# the Wetland Care Guide

A landowner's guide to Atlantic Canadian wetlands

Ducks Unlimited Canada
Conserving Canada's Wetlands

Atlantic Wetland Care Program

**Your wetland not only enhances the beauty of your land, it provides vital habitat to waterfowl and other wildlife.**

**70% of wetlands are lost in settled areas of Canada. Now more than ever, we need to protect the remaining wetlands and restore others to offset this historical loss.**

**The Wetland Care Guide is a useful tool for landowners with any questions or concerns about the wetland(s) on their property.**

**We value your wetland and hope this guide helps you develop a new appreciation and understanding of this critical habitat.**

# About DUC

Ducks Unlimited Canada (DUC) is the leader in wetland conservation. A registered charity, DUC partners with government, industry, other non-profit organizations and landowners to conserve wetlands that are critical to waterfowl, wildlife and the environment.

DUC's conservation efforts :

- We have dedicated years to protecting, restoring and enhancing wetland habitat as we work directly with private landowners. We're proud to say that we manage over 25% of the best waterfowl habitat in the Maritimes.
- Our on-the-ground work is guided by the wetland and waterfowl research of DUC's scientists.
- DUC works to encourage policy in favour of wetland and habitat conservation.
- DUC delivers wetland and environmental education programs to teach Canadians about wetlands and the need to conserve them.

As a non-profit organization, we rely on the support of Canadians from across the country. DUC's dedicated volunteers, members and staff work very hard to help us to achieve our conservation mission. As a landowner, you are a vital partner in the overall conservation picture. We truly appreciate your commitment to conserving the wetland on your property, and to protecting this important wildlife habitat.

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ducks.ca

# Atlantic Wetland Care Program

As a landowner, you are one of over 1800 individuals or businesses across Atlantic Canada with whom Ducks Unlimited Canada works in partnership to conserve wildlife habitat. Your fellow landowners are a varied group. Whether farmers, professionals, retirees, business owners, families, individuals, young or old, your common link is your appreciation of wetlands.

One way DUC is furthering its relationship with you, is through the Atlantic Wetland Care Program. This new program aims to ensure you have the support and resources you need as conservation partners.

The Atlantic Wetland Care Program officially launched in June 2011. In the coming years this program will be continually building, allowing DUC and landowners to forge stronger bonds and to help landowners feel a deeper connection to how their wetland contributes to conservation.


## Acknowledgements

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Maritimes & Northeast Pipeline

Environment Canada Environnement Canada

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# Wetlands 101

*Wetlands are one of the most beautiful and diverse ecosystems in the world. Providing important habitat for waterfowl species, wetlands support approximately 600 species of plants, animals and insects.*

*Wetlands provide a wide range of recreational, economic and environmental benefits to people such as maintaining a clean water supply, flood and drought prevention, food production, and offering aesthetic and recreational opportunities.*

*Wetlands 101 introduces the different types of wetlands you may see and describes the many values of these unique ecosystems.*

## Introducing Wetlands

Wetlands are areas commonly referred to as marshes, salt marshes, swamps, bogs, flats and shallow water areas.

They are areas where the water meets the land, and are a transition between dry land areas and deeper water areas. Due to their varying nature, some wetlands hold water year-round while others may appear dry for most of the year. In these cases, the water table is very near the soil surface, and may not be visible. As a result, wetlands have plants and soils that are adapted to this 'wet and dry' environment.

## Different Types of Wetlands

### Bogs

Bogs are typically formed in low depressions in the earth and characterized by their accumulation of peat (Sphagnum).

With limited input of groundwater, most water and nutrients in bogs comes from rain, creating a nutrient poor environment. Bogs provide habitat for a variety of animal and plant species that have adapted to varying nutrient conditions (e.g. sundew and pitcher plants).

### Fens

Similar to bogs, fens are dominated by the presence of peat moss. They are less acidic and receive more nutrients through groundwater that drains from surrounding upslope mineral-rich soils. Due to changing levels of water and nutrient availability, fens provide a diverse ecosystem that can include grass meadows, sedges and wildflowers.

S. Blaney, ACDC (3)

## Swamps

Swamps are found in a wide range of landscapes. Water-flow within a swamp remains high, but varies seasonally. Nutrient composition in swamps can range from poor to rich depending on the exposure to mineral rich water. Dominant vegetation can include trees and shrubs.

## Marshes

Marshes are formed in low-lying areas in the landscape and are associated with shallow water. With a wide variety of water sources, they provide a nutrient-rich environment that supports a broad range of animal and plant life. Marshes are dominated by aquatic plants such as cattails, sedges and grasses and provide habitat, food and breeding areas for numerous waterfowl species.

## Shallow Water Wetlands

Shallow water open wetlands (ponds) consist of standing or flowing water generally with a depth of less than 2 metres. It provides a nutrient rich environment where vegetation is free-floating and may consist of duckweed and water-lilies.

## Meadows

Wet meadows exist in areas as open water basins. Water levels fluctuate on a continuous basis depending on rainfall/runoff events. Nutrient availability is high due to the strong influence from surrounding upland. Dominant vegetation includes sedges (i.e. species of Carex) or grasses.

## Forested Wetlands

Forested wetlands are located in dense forest areas that do not contain permanent standing water. Much of the nutrient flow in these areas comes from occasional flooding. Dominant vegetation includes large trees such as red maple, oak or ash.

## Vernal Pools

Vernal pools are small wetlands that contain shallow water for short periods of time (winter to spring). Lacking outlet streams, these wetlands have the tendency to dry out in the summer. Vernal pools are important breeding areas for salamanders, insects and frogs and serve as a seasonal food source for many other wildlife species.

*right top: S.Blaney, ACCDC*

### Coastal Wetlands

Coastal wetlands are typically located between land and sea. Consisting of salt-brackish water, these wetlands receive inflow from storm surges or occasional direct access to the ocean. Coastal wetlands display both terrestrial and aquatic characteristics and are considered very productive ecosystems. They provide nurseries for a wide variety of fish species, are a plentiful food resource, and aid in flood control and erosion prevention. Among the most common types of coastal wetlands are salt marshes, estuaries and mudflats.

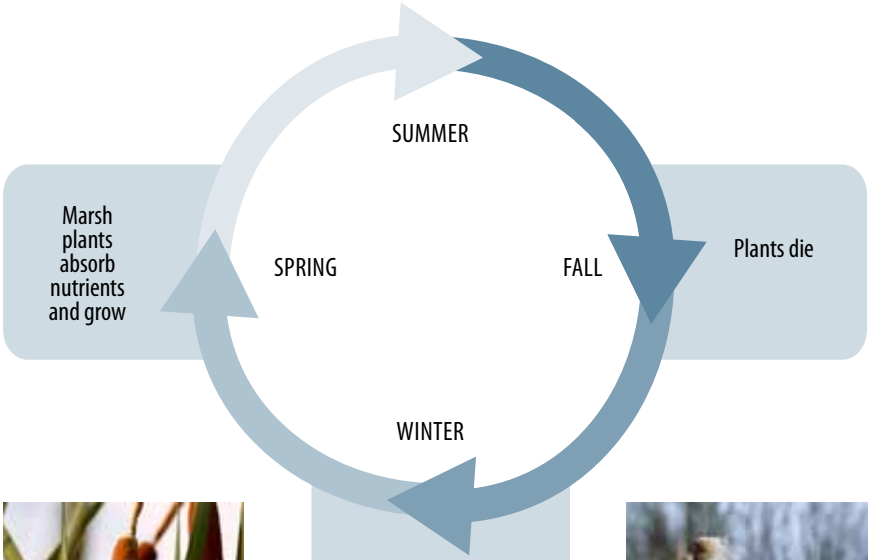
## The Life Cycle of a Wetland

A wetland is a living ecosystem that changes from month to month and year to year. Annually, a wetland's water level rises and falls, depending primarily upon precipitation and temperature. This rise and fall in water level can affect the vegetation in the wetland.

Water level fluctuations also occur on a longer cycle over several years. Several ecological benefits arise out of this natural cycle, resulting in a wetland with higher nutrient levels and greater biodiversity.

When water levels drop, more vegetation emerges in the newly shallow or exposed areas. When water levels rise back up, this vegetation decomposes and its nutrients are released into the water and the soil, providing a richer, more productive environment.

## Seasonal Nutrient Cycle of a Marsh




## Wetland Values

### Wetlands...

#### *Provide Clean Drinking Water*

Wetlands are nature's water filters. Soils, vegetation and microorganisms play a key role in removing pollutants through biological and physical processes.

The lack of freshwater resources and access to these renewable resources pose serious concerns in the world today. As one of the most vital elements on Earth sustaining both animal and plant life, high quality and quantity of freshwater is in demand, as is the need to focus our efforts on conservation.

***Water quality is one of the most important issues facing the world today, therefore protecting wetland habitat is essential.***

### Wetlands...

#### *Reduce Flooding & Stabilize Erosion*

Wetlands act as natural sponges, storing excess water from rain and snowfall. Coastal wetlands can provide protection against tidal waves and storm surges by acting as a barrier, slowing down the speed and height of water. Vegetation along the shoreline helps to bind soil together, which slows down the movement of water, limiting the loss of exposed soils.

Water is released slowly from wetlands, replenishing groundwater and reducing the risk of flooding. As well, wetlands can retain water during periods of drought.

## Wetlands…..

### *Provide Valuable Wildlife Habitat*

Wetlands are in high demand by waterfowl, fish, mammals, birds, invertebrates and amphibians who depend on these areas in order to feed, nest and breed. During migration, birds rely on the availability and quality of wildlife habitat for survival.

## Wetlands…..

### *Make Great Outdoor Classrooms!*

Wetlands are full of life and are great places to explore and learn about nature and the environment! A hands-on approach for experiencing wetlands engages students, making learning fun.

## Wetlands…..

### *Provide Opportunities to Have Fun!*

Wetlands have an inherent beauty that attracts people to engage in activities such as hiking, fishing and bird-watching. These natural habitats are filled with opportunities for people of all ages to enjoy, relax and have fun!

*left bottom: D. Mazerolle, ACCDC; right top: S.Blaney, ACCDC*

# But...

## *WETLANDS ARE DISAPPEARING...*

Wetlands are one of the most threatened ecosystems on Earth. Up to 70% of wetlands have been lost in settled areas of Canada. In Atlantic Canada, 65 per cent of coastal marshes have been altered or destroyed. In the Upper Bay of Fundy region, that number reaches 85 per cent.

Historical lack of appreciation has resulted in continued destruction of wetland habitat through development and poor land use management practices. The importance of these natural systems is only now becoming understood.

Destroying wetland habitat reduces the ability for these ecosystems to effectively support their ecological functions. Annually, billions of dollars are spent on ecological services, such as flood control and the replenishment of high quality drinking water. Since extreme weather events are more frequent and intense, wetlands are becoming even more important.

# DUC & Your Wetland

*As a science-based organization, Ducks Unlimited Canada has dedicated years of research towards understanding wetlands: how they work, how to restore them properly, how to manage them and how to deal with issues that can arise. Our Atlantic Canada Conservation Program focuses on maintaining current wetland projects, constructing new wetlands and enhancing wetland and upland habitat.*

*We have been working with landowners like you, who are our partners in conservation, and are eager to help you better understand the work that we do to help create healthy wetland habitat.*

*In this section, we will share some of the knowledge and techniques that we have gathered over the decades.*

*left: D. Mazerolle, ACCDC*

## New DUC projects

DUC remains active in putting new wetland projects on the ground, although the types of projects that DUC can complete has evolved with changing legislation, policies, and regulations for wetlands. Our projects are typically completed in support of the Provincial wetland policies which aim to prevent the loss of wetlands.

### Our current projects are prioritized in the following way:

### Wetland Restoration:

Re-establishing wetlands that have been altered and are in a highly degraded state. Common alterations include in-filling wetland or draining wetlands. Restoration projects are of highest interest to DUC and provincial policies.

### Wetland Enhancement:

Projects conducted in or around existing wetlands that physically improve its function (s).

### Wetland Creation:

Creating new wetland habitat in areas where wetlands do not currently exist or have ever existed.

## Interested In A Wetland Project?

- Once you have identified a potential wetland project site, **contact your provincial DUC office** for a wetland assessment.
- When you call, please **provide your Property Identification Number** (PID). We can then do an initial assessment of the site by looking at topographical maps, soils maps, landscape features, and aerial photos. Additionally, we are interested in historical and present day land use as it relates to wetlands on the property (i.e. have wetlands been drained or filled-in?).
- If the project has potential, we will complete an on-site assessment to get more in-depth information about the site's suitability for a wetland project. Suitability will be determined by criteria including: **slope, soil type, potential project size, historic land use, drainage patterns, and proximity to existing watercourses and wetlands**.
- If your site is acceptable, **DUC staff will work with you** to develop a design for the wetland. Timeline for project delivery is funding dependent.
- DUC will hire an experienced contractor and supervise the construction of the project.
- DUC will continue to **manage and maintain the project for a set period of time** as determined by a "Conservation Agreement" between DUC and the landowner.


# Managing Your Wetland

*You have a new wetland on your property...so what now?*

*Congratulations! You can now enjoy your wetland and watch the wildlife and vegetation change from season to season.*

*We appreciate your constant dedication and support to our mission in conserving wetland habitat. Welcome to our community of DUC Landowners!*

*In this section, we explore various wetland management techniques and solutions.*

# Conservation Agreements

## What is a Conservation Agreement?

Before a wetland is restored, a Conservation Agreement is typically signed by the landowner and DUC. These agreements are tailored to each landowner and represent a commitment to conserve.

### Conservation agreements benefit both landowners and the landscape.

Under this agreement:

- Landowners retain ownership of the land.
- Landowners grant DUC staff permission to access the wetland and manage issues that may arise.
- A minimum term is agreed upon.
- Landowners are partnering with DUC to conserve their property's valuable natural resources.

## Water Control Structures

In wetlands with large drainage areas, water control structures are installed to maintain the water level of the wetland at an ideal depth. Typical structures : engineered water control structures, Clemson beaver levelers, fishways , and rock outflow.

**Engineered Water Control Structures** - designed to regulate a normal operating level. Engineered to handle 'peak flows'.

**Clemson beaver levelers** - designed to minimize the risk of beaver dam construction.

**Fishways** - Allow fish passage through physical barriers. A gradual slope in channels allow fish to migrate easily up the fishway.

**Rock Outflow** - Act as an outlet for excess water.

**DUC inspects our engineered water control structures once a year - in the spring and (again in the fall where a fishway is present) to ensure that all structures are intact and working properly.**

## Other Enhancement Techniques

- Establish and maintain a healthy, natural area around your wetland consisting of trees, grasses or shrubs. The wider the buffer the better! Plant a variety of native species around your wetland to increase habitat, shelter and food availability as well as to reduce erosion and filter sediment run-off (e.g. Hawthorne, dogwood, willows).
- Place and maintain nest boxes on your property (e.g. swallow boxes, bat houses, wood duck boxes).
- Plant native wetland vegetation in your wetland (eg. duckweed, cattails).
- Discuss maintenance/management issues with a DUC Conservation Program Specialist. They are great educational resources!

Fishway

Beaver leveller

Water Control Structure

## Nest Boxes

Waterfowl species such as wood ducks, common goldeneye and hooded mergansers make their nests in tree cavities. Many of these species become dependent upon nest boxes when natural tree cavities are absent. Nest boxes are a great substitute and must be properly maintained to ensure success.

## Nest Box Facts

Nest boxes must be placed near open water no less than 1 metre above high water.

Once nesting birds begin to use your box, there is a good chance they will return in following years.

## Annual Maintenance of Nest Boxes:

- Inspection of nest boxes should take place during the fall or winter months to ensure that they are in good condition.
- At that time, it is recommended to remove old nesting debris, replacing it with new wood shavings.
- Please record nest box activity and report back to DUC staff.

For more information on nest boxes please visit: ducks.ca/resource

## Wetland Management Solutions

In most cases, once a wetland is restored, it is able to function as a self-sustaining ecosystem, requiring very little in the way of maintenance or management.

Keeping inspection records of water quality, wildlife, and amount of vegetation a few times a year is a great way to evaluate your project and prevent potential problems from developing.

However, there may be some situations that will arise from time to time that require a more hands-on approach. The following pages identify some scenarios that can arise with your wetland, and how best to address them.

### Beaver Activity:

Having the company of beavers is natural in a healthy ecosystem. However, these furry friends can cause problems when it comes to water control structures. Beavers, can increase water levels on your property and fish passage can be prohibited. If you have a problem with a beaver on your DUC wetland you should contact us. DUC staff will complete a site visit and determine the best course of action.

### Predators:

Predators play a natural role in the lifecycle of most animals. Their presence indicates a healthy ecosystem.

### Low Water Level:

If you experience low water level in your wetland, don't panic! This may be a natural process in which fluctuation in water levels will vary according to amount of rainfall, weather conditions, flooding, etc. Vegetation and wildlife species that inhabit these areas are adapted to varying conditions. However, if the water level has dropped significantly for an extended period, please contact your local DUC office.

## High Water Level:

If you suspect that your water level is higher than normal, inspect your wetland carefully to determine possible causes. The cause may be a major rain event, damage to the existing water control structure and/or beaver activity. If damage or beaver activity is suspected, please contact DUC staff to set up a site visit.

## Eutrophication (Indicator: excessive algae):

Excessive nutrients (eutrophication) in water bodies can lead to algae blooms, which can reduce oxygen content in the water to levels that can kill fish and small invertebrates. The presence of a reasonable amount of green algae in a wetland is normal and can play an important role in wetland ecology. Eutrophication can be minimized by keeping a buffer of undisturbed vegetation around the wetland, reducing fertilizer use in surrounding area and planting aquatic vegetation.

## Invasive Plants:

Invasive plants such as purple loosestrife and phragmites can cause problems for the health of a wetland ecosystem. Purple loosestrife is a non-native plant that spreads quickly and can out-compete native species. Invasive species can be controlled through biological means and preventative measures. Please contact your local provincial government for information on proper disposal of invasive plant waste.

*right: S.Blaney, ACCDC*

## Where are the Ducks?

Presence of waterfowl can be one indication that your wetland is healthy. However, if you do not see ducks, don't panic. There may be many reasons why there is an absence of these feathered creatures in your wetland.

Wetlands are incredibly diverse, and are home to a broad range of wildlife. A particular wetland may not necessarily be attractive to waterfowl, but instead, provides excellent habitat for red-winged blackbirds or spotted salamanders. As well, it still provides a wide range of ecological benefits to you and your land.

Sometimes you might see ducks in your wetland, but only briefly. This too, is normal. There are a number of waterfowl needs which a wetland can support, such as pairing, brood-rearing, staging and migration.

Keep in mind that a wetland that is perfect for brood rearing may not be necessarily appealing for pairing. It is very rare for a small wetland to be able to fulfill all of a duck's needs throughout its entire life cycle. So you may see a hen and brood for a little while, and then they may disappear. The hen and brood may have simply moved on, due to their changing habitat requirements.

# Wetland Resources

*Ducks Unlimited Canada hopes that this guidebook has helped you get to know your wetland a little bit better. However, other questions may arise that have not been covered.*

*In this section, you will find:*

- *Information on Provincial Wetland Policies*
- *Frequently Asked Questions (FAQ)*
- *Information about DUC and our programs*

*right: S. Blaney, ACCDC*

## Wetlands and Your Province

Ducks Unlimited Canada has worked to conserve wetlands in Atlantic Canada since 1960. DUC continues to work with government, industry, private landowners and other conservation organizations to ensure wetland habitats remain a part of Atlantic Canada's landscape, ensuring a healthy future for waterfowl, wildlife and people.

## *WE CANNOT DO IT ALONE...*

One of the strongest safeguards against wetland loss is the implementation and enforcement of government wetland policies.

The Federal Policy on Wetland Conservation (FPWC) announced by the Government of Canada on March 9, 1992 focuses on the sustainable wise use of wetlands in Canada, consistent with the "Wise Use Principles" developed by the Ramsar Convention.

***Federal Policy***

***Applies to all of its agencies, programs and projects. It is being implemented through existing programs and budgets.***

The stated objective of the Government of Canada as articulated in this Policy with respect to wetland conservation is:

*"to promote the conservation of Canada's wetlands to sustain their ecological and socioeconomic functions, now and in the future."*

It is the responsibility of each Province to establish and enforce their own wetland policy for public and private projects. These policies are vulnerable to priority shifts due to changes in government so it is vital for conservation organizations and landowners to continue to communicate with their provincial governments about the need for a strong wetland policy. As policies are subject to change, we urge you to contact your provincial government for the most up-to-date information on what your government is doing to protect wetlands.

## For Information on Each Province's Policy:

### Nova Scotia
**www.gov.ns.ca**

NS Environment
PO Box 442,
5151 Terminal Road
Halifax, NS, B3J 2P8
902-424-3600

### New Brunswick
**www.gnb.ca**

NB Department
of Environment
Marysville Place,
P. O. Box 6000
Fredericton, NB, E3B 5H1
506-453-2690

### Prince Edward Island
**www.gov.pe.ca**

Fish and Wildlife Division
Upton Road
Charlottetown, PEI, C1A 7N8
902-368-4700

## Frequently Asked Questions

### 1. A wetland is being altered. What should I do about it?

Please contact your provincial government agencies responsible for environmental matters. They are the regulatory agency that deals with issues such as spills, dumping in and/or destruction of wetlands and wetland habitat.

Prince Edward Island – (902) 368-4683

Nova Scotia– (902) 424-3600

New Brunswick – (506) 453-2690

Newfoundland - 1-800-563-6181

### 2. Does DUC buy wetlands? How do I donate/sell my land to DUC?

Yes, we buy wetlands and adjacent uplands.

If you are interested in selling or donating your property for conservation please contact your local DUC office to complete an assessment. The assessment is based on the property's waterfowl value, its location in relation to our high priority areas, availability of funding and wetland restoration potential.

Based on the results of the assessment, we may initiate the purchase process which involves an appraisal of the property value. If the property meets our conservation criteria then we will discuss a variety of options that , in the case of land donations, includes a full tax credit for you and your family.

### 3. Is hunting allowed in DUC wetlands?

On wetlands that DUC manages on private lands, it is the landowner who decides whether hunting will be prohibited. Hunters should seek permission from the landowner and both hunters and landowners should clearly understand the provincial Trespass Act.

### 4. I found an injured duck. What do I do with it?

Holding wildlife even temporarily is against the law in most provinces. DUC is not licensed to care for injured wildlife. Please direct calls to your Provincial Wildlife Agency or local rehabilitation center.

S. Blaney, ACCDC

### 5. What can I feed ducks? Why isn't DUC feeding the ducks?

Feeding ducks is discouraged because it may interrupt natural migration, feeding patterns or it may congregate birds in small areas where the chance of spreading disease is increased. Feeding ducks bread is not helpful as bread lacks high protein that these birds need for egg laying and migration.

We do feed ducks. . . but we do it naturally, by conserving and restoring wetlands, which provides food for waterfowl.

### 6. Why aren't the ducks in my area migrating?

Over the winter months, species like black ducks, mallards and goldeneyes will stay in Maritime areas that have open water and a food source.

### 7. I am having a problem with waterfowl on my property. What do I do?

The best way to keep waterfowl out of your yard is to keep the area active with movement and noise. For movement, try putting out streamers or lights. You might also try to make a scarecrow.

Waterfowl will generally stay in an area if food is available. If someone is feeding the ducks, discontinuing the feeding will hopefully persuade them to leave.

For more information on removal of nuisance waterfowl please contact Canadian Wildlife Service.

Canadian Wildlife Service
Environment Canada
P.O. Box 6227
17 Waterfowl Lane
Sackville, New Brunswick E4L 1G6
(506) 364-5044
www.atl.ec.gc.ca

# DUC and Our Programs

## Habitat protection

Ducks Unlimited Canada works in partnership with other non-profit organizations and private landowners to protect habitat, now and into the future. Protecting existing habitat is just as vital as restoring habitat that has been lost.

DUC accepts private donations and purchases habitats in our priority areas.

## Wetland Restoration

Many provincial wetland policies require individuals, companies and/or government departments to restore wetland habitat to compensate for wetland loss.

Our program delivers wetland compensation projects that are triggered by habitat loss or alteration, through the regulatory permitting process. In partnership with the provincial and federal agricultural departments we have delivered such programs as beaver pond management and the construction of ponds to manage nutrients on agricultural land.

## Science

In Atlantic Canada, we embrace an adaptive management philosophy in our research programs. Our science program has successfully grown to involve partnerships among university professors, graduate students, government departments and staff. We continue to increase our knowledge of local wetland and waterfowl issues.

## Education

DUC's national education program is award-winning and inspires a sense of stewardship and encourages students to take action. Students gain a sense of empowerment in realizing they can play an important role in creating a better world. For more information on our education programming, please visit ducks.ca.

S. Blaney, ACCDC

# Wetland Field Guide

Appendix A

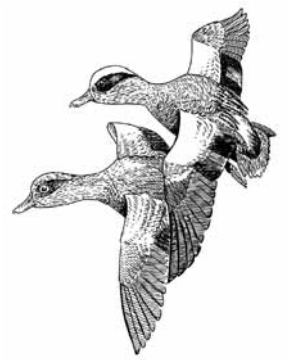
*Wetlands are home to a broad variety of waterfowl, wildlife and vegetation. This section lists some of the common species that you may readily identify within your wetland:*

- *Waterfowl (Dabbling, Diving)*
- *Other Birds*
- *Amphibians*
- *Reptiles*
- *Invertebrates*
- *Mammals*
- *Plants*

## DABBLING DUCKS

### American Wigeon

*Anas americana*



The wigeon is an early spring migrant, arriving soon after the pintail and mallard. The male is identified by his white crown and large white shoulder wing patches. Females are dull brown and grey. Wigeons are well equipped for plucking vegetation due to the specialized structure of its bill. The nest is built in grasses and away from water.

### American Black Duck

*Anas rubripes*

The drake and hen are similar in appearance and are easily distinguished only by the colour of their bill, which is greenish yellow on the drake and dull olive green to black on the hen. Both the male and female black duck resemble a mallard hen, but have a noticeably darker black-brown body that contrasts with their light brown head.

### Blue-Winged Teal

*Anas discors*

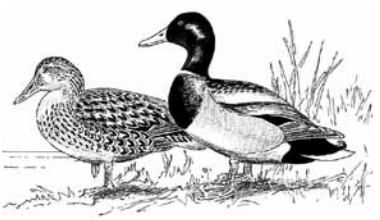
Blue-winged teal are small dabblers that are easily recognizable by their grey-blue shoulder patch and by the male's white head-crescent and white flank patch in front of their black rear. They nest among the grasses and forage in shallow ponds for insects, snails, grains and crustaceans.

### Green-Winged Teal

*Anas crecca*

Nests are located on dry land, usually well concealed in a grass clump or beneath low shrubs. The male can be recognized by his reddish green head with a green stripe that extends through the eye, a green patch on the wings, and a white stripe in front.

Females are brown overall with whitish underparts and have green wing bars. They are typically found in shallow ponds.

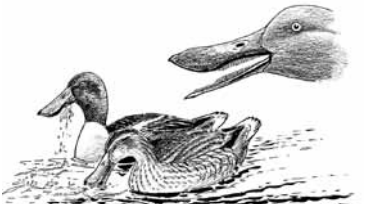


## Mallard

*Anas platyrhynchos*

In breeding plumage, the drake is easily identified by its bright green head, olive yellow bill, brown chest and blue wing patches.

The hen is a brown colour overall, with blue wing patches, orange and black bill and orange feet. Mallards nest on dry land in vegetated areas.



## Northern Shoveler

*Anas clypeata*

The shoveler is a fresh-water duck with a bill that is large and broadly flattened toward the tip. The male has greenish feathers on the head and neck, the breast and belly are white, the back is black and white, and the wings have a rusty brown hue, with the inner wings being bluish. The female's belly and breast are white, the body is brown in color, and the inner wings are bluish.

## Northern Pintail

*Anas discors*

The pintail is a medium sized duck with a slim profile, long narrow neck and pointed tail. Males have a chocolate brown head, white foreneck, blue-grey bill with black stripe and a long "pin" tail. Females are buff or tan and have blue bills with dark spots or mottling.

## Wood Duck

*Anas crecca*

Considered by many to be the most beautiful of North American waterfowl, the wood duck is a perching duck that normally nests in cavities of trees. The wood duck has sharp claws for perching in trees.

The male has a green and white crested head, red eyes, red and white bill, chestnut breast, golden flanks and back. The female is a drab version of the male but is considered striking compared to other duck hens.

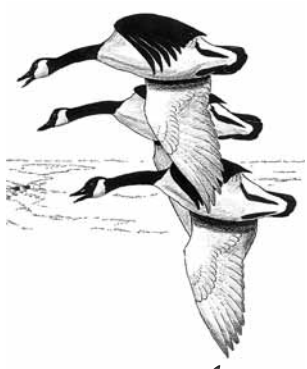
### Gadwall

*Anas strepera*

The gadwall, or "grey-duck" is a grayish-brown, medium-sized duck with a wide distribution in Western North America. It is most readily identified in flight by the white feathers of the speculum adjacent to the body.

Forward of the speculum is a chestnut colored patch. Yellow legs and feet are also distinctive features.

## GEESE



### Canada Goose

*Branta canadensis*

The Canada goose, is easily identifiable by its black head and neck, white patches on the face, and brownish-gray body. Fully grown, some individuals weigh as much as 27 1/2 pounds.

## DIVING DUCKS

### Hooded Merganser

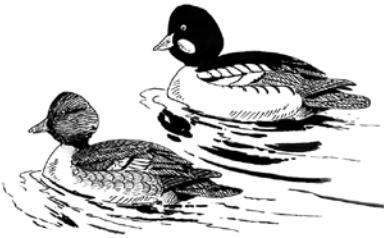
*Lophodytes cucullatus*

Hooded mergansers have a crest at the back of the head which can be expanded or contracted. In males, this crest has a large white patch, the head is black and the sides of the duck are reddish brown. The female has a reddish crest, with much of the rest of the head and body a greyish-brown.

### Red-Breasted Merganser

*Mergus serrator*

The adult male in breeding plumage has a reddish-brown breast, white neck collar, green head, and red eyes. The bill is orange to red-orange in colour and is very thin. The back is black and white, and the flanks are gray. The female has an overall gray body, reddish-brown head, and reddish eyes. There is no obvious white chin-patch as in the female Common Merganser. They forage by diving and swimming under water, sometimes in cooperative groups, working schools of fish into shallow water.

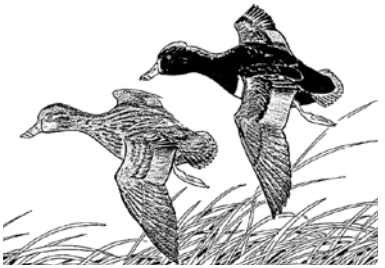


## Common Goldeneye

*Bucephala clangula*

These deep-water ducks are found in tree-bordered ponds, marshes and lakes. Nests are located in cavities in trees or in hollow stubs.

The species is named for its golden-yellow eye. Males have a dark head with a greenish gloss and a circular white patch below the eye, a dark back and a white neck and belly. Females have a brown head and a mostly grey body.



## Ring-Necked Duck

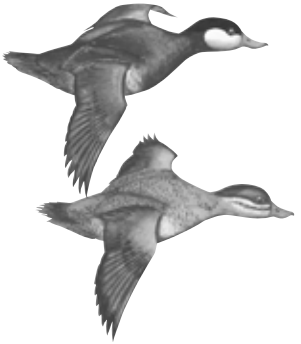
*Aythya collaris*

The Ring-necked duck is a small to medium-sized diving duck with distinctive white bill markings. The male has a grey bill with a white band, a shiny purple head, a white breast, yellow eyes and a dark grey back. The female has a pale brown head and body with a dark brown back, a dark bill with a more subtle light band than the male and brown eyes.

## Scaup

*Aythya marila* and *Aythya affinis*

Greater (A. marila) and lesser (A. affinis) scaups are divers known to sportsmen as big and little bluebills. The greater is the larger bird, with more extensive white on the wing and a broader heavier bill.



## Ruddy Duck

*Oxyura jamaicensis*

Most duck species have one or two characteristics that make them different. But with ruddy ducks, almost everything is unusual. Ruddy ducks are shy, spending much of their time surrounded by the cattails that grow in shallow water at the edge of wetlands.

Characterized by their white cheek patches, dark cap and blue bill, ruddy ducks prefer to dive in deeper water, feeding on insects, seeds and roots of aquatic plants.

### Bufflehead

*Bucephala albeola*

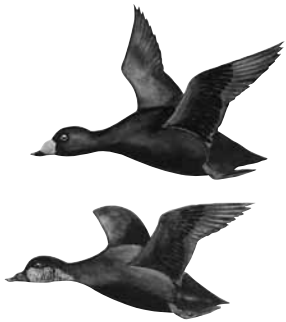
Buffleheads are one of the smallest diving duck species that nests in cavities of trees and nest boxes close to the water. Adult males are black and white, with green and purple heads with a large white patch behind the eye. Females are grey-toned with a smaller white patch behind the eye and a light underside.

### Common Eider

*Somateria mollissima*

Eiders are large sea ducks that typically nest on the ground near the ocean feeding on crustaceans and other aquatic invertebrates. Adult males display black, white and green plumage while the females are brown with black barring.

### Scoter



Three species of scoters can be found along the coast: the white-winged, surf and black scoter. The white-winged species is the largest of the three with a dark black body and a small patch of white under the eye. The surf scoter is black with a small patch of white at the crown and back of neck. The black scoter is completely black with a bright orange knob on its bill.

## OTHER BIRDS

### Tree Swallow

*Tachycineta bicolor*

Like all swallows, tree swallows are slender with streamlined bodies, short necks, very short legs and tiny feet. Their long pointed wings enable them to fly with amazing agility. Adult male and older female tree swallows can be easily identified by their blue-green backs and white bellies.

Tree swallows prefer to nest in mature woodlands where they can find nesting cavities. While they will nest in a variety of locations, they do prefer to take up residences near ponds, rivers and lakes where flying insects are abundant.

## Barn Swallow

*Hirundo rustica*

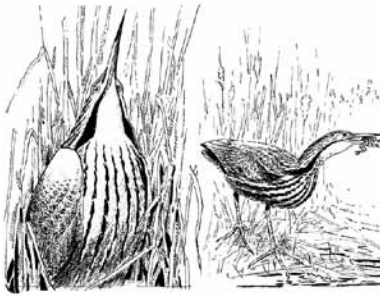
The barn swallow is a distinctive bird with bold plumage and a long, slender, deeply forked tail. Barn swallows are deep blue above, with an orange-buff breast and belly. They have russet throats and forehead patches. The rest of the head is deep blue, extending in a line through the eye.

## Great Blue Heron

*Ardea herodias*

Standing motionless or slowly stalking its prey, this heron is frequently seen along the shallow edges of marshes, rivers and lakes.

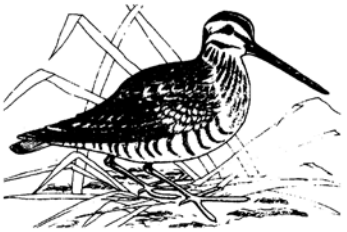
The great blue heron is a large bird, standing about 1.2 metres. It nests in colonies, generally in trees where the bulky nests of sticks may be three to eight metres from the ground. Its principal food is fish, crayfish and other crustaceans, frogs and snakes, as well as insects, mice and shrews.



## American Bittern

*Botaurus lentiginosus*

The bittern, legendary bird of the marsh, is found throughout the old and new world. It is commonly called thunder-pump, or stake driver, from the peculiar vocal sounds it makes during the breeding season, resembling the rhythm and sound of a suction pump working slowly in thick muddy water. The sound carries far and is surprisingly loud close at hand.



## Common Snipe

*Capella gallinago*

This elusive member of the sandpiper family is also known as the Wilson's snipe. The common snipe's long, straight bill probes deep into wet mud for food. It nests on the ground in a depression among grasses or in other thick cover near water.

## Common Yellowthroat

*Geothlypis trichas*

Shy and elusive, this small yellow and green warbler is a resident of marsh edges, darting about reed beds or willow thickets. The male has a striking black face mask; the female has none. Both are olive-green above, yellow below, and brightest on upper breast. Its song is a clear, ringing, "wich-i-ty-wich-i-ty, wich-i-ty". Nests are situated on or close to the ground and are somewhat bulky structures, interlaced into supporting vegetation.

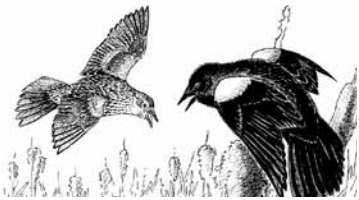
## Pied-billed Grebe

*Podilymbus podiceps*

Pied-billed grebes are found in sloughs, bays and marshes. Solitary, they rarely fly except in migration. Expert swimmers and divers, they can submerge until only their head appears above water, and with barely a ripple, slip beneath the surface. Nests are on floating platforms of marsh debris. Eggs are carefully covered with wet vegetation when the bird leaves the nest. Grebes' feet have three separate toes, widely lobed.

## Red-winged Blackbird

*Agelaius phoeniceus*



The red-winged blackbird is a colourful inhabitant of marshes where emergent vegetation is found. The male is easy to spot, as the name implies, while the female is heavily streaked with dark brown and has only a dull red shoulder patch.

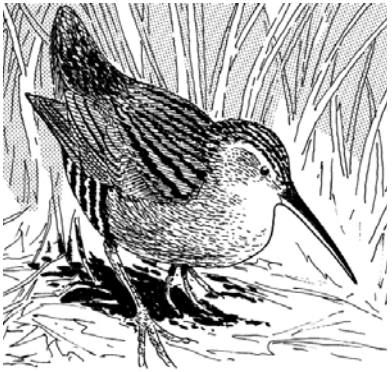
The nest, found in emergent vegetation, often over water, is deep and securely woven into supporting stalks.

## Sora

*Porzana carolina*

A small marsh bird, the sora has a chunky body and a short yellow bill. Slender legs and long toes enable it to scamper among tangled reeds and patter over lily pads.

More often heard than seen, its call is a series of rapid, whistled notes descending in scale. Nests in grass or reeds over water may contain anywhere from 9 to 18 eggs, sometimes in two layers.



## Virginia Rail

*Rallus limicola*

About the same size as the sora, this rail has a long, tapered bill, dark above and red-orange below. Sexes are alike, dark brown above streaked with black, with a breast that is chestnut and paler on the throat. Its cheeks are grey, flanks and undertail black barred with white. It prefers cattail marshes where its basket-like nest is built over or near water.

## Belted Kingfisher

*Ceryle alcyon*

This quick little fisherman should be familiar to us all. Found near fish-inhabited waters (especially streams), the kingfisher occasionally may be perched patiently on a branch watching the water below. Suddenly, this small grayish bird with large black bill will glide from its perch, hover momentarily, then dive headlong into the water, emerging with its catch.

## Northern Harrier

*Circus cyaneus*

This slender, long-tailed, long-winged hawk commonly found in open country and the vicinity of marshes is usually called a "marsh hawk".

The adult male is grey above and white below, with black wing-tips. Female and immature marsh hawks are reddish-brown and darker on the back and wings. The white rump patch, present in all plumages, is a good field mark. Hunting in low level flight, it courses back and forth over favoured territory. Prey consists of small rodents, reptiles and birds.

### Swamp Sparrow

*Melospiza georgiana*

Like sandpipers, the swamp sparrow often wades into shallow water picking beetles, ants, crickets, and other insects off the surface. The swamp sparrow is a medium-sized sparrow, slightly smaller and shorter-tailed than its close relative, the song sparrow.

Male and female swamp sparrows differ only slightly, with the female's crown usually duller. An adult in breeding plumage has a dark crown, a narrow black eye stripe, and gray on the sides of the face, neck, breast and belly. Its clean white throat contrasts sharply with its gray breast and is separated by a thin dark stripe. The sparrow's back is light brown, streaked with darker brown and its wings show a noticeable shoulder patch in all plumages. The flanks and undertail coverts are buff.

### Other Birds You May See…

There are hundreds of other bird species that you may find in different types of wetlands. Other common species that you may readily identify including: bald eagle, black tern, common loon and killdeer.

## REPTILES & AMPHIBIANS

Since reptiles and amphibians require water to sustain critical developmental stages in their life, it is no surprise that a large majority of these unique animals inhabit wetlands and their associated habitats.

These species are an important part of a wetland and contribute greatly to the health of a wetland ecosystem. Common species that you may find in your wetland include: painted turtle, snapping turtle, leopard frog, bullfrog, northern spring peeper, green frog and spotted salamander.

## INVERTEBRATES

When we think of wetland species, invertebrates may not be the first to come to mind! Water boatman, dragonflies and caddisflies all depend on wetland habitats.

## MAMMALS

Mammals also make use of wetland habitat as a source of food, water and shelter. Common species that benefit from wetlands are coyote, moose, raccoon, deer, muskrat, skunk and the beaver, to name only a few.

And of course, another mammal that benefits from wetlands is *homo sapiens* — human!

Wetlands are key to the lifecycles of waterfowl and other wildlife species.

# PLANTS

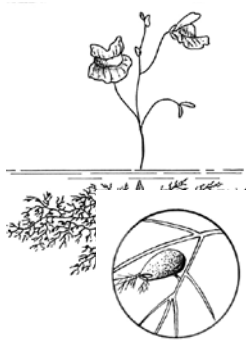
## Algae

We commonly think of algae as a smelly, blue-green scum on the surface of shallow ponds and lakes. Algae is comprised of a very diverse group of plants which play a very important role in the complex interrelationships of living organisms.

Algae provides food that is consumed by small aquatic invertebrates which are then consumed by other wetland species including waterfowl.

## Bladderwort

*Utricularia macroriza*



Often known as a carnivorous plant, the bladderwort's stem consists of an intricate network of branches below the surface. These branches contain a series of bladders that when triggered can trap small insects and are decomposed and absorbed by the plant.

Found in fresh water, it sometimes forms large mats of several hundred plants. Attractive yellow flowers are borne on a leafless stalk above water.

## Arrowhead

*Sagittaria sp.*

## Water Plantain

*Alisma sp.*

These plants grow in shallow water and saturated soils and are easily identified. Both have white 3-petaled flowers. On the arrowhead, the flowers are medium size and on a single stalk, while on the plantain they are tiny and on a many-branched stalk. Arrowhead tubers, called duck potatoes, are eaten by ducks, which root them from soft mud. Plantain is a good food for geese. They eat the fleshy basal portions.

## Bulrush

*Scirpus sp.*

There are two basic varieties of bulrush: round-stem and three-square (triangular stem). There are several species of both.

Round-stem grows along marsh and stream borders, often in dense stands. It can reach 2.5 metres in height, with a stem 20mm thick. The seeds are excellent duck food; the rootstocks are eaten by geese. Round-stem bulrush provides good cover for broods and nest material for diving ducks.

## Bur Reed

*Sparganium sp.*

Bur reed grows along borders of marshes and ponds in water 1.5 metres deep. The ball shaped seed-heads contain nut-like fruits and are eaten by ducks. The rootstocks provide good food for muskrats.

## Cattail

*Typha sp.*

There are two species of this common marsh plant: broad and narrow leafed. Cattails grow up to 2 metres in height in shallow water frequently colonizing entire wetlands.

Cattail rootstalks are a valuable food for muskrat, which also use the stems and leaves as building material for their houses. It also provides excellent cover for many species of waterfowl and other wetland birds.

## Coontail

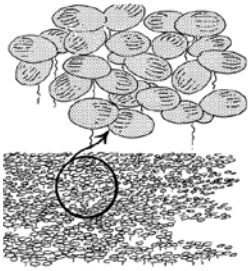
*Ceratophyllum demersum.*

Another widespread aquatic plant, coontail is often in enormous submersed beds of closely packed plants, which choke out more desirable vegetation. It grows equally well in sun or shade and frequently in deep water.

## Duckweed

*Lemna sp.*

Duckweed are tiny floating plants commonly found in calm water areas of marshes, sloughs and potholes. They grow in dense mats, often covering the entire surface.



## Horsetail

*Equisetum sp.*

Horsetail is found in the shallow borders of marshes, swamps and bogs. The stems are found, fluted and grooved, with a toothed sheath at the joints. It grows to 45 cm in height, from a creeping rootstock.

## Marsh Marigold

*Caltha palustris*

A member of the buttercup family, this low compact plant has broad, heart-shaped leaves with thick hollow stems. Flowers are deep yellow and consist of 5 to 9 petals (actually sepals).

## Pondweed

*Potamogeton*

Probably the most valuable aquatic food plant for waterfowl is the widely distributed sago pondweed. Tubers, seeds and leaves are consumed by ducks. These plants provide habitat for small invertebrates which are consumed by other wildlife species including ducks and fish.

*Right top: D.Mazerolle, ACDC*

## Water Buttercup

*Ranunculus sp.*

This aquatic plant is found in marshes across Canada. The small, five-petalled yellow or white flowers frequently carpet the surface of the water over a considerable area.

The submersed leaves are divided into many slender, finger-like parts which form a lacy network extending down from the surface of the water. There are a number of very similar varieties of water-buttercup.

### Did You Know?

**The leaves of some water buttercups droop and mat when the plant is taken from the water; others remain stiff and keep their form.**

## Northern Wild Rice

*Zizania palustris*

Wild rice is a very important duck food. In Canada, wild rice is distributed widely. It grows best in 60 to 75cm of water, also on tidal flats when not too salty, and reaches a height of 3 metres. Processed, the long black grains make an excellent and highly nutritious cooked cereal.

# INVASIVE PLANTS

## Purple Loosestrife

*Lythrum salicaria*

Purple loosestrife is characterized by its purple flowers and long, red-purple squared stem. It can grow up to 1-1.5 m tall. A hardy perennial plant, Purple loosestrife can rapidly degrade wetlands, diminishing their value for wildlife habitat. When purple loosestrife over-populates an area, it replaces native plant species and the habitat where fish and wildlife feed, seek shelter, reproduce and rear young.

## Phragmites

*Phragmites australis*

Phragmites, or common reed, is an invasive species threatening the Atlantic coast. Typically, this species can grow to 6m in height and form dense stands up to 200 stems/m2 . This species spreads through under-ground rhizome (root) structures. Distribution of phragmites remains wide as it is found all across Europe, Asia, Australia and North America.

## Other Plants You May See…

There are many other native and non-native plant species that you may find as you are out exploring your wetland. Other common species that you may see: cane reed, water lily, wild celery, spike rush and spirea.

*Right: D.Mazerolle, ACDC*

# My DUC Wetland Project

As a wetland owner, it is important to keep in mind that the first step in conserving wetlands begins with continuous observations of your wetland project. DUC encourages each landowner to get to know their wetland by observing and noting its characteristics during different times of the year. Who knows. . . you may be surprised by the things you find!

| **Project Name:** | **Location:** | **Date:** |
|---|---|---|
| **Property Owner:** | **PID:** | **Project #:** |

| **Wetland Characteristics** |
|---|
| Vegetation Observations:<br>(Wetland species, buffer zone vegetation, native species, algae, etc.) |
| Wildlife & General Observations:<br>(evidence of nesting, presence of wildlife, tracks, etc.) |

# Field Notes

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# References


Blaney, Sean. Wetland Photographs. Photograph. Atlantic Canada Conservation Data Centre, Atlantic Canada.

Canadian Nature Federation. Plant Watch: Canada in Bloom! Ontario: Canadian Nature Federation.

Campbell, L. and C. D. A. Rubec. 2003. Wetland Stewardship: New Directions. Final report of the conference on Canadian Wetlands Stewardship. Report No. 03-3. 16pp.

Cornell University.2012. 'Bird Guide'. Cornell Lab of Ornithology. Web. Nov-Dec 2011.

Cows and Fish. 2003 The Economic, Social and Environmental Value of Wetlands. Alberta: Cows and Fish.

Cows and Fish. 2002. Lakes and Wetlands. Alberta: Cows and Fish.

Ducks Unlimited Canada. Managing Small Wetlands for Waterfowl. Amherst, Nova Scotia. Ducks Unlimited Canada.

Ducks Unlimited Canada. 1991. Marsh World. Winnipeg, Manitoba: Ducks Unlimited Canada.

Ducks Unlimited Canada. 2006. Natural Values: Linking the Environment to the Economy (Wetlands).

Ducks Unlimited Canada. 2000. Nest Box Guide for Waterfowl. Ontario: Ducks Unlimited Canada.

Ducks Unlimited Canada. 2007. Wetlands on My Lands: A Landowner Guide for Restoring and Maintaining Wetlands. Alberta: Ducks Unlimited Canada.

Environment Canada. 2004. Threats to Water Availability in Canada. National Water Research Institute, Ontario. NWRI Scientific Assessment Report Series No. 3 and ASCD Science Assessment Series No. 1. 128 p.

Government of Nova Scotia. 2011. Nova Scotia Wetland Policy. Department of Environment, Nova Scotia.

Government of Prince Edward Island. 2003. Prince Edward Island Wetland Policy. Department of Fisheries, Aquaculture and Environment, Prince Edward Island.

Mazerolle, David. Wetland Photographs. Photograph. Atlantic Canada Conservation Data Centre, Atlantic Canada.

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