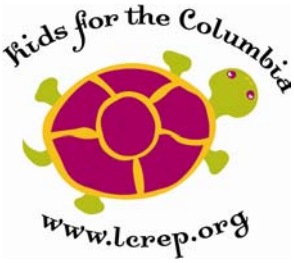

Free class programs offered by the Lower Columbia River Estuary Partnership
2005-2006 School Year

The Lower Columbia River Estuary Partnership is a two-state, public-private organization focused on protecting the lower 146 miles of the Columbia River from the Bonneville Dam to the Pacific Ocean. The Estuary Partnership works concertedly in five specific areas to: increase habitat and habitat functions; improve land use practices to protect ecosystems; enhance education opportunities about the lower river and estuary to build stewardship among all citizens: individual, municipal, corporate; strengthen coordination between the states in water quality and species issues; and monitor the river for the long term, evaluate the impact of actions and prevent pollution. The Estuary Partnership encompasses a watershed-wide perspective to address land use, water quality and species protection. We are community based and depend on a diverse Board of Directors and many partners to guide our activities. The Partnership works through consensus and collaboration, relying on voluntary efforts to get on-the-ground results.

The Estuary Partnership Kids for the Columbia education programs are science based, yet many programs include other disciplines such as math, literature, history, and even music and art. We strive to offer information about all aspects of the lower river, including its biological, chemical, historical, social and economic characteristics. Our goal is to provide current information and build students curiosity to enable them to make informed decisions about the protection and future of the river as they grow.

The Estuary Partnership three types of class visit programs:

- Single day class programs focus on scientific inquiry of environmental topics within the Columbia River Estuary.
- Mini-unit programs allow for a more detailed development of the topic of interest. From animal adaptations to forest features, the program units include 4-5 class visits, a hands-on field trip experience, and a follow-up discussion and conclusion of the topic studied.
- Year-long study includes classes each month, a field component, and culminates in a community service project such as a restoration project. Benefits of a year-long study include detailed development of the scientific method with regard to an environmental theme. The year-long investigation can be used to form a cohesive understanding of the relationship between humans and the health of the Columbia River ecosystem.

Listed below is a sample of some of the classes and field trip activities offered by the Estuary Partnership. The classes are sorted by topic, although many are related to more than one topic. Selections of classes from topics can comprise a mini-unit. Most classes listed can also be completed as a single class visit. Program lengths are 45 minutes unless otherwise noted.

We have, on numerous occasions, developed new programs that better suit a teacher's need. We are happy to do so and appreciate the opportunity to integrate our programs with topics being studied in the classroom.

Animal Adaptations:

- Camouflage and Coloration: (grades 2-4) Learn how animals use camouflage and coloration to protect themselves and find food through a fun, observational activity.
- Animal Signs and Observation: (grades 3-8) Do you know what signs animals leave behind? Become an animal detective and see if you notice these hidden clues that are left by animals in a variety of habitats.
- Animal Adaptations: (grades 1-5) Learn about the unique adaptations of local frogs & beavers. See how humans compare to frog's abilities to catch flies, leap, and find their prey. Investigate the beaver and how it is specially adapted for life in its watery habitat.
- Animal Tracking: (grades 2-5) Students will explore animal tracks and discover how animal tracks reveal not only the animal that made them, but also animal adaptations and the movements of each animal.
- Food web: (grades 1-4) Learn about plants and animals commonly found throughout the Lower Columbia region. Make a food web out of students using these plants and animals or make food web pyramids with students. Learn about producers and consumers and their role in the food web. Discuss what happens when parts of the food web, like salmon disappear.

Botany Bounty:

- What Plants Need: (grades 3-5) In order to thrive, plants need to grow in areas of specific environmental conditions. Students will discuss the basic necessities a plant needs to survive. Students will then look at native plants and discuss the specific range of tolerances for native plants in reference to a specific habitat, such as a wetland or forest.
- Tree and Plant ID: (grades 5-8) Students will learn simple plant leaf terminology and then be introduced to simple dichotomous keys to identify plant species.
- Native vs. invasive: (grades 3-6) Students will become familiar with several types of invasive species. Discover why these invasive species are harmful to native plants and animals and learn about methods to remove them. This class is highly recommended prior to a pre-service learning project.

Beautiful Birds:

- Introduction to Local Birds: (grades 2-8) What birds would you typically find throughout the region? Find out more about the feathered friends that live near your school through listening to bird sounds and playing a bird game to discover some of the challenges birds face when they communicate.
- Bird Beak Buffet: (grades 2-4) Explore how birds are adapted to eating their food sources through their specialized beaks.
- Migration Magic: (grades 3-5) Discuss the reasons why birds migrate and the challenges they face. Then, be a bird on its migration. This activity requires a large flat area where students can run around.
- Create a Bird: (grades 3-5) Students will observe structural adaptations found among the many different bird species. Then, students will create their own bird that illustrates many of these features.
- Bird Adaptations: (grades 5-7) Students will learn to identify some simple characteristics of birds, including where they live and what they eat just by looking at their beaks, skulls, and feet.

Cycles:

- Water Cycle: (grades 2-5) Examine the processes that move water around, through, and over the earth. Students will travel on an "Incredible Journey" to trace the movement of water within the cycle through its solid, liquid, and gas forms.

- Salmon Life Cycle: (grades 2-4) Learn more about the life cycle of salmon. Students will investigate objects and recreate the salmon life cycle.
- Animal Life Cycle: (grades 2-4) Explore the amazing life changes and journeys that salmon, frogs, dragonflies, and mammals experience throughout their lifetime. 10 minutes of a Bodychangers video will be shown that focuses on dragonflies and frogs.

Estuary:

- Intro to the Estuary: (grades 4-8) What makes an estuary an estuary? Why is it a unique habitat? Students will learn about the unique plants and animals within an estuary and create an art project by drawing estuary plants and animals onto an estuary landscape.
- Plant and Animal Adaptations: (grades 4-8) Learn more about the plants and animals that live in an estuary, what special adaptations must they have to survive?

Forest Features:

- Layers of the Forest: (grades 2-5) Learn about the three basic layers of a forest. What kinds of plants and animals can be found in each layer? Students will create a detailed drawing of the main forest layers that includes plants and animals that can be found in the Pacific Northwest.
- Forest Succession: (grades 5-8) This activity involves creating a miniature landscape to depict the different stages of plant succession. The goal is to illustrate that change is a natural part of the environment. Plant succession at Mt. St. Helens will be used as an example.
- History of a Tree: (grades 4-7) A tree can tell it's own history if you just know where to look. Students will examine tree rings to decide how long the tree lived, what type of climate the tree lived in, whether the tree ever experienced any fire or disease and more.
- Forest Floor: (grades 2-4) Using leaf litter, students will examine the process of nutrient cycles in the forest ecosystem. The role of soil organisms will be explained in relation to the process of decomposition.

Human impact:

- Development & the Stormwater Story: (grades 5-8) How does development and land use impact habitats and water quality? Discover how impervious surface has changed runoff. Determine where the water flows from your schoolyard and calculate runoff.
- You Can Do It Too: (grades 1-8) One person can make a difference and many small actions can add up to one big change. Students will learn ways in which they can be more environmentally conscious in their own lives & be given materials to track their changes within the classroom and at home.
- Habitat Restoration: During this lesson students will begin to learn the basic principles of habitat restoration. Human development has altered the landscape to its present condition. Through invasive plant removal and native plantings we can begin to restore natural areas.

Lewis and Clark:

- Lewis and Clark plants and animals: (grades 3-6) Learn more about the plants and animals that Lewis and Clark discovered and used during their travels in the Pacific Northwest. During the activity, some students will act as explorers, creating journal entries that describe local animals while other students will act as President Jefferson and attempt to guess what type of animal their classmate had described.

Macro Mania:

- Intro to Macros: (grades 4-8) Macroinvertebrates (stream insects, snails, etc.) are excellent indicators of water quality. Learn more about macroinvertebrates and discover how these organisms can teach us about water quality. Students will see a slide show of macros as well as an activity in which students handle macro specimens, sketch their animal and identify them using field guides.

- Macro Feeding and Adaptations: (grades 4-8) Students will investigate the physical and behavioral adaptations of macroinvertebrates to understand how each species meets the demands of its specific habitat and feeding behavior.

Mapping:

- Intro to Mapping: (grades 4-8) Students will learn the importance of maps, their numerous functions, and how to read them. Students will each hide a penny and create a map that their classmate will then use to find their penny.
- Map and Compass Course: (grades 4-8) Students will learn how to use a compass and practice their compass skills to complete a compass course in the schoolyard. Map symbols will also be explored through a hands-on activity.

Northwest Ecology:

- Habitats of the Northwest: (grades 3-5) Students will receive an introduction to some of the different habitats found in the lower Columbia region, including: wetlands, forests, meadows, streams, and estuarine environments. Next, students will be asked to match plants and animals with their respective habitats.
- Landforms of the Pacific Northwest: (grades 3-5) From the mountains to the sea we will explore the geology and landforms of the Pacific Northwest; students will even build their own mountain
- Formation of the Gorge: (grades 4-8) During this class students will learn the geologic history of the Columbia River Gorge. Learn about the amazing Missoula Floods that carved out the gorge during the last ice age.

Northwest Natives:

- Native American Plant Use I: (grades 3-8) Learn how native plants were used as a food source for Native Americans in this region. This class can be a great way to enhance student appreciation of naturescaping projects at schools.
- Native American Plant Use II : (grades 3-8) Learn how native plants were important for tools, medicine, shelter, and transportation. This class can be a great way to enhance student appreciation of naturescaping projects at schools.
- Native American Salmon use: (grades 3-8) Learn how salmon were an important cultural feature in the lives of Native Americans in this region. Compare this to the role salmon play in our daily lives.

Soil Science:

- Intro to Soil: (grades 2-6) Investigate the role that soil plays in the environment. Students learn to identify the three types of soil and their characteristics. Students will also perform percolation tests to make a scientific inquiry into the permeability of different soils. They will use this information to explore the formation of wetlands.
- Radical Rocks: (grades 2-4) Study the diversity of rocks and discover sedimentary, igneous, and metamorphic rocks and their distinguishing characteristics.
- Igneous Rocks: (grades 4-7) Students will explore the variety of textures and colors that make up igneous rocks. Using a dichotomous key, students will observe and identify three igneous rock samples.

Streams, Watersheds, and Riparian Zones:

- Stream Table: (grades 2-8) Using this hands-on stream model table students have an opportunity to learn about the relationships between vegetation, sediment, and flowing water. During the development of a stream channel, students have the chance to observe that protecting and restoring the stream corridor is a critical component to protect fish and wildlife as well as property.

- Riparian Resources: (grades 2-8) Explore the role of plants, wildlife, and the stream corridor. The importance of riparian habitats as "the green ribbon of life" is investigated in terms of the important role or niche each plant and animal play.
- What is a Watershed?: (grades 2-5) An excellent overview activity to teach about watersheds and point and non-point sources of water pollution. Younger students will build their own watershed. Older students will analyze current and historical maps to define trends and changes in their watershed. Using a watershed model, participants will learn more about point and non-point source pollution and demonstrate pollution impacts on their local stream.
- Intro to Water Quality: (grades 4-12) Learn about water quality parameters and how they relate to stream health. Students measure, use numbers, and interpret data as they are introduced to the water quality parameters of pH, dissolved oxygen, phosphate, temperature and turbidity. Highly recommended pre-activity to a field trip or water quality monitoring program.

Wetland Wonders:

- Introduction to Wetlands: (grades 3-5) During this activity students will use metaphorical objects to describe characteristics of wetlands. They will also begin to understand the ecological functions of wetlands and their importance to wildlife and humans.
- Wetland Plant Adaptations**:** (grades 2-4) Learn more about the special adaptations that wetland plants such as cattails and lily pads have to survive their watery habitat. Then, students will see if they can guess which plants are real and which are made up. Note: class length is 30 minutes.

Field Activities:

- Riparian Assessment
- Scavenger Hunt
- Water Quality Testing
- Birding and Animal Observation
- Macroinvertebrate Sampling
- Unnature Trail
- Field guides
- Dichotomous keys
- Forest Floor (Layer) Observation
- Native American Scenarios
- Soil Testing
- Compass Course
- Plant & Lichen Identification

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