angle. Nesting material placed into the nest box should form a bowl with tapered edges so that the gosling ramps and nest bowl permit the young to exit the nest box. Maintenance is done in winter, which means easy access to nest structures via snow shoes or skis. Monitoring would also form an important part of the nest raft project to ascertain level of occupancy and nest success. This type of project would be a realistic one for a Conservation Green Team.

Ospreys

Ospreys are fish eating raptors that are frequently observed hunting in wetland habitats, particularly areas along the coast. Unfortunately, populations of these birds 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 (i.e. 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 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, monogamous, 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. (Appendix 7)

Island Construction

A number of wildlife species, such as terns and waterfowl, nest and loaf on islands due to a reduced risk of predation from land-based predators. Many of the wildlife species present within 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 four square meters 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 (i.e. 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 (i.e. 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 constructed islands. One must consider the potential necessity for annual removal and reinstallation of islands in response to ice conditions tidal influenced areas.

Other forms of artificial islands exist and involve the planting of 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 during the period in which 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 “taking up” some of the excess nutrients in the estuary effectively deterring algae growth. These floating islands would also, likely, require annual removal and reinstallation.

Nest Boxes

Cavity Nesting Waterfowl

Cavity nesters such as the Common Goldeneye have certain habitat requirements for nesting. 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 6). 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 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.

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 Wildlife Division or a local conservation officer. It is very 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. 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. 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 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 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. It is also a great idea to keep in mind that 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 it is advised to contact the staff of the Wildlife Division. The construction of nest boxes is provided in the Habitat Conservation Plan.

Figure 6 - Cavity Nest Box in Cobb's Pond, Gander. Photo by Charmaine Barney

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 7). 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) populations of birds that may not be desirable to farmers (i.e. crows, starlings) and rodents (i.e. mice) while increasing biodiversity on the agricultural landscape.

Figure 7 - Bat roosting box. Photo by Gerry Yetman

Educational Programs

Public education is essential in the development of a greater sense of habitat stewardship among town 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), "Project Webfoot" (Ducks Unlimited Canada). A number of night programs also exist that would be appropriate for girlguide and scout troupes. 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 townsperson 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.

Greenwing Program
This conservation awareness program targets grade four students, who have been identified as being most ready to receive and consider conservation messages. The Greenwing program is initiated by the "adoption" of a fourth grade class by local businesses or individuals. Members are then given a wealth of items ranging from t-shirts and lunch bags, encouraging a conservation-minded approach to daily life, and educational magazines revealing the wonders of wetlands, wildlife species and natural areas. Greenwing events are also available to any Greenwing members, where conservation minded adults (i.e. potentially EHJV staff members) host project days or educational field trips with support from Ducks Unlimited Canada. Greenwing members who attend a Greenwing event typically leave an event with a greater sense of conservation awareness, and a parting item like a birdhouse or birdfeeder.

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 within the Eco-museum shelter as a follow up. 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 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 (Figure 8) is an aquatic grass is known to have significant value for waterfowl and providing habitat for many aquatic species such as juvenile Salmonids. 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.

Figure 8 - Eel grass

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 (Ammophilia 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 of seclusion.

Litter Removal

It is strongly recommended that community interest groups and individual residents work cooperatively to remove the large quantity of litter in and around all portions of the community on a regular basis, while making certain to avoid those times of year (May to August) when waterfowl may be disturbed during breeding, staging or brood rearing periods. Programs such as Ocean Net and Vanaqua Shoreline Cleanup assist communities in organizing litter cleanups.

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 9). Ducks Unlimited Canada (DUC), a partner of the Easter Habitat Joint Venture, has a great deal of experience in this area. Staff of the Wildlife Division can put you in touch with DUC to assess the possibilities, costs and issues in this area.

Figure 9 - Fish Baffles in Grand Falls – Windsor. Photo by: Charmaine Barney

APPENDICES

APPENDIX 1

STEWARDSHIP AGREEMENT

THIS AGREEMENT made at Steady Brook, in the province of Newfoundland and Labrador, this 1st day of July, 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 STEADY BROOK,** 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

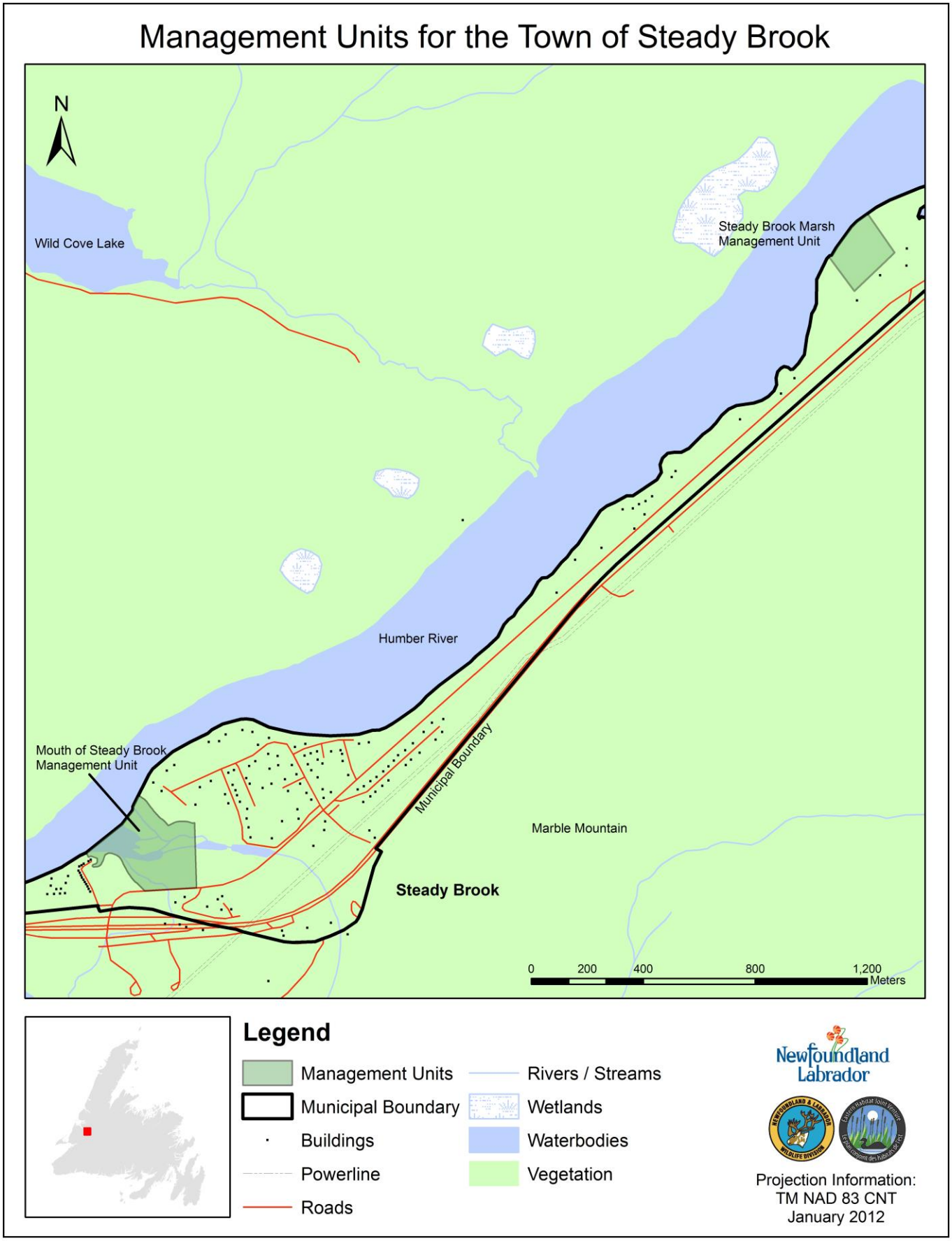
THE HONOURABLE THE MINISTER OF ENVIRONMENT AND CONSERVATION

THE SEAL OF the Town Council of the
Town of Steady Brook hereunto
affixed in the presence of:

Witness

THE TOWN COUNCIL OF THE TOWN OF STEADY BROOK

APPENDIX 2 – SCHEDULE "A"



APPENDIX 3

Appropriate wording required for a potential "No-shooting" sign

APPENDIX 4

Waterfowl Monitoring Project Protocols and Data Sheet

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).**

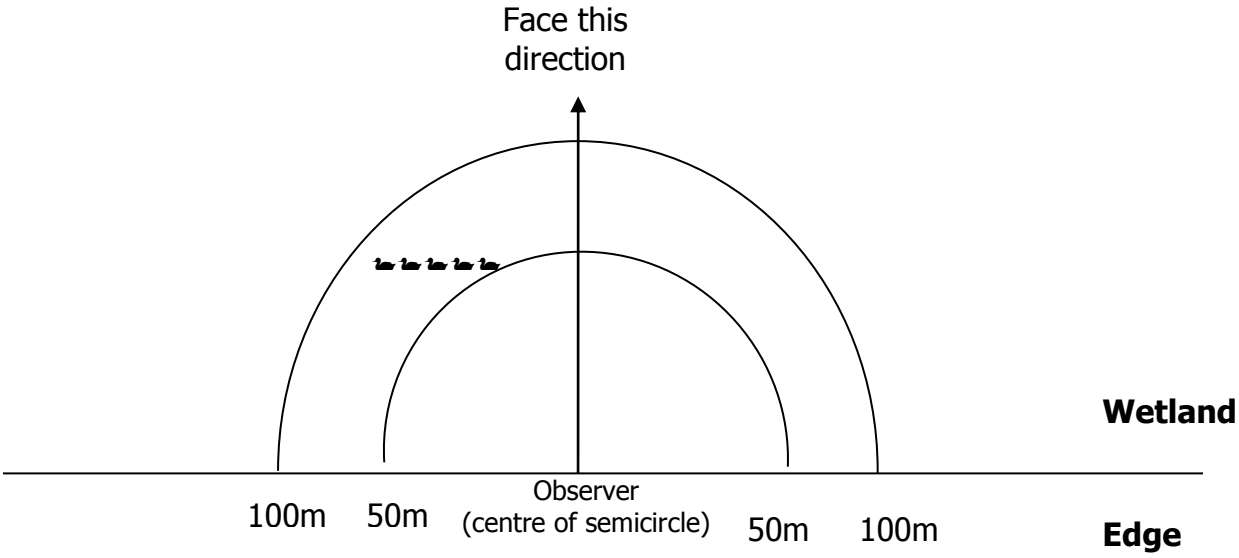
If you are not already familiar with the area it would be advantageous for you to become familiar with the sample locations identified on the map prior to the day of your survey. It may also be prudent to seek private landowner permission in advance of your intended survey day. In addition, identify 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 10minute period.** If possible 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 tides and 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

EHJV Community-Based Waterfowl Monitoring Reporting Sheets

Sheet #___ of ___ Date DD/MM/YY

Weather Conditions

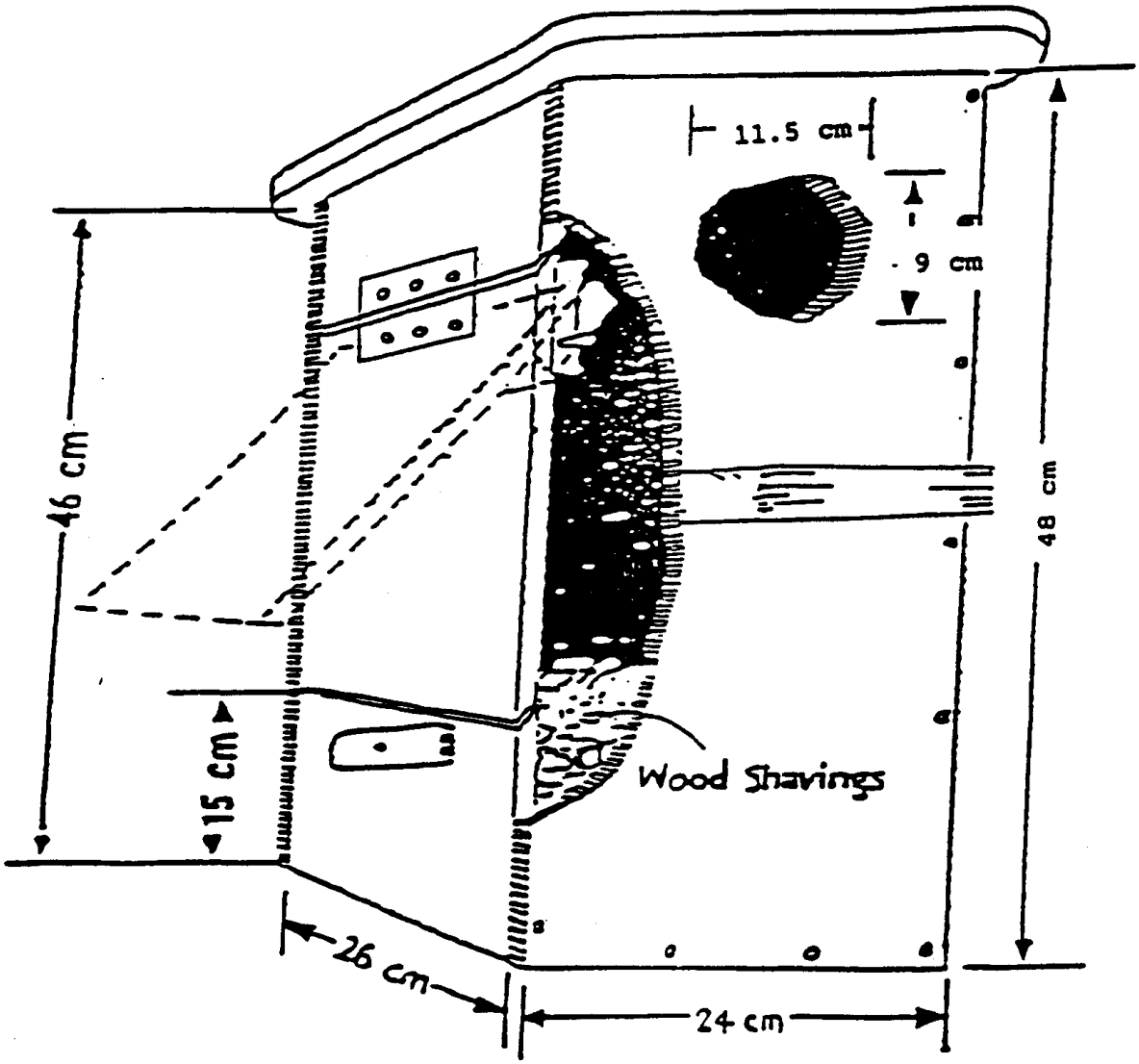
Visibility:
Wind:
Temperature:
Precipitation:

**MFUD = Male/Female/Adult of Unknown Sex/Duckling*

Waterfowl Species	Site # _____ Start Time: End Time:				Site # _____ Start Time: End Time:			
	M	F	U	D	M	F	U	D
American Black Duck								
American Wigeon								
Blue-winged Teal								
Canada Goose								
Common Goldeneye								
Common Loon								
Common Merganser								
Eurasian Wigeon								
Greater Scaup								
Green-winged Teal								
Long-tailed Duck								
Mallard								
Northern Pintail								
Northern Shoveler								
Red-breasted Merganser								
Ring-necked Duck								
Other:								
Disturbance in the area								
Non-waterfowl species in vicinity of survey area								
Waterfowl moving through, into/out of, or over survey area								

APPENDIX 5

Design and Dimensions for the Cavity Nest Boxes



APPENDIX 6
Potential Constructed and Floating Islands

Instructions/Material for Constructed and Floating Islands:

1) 2m X 2m floating island constructed from high modular polypropylene floating booms and heavy gauge mesh:

Photo Courtesy of "Water Lines"

2) 3.5m octagonal floating island constructed from high modular polypropylene floating booms and heavy gauge mesh:

Photo Courtesy of "Water Lines"

3) By adding a floating island to a pond you will see dramatic improvements in the ponds water quality as well as the habitat for waterfowl. Islands are ideal for ponds surrounding towns to help improve wetlands as well as the habitat for waterfowl and other wildlife species. Visit CanadianPond.ca for more details.

Photos Courtesy of "Canadian Pond Products Limited"

4) Installation of floating island in the United Kingdom By “Water Lines” Staff:

Photo courtesy of "Water Lines"

5) Image of a timber rock crib installed in Kingsford, Mississippi by the Pine Creek Watershed Conservation Project. A proper crib is built from new, square-cut timber, not wire or driftwood or round logs tacked together with small nails. The timbers are assembled into a slatted, box-like affair. The box is then filed with rock and can weigh up to several tones:

Photo Courtesy of "Pine Creek Watershed"

6) Timber rock crib being installed in Kingsford, Mississippi by the Pine Creek Watershed Conservation Project. High quality construction would be essential to placement of this style of rock crib within the Shearstown Estuary to withstand ice and winter storm conditions. Design may have to be modified to deal with specific conditions existing within the estuary:

Photo Courtesy of "Pine Creek Watershed"

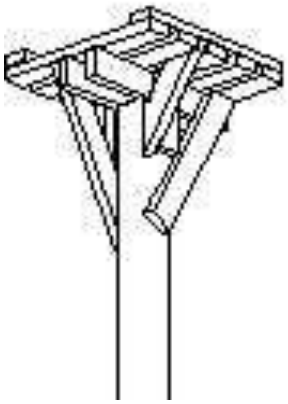
APPENDIX 7
Potential Artificial Osprey Platform

Instructions/Material for Artificial Osprey Platform Construction:

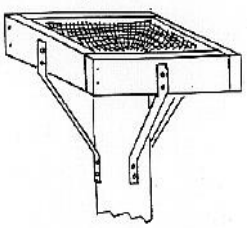
Quite a number of osprey artificial nest designs have been developed for different habitats and sites. One of the more suitable designs for Winterland is the Minnesota Design. This structure is mounted on a single pole (i.e. untreated telephone pole) at least five meters above the ground. All nail and bolt holes are pre-drilled to prevent splitting. The wire mesh is nailed in the platform. Steel braces are bolted to the platform and the lag screws are used to secure the platform to the pole. Some sticks should be wired to the nest to help stimulate nest building. The use of tamarack larch or cedar is highly recommended.

Nesting structures should be placed within fifty (50) meters of water and at least one hundred meters from the nearest residence. Regular inspection of the structure is necessary. After a few years some nests become quite large because the osprey continually adds new sticks. This weight may cause support structures to break. If the nest does become large, it is often a good idea to remove some nest material outside of the breeding season. With proper construction and maintenance, the nest structure may last up to fifteen to twenty years. It is not uncommon for several years to go by without osprey use of the artificial structure. Only an osprey can ever truly know what an osprey seeks during placement of nesting structures!

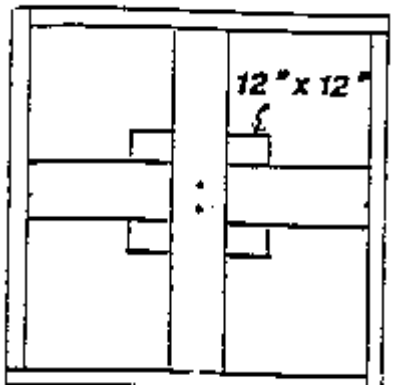
Osprey Platform (Images Courtesy of the Minnesota Raptor Centre):



1) Platform View

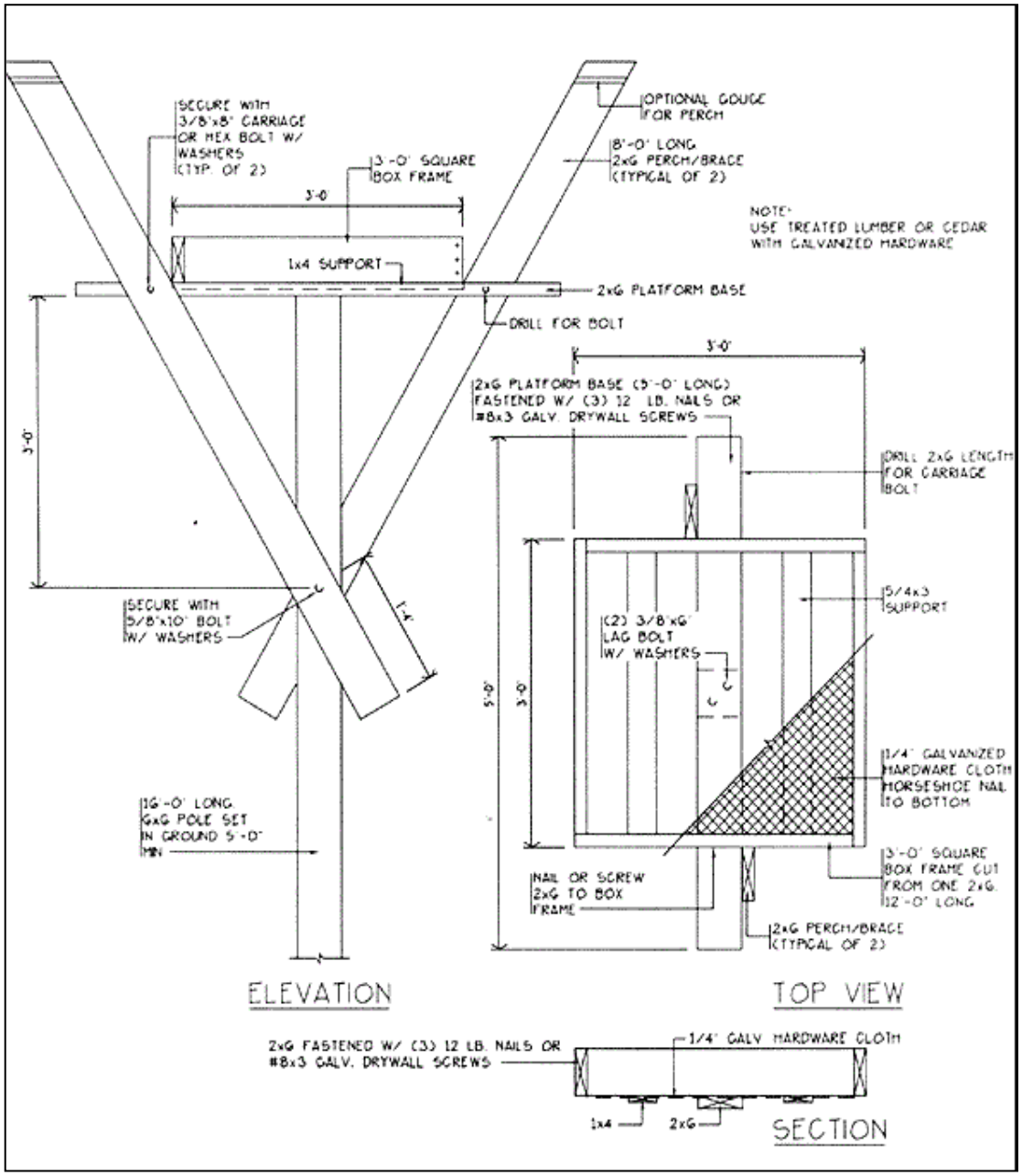


2) Platform side-view



3) Osprey platform top view

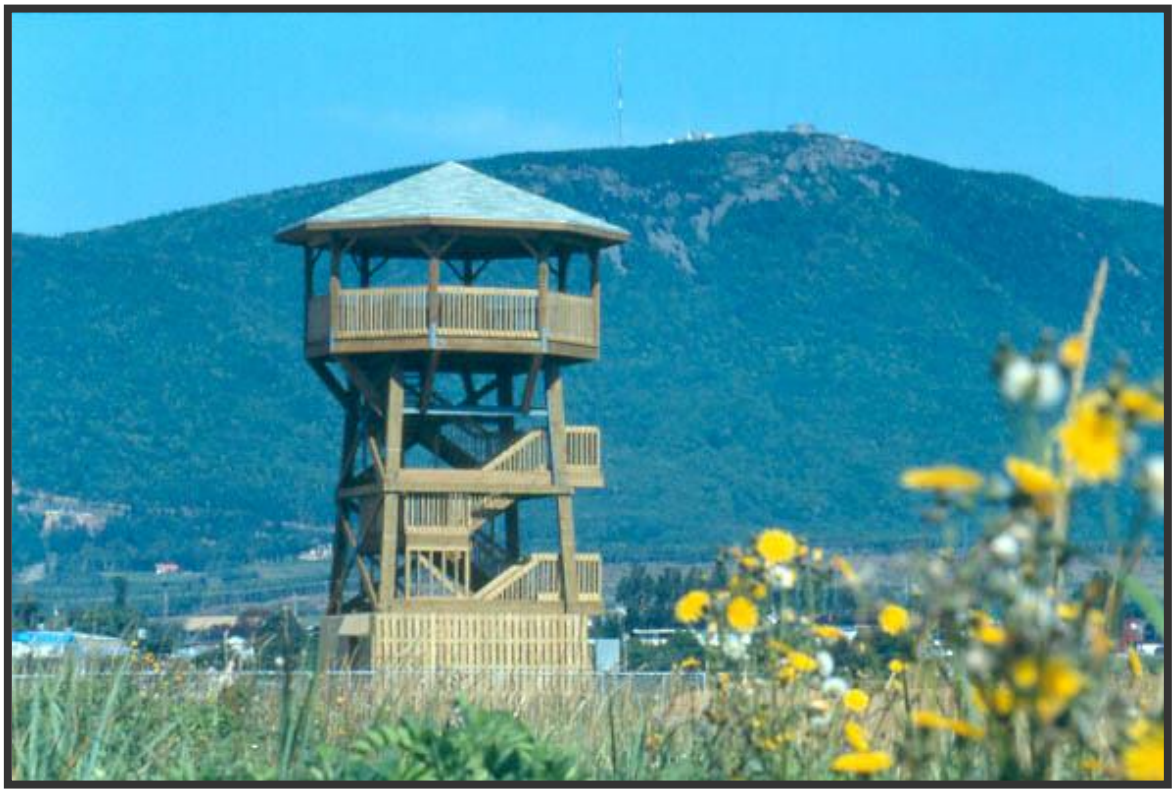
Artificial Osprey Platform design



APPENDIX 8
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

APPENDIX 9
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 10
Construction of a Viewing Deck

Image of viewing deck with interpretive panel in Glovertown:

Photo taken by EHJV Staff