



# Detroit River International Wildlife Refuge

Teach like a Ranger: Empowering Teachers to Become Independent and Effective Environmental Educators

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## Contact Table Chart

Contact Name	Number	Email
Jazmyn Bernard (lead presenter)	734-288-6459	<a href="mailto:Jazmyn_bernard@fws.gov">Jazmyn_bernard@fws.gov</a>

## Introductions

### U.S. Fish & Wildlife Service

The U.S. Fish and Wildlife Service is one federal agency that acts like a collection of smaller agencies. Each smaller agency works together to meet the wider mission; work with others to conserve, protect, and enhance, fish, wildlife, plants, and their habitats for the continuing benefit of the American people. There are 7 different branches in the U.S. Fish & Wildlife Service and the DRIWR is a part of the National Wildlife Refuge System. The National Wildlife Refuge system is made up of over 560 refuges throughout all 50 states and U.S. territories!

### Detroit River International Wildlife Refuge (DRIWR)

The DRIWR is a new refuge having been protected in 2001. The refuge spans from the southern border of Detroit to the Ohio border and runs 48 miles along the shoreline of the Detroit River and western Lake Erie.

### Environmental Education Program

We at the Detroit River International Wildlife Refuge would like to offer you the opportunity to bring nature to your students! Our Environmental Education Program includes field trips to the refuge, Park Ranger classroom visits to your school, loaning kits, Story Time with a Ranger, and teacher workshops. All these program options are FREE of cost!

## Coming to the Refuge?

The DRIWR has many resources available to teachers to use for educational purposes. Resources like use of the classroom and gear and bus funding are available to help reduce any barriers that would prevent a teacher from bringing their students to the DRIWR.

### Gear Closet

- List of items in our gear closet
  - Rainboots: 14 little kids, 6 youth, 6 adult
  - Winter coats: assorted size, limited supply
  - Winter boots: assorted size, limited supply
  - Hiking boots: assorted size, limited supply
  - Raincoats: 20 yellow coats
  - Winter hats

- Scarfs
- Gloves
- Ponchos: 25

### **Loaner Items**

- List of items in our gear closet
  - Fishing poles: 50
  - Fishing tackle boxes: 30
  - Fishing net: 2
  - Yoga mats: 15
  - Binoculars: 30
  - Dip nets: 35
  - Handheld lenses: 22
  - Waders: 17, assorted sizes

### **Classroom Materials**

- List of items in our gear closet
  - Colored paper
  - Pencils
  - Crayons
  - Markers
  - Expo markers
  - Pencil colors
  - Copy paper
  - Scissors
  - Erasers
  - Clipboards
  - Chalk
  - Glue
  - Projector

### **Bus Funding**

The DRIWR Environmental Education Program has limited bus funding to help aid schools and teacher with transporting students to the refuge. If you would like funding for your visit to the refuge, please provide the bus invoice for your trip to Park Ranger Jazmyn ([jazmyn\\_bernard@fws.gov](mailto:jazmyn_bernard@fws.gov)).

## **DRIWR Environmental Education Programs**

The DRIWR has many environmental education programs for teachers, so let's break it all down here!

To sign up for an environmental education program please fill out the Detroit River International Wildlife Refuge Environmental Education Program Forms (This should have been emailed to you through a link).

### **Field Trips**

#### **Everyone is a Naturalist**

**Grade:** All grades

**Season:** Any season

**Activities:** Tools of a Naturalist, Tracking, Sensory Hike



**Snapshot of program:** Students will learn about naturalists. They will learn that they are naturalists themselves as they explore the life of other naturalists and the tools, they used to study nature. Students will make their own nature journals to use throughout the year to make observations about the things they see, smell, touch, or hear in nature. To add to their naturalist skills students will learn how to interpret signs (such as tracks, scat, etc.) animals leave behind to be able to tell the “story” of what happened in a nature scene.

#### **Station 1: Tools of a Naturalist**

Students will learn about famous naturalist and how they too can be a naturalist. Students will also make and record in their own nature journals.

#### **Station 2: Tracking**

Students will learn about the different ways animals leave behind signs as they work together to identify tracks and tell the “story” of what happened in our nature scene.

#### **Station 3: Sensory Hike**

Students will explore the trails of the Detroit River International Wildlife Refuge and learn about how animals use their sense of touch, taste, smell, hearing, and seeing. Students will also learn about the similarities and differences between how humans and animals use their five senses.

#### **Next Generation Science Standards:**

- 4-LS1-1- Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 4-LS1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4-ESS2-2- Analyze and interpret data from maps to describe patterns of Earth's features.
- 3-LS3-2- Use evidence to support the explanation that traits can be influenced by the environment.

## Water in our Backyard

**Grade:** 4<sup>th</sup> and higher

**Season:** Late Spring or Summer-because of the macroinvertebrate activity

**Activities:** Water Quality Testing, Macroinvertebrate collection and identification, Macroinvertebrate Mayhem Game



**Snapshot of program:** Students will focus on how to test the quality of water in our own wetland. First, students will test the local wetland for dissolved oxygen, pH, Turbidity, Nitrogen, and Phosphate. This will allow students to learn how nutrients enter the water and may change the health of the wetland. Next, students will get an opportunity to look for and identify macro-invertebrates that are found in the wetland. This activity will help students to determine the water quality based on the pollution tolerance of the different macro-invertebrates. After completing both test students will know the health of their local wetland. Students will also participate in an active play game that will teach them the different types of pollutants that effect macroinvertebrates and how each macroinvertebrate are affected differently based on the level of pollution.

### **Station 1: Water Quality**

Students will work in groups to test for Dissolved Oxygen, pH, Nitrogen, Phosphate, and turbidity. We will discuss the sources of nutrients that enter the water and how that may change the health of the water.

### **Station 2: Macroinvertebrate Mayhem Game.**

Students will play a game to understand how pollution changes the population of macroinvertebrates in an aquatic habitat.

### **Station 3: Macroinvertebrate ID**

Students will have the opportunity to identify macro invertebrates that they find in the water. They will learn how scientists can determine the health of the water based on which types of macro invertebrates are found there. If time permits, they will draw some of the macro invertebrate in their nature journals.

### **Next Generation Science Standards:**

- 3-5-ETS 1-2- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 5-ESS3-1- Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

## Wildlife Exploration

**Grade:** All grades

**Season:** Any season

**Activities:** Tracking, Habitat Exploration, Adaptation Study Using Skulls



**Snapshot of program:** Students will learn differences between the skulls of a native Michigan carnivore, herbivore, and omnivore and will gain insight into how animals are adapted to respond to their life needs and changes in their environment. Students will get to experience how to track wildlife using a model animal tracking sheet. After practicing with the model students will explore the trails at the Detroit River International Wildlife Refuge to look for real wildlife signs.

### **Station 1: Tracking**

Students will learn about the different ways animals leave behind signs as they work together to identify tracks and tell the “story” of what happened in our nature scene.

### **Station 2: Habitat Exploration!**

Students get an opportunity to explore some of the habitats found on the refuge - prairie, river, and forest. There will be stops along the way as we make observations and discuss what we find. This even includes a visit to a human-size eagle’s nest! Here we will talk about Habitat and using our wildlife observation skills to notice how animals and plants depend on a diverse habitat to survive

### **Station 3: Adaptation Study Using Skulls**

Students will learn differences between the skulls of a native Michigan carnivore, herbivore, and omnivore and will gain insight into how animals are adapted to respond to their life needs and changes in their environment.

### **Next Generation Science Standards:**

- MS-LS2-1- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4- Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

## Taste of the Refuge

**Grade:** All grades

**Season:** Any season

**Activities:** Food Web Tag, Habitat Exploration, and Build a Beaver



**Snapshot of program:** Students will attend three sessions where they will participate in hands-on activities, active play activities and group discussions surrounding habitat, ecosystems, wildlife relationships, adaptations, and wildlife observation skills.

### **Station 1: Habitat Exploration!**

Students get an opportunity to explore some of the habitats found on the refuge - prairie, river, and forest. There will be stops along the way as we make observations and discuss what we find. This even includes a visit to a human-size eagle's nest! Here we will talk about Habitat and using our wildlife observation skills to notice how animals and plants depend on a diverse habitat to survive.

### **Station 2: Creature Feature-Beaver**

One brave and fun-loving student will volunteer to allow the other students to dress them up like a beaver. This activity uses different materials to explain to students the ways in which the beaver is adapted to the life it leads. (*This activity will tie into the post-activity classroom portion when the students will have the opportunity to build a beaver dam and discuss potential and kinetic energy*)

### **Station 3: Food Web Game**

This is an active game used to teach the students about food webs/chains. Students get the opportunity to become Producers, Decomposers and Consumers (herbivores and carnivores). The leader of the game is the sun a.k.a the "giver of life". The students play the game as a character, for example the producer's goal is to survive, chase no one, collect nothing and be chased by herbivores and decomposers. The carnivores catch herbivores, avoid decomposers, chase herbivores, collect as many producer and herbivore cards as possible and be chased by decomposers.

### **Next Generation Science Standards:**

- 4-LS 1-1 – Construct an argument that plants, and animals have internal and external structure that function to support survival, growth, behavior, and reproduction.
- 4- LS 1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- MP.5 – Use appropriate tools strategically.
- 5-PS3-1 - Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.



## Movement through Migration and Pollination

**Grade:** All grades

**Season:** Any season

**Activities:** Migration Headache! STRGEON, Migration Challenge! BIRDS, and Seeds on the go! POLLINATORS



**Snapshot of program:** Students will attend three sessions where they will participate in hands-on activities, active play activities and group discussions surrounding movement through migration and pollination.

### **Station 1: Migration Headache! STURGEON**

Students get an opportunity to play a game where they get to become Lake Sturgeon on their migration up the Detroit River. They will learn the dangers of migration both human-made and natural.

### **Station 2: Migration Challenge! BIRDS**

Students explore the hazards and helpers that migratory animals encounter on their long-distance journeys. This time they will pretend to be birds.

### **Station 3: Seed on the go! POLLINATION**

Students will use their engineering skills to create a mode of transportation for a seed as they explore the way the wind is a pollinator.

#### **Next Generation Science Standards:**

- 3-5-ETS 1-1-Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS 1-2- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS 1-3- Plan and carry out fair test in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- 4-LS 1-1 – Construct an argument that plants, and animals have internal and external structure that function to support survival, growth, behavior, and reproduction.
- 4- LS 1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4 –ESS2 -2- Analyze and interpret data from maps to describe patterns of Earth’s features.
- MP.5 – Use appropriate tools strategically.

## Water is Important to all Living Things

**Grade:** All grades

**Season:** Any season

**Activities:** Habitat Exploration, Creature Feature! MAYFLY, & Food Chain Tag



**Snapshot of program:** Students will attend three sessions where they will participate in hands-on, active play activities and group discussions focused on the importance of water.

### **Station 1: Habitat Exploration!**

Students get an opportunity to explore some of the habitats found on the refuge - prairie, river, and forest. There will be stops along the way as we make observations and discuss what we find. This even includes a visit to a human-size eagle's nest! Here we will talk about Habitat and using our wildlife observation skills to notice how animals and plants depend on a diverse habitat to survive.

### **Station 2: Creature Feature! MAYFLY**

One brave and fun-loving student will volunteer to allow the other students to dress them up like a mayfly. This activity uses different materials to explain to students the ways in which the mayfly is adapted to the life it leads. We will also talk about the decline and restoration of mayflies in our area and their role in the determination of clean waters. We will talk about their life stages and talk about how in the spring the students may find a stage of the mayfly in the water.

### **Station 3: Food Web Tag**

Flying Wild pg. 66 This is a version of a bioaccumulation game. Students will learn how pollution at the bottom of the food chain can harm most the animals located at the top of the food chain. We will start this activity out with an example of a food chain and then move on to allow the students to act out as members of the food chain. We will talk about ways that people have helped to clean up the waters and what the students can do as 5th graders to protect their waters. Focus on the Great Lakes.

### **Next Generation Science Standards:**

- 5-LS2-1.A- The food of almost any kind of animal can be traced back to plants.
- 5-LS2-1.B- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die.
- 5-PS3-1 - Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

## **Classroom Visits**

### Physics in Nature

**Grade:** All grades

**Season:** Any season

**Activities:** Kinetic Vs Potential Energy Discussion, Exploration of Beavers Discussion, Beaver Dam Building



**Snapshot of program:** This activity will help students to understand potential and kinetic energy. By building a model beaver dam in a small plastic basin they will recognize the potential energy and they will see that energy as it is released and becomes kinetic energy.

### **Kinetic Versus Potential Energy**

The students will write the words, kinetic and potential in their nature journals and we will define them together (Kinetic energy is the energy an object has due to its motion or energy of motion. While Potential energy is the stored energy an object has because of its position or state or stored energy). Once they have their journals ready and their definitions written down, they will move into three different stations to explore three examples of potential and kinetic energy. They will explain the difference between the two energies by giving these three examples, they can write or use drawings.

### **Exploration of Beavers**

Beavers do not like flowing water. Instead, they prefer that water be dammed up to flood an area and make their travel between trees easier. Thus, a beaver can stop the kinetic energy of the river. Using their webbed paws, tail, and teeth, beavers collect branches and sticks to dam up the river. They may also use nearby mud to patch holes. After completing the dam, the beavers will create beaver lodge in a similar way. While introducing beavers to the class show them the beaver pelt, skull, and pictures of beaver dams and lodges. How do beavers alter the landscape and how are their behaviors related to potential and kinetic energy? How could we turn this question into an experiment?

### **Beaver Dam Building**

We are going to create beaver dams. What materials do beavers use? What materials do you think work best? The goal of this activity is to create a dam that will hold up against a pond. Students will work in groups of 3-4 and create their beaver dam in the middle of the bin using sticks, mud, and leaves. After the group finished their dam, the refuge staff will fill one side of the container with water to act as the pond. The students will then observe the effects. What materials worked best?

### **Next Generation Science Standards:**

- 3-5-ETS 1-1-Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS 1-2- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

- 3-5-ETS 1-3- Plan and carry out fair test in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- 4-PS3-3- Ask questions and predict outcomes about the changes in energy that occur when objects collide.

## Exploring the Water Cycle in our Watershed

**Grade:** All grades

**Season:** Any season

**Activities:** Enviroscope



**Snapshot of program:** Students learn about the many uses of water and the consumers of the water. Students will explore watersheds and the importance of water use for humans as well as wildlife.

### Enviroscope

The Enviroscope is a small-scale model of a watershed. The students will be able to witness how the watershed works and how pollution travels throughout the watershed.

### **Next Generation Science Standards:**

- 5-ESS2-2-Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

## Everyone is a naturalist

**Grade:** All grades

**Season:** Any season

**Activities:** Who are Naturalist and Make a Nature Journal



**Snapshot of program:** Students will learn about famous naturalist and how they too can be a naturalist.

### Who are Naturalist?

Introduce the idea of a naturalist to the students. **Ask them what they think a naturalist is.** Show examples of past and current naturalist (**using the provided pictures of famous naturalist**); give the names of each person and what they are remembered/ known for. After giving examples of naturalist, tell the class how many naturalists kept a nature journal to record all that they observed while being outside. Show examples of nature journal styles (**using the provided pictures of journal types**) and examples of what someone could write or draw about in their journals (**using the provided pictures of things in nature**).

### Make a Nature Journal

We are going to make our own nature journals like the naturalist we just spoke of. These nature journals will be used throughout the entire year. Instruct the students how to make their journals.

Once the students have their journals; we will make our first journal entry. We will work together as a class and based off what we have already learned about naturalist we will make up a list of what WE believe makes us naturalists. For our list we will use positive language. This list will become our Naturalist Oath and will be copied into the first page of the student's journals.

## Fish Migration

**Grade:** All grades

**Season:** Any season

**Activities:** Fish Migration and Let's Build a Reef



**Snapshot of program:** Students will learn about how the Lake Sturgeon migrate using their sense of smell and how difficult migration is for wildlife. Students will also learn about the conservation methods biologist use to help increase the population of these animals.

### Fish Migration

Students will learn that fish can migrate just like birds and other animals. Students will learn that fish use chemical receptors in their nose to figure out where to migrate. In an interactive activity students will pretend that they are Lake Sturgeon and will try to make it up the river to lay their eggs.

### Let's Build a Reef

Students will learn about the habitat of Lake Sturgeon and how and why it is decreasing. Students will also learn about what U.S. Fish and Wildlife Service does to protect these endangered/ threatened species.

### **Next Generation Science Standards:**

- 4-LS 1-1 – Construct an argument that plants, and animals have internal and external structure that function to support survival, growth, behavior, and reproduction.
- 4- LS 1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4 –ESS2 -2- Analyze and interpret data from maps to describe patterns of Earth's features.

## Habitats

**Grade:** All grades

**Season:** Any season



**Snapshot of program:** Students will learn about habitats and the different animals and their roles in their ecosystems using predator/prey games. These games will teach students how resource availability influences organisms and population of organisms in an ecosystem.

### **Oh Deer!**

Students will learn that good habitat is the key to wildlife survival; a **population** will continue to increase in size until some limiting factors are imposed, limiting factors contribute to fluctuations in wildlife populations and nature is never in “balance” but is constantly changing. What role can humans have in this?

### **Food Web Game**

This is an active game used to teach the students about food webs/chains. Students get the opportunity to become Producers, Decomposers and Consumers (herbivores and carnivores).

#### **Next Generation Science Standards:**

- MS-LS2-1- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4- Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

## **Story Time with a Ranger**

What's Wild? (This program is from Growing up Wild)

**Grade:** k-2

**Season:** Any season



**Snapshot of program:** Students engage in stories comparing the lives of a wild and a tame animal, then sort animals into categories.

### **Storytime**

Students learn about the day in a life of a squirrel and dog using a flannel board. After listening to the story students use the clues from the story to decide which animal was tamed and which one was wild.

### **Animal Sorting**

After the story time, students will receive their own animal card and will use what they learned from the story to decide if their animal card is a wild or tamed animal.

Whose Tracks Are These? A Clue Book of Familiar Forest Animals

**Grade:** 3-5

**Season:** Any season



**Snapshot of program:** Students engage in a story to learn about the tracks animals leave behind and how we can use those clues to figure out what kinds of animals live within the forest.

### **Storytime**

Students learn about the day in a life of a squirrel and dog using a flannel board. After listening to the story students use the clues from the story to decide which animal was tamed and which one was wild.

### **What Other Clues do Wildlife Leave Behind?**

After the story time, students will learn about the other ways to track wildlife in the wild. Some ways include looking for fur, scat, bones, etc. During this activity students will get a hands-on opportunity to observe and interact with these other clues for tracking (most objects are models while the furs are real animal fur).

## In Class Videos

In class videos are 20+ minute videos created by a Park Ranger to offer a recorded field trip and/or classroom lesson for teachers and students.

### Everyone is a Naturalist

**Grade:** 3+

**Season:** Any season



#### **Snapshot of program:**

A naturalist is someone who studies and appreciates nature. There are some people who get paid to be naturalists, however being a naturalist is something everyone can be no matter what they do for a living. No matter how old a person is or where they live you can be a naturalist. Nature is everywhere and can be observed and appreciated by everyone. In this video we will learn about different naturalist, make a nature journal (craft activity) and hike at the Detroit River International Wildlife Refuge.

### Habitat Exploration

**Grade:** 3+

**Season:** Any season



#### **Snapshot of program:**

A habitat is the entire area needed for an animal to complete its life cycle. A healthy habitat would have food, water, shelter and space. The habitat for one animal may look very different from the habitat of another animal. In this video we will learn about the four different habitats at the refuge, what you can do in each habitat as a visitor, and what animals live in each habitats.



## **DRIWR Environmental Education Loaning kits**

We at the Detroit River International Wildlife Refuge would like to offer you the opportunity to bring nature to your classroom! The Loaning Kit program allows teachers **who have participated in our teacher workshop** to borrow environmental education material from our inventory. As well as reserve our education rooms in the John D. Dingell Jr. Visitor Center (as Covid protocols permits) and our education shelter on our trail system.

The DRIWR's activity bins are ready to use bins. These means that any materials, instructions on how to do the activities, and background information on the topic of the activity are all in one bin. We have ten different activity bins that cover themes of wildlife, water, habitat, and more! Majority of our activity/ lessons within our activity bins cover a Next Generation Science Standard. As well as new vocabulary words that match the theme of the bin, journaling activities, and recommended readings.

It is important to remember that when looking at an activity bin write up, do not think it is a lesson or activity write up, but a write up that covers EVERYTHING within the bin. Most activity bins have two to three different activities/lessons in them that will cover the topic of the bin. This makes our activity bin write ups very long.

To check out an environmental education bin or reserve an environmental education classroom/ shelter please fill out the Detroit River International Wildlife Refuge Environmental Education Program Forms (This should have been emailed to you through a link).

### **Loaning Kit Options:**

#### **Adaptation Study Using Skulls**

**Grade:** All grades

**Season:** Any season

**Location:** Classroom or humbug marsh



**Snapshot of program:** Students will learn differences between the skulls of a native Michigan carnivore, herbivore, and omnivore and will gain insight into how animals are adapted to respond to their life needs and changes in their environment.

#### **Next Generation Science Standards:**

- 4-LS1-1- Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

#### **Bird Study**

**Grade:** All grades

**Season:** Any season

**Location:** Refuge gateway, classroom, any natural area



**Snapshot of program:** Students will learn about birds by participating in multiple bird-based activities. Activities will include lessons about migration of birds, body parts of a bird, how features of a bird will dictate where they live, and the difference between birds and other animals (such as mammals and reptiles). Students will also use their naturalist skills to look for signs of birds and identify birds out in nature.

**Next Generation Science Standards:**

- 4-LS1-1- Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 4-LS1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4-ESS2-2- Analyze and interpret data from maps to describe patterns of Earth’s features.
- 3-LS3-2- Use evidence to support the explanation that traits can be influenced by the environment.

**Monarchs!**

**Grade:** All grades

**Season:** Any season

**Location:** Classroom and refuge gateway



**Snapshot of program:** Students will “become” monarch butterflies and experience the difficulties of migrating. Through this activity students will learn that there are many obstacles that make migrating hard for butterflies, but there are things they can do to help the monarch during the migration season.

**Next Generation Science Standards:**

- 4-LS1-1- Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 4-LS1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

**Tools of a Naturalist**

**Grade:** All grades

**Season:** Any season

**Location:** Classroom, humbug marsh, any natural area



**Snapshot of program:** Students will learn about naturalists. They will learn that they are naturalists themselves as they explore the life of other naturalists and the tools, they used to study nature. Students will make their own nature journals to use throughout the year to make observations about the things they see in nature.

## Habitats

**Grade:** All grades

**Season:** Any season

**Location:** Classroom and humbug marsh



**Snapshot of program:** Students will learn about habitats and the different animals and their roles in their ecosystems using predator/prey games. These games will teach students how resource availability influences organisms and population of organisms in an ecosystem.

### Next Generation Science Standards:

- MS-LS2-1- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4- Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

## Macroinvertebrate Adventure

**Grade:** All grades

**Season:** Late spring or summer due to activity of macroinvertebrates

**Location:** Refuge gateway wetland or classroom



**Snapshot of program:** Students will get an opportunity to look for and identify macro-invertebrates that are found in the wetland. By identifying these species, they can determine the water quality based on the tolerance of the different macro-invertebrates.

### Next Generation Science Standards:

- 3-5-ETS 1-2- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 5-ESS3-1- Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

## Tracking Sheet Activity

**Grade:** All grades

**Season:** Any season

**Location:** Refuge, classroom, any natural area



**Snapshot of program:** Students will learn about the different ways animals leave behind signs as they work together to identify tracks and tell the “story” of what happened in our nature scene.

### Next Generation Science Standards:

- 4-LS1-1- Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 4-LS1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4-ESS2-2- Analyze and interpret data from maps to describe patterns of Earth’s features.
- 3-LS3-2- Use evidence to support the explanation that traits can be influenced by the environment.

## Water Cycle

**Grade:** All grades

**Season:** Any season

**Location:** Humbug Marsh, classroom, local green spaces



**Snapshot of program:** Students will learn about how the water cycle works and how we all can play a part in being good stewards of water!

### Next Generation Science Standards:

- 4-ESS2-2- Analyze and interpret data from maps to describe patterns of Earth’s features.
- 5-ESS2-2- Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

## Water Quality Monitoring

**Grade:** All grades

**Season:** Spring or summer

**Location:** Refuge gateway site wetland



**Snapshot of program:** Students will test the local wetland for dissolved oxygen, pH, Turbidity, Nitrogen, and Phosphate. Students will learn how nutrients enter the water and may change the health of the water.

**Next Generation Science Standards:**

- 3-5-ETS1-3- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

**Wetland Metaphors**

**Grade:** All grades

**Season:** Any season

**Location:** Refuge, classroom, any natural area



**Snapshot of program:** Students will learn about the importance of wetlands by finding the similarities between common items and the different things wetlands do/provide. They will learn specifically about Humbug Marsh.

**Next Generation Science Standards:**

- **5-ESS2-1-** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

**Sturgeon Map**

**Grade:** All grades

**Season:** Any season

**Location:** Refuge, classroom, any natural area



**Snapshot of program:** Students will learn about how the Lake Sturgeon migrate using their sense of smell and how difficult migration is for wildlife.

**Next Generation Science Standards:**

- 4-LS 1-1 – Construct an argument that plants, and animals have internal and external structure that function to support survival, growth, behavior, and reproduction.
- 4- LS 1-2- Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4 –ESS2 -2- Analyze and interpret data from maps to describe patterns of Earth’s features.

## **Loaning Kits Terms and Conditions**

Please note that all bins will be picked up/returned by the next Thursday after drop off/pick up date.

### **Picking up a kit from the refuge**

This will be done through contactless pickup. When your form is received you will receive a confirmation email letting you know the date, time, and address of where to get your bin and that your bin has been reserved. Upon arriving at the refuge please park in the staff parking lot and call the park ranger to inform them that you have arrived (734-288-6459). Once the ranger has been notified that you have arrived, they will bring out your bin and place it into the trunk of your vehicle.

### **Park Ranger dropping off a kit to your school**

All environmental education materials will be dropped off on Thursdays from 3:00-4:30 pm. When your form is received you will receive a confirmation email letting you know your bin has been reserved and the date and time your bin will be delivered.

### **Reserving a kit, but using it at the refuge**

Please note that this will be a self-guided field trip by the teacher NOT the park ranger. However, a park ranger can be made available to do a quick (2-3 minute) introduction to the refuge before your trip if you would like.

When your form is received you will receive a confirmation email letting you know that both your environmental education material and your classroom/ education shelter has been reserved.

## **DRIWR Environmental Education Teacher Workshop**

The teacher workshop is located at the Detroit River International Wildlife Refuge. The direct address is 5437 West Jefferson Ave. Trenton, MI 48183. The typical duration of the workshop is from 9 am - 3:30 pm. During this **FREE** teacher workshop, we will dive into what is the DRIWR Partner Teacher Program by exploring the refuge's classroom and trails, demonstrating multiple activity bins, and discussing the many resources available to teachers at the refuge. Handouts and writing material will be provided to participants during the workshop. However, participants are welcome to bring their own notebooks, pens, highlighters, etc. to take notes during the workshop.

Lunch is not provided during this workshop, but there will be a thirty-minute break midway through the workshop for lunch. I recommend that participants bring a lunch as it may take too much time to have food delivered. After lunch, we will be exploring the refuge trails and more. This will all be done outside, therefore, please make sure to dress appropriately for the weather (make sure to wear closed-toe shoes such as tennis shoes) and bring a reusable water bottle.

Our teacher workshop has been approved for **5 State Continuing Education Clock Hours (SCECHs) credit.**

Teachers who participate in the workshop will receive the ability to reserve the DRIWR's classroom and outdoor education shelter (located on our trails). Teachers will also be able to borrow activity bins from our Environmental Education Closet, which consist of 10 different environmental themed activity bins. To see the list of the bins please see the DRIWR Environmental Education Loaning Kit section.