



Duck Detectives Lesson Plan

Overview

This activity introduces Project Webfoot students to migration and bird banding, and engages them in learning more about the important habitats that need to be protected for the conservation of waterfowl (ducks, geese and swans) and for the benefit of other wildlife and people.

Initially each student is given one of four coloured wristbands, each representing a different duck species. They are not told their species but will find this out by visiting the Ducks' education website where they can view and download a certificate telling them a bit about their duck's life. Additional study ideas will help them to explore the importance of habitat and habitat conservation, and learn more about some of the scientific research that is part of protecting wildlife and the environment.

To help you, we have included:

- A class set of student wristbands and a Lesson Plan with:
 - Quick Facts about Migration, Bird Banding and the Habitat Link
 - Three pages to use in an activity centre
 - 1) *How to use "Duck Detectives"*,
 - 2) close-up photo of a duck being banded, and 3) Banding tool and a Certificate of Appreciation for returning band.
 - A lesson plan which includes class sets of two student Activity pages – *Bird Banding and Flyways*



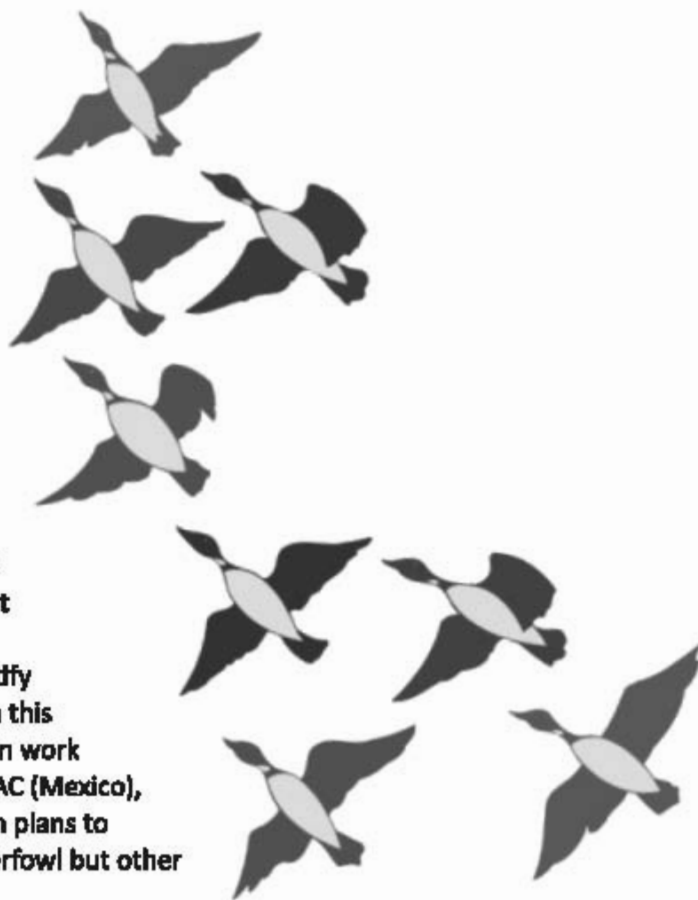
Key Messages:

- birds migrate to meet different needs
- wetlands and other habitats are essential for ducks and other birds along their migration flyways and throughout their lifecycle
- Ducks Unlimited Canada and other scientific groups band birds and share this information with each other so they can learn more about birds in order to conserve them and the important habitats that they need to survive
- the north-south migration routes in North America follow four flyways (Pacific, Central, Mississippi and Atlantic); students should know their local flyway.

Migration, Bird Banding and the Habitat Link

Migration is a complex behavior. It's a journey that requires a great deal of energy and effort to survive. But if it's such a harrowing experience, why do birds bother to migrate at all? Basically, birds migrate to enjoy the benefits of good habitat conditions all year round. During the spring and summer, they take advantage of the conditions in the north that provide abundant food along with good breeding and nesting habitat. Once fall rolls around, they make the arduous journey to enjoy these same types of habitat benefits further to the south.

One of the biggest challenges faced by **waterfowl** (such as ducks, geese, and swans) and other birds that migrate is the loss of **habitat** in any part of their **range**. Birds need their summer breeding and nesting habitat, and their winter feeding grounds but they also need the many places in-between where they stop, rest and refuel during migration. This is where Ducks Unlimited Canada comes in, using science to help identify the important habitats that need to be protected. With this scientific background, Ducks Unlimited Canada can then work with its partners, Ducks Unlimited Inc. (U.S.) and DUMAC (Mexico), and other organizations to create the best conservation plans to protect these areas. These areas benefit not only waterfowl but other wildlife and people too!



Scientists recognize that birds are migratory and visit different spots throughout their life cycle. Nearly a century ago (1916), the governments of Canada and the United States signed the Migratory Birds Convention, which recognizes that migratory birds are vulnerable to different factors across North America, and that countries need to work together to manage and conserve their populations.

Bird banding is one of the tools that researchers use to help them learn more about the lives of birds and the habitats they need to survive. Bird banding is a scientific approach to learning about birds by "marking" or banding sample birds with a small, metal bracelet stamped with a unique ID number, and tracking them throughout their lifetime. Every time a band is reported, the information gets added to a computer database that serves research scientists across North America. The waterfowl researchers are specially trained and licensed by the Canadian Wildlife Service to band birds, and are very gentle and careful to avoid injuring the birds.

Banding Information helps researchers to learn more about the birds, their habits and lifecycle, key nesting areas, places where they gather to over-winter, their lifespan, their migration routes, places where they need to stop and feed while migrating and so on. Banding Information is added to other research to help us understand the needs of different species and to identify important habitats that we need to protect, or other actions that we may need to take, in order to help them to survive.

Sharing this information is important because waterfowl that breed in Canada generally winter elsewhere. So, when a scientist in Venezuela reports on a bird banded in Canada, it can provide valuable information and reinforce the need to work together to protect wetlands and other habitat all along the bird's migration path and for all parts of its lifecycle.



North American birds migrate in a north-south pattern along established routes known as "flyways". For waterfowl and shorebirds, in particular, four flyways are recognized: the Pacific, Central, Mississippi and Atlantic.

LESSON PLAN



1. **Migration** is often taught in the primary grades. Check to make sure your students are familiar with the concept and if they are not, introduce migration to them.

A few key points:

- Migration is the seasonal movement of animals from one habitat to another. Animals generally migrate between their wintering and breeding habitats. These animals travel seasonally along specific routes and move to areas that provide important basic needs for that species (such as breeding ponds, milder weather or abundant food).
- Many animals migrate. Ask the students to suggest some of the animals that they might know. (Birds are well-known but others include butterflies, salmon, turtles, toads, caribou, lemmings and whales.)
- In spring and summer, birds take advantage of the conditions in the north that provide abundant food along with good breeding and nesting habitat.
- In fall, birds journey south to avoid winter's cold and enjoy the south's habitat benefits (food, open water).

2. Read the enclosed page ***Duck Detectives - Bird Banding*** (you can do this as a class, in small groups or individually.) This will help students to understand the process of bird banding. A close-up photo of a duck being banded and a page showing a banding tool and a Certificate of Appreciation for returning the band are enclosed.

3. **"Band"** each student with one of the four different coloured wristbands provided.

Explain that, today the students will be banded but, just like a banded duck, they won't know their species (i.e. what "kind" of duck they are – such as a mallard, pintail, wood duck, etc.). To find this out they will need to visit *Duck Detectives* on the Ducks Unlimited Canada's education website at education.ducks.ca. Here they can also download their own personal certificate, telling them a bit more about their duck.

The site is self-explanatory but we have included an instruction page *How to Use "Duck Detectives"* as a guide for you and your students.

ABOUT THE WRISTBANDS:

- The wristbands have Ducks Unlimited Canada's website address which students can use to find out their species and download a special certificate about "their duck" by entering the colour of their band and their province.
- The wristbands "lock" and need to be cut off or removed by an adult.

4. **Use their Internet experience to learn more.** Their certificates will provide them with information about four ducks that are commonly found in their province.
- I. Where did their duck nest in the spring? You may want to show this on a map of North America. What kind of **habitat** did they choose? (see Answers section at end.)
 - II. Where did they migrate to in the fall? Again, you may want to show this on a map.
 - III. Why might they have gone to this location? (to avoid cold winter weather, to find food, etc.)
 - IV. For discussion:
 - What would happen to these ducks if either their winter or summer habitats were to disappear?
 - What might cause these habitats to disappear?
5. **Discuss the fact that birds migrate using the same routes (flyways)** when they travel between their summer and winter homes. For waterfowl and shorebirds, in particular, four flyways are recognized: the Pacific, Central, Mississippi and Atlantic.
6. **Handout *Duck Detectives – Flyways* activity sheet to each student.** This activity asks each student to:
- Enter the name of each flyway in the proper place. (*i.e. Pacific, Central, Mississippi and Atlantic.*)
 - Select one duck from each flyway. This is done by selecting a wristband colour, then a province that is located in that flyway. Students can read the information on-line or download the certificate.
 - The activity sheet asks students to identify the duck species, where it nests and where it spends its winters using this information. (*see Answers section at end.*)
7. **Additional Questions:** To answer these questions, students will need to share the information they discovered while exploring the different duck species during #6 above.
- 7 a. **Not all ducks migrate south for winter. Name three ducks that migrate to coastal areas** (where there is milder weather, open water and food.)
- A. harlequin duck (Pacific), wood duck (BC only), common eider (Atlantic)
- 7 b. **Which of the ducks you have studied laid the most eggs? Which laid the least?**
- A. mallard (12 eggs), harlequin (5 eggs)
- 7 c. **Which duck has to raise a duckling that is not its own?**
- A. the redhead duck sometimes lays its eggs in other ducks' nests. In this case, the canvasback will have to raise the redhead duckling.

7 d. What is the Spanish word for “duck”? Do students in your class know the word for “duck” in any other languages? Ask them to share them with the class.

A. “pato” (see blue-winged teal (BC)); le canard (French)

8. Challenge or Research Questions:

- How might losing the winter and summer habitats affect other animals or people?
- What could your students do in their own communities to protect wetlands and wildlife habitat?
(They will find some ideas on our education.ducks.ca website.)

9. Extension: Ask students to draw a poster based on this lesson. For example, they could produce one about a species of duck and the habitat that needs to be protected OR about an action that needs to be undertaken to protect local habitat OR one about the work that Ducks Unlimited researchers and others do to help conservation.

Find out where the ducks are going

<http://www.ducks.ca/resource/general/wetland/migration/maps.html>

Ducks Unlimited Canada (DUC), in cooperation with the United States Geological Survey (USGS), has developed an interactive map system to show you the migration of ducks from Canada to the United States.

Other Wildlife Migration Website Links to Explore:

Hinterland Who's Who - www.hww.ca (available in English and French)

This is where you'll find in-depth descriptions of wildlife, discussions on issues, actions that you can take to help wildlife, and educational materials that teachers and group leaders can use.

Canadian Museum of Nature – The Migration Challenge

www.nature.ca/discover/exb/index_e.cfm (available in English and French)

The CMN provides interesting online, interactive resources relating to migration, wildlife monitoring projects and other related topics.

Journey North

www.leamer.org/resources/series127.html (English only)

Global assortment of wildlife migration lesson plans and activities, opportunities to track diverse species (such as the migration of bald eagles, caribou, hummingbirds, manatees, butterflies, robins, cranes, and grey whales).

Winging Northward: A Shorebird's Journey

<http://shorebirds.pwnet.org/migration/journey.htm> (English only)

Provides opportunities to view shorebirds arriving in Alaska via satellite hook-ups.

Answers:

Answers to 4. and 6. Duck Detectives – Flyways (Atl = Atlantic – PEI, NS, NB and Newfoundland)					
Band	Prov	Species	Nests	Winters	Nesting Habitat
Blue	Atl	Mallard	Liverpool, NS	Delaware	grassy field
	AB	Mallard	Bow River, Calgary AB	California	grassy field
	ON	Mallard	Toronto, ON	S. Carolina	island with a marsh
	MB	Mallard	OHMIC, MB	Louisiana	marsh at Oak Hammock
	SK	Mallard	St. Denis	Louisiana	near marsh
	QC	Mallard	Quebec City	Delaware	grassy field
	BC	Wood duck	S. Okanogan	BC coast (cold winters)	hole in old tree
Green	Atl	Common eider	Cartwright, Labrador	Yarmouth, NS	ground near ocean
	AB	Blue-winged teal	Frank Lake, High River	Gulf Coast	prairie grasses near wetland
	ON	Canvasback	Southern Manitoba	Maryland	small wetland in Manitoba
	MB	Canvasback	Portage La Prairie	Maryland	small wetland
	SK	Canvasback	Allen Hill, central SK	Catahoula Lake, Louisiana	small wetland
	QC	Wood duck	Mont-Orford	South Carolina	hole in old tree
	BC	Blue-winged teal	Williams Lake, central BC	Gulf coast, Louisiana & Texas; also Mexico, Venezuela	long grass near wetland
Red	Atl	Green-winged teal	Mount Stewart, PEI	Louisiana	grass near a beaver pond
	AB	Harlequin duck	Rocky Mtns in Alberta	Vancouver Island	near a rushing mountain river
	ON	Wood duck	Beaver pond near Lake Ontario	South Carolina	near a beaver pond
	MB	Green-winged teal	Riding Mtn Nat. Park	Louisiana	grass near a beaver pond
	SK	Green-winged teal	Missouri Couteau, near Old Wives Lake, s. Sk.	Texas	grass near a small "pothole" (wetland)
	QC	Green-winged teal	Rupert River, n. Qc.	Massachusetts	grass near a beaver pond
	BC	Harlequin Duck	Rocky Mountains	Vancouver Is.	near a rushing mountain river
Orange	Atl	Am.black duck	Tantramar Wetland	Chesapeake Bay, Maryland	marsh
	AB	Pintail	Kitsim Marsh	California	marsh
	ON	Am. black duck	Kingston, ON – St. Lawrence River	North Carolina	marsh on the St. Lawrence River
	MB	Lesser scaup	Saskeram Marsh, The Pas	Louisiana	nest in tall grasses on small island
	SK	Pintail	Luck Lake, SK	California	near a small pond
	QC	Am. black duck	Lac-St-Jean, boreal forest	Georgia	marsh in the boreal forest
	BC	American Wigeon	Yukon	Southern BC	tall grass near wetland

Glossary:

- Brood** The young produced or hatched at one time and taken care of by the same mother.
- Drake:** An adult male duck.
- Flyway:** A season route travelled by birds during migration to and from their breeding grounds. In North America, waterfowl (ducks, geese, swans) follow four main flyways: Atlantic, Mississippi, Central and Pacific.
- Habitat:** The place where are specific species live and grow and which provides them the necessities of life (food, water, shelter).
- Hen:** An adult female duck.
- Migration:** Migration is the seasonal movement of animals from one habitat to another. Animals generally migrate between their wintering and breeding habitats. Birds are well known for their migrations, but butterflies, salmon, turtles, toads, caribou, lemmings and whales are a few examples of other animals that migrate. These animals travel seasonally along specific routes and move to areas that provide important basic needs for that species (such as breeding ponds, milder weather or abundant food).
- Moulting:** This refers to the routine shedding of old feathers in birds and typically happens in the late summer before fall migration. It is a slow process, as a bird never sheds all its feathers at once. The bird must keep enough feathers to regulate its body temperature and repel moisture. Many species of ducks are temporarily flightless while moulting and this is often the time when they are most easily captured for banding.
- Range:** The area used by an animal over the course of its lifetime. For example, the range of a mallard duck would include its summer breeding habitat and its wintering grounds as well as the areas that it is passing through during migration. Biologists may refer to its "summer range" or "breeding range" which means the area where that species might be found during that time of year.
- Waterfowl:** In North America, this term normally refers to ducks, geese, and swans. Elsewhere, it may also include other birds living on water, such as loons and grebes.



Ducks Unlimited Canada
Conserving Canada's Wetlands

Ducks Unlimited Canada (DUC) has been committed to wetland conservation for more than 70 years. Despite this, wetland loss continues across Canada. As much as 70 per cent of Canada's original wetlands have been lost in settled areas of the country. Ducks Unlimited Canada is a private, non-profit organization that conserves, restores and manages wetlands and associated habitats for waterfowl. These habitats also benefit other wildlife and people.



Project Webfoot is Ducks Unlimited Canada's national education program for schools. Our programs and resources are offered in English and French and align with provincial and territorial curricula. They are designed to reflect the local environment and address students' interests. Many of our resources are available as free downloads from our website.

Sponsored classes receive support in a variety of ways, depending on their location and these may include in-class resources, outreach programs at their school, a field trip or a visit to a special wetland interpretive centre. Teachers' workshops are available in some locales.

For more information about programs in your area, or about our Greenwing membership program please visit our website at education.ducks.ca or email us at project_webfoot@ducks.ca

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