**Lesson 10: Salmonid Natural History Lesson Plan**

**ESSENTIAL QUESTION:**

What combination of factors both natural and manmade is necessary for healthy river restoration and how does this enhance the sustainability of natural and human communities?

**GUIDING QUESTION:**

How does biological evolution account for the diversity and distribution of salmonid species?

**OVERVIEW:**

This lesson focuses on some of the natural history and stochastic events that have influenced the current distributions of salmonid fish in western North America. The relatedness of salmonid species and some of the events of the past, of which the ice age is the most important, can be examined using phylogenetic trees. This information can then be used to determine how the phylogenetic tree branched as it did. Genetic isolation, the founder effect, genetic drift, and stochasticity have all played a role in the diversification of the various species, subspecies, stocks, and runs of salmonids in western North America.

**TIME:**

One class period.

**MATERIALS:**

Lesson 10- Salmonid Natural History PowerPoint

Speciation Articles.pdf

Reflection Journal Pages (Printable handout)

Vocabulary Notes (Printable Handout)

**PROCEDURE:**

1. Review Essential Question; introduce Guiding Question.

2. Students should take a few minutes to respond to the First Reflection Journal questions. Discuss their answers and any questions they've generated.

3. Hand out the Vocabulary Notes. With this lesson you may want to define the words before presenting the PowerPoint Lesson.

4. Present the PowerPoint Lesson.

5. Read Speciation Articles on Lake Crescent Trout, Olympic Mudminnow, and Olympic Marmot.

6. Hand out the Second Reflection Journal page. Give students time for a final reflection on the session.

**WASHINGTON STATE STANDARDS:**

**SCIENCE**

1. **EALR 4: 6-8 LS3A** The scientific theory of evolution underlies the study of biology and explains both the diversity of life on Earth and similarities of all organisms at the chemical, cellular, and molecular level. Evolution is supported by multiple forms of scientific evidence.

* Explain and provide evidence of how biological evolution accounts for the diversity of species on Earth today.

2. **EALR 4: 6-8 LS3E** Adaptations are physical or behavioral changes that are inherited and enhance the ability of an organism to survive and reproduce in a particular environment.

* Give an example of a plant or animal adaptation that would confer a survival and reproductive advantage during a given environmental change.

3. **EALR 4: 6-8 LS2D** Ecosystems are continuously changing. Causes of these changes include nonliving factors such as the amount of light, range of temperatures, and availability of water, as well as living factors such as the disappearance of different species through disease, predation, habitat destruction and overuse of resources or the introduction of new species.

* Predict what may happen to an ecosystem if nonliving factors change (e.g., the amount of light, range of temperatures, or availability of water or habitat), or if one or more populations are removed from or added to the ecosystem.

**READING**

1. **EALR 1**: The student understands and uses different skills and strategies to read.

* Component 1.2 Use vocabulary (word meaning) strategies to comprehend text.

**SOCIAL STUDIES**

1. **EALR 5**: The student understands and applies reasoning skills to conduct research, deliberate, form, and evaluate positions through the processes of reading, writing, and communicating.

* Component 5.2: Uses inquiry-based research.

**WRITING**

1. **EALR 2**: The student writes in a variety of forms for different audiences and purposes.

* Component 2.1: Adapts writing for a variety of audiences.