

**Script for Guide by Cell Pilot Project
At
Swallow Hollow Nature Trail**

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**1.
Overview and Start and trail
(At trail head)**

Hello, this is Mary, from the Canisius College Ambassadors for Conservation. I want to welcome you to Iroquois National Wildlife Refuge. This is the Swallow Hollow nature trail that will take you through some of the most beautiful parts of the refuge.

As you go, look for the Audio Tour signs; call the listed phone number; and enter the stop number. Feel free to stroll along as you listen, enjoy the view, and reflect on what you have just learned.

This trail is just over a mile long, and it will take you through three different habitats.

The Forested Wetlands, the Upland Hardwood Forest, and the Emergent Marsh.

Each time you pass from one habitat into another, you will be at a “transition zone”, and you’ll know this because you’ll see things changing around you. So, here is a challenge for you. See if you can tell when this happens and spot the transition zones.

Let’s start the trail!

**2.
Flooded Forest
(Flooded Forest to the right of the kiosk)**

You have now entered a Flooded Woodland.

Now, you may notice that it is not particularly flooded right now. That’s because it is an area that goes through seasonal flooding. In the wintertime we have about two feet of water standing here. It is the dry summer season that allows all these bigger trees to live here. If it were flooded all year round, the trees would not be able to get enough oxygen to their root systems to allow them to survive.

As you look around, you will also surely notice how many leaves are on the ground and how many downed trees and sticks are all over the place. At first, you might think that it would be a good idea for someone to come in here and to rake it up. But actually all of that detritus—that’s the name for all of the decaying leaves and twigs on the ground—is a good thing. That is because insects and other small creatures live in the numerous micro-habitats that are created here on the ground.

3.

Migratory Birds**(Migratory bird sign)**

Let's talk about the wonderful birds that you may have been seeing and will continue to see along the trail. A neotropical migrant is a bird that breeds in the US and Canada, and then migrates to the tropics for the winter. We think of them as our birds. But it might be more correct to think of these birds as colorful tropical species that fly north for breeding, rather than temperate species that fly south for feeding. Places like these serve as summer homes for these birds.

These birds are amazing in a number of ways. For example, did you know that

- the effort used to migrate is comparable to a human running at 15 miles per hour for 80 hours without stopping.
- they wait for strong weather fronts that bring winds blowing in the right direction. They then fly along, riding the wind like surfers riding the waves.
- they use the stars in the sky as navigational guides, much the same way that human navigators do when they are sailing on the ocean.

4.

Driveway Glen**(Driveway glen entrance)**

When you see trees lined up like this, it almost always means that the hand of man was involved.

These trees are lined up because they are left over from a former Christmas tree farm.

These are Norway Spruce. It is the long-term goal of the refuge to gradually eliminate these foreign trees and so that this land can be yielded back to the native forest species. This will be a process that will take decades.

5.

Spruce Glen**(Spruce glen entrance)**

When you walked into this section of the forest, you probably noticed that it is a lot darker, and that there is almost no vegetation on the forest floor or in the shrub layer. Almost all of the actively growing vegetation is found in the canopy only. This is because this section is made up entirely of Norway Spruce trees, and in this species there is a long, steady competition to be at the very top. The tallest trees get the most sunlight, and they spread so many of their needles that they cast everything else into a dark shadow.

Plants, unlike animals, cannot move to collect the resources that they need. You can think of plants as having a "stand and fight" lifestyle. Any given new plant has to make do with the place where its seed originally fell. It must stay put and compete with the plants around them. By growing tall and strong they can fight against fires and bad weather.

But that doesn't protect them from animals. Most plants like these trees produce toxins so that insects and other animals are deterred from eating them. Most plants have enough distasteful toxins that when an herbivore like an insect or deer begins to eat the plant, it will soon be so bothered by the bad taste so it moves on. In coniferous trees, many of their toxins flow in their sap. Look for a tree that is oozing sap. That is usually a sign that the tree is in the process of fighting off an attack by insects.

6.
Forest Layers
(Bridge #1 at layers sign)

If you take a look from here, you can really notice that a forest consists of five specific layers.

1. There is the underground soil where fungi and countless invertebrates live among the tangled web of tree roots.
2. There is the forest floor, where we see the massive tree trunks and their buttresses. Here we also find ferns, and many other low growing land plants. It is also where we might find the largest forest animals like bear and deer.
3. The shrub layer which has the fast-growing spring time specialists. We call them this because they do most of their living in short periods each year, before the essential sunlight is taken away by the taller trees.
4. The understory is the relatively open area above the shrubs. At night the understory is alive with bats hunting for insects.
5. The canopy is the highest layer. That is where most of the forest growth takes place, and another place where biodiversity is great. Hundreds of insect and bird species feed and make their nests in forest canopies.

It is interesting that biodiversity is greatest at the very top layer, the canopy, and at the very bottom layer, the soil.

7.
Grandmother Oak
(Near grandmother oak)

Let's pause at this huge tree. Do you know why it is so much larger than the other trees ? (Pause) It was one of the trees that was spared when this area was cleared for logging many, many years ago. All these other trees are relatively young trees. And they are growing in what is called a 'secondary forest' – a forest that is growing back after humans have cleared away the original 'primary forest'. What was here originally? Huge trees like this one! It is an oak tree, but let's think of it like grandmother willow in Pocahontas. And lots and lots of huge trees like this will be here again someday. Because this is now a refuge, the trees in this forest will be allowed to grow and mature for 100, 200 and even 300 years – till the point where once again we'll have forest of towering giants like this one. Isn't that great?!!

If you would like, you can touch Grandmother Oak. I always like to give her a gentle pat as I walk past to show my respect for such an ancient tree.

8.
Water Cycle
(At water cycle sign)

Here you can clearly see a large increase in the amount of standing water. That is because we are seeing a beautiful view of the emergent marsh.

This is a good place to reflect upon the role of water in our lives.

When the sun comes out it causes the water to evaporate

Then it condenses in the air to form clouds

Then when the clouds become saturated with water precipitation falls upon the earth

The water can then accumulate into lakes and ponds, seep into the ground and become ground water, or become run-off into rivers and streams.

This connects the wetlands to us. The water that you see here today may one day be in your faucet. It may one day even be in you!

9.**Cattails****(At 2nd corner overlook)**

Now, do you see the plants? They are called cattails.

They are one of the main reasons that wetlands do such a good job cleaning up our water. This species of plant has an amazing ability to absorb excess fertilizer that washes off farms—chemicals like nitrogen and phosphorous.

It's even more amazing. Even though excess of these chemicals are harmful to most plants, there are no known detrimental effect of these chemical on cattails. Isn't that great?!

But get this. It is true that when the concentrations of nitrogen and phosphorous are too high it is bad for the environment, but it is also true that when their concentrations are too low it is also bad. What is neat about cattails is that they hold onto these chemicals as surpluses, and then release them back into the environment when there levels are low. So the cattails serve as chemical reservoirs – like banks – for the environment.

10.**Pileated Woodpecker Holes****(Holes near red winged black bird sign)**

You can see that there they are enormous holes in this tree. They are woodpecker holes. The bird that made them must have been very big! In fact, it was almost certainly the largest woodpecker in North America, the Pileated Woodpecker. Here is the call of the Pileated Woodpecker (Play recordings)

Do you think these particular holes are for nesting, or for feeding? Since they are so low, they were almost certainly for feeding. When a woodpecker hollows out a nest, it is important for it to be very high up so predators can't get to it.

Some people think that woodpeckers drill into trees to eat wood. But that's not quite it. It is carpenter ants that eat wood, and pileated woodpeckers love to eat carpenter ants and beetle larvae!

It is very good news that we have them here. Pileated Woodpeckers are considered to be an "Indicator Species". They are a species that does not thrive unless they are in very clean, undisturbed habitats. This means that biologists can use Pileated Woodpeckers as an "indicator". If they are around, it indicates there is a healthy, balanced ecosystem in that area. So the sign of them here is very good news for us at Iroquois.

11.**Characteristics of the Wetlands****(At frog bridge)**

When people think of wetlands, they usually think of marshy areas like this.

Basically a wetland has three characteristics.

1. The soil is saturated with water for all or most of the growing season.
2. There is very low oxygen in the soil.
3. The plants and animals that live in this area are well adapted to wet conditions.

When people think about important environments, they often think about saving the rainforests or the coral reefs because they have learned that those areas have high biodiversity, or a large number of species concentrated in one area. But what many people don't know is that wetlands also have high biodiversity.

We have mammals like raccoons and beavers. We also have reptiles like garter snakes and snapping turtles, and amphibians like leopard frogs and salamander, and of course lots and lots of fish. But all of that pales in comparison to the huge number of plant and insect species that are preserved here. Many, many species make this area their permanent homes. Other species – especially birds – use places like this as stopovers during migration. There are so many different species, people need to think about the wetlands as the huge source of biodiversity that they are.

12.**Value of the Wetlands
(At or near biodiversity sign)**

Now let's talk about the value of wetlands to humans. Not only are these places very important to animals that live here, they are also very important for us in ways that we don't usually think about.

Let's highlight three basic benefits that wetlands provide to humans:

1. They help to prevent flooding. Excess rain water goes here, instead of in our towns and homes.
2. They store water for later use. The excess water remains here for long periods, and we are able to use it when it flows out into rivers and streams.
3. They filter water so that it is cleaner when it flows out of the wetlands than when it flowed in. That is because the plants here—like cattails—are good at removing pollutants.

The truth is that we should all consider wetland protection just as important to conservation and the environment as recycling, and pollution control.

13.**Coexistence, CAC message, and CAC sayings
(Between wood duck sign and end of board walk)**

One theme of our presentation is the importance of co-existence with nature. That refers to a new attitude in which we humans respect and live with wildlife, rather than fearing or exploiting it. And the preservation of this wetlands is a good example. We humans have taken space for our cities and our farms. Now it is good that we preserve places like this for wildlife. And the good news is that there are lots of other examples.

Just think of the whales that are coming back into our oceans. And think of the huge herds of bison and elk that are now refilling our national parks and reserves out west. We even have Peregrine Falcons now nesting in downtown Buffalo.

Let's hope the future is going to see more and more examples like that. Wildlife in preserved spaces, but also wildlife in suburban backyard habitats, and even urban wildlife. We are starting to think of squirrels in our yards as a joy, not as pests. This is a very good thing, and you can be part of it. It is not humans versus nature. It is humans as part of nature --- sharing the planet in a spirit of respectful co-existence.

We have some of the sayings that we like in our program.

- One of them is, "take only photographs, leave only footprints." This means to leave nature exactly the way we found it. Not taking any leaves or sticks and not leaving any trash or graffiti behind.
- We have another one, "don't hate, don't exterminate." This means that we shouldn't kill an animal that we might not want in your house or yard. Trap and release is a good solution to this problem.
- The last saying is "the stream begins with me." This means it is important to be conscious about what we put into nature, especially our water system.

In the old days, people didn't think about running out of forests or wetlands. But now we know better, don't we?

We now understand the inherent value of wildlife, and the importance of forests and wetlands. And many, many people have gotten involved to help save them. So the conservation story is beginning to be a good-news story! Human engagement is shifting to a respect for nature, and for a desire to co-exist. I am very glad to say that that is happening just about everywhere!

So as you go forward, please remember to leave space for wildlife. Remember to respect wildlife. Remember our phrases like take only photographs, leave only footprints.

It is a good thing that special refuges for wildlife are being preserved. The good being done here in places like this is a clear example of a saying I truly believe in. If we all work together, we can make the world a better place. We really can.