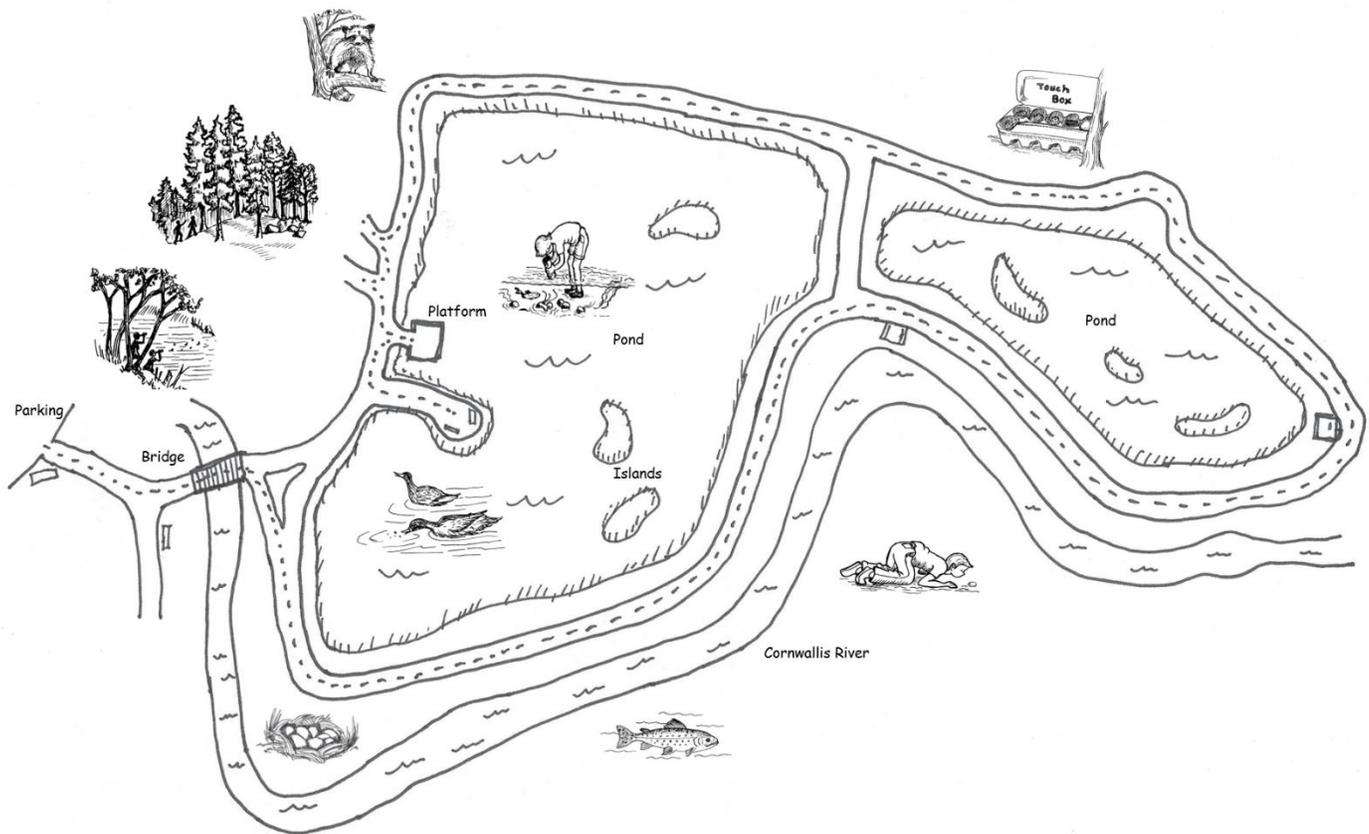


The Black Duck Mystery: A Miner's Marsh Adventure



Distance: 1.5 km return

Approx. Time: 1 hr 15 min

Trail Info: This trail is very accessible, having broad flat trails that loop around 2 open ponds and bordering the Cornwallis river. This wetland was acquired by Ducks Unlimited and constructed from a farmer's field by the Town of Kentville who maintains the site for public enjoyment. The site has viewing platforms, picnic tables and interpretive signage and is very popular for birdwatchers, and nature enthusiasts due to the abundance of wildlife that use the marsh throughout the year. Miner's Marsh can be accessed from the abandoned rail line trail at the intersection of the trail with Leverett Avenue, and from the parking area behind the County of Kings Municipal building on Cornwallis Street in the Town of Kentville.

Directions: From Halifax take Highway 101 west to the Annapolis Valley. Take Exit 12 and turn right at the bottom of the off-ramp towards Kentville/New Minus. Drive 1.5 km to the lights and turn left onto the Number 1 Hwy (Main St.) towards Kentville. Drive 2.3 km on Main St. and merge left onto the one-way Cornwallis St. in Kentville. Continue 150 m and turn right onto Barklay St. which is the driveway that goes behind the Municipality of Kings County Office and Courthouse building. Park at the far side of the parking lot and start at the Miner's Marsh sign.

Trail Tools: Bring a daypack with water, snacks, first aid kit and anything else you need. Prepare and gather these tools for each person before heading out on the trail.

- Spy Scope (decorated toilet-paper role)
- Touch Box (egg carton with a touch words written in each cup – wet, dry, rough, smooth, soft, hard, round, flat, dull, sharp, fuzzy, prickly).
- Hard-boiled eggs, painted like duck eggs (store in the touch box). A few for everyone.
- Underwater viewer (cut the bottom out of a yogurt container, stretch tough plastic wrap over the top and keep in place with a sturdy rubber band).
- Binoculars (optional)



Discover the Secret of Survival

⇒ Stand at the head of the trail at the Miner's Marsh sign.

Step into a duck's world as you search for 4 clues to a mystery: the black duck's secret of survival. Discover the throughout the trail and then unscramble the letters in the boxes at right to figure out the secret word. Along the way you'll have to care for and protect your own duck eggs. Are there hungry duck predators around?

You'll have to do some spying too as ducks aren't about to give away their secrets. Act and sound like a duck and you'll blend in better. Do the duck waddle walk as you quack down the trail.

Clue # 1:	█	█	█	█	█	█	█
Clue # 2:	█	█	█	█	█	█	█
Clue # 3:	█	█	█	█	█	█	█
Clue # 4:	█	█	█	█	█	█	█

1. Spy on a Tidal River

⇒ From the trail sign, waddle 50 m up the trail to the bridge over the Cornwallis river.

Take out your duck scope or binoculars. Are there any animals on the river today? Look for:

- Muskrats
- Otters
- Snapping Turtles
- Ducks
- Fish

This river is a tidal river, meaning that the water runs down when the tide is going out and up when the tide is coming in. What is the tide doing right now?

If you see some ducks, quack to call them over.

Waddle to the next stop.



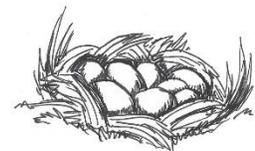
The **Cornwallis River**, know to the Mi'Kmaq as the Jijuktu'kwejk (pronounced Jijuwuktuk) meaning "Our Narrow River", is the tidal river running under the bridge to and along the southern edge of Miner's Marsh. Every six hours you can see the tide change from high to low and watch the water flowing up the river backwards when the tide comes in! Being a tidal river, it flows with fresh water when the tide is out and with saltier water as the Minus Basin pushes the salt-water tide up the river to mix with the fresh water. Animals such as the **Brown Trout, Muskrat and Snapping Turtle** can live just fine in this changing water. Do you see them in the river looking from the bridge?

2. Get Egg-cited

⇒ From the bridge, walk 30 m, continuing right at the Y in the trail. When you reach the main trail around the marsh go right and walk 50 m to where the trail start to turn to the left.

Is there a rumble coming from your eggs? Quick you need to build a nest for them.

- 1) Find a spot on the ground that is well hidden: under bushes, ferns or small trees. It should have an escape route to the water.



- 2) Gather nest material: dried grass and cattail fluff.
- 3) Make a nest just big enough to hold your eggs.
- 4) Weave the material together in your special spot.
- 5) Carefully place your eggs in the nest

Show off your nest to everyone and explain why you choose this spot to hatch your egg.

Before you leave, spread your nest material on the ground for other ducks to use and bring your eggs with you in your carton.

This egg carton / touch box can tell you how long a black duck might live. The number of eggs that this carton can hold is:

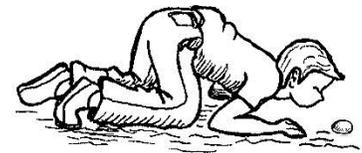
_____ (Clue # 1). This is the possible age of a black duck in the pond.

3. *Have an Egg Race*

- ⇒ Waddle along the trail 150 m to a flat grassy spot to the right side of the trail.

What if your egg rolled out of the nest by accident? Could you get it back to the nest? Test your skill at egg rolling:

- 1) Mark a starting and a finish line on the trail with 2 water bottles, with five giant steps in between.
- 2) Two ducks get down on their hands and knees behind their egg on the starting line.
- 3) On “go”, the ducks push their eggs with their bills (noses).
- 4) The first to reach the finish line wins!



Look for spots where a predator might hide as you move to the next stop.

4. *Spy on a Duck*

- ⇒ Waddle 50 m along the trail, and stop at the second pond, just passed an intersecting trail to the left.

Take out your duck scope or binoculars. Stay low and quiet as you creep closer to the pond. Make some quacking noises to call to the ducks on the pond.

Are there any ducks on the pond? What are they doing? Look for a small blue patch on the duck. The blue colour is located on the duck's _____ (clue # 2).

Waddle to the next stop.

Black ducks actually have a very dark brown body with a somewhat lighter brown head and a yellowish bill. Watch for mallard ducks as well. The males have a green head while the females are a shade of brown similar to that of the black duck. The mallard is not native to Nova Scotia, having gradually moved in from the West. Ducklings that result from a mallard and black duck mating have lower survival since they are not as well adapted to this climate.

EARTHWORKS

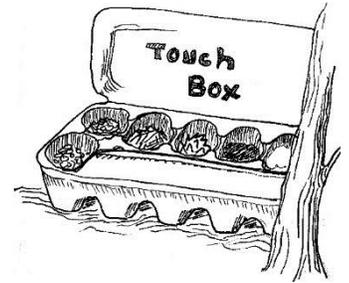


Wetlands are home to a community of special plants and animals. All sorts of creatures make a home and find their needs for life in and around ponds and marshes. It is a source of drinking water for land creatures, home for water plants, a source of oxygen for swimmers and a feeding spot for bats and birds who eat flying insects.

5. Test Your Bill

⇒ Waddle 200 m along the trail and around the corner passing the viewing stand. Stop at the wooden fence rails to the right.

The black duck has a very good sense of touch using its bill. It comes in handy for finding good stuff to eat and for building nests. Collect touches with your bill on the hill above the railing.



- 1) Carefully remove the eggs from your box and set them in a safe place.
- 2) Put your pointer and middle fingers together.
- 3) Rub and tap them on your thumb to make your very own duck bill.
- 4) Find a small natural item on the ground and pick it up with your duckbill.
- 5) Put it in the touchbox cup that has the word in it that matches the item's feel.
- 6) Fill the box by finding items with the proper feel for each word in the cup.
- 7) Close the box and gather as a flock.
- 8) Take turns having each person close their eyes, touch an item with their duckbill and guess the word.

Scatter the items from your touch box on the ground for other ducks to find and replace your eggs before you move on.

The black duck has a special sense in its bill to identify food before it is eaten. It filters out non-edible items out through the sides of its bill and swallows the rest. Instead of teeth, ducks and other birds have a muscular chamber in their digestive system called a gizzard that grinds up their food.

6. Protect Your Eggs

⇒ Waddle 200 m along the trail, passing a trail to the left, until you see a little clearing to the right with a trail into the woods. Walk 20 m into the woods.

Predators like raccoons are after your eggs. See how well you can hide them:

- 1) One person is the duck and everyone else is a raccoon.
- 2) The duck hides the eggs separately within a defined area near the trail while the raccoons hide their eyes.
- 3) The raccoons see how many eggs they can find in 4 minutes.
- 4) Switch ducks each round.



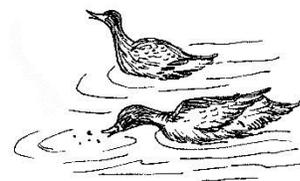
Place your eggs back in the touch box.

What could hurt a duck? A raccoon, fox or cat might sneak up on land, especially at night. A falcon or owl could swoop down from the air. Humans can hurt ducks without realizing it. If pollution such as pesticides and trash such as lost fishing gear get into the pond, ducks could eat them and these harmful chemicals make them sick and weak and could kill them.

9. Join the Duck Party

- ⇒ Back on the trail, waddle 20 m and turn left onto the path leading to the peninsula sticking out into the pond. Waddle to the end.

Use your duck scope or binoculars to find some duck friends to hang out with at this party. Give a few duck calls. Some might come over but they may be too shy. What can you figure out by watching them?



- 1) Are any of the ducks dabbling (tipping their tails in the air)? Why do they dabble?
- 2) Where does a sleeping duck put its bill?
- 3) Duck's bills are not all the same colour. Compare the colours of the bill and feet of several ducks.
- 4) Find female and male ducks. The female black duck has brown legs while the male has legs (clue # 4).
- 5) What else do you notice about the ducks?

10. Solve the Mystery

- ⇒ Walk back to the main trail and waddle left back to the bridge. Sit at the picnic table on the other side.

Using the clues from each section, go back to the introduction to the trail and fill them in. There are four shaded letters amidst the clue words. Unscramble these letters to find out the black ducks' secret to survival.

Congratulations, you have just solved the black duck mystery. Why is (secret word) the secret to survival? It is the layer of feathers closest to the duck's body. Humans use it too for the same reason. We fill blankets, winter jackets and pillows with it. Why is it so important?

BEYOND THE ADVENTURE



- The Miner's Marsh trail is connected to the larger Rail Trail system that runs through the communities in the Annapolis Valley along the old Rail bed. Access the rail trail by walking right before the bridge and walking up Leverett Rd. 50m. Learn more about Miner's Marsh trail and other trails in Kentville at the Town's site <http://kentville.ca/community/parks-trails/>.
- To learn more about the Jijuktu'kwejk Watershed Alliance, a new conservation group for the River check out this site <https://jijuktu'kwejkwatershedalliance.wordpress.com/>.
- To find out the tide times for your area visit <http://www.tides.gc.ca>.
- There are also 2 Facebook pages with lots of lovely pictures and information so check out "Miner's Marsh" and "Friends of Miner's Marsh" on Facebook.

MORE ADVENTURES IN KINGS COUNTY

Go to the Kings County for more trail adventures in the Annapolis Valley. <http://www.countyofkings.ca/common/pars/>

CREDITS:

This document was created by Marina Myra of Wild Roots Nature Education Centre. <https://www.wildrootsnec.com/>. This work was inspired by and adapts material from Earth Adventures in the Halifax Region 3rd Edition, by Alan Warner, Janet Barlow, and George Taylor.



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