

## Lesson: Severn Science- Indian Creek Exploration

\*Arlington Echo works to continuously improve our lessons. This lesson may be modified over the course of the school year.

**Environmental Literacy Question:** How have humans affected the Chesapeake Bay and its watershed?

**Topic/Essential Question:** What human activities cause erosion? How can we prevent erosion?

**Unit/Lesson Sequence:** This is one of two lessons in the “Water living things” 4<sup>th</sup> grade module based at Arlington Echo Outdoor Education Center.

### Content Standards:

- **Environmental Literacy:**
  - 5. A.1. Analyze the effects on human activities on earth’s natural processes.
  - 8. F.1.b. Identify actions that can be taken as individuals and those that require the involvement of other people, organizations and government.
- **Science:**
  - 6.4. B.1. Recognize and describe that people in Maryland depend on, change, and are affected by the environment.
- **Common Core Standards for English Language Arts Standards - Speaking and Listening - 4<sup>th</sup> Grade Comprehension and Collaboration**
  - **CCSS.ELA-Literacy.SL.4.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others’ ideas and expressing their own clearly.

### Length of Lesson:

Overnight program: 60 minutes

Day Program: 45 minutes

**Student Outcome:** Students will learn that Maryland’s landscape is changing due to both man-made and biological changes. Students will identify different shorelines found along the Severn River and in the Chesapeake Bay region to identify which are man-made and which are natural. Students will also search on the water for various organisms found in the Severn River and Indian Creek via canoe.

### Knowledge of the Learner:

- Prerequisite knowledge, skills, and processes: Basic understanding of how humans change land to meet their needs without considering the impact these changes can have on other organisms.
- Student needs, interests, previous learning: These will be determined during pre-assessment.
- Conceptual difficulties: Learning to navigate the canoe specifically that the boat moves opposite of the paddling motion.
- Differentiated: This lesson appeals to different types of learners. Kinesthetic learners respond to the physical act of navigating the canoe. Interpersonal learners benefit from the team dynamic required for steering a canoe. Observing different shoreline types and making assessments should appeal to



visual learners.

## Knowledge of Content

- **Vocabulary:**

- Types of Shorelines:**

- Natural Shoreline

- Rock Rip-rap

- Wooden Bulkhead

- Living Shoreline (man-made)

- Trends:**

- Rise in sea levels

- Subsidence (land sinking) Maryland

- **Resources:**

- Life jacket for each child and adult

- Life Ring

- Paddle for each child and adult

- Emergency blankets

- Canoes

- Waterfront Radio

- "Can you Find..." poster

- **Supplements:**

- Supplement A: Canoeing Skills

- Supplement B: Background Information

- Supplement C: Talking Points

- Supplement D: Poster

## Lesson setup:

Take the waterfront radio and adult PFDs for the instructors to the waterfront and pull down the number of canoes needed for the group (one canoe for each student pair and two for activity leaders). Secure the canoes by clipping them to the floating dock. Set up the poster and put out the life ring and emergency blankets from the pier closet.

## Instructional Delivery

### Module Introduction:

All students and activity leaders will meet behind the Dining Hall. An Arlington Echo staff member will lead a safety talk about PFDs (personal floatation devices; life jackets) and ensure that all students and chaperones are fitted properly with a device. Each student must keep their PFD on for the duration of the activities unless otherwise instructed. In addition, staff will discuss with the students ways to behave safely down at the waterfront (no running, wearing a PFD, paying attention to instructions, leaving small rocks on the ground). The groups will then be directed to their activities.

### Engage:

- Welcome the students to the activity and introduce yourself.
- Ask students if anyone has been on a boat before. What kind of boat (motorboat, canoe, rowboat, kayak)? Do any of them have boats at home?
- Ask students, **“How do human activities affect the Indian Creek habitat?”**
- Engage the students by explaining that they will be going canoeing. Tell them they will be exploring Indian Creek at Arlington Echo by canoe and observing various shorelines found along the river and creek that may have been changed by human. They can also search for organisms found in that particular habitat.
- Ask the students to observe the poster. Can they observe how the shorelines may or may not have been altered by humans? As they look at the water before them, can they see where these types of changes (bulkhead, rip rap, living shoreline) have been made at Arlington Echo and/or by their neighbors? Ask the students, **“Why do you think we changed the shoreline?”** *To stop erosion. “Do you think any of these changes may have been hard for wildlife to adjust to?”* *Some animals may have trouble getting in and out of the water to nest or eat.*
- Walk along the path to observe where erosion has occurred behind the bulkhead. Ask the students, **“Can you find an area where a bulkhead may have been buried?”** This is evidence that Arlington Echo has restored a bulkhead to a living shoreline. A living shoreline is where humans have restored an unnatural shoreline such as rip-rap or bulkhead into a shoreline that resembles a natural state. Ask the students, **“Were the changes bad or good in the long run?”** Remind the students to observe the shorelines from the water while they canoe.

### Explore:

- Go over canoeing skills. Each student should select a paddle appropriate for their height (when standing with the blade of the paddle on their toes, the grip should fall between their nose and chin. Red paddles will work for most students; blue will work for taller students).
- Have students pair up and stand in two rows as if they are in imaginary canoes. The more experienced paddler should be in the back. Where skill is equal, the larger person should take the back seat. The person in the back seat is the “Captain” and is in charge of communicating, because they can see what the person in front of them is doing.
- Demonstrate basic canoeing maneuvers: forward stroke, back stroke, canoeing in a straight line, and turning a canoe. Have the pairs of students follow along with their paddles, making sure that students are paddling in the air, not scraping the ground. *(One activity leader could demonstrate these techniques in the water while the other discusses and mimics them with the students).* **(See**

### Supplement A)

- Demonstrate the proper technique of boarding a canoe. Be sure to emphasize the importance of staying low and keeping three points of contact (*See Supplement A*). NEVER stand in a canoe.
- Point out the boundaries for canoeing. Students can go back into Indian Creek (to the right), but are not to canoe past the yellow buoys into the Severn River, or past the dock to the left.
- A canoe with at least one adult in it should be the first to go out. The other activity leaders/chaperones will stay behind to assist students in boarding their canoes and keep a lookout from the shore. **We HIGHLY recommend that you leave all personal electronic devices on shore, just in case!**

### Explain:

Once everyone is in the canoes, have the students meet up in a circle just off the dock. This is a great time to refer back to the “Can you find...” poster. Tell the students to be extremely quiet so they can observe the fascinating wildlife Arlington Echo has to offer. Guide the students into the cove, where they can look for various wildlife and the 3 distinct shorelines. Below is an example of how the students should gather together, weather permitting. **(Strong winds may affect this task.)**



### Elaborate:

Once the group is up the creek, gather together and have them observe the marsh area. Ask the students, **“Can you tell the difference between the two shorelines of the marsh?”** *One side is covered in phragmites and the other in native marsh plants.* **“Do you think one is a better habitat than the other? How does this area compare with the other shorelines we talked about earlier?”**

You may have to direct or tow students whose canoe gets stuck in shallow water or along shoreline.

Tell students not to canoe past the seining pier (in foul weather/windy conditions). Make sure students look out for those that are seining in Indian Creek.

**Evaluate:**

Upon returning to shore, ask the students to tell you what they found during their exploration. After they've pointed out a few things, guide them towards discussing the human impact on the Indian Creek habitat. **(See Supplement B)**

**Notes for Clean up:**

Use the last group of adults and students for the day to help rack the canoes that were used during the lesson. Please organize and return the lesson folder, poster and life ring to the boat pier shed. The PFD's and paddles are returned to the boat house near the Dining Hall by students and the radio should be returned to the Upper Resource lab or to Arlington Echo Staff. Remember to inform the Arlington Echo Staff if you need assistance or if any materials are damaged or missing. If there is another school using the canoes after your group, leave the canoes tied to the floating pier and the other materials where they're being used.

**Notes for Inclement Weather:**

Arlington Echo encourages keeping our outdoor activities outdoors —even in the rain—but in the case of severe weather (thunder, severe cold, etc.), the rain location and alternate activity for this activity will be determined when your schools arrives (Resource Lab or Dining Hall).

## Supplement A: Canoeing Skills

### Choosing the right paddle and PFD

- Paddle: Place the blade of the paddle on top of your toes while standing. The grip should fall between your chin and nose.
- PFD: Pass out the PFD that corresponds to the student's weight.

### Entering a Canoe

1. The activity leader should sit on the dock with both feet in the canoe, holding the canoe steady.
2. The student should sit on the dock with feet in the canoe in front of the seat they will be using, as show in picture one.
3. The student holds the opposite side as shown in picture #2
4. The student slides into the seat, remaining low.
5. Load the second canoer in the same manner.

NOTE: When loading the canoe, the person sitting in the back of the canoe gets in **first**, to keep the canoe stable.



**Picture 1**



**Picture 2**

### Leaving a Canoe

1. The activity leader should sit on the dock with both feet in the canoe, holding the canoe, the same as when students are entering.
2. The student should place their paddle on the dock.
3. The student should slide sideways out of the seat, staying low, and sit on the dock.
4. The student can then carefully swing their legs out of the canoe and stand on the dock. Make sure that students are NOT standing in the canoe!

NOTE: When unloading the canoe, the person in the back of the canoe gets out **last**, to help keep the canoe stable.

