Hands-on River Ecology

Unit: Life along the Hudson River: Exploring Nature and Culture

Destination(s)

Waryas Park
75 North Water St
Poughkeepsie, NY 12601

Esopus Meadows Preserve and Environmental Education Center
293 River Road
Esopus, NY 12487
http://www.scenichudson.org/parks/esopusmeadows

County
Dutchess

Grades
2nd Grade, 1st Grade

Author
Lynn Fordin, Poughkeepsie Day School

Summary

Students learn more about the importance of estuaries, including our own Hudson River, and are exposed to a variety of hands-on, site-based experiences that broaden their understanding of the ecology of the Hudson River. These activities build on other trips discussed in this unit.

Question

- What native animals live in the Hudson River?
- What are the relationships between plants and animals in the river?
- What is a fish?
- What is an estuary?

Content Understanding(s)
The Hudson is more than a river. If you taste its water near West Point at the end of summer, it will probably taste a little bit salty. A body of water in which fresh water from a river meets salty water from an ocean is called an estuary. The Hudson River is a good example of an estuary.

The Hudson River is home to many species of fish and plants that depend on each other. At the bottom of the food chain are organisms, called plankton, that float freely in the currents. Phytoplankton are photosynthesizing organisms and zooplankton are animals.

Fish have distinct external body parts enabling them to survive in water; they breathe with gills, have scales, and swim using their fins. Some fish are bottom dwellers while others swim on the surface. The Hudson River estuary has species that live only north of the salt front, species that live only south of it, and some that can tolerate ranges in salinity and live in both.

The salt front is the leading edge between seawater and fresh water. This area is affected and determined by fresh water runoff, including snowmelt and the tides. Salt water is heavier than fresh water.

Concept Understanding(s)

- Being an estuary makes the Hudson River special.
- Species in any given ecosystem are interdependent.
- Comparisons between their own species’ ability to live, eat, and survive in an environment and the abilities of other species.

Vocabulary

- Estuary
- Salt Front
- Gills
- Food Chain
- Plankton
- Phytoplankton
- Zooplankton
- Ecosystem
- Mixture
- Salt Water
- Fresh Water

Suggested Time Frame(s)

Each activity requires about forty-five minutes. Plan most of a day for the site visits.

Narrative

PRE-VISIT ACTIVITIES

- See "Creating an Estuary" in this unit.
- See "Creating a Fish Mural" in this unit.

SITE EXPERIENCES

Esopus Meadows Environmental Center. Educators associated with Clearwater coordinate the education programs at this site in Ulster County. The environmental center is set up in stations that the students rotate
through, both indoors and out. These learning experiences include: Seining, Fish Study, Plankton Study and Beachcombing.

The trip is fun for all. Teachers, chaperones, and educators put on waterproof waders and slosh into the river to gather fish with a seining net. Students then sort through the collection and place the fish in a tank to observe and identify. Students use microscopes and slide projectors to view plankton and larvae found in river water. They also use identification sheets to locate and name the critters they have on view.

Students may take an "un-nature" walk; educators place strange, man-made objects in the woods along the riverbanks and the children try to locate, recall, and describe them. It is a terrific introduction to the importance (and difficulty) of using observation skills in an authentic and fun context. There are also many elective stations available to customize the experience.

Sloop Clearwater, Pumpkin Sail. This is a wonderful first experience to get the kids to the river for a few hours. Clearwater educators set up stations outside at Waryas Park. These include a plankton station, a singing stop (where the kids learn wonderful songs about the river), fish identification and petting stations, and a chance to board the Clearwater and learn sloop terminology and move the tiller. Last but not least, students pick a pumpkin and take one home. (For details on this trip, see the Geology lesson in this unit.)

Mid Hudson Children's Museum. Children participate in an activity called "Pollution and Food Chain Play," where they act out bio-magnification by wearing funny hats. This activity has a strong kinesthetic and visual component that helps the children to understand this concept. (For details on this trip, see the Geology lesson in this unit.)

POST-VISIT EXPERIENCES

- **Journal writing.** Develop a Hudson River Journal for each student with both lined and blank pages. Brainstorm with the class as a whole what they remember about their trip. Possible writing prompts include: listing key vocabulary words on the board, using sentence starters, and creating a sample entry. Ask children to reflect using pictures and diagrams as well as words. Some children will benefit from drawing first, while others will want to write first. Keep this journal for all related outings and activities.

- **Found Object Mosaic.** Using materials gathered along the river's edge with Clearwater educators, recreate an important aspect of the river. We made an Esopus Lighthouse mosaic as a whole class project. Try planning ahead, perhaps as you travel to the river, to recreate something specific; this helps students think about what to gather. On a piece of plywood, sketch an object (such as the lighthouse) from a photo. Then lay out the gathered objects. Use Mod Podge or another adhesive to glue the objects down. The mosaic can be a beautiful reminder throughout the year of your trip and your cooperative work together.

- **Write a song.** We were fortunate to have a teacher who is also a songwriter! But, everyone has a music teacher out there, or maybe a parent with equal skills. If not, it is not as hard as you would think to write a song. Take a popular tune that most people know; use its rhythm and/or rhyme scheme to guide you and your students in creating a song. It's a wonderful way to revisit what was learned as well as to memorize facts.

- **Recreate the food chain game** played at the Children's Museum, as a board game, for example.

- **Create a mural** that represents the interdependence of species.

- **Make simple hand puppets** and put on a play demonstrating what students have learned about the estuary.

**Supplies Used**

- Journals with lined and blank pages
• Found objects from river's edge  
• Plywood  
• ModPodge or other adhesive  

What Should Students Know At The End of This Lesson  
 See understandings above.  

What Should Students Be Able To Do at the End of This Lesson  
 See understandings above.  

How do you assess student learning?  

• Journal.  
• Classroom and trip participation.  
• Contribution to creating the mosaic, song, and/or other post-visit creations.  

Site Tips  

Esopus Meadows Preserve is 93-acre Scenic Hudson park with two miles of woodland trails and a shoreline with stunning views of Esopus Meadows Light-house, historic Mills Mansion, and more. The shallow waters just offshore are important spawning grounds for striped bass. There is also a Hudson River Water Trail stop with facilities for paddlers. Abundant opportunities for nature study. Clearwater runs the environmental program, Tidelines Discovery. (See the resource list for links to Clearwater and Scenic Hudson.)  

Tidelines is offered from March through November. Schools in the mid-Hudson Valley are encouraged schedule the program at Esopus Meadows but it can be set up in a local riverfront park anywhere in the region if necessary. Some program activities can also be brought to your classroom, but there's nothing quite like being on the river! Clearwater educators are experienced and organized. The program is hands-on featuring the stations described above in the narrative section.  

Waryas Park and Mid-Hudson Children's Museum. Bring along art supplies for the children to paint watercolor landscapes of the Hudson. The benches and sidewalk along the river between the museum and the park are perfect for young Hudson River School artists to capture using watercolors. Bring a bag lunch and use the picnic tables that overlook the river. There are port-a-toilets by the playground. See the Geology lesson in this unit for additional trip details.  

Chaperone Information  

Chaperones should be prepared to put on waterproof waders and slosh into the river to gather fish with a seining net.