

French Creek Outdoor School



Riparian Creek Field Study



Siskiyou County Office of Education Kermith R. Walters, County Superintendent

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Station Over-View: (Allow 1.5 hours for this Station)

The Creek Study has stops along the creek that highlight different aspects of the riparian habitat. The goal of this station is to give the students an understanding of the importance of the riparian corridor. The connections between stream health and the health of the riparian corridor inhabitants are highlighted.

Station Leaders:

1. Be sure to pick up the station backpack.
2. Pick up the first aid kit fanny pack.
3. In case of an emergency contact Jason Singleton, Camp Director. His cell # is 530-598-6131.
4. Between stations contact the leader of the Forest Field Station to coordinate student group exchange and meeting at the fire ring area.
5. Give students a quick bathroom and drinking fountain break during the group exchange.

Materials:

All materials and necessary equipment will be at the station, most in a large plastic tub.

- Clipboards (1 per student)
- Pencils (1 per student)
- Data Sheets (1 per student)
- Aquatic insects kick nets
- 2-Way viewers
- Strainers
- Small nets
- Ice cube trays (for sorting aquatic insects)

Introduction:

Introduce yourself, teacher, counselor and any other adults. Hand out data sheets and explain objectives of the field study. (*Objectives listed below.*)

Riparian Field Study Objectives:

Students will be able to...

- Name two differences between the riparian zone and the forest.
- Identify one observation from their silent walk along the riparian corridor.
- Understand the word “habitat” and what determines good habitat for fish, including trout.
- Identify one thing that makes a healthy riparian zone.

- Explain the function of the fish screen.
- Find and identify and draw two aquatic insects.
- Determine if French Creek is a healthy riparian area.

Procedures:

Stop #1: Riparian Walk

1. Riparian Zone

Stop in the first clearing.

Question: What difference do you see in the vegetation along the side of the creek compared to that upslope by the cabins?

Define a riparian zone.

Riparian areas are the green areas of plant life found along the edges of water. Some examples of plants that grow well with their root systems near groundwater are maple, willow and cottonwood. Riparian areas provide space, shelter, water and food for the plant and animal communities.

Discuss the importance of riparian vegetation to the creek (i.e. shade, erosion prevention, leaf matter for insects.)

The Importance of Riparian Vegetation

- Vegetated areas help to augment surface flows during dry seasons because they absorb rainwater and release it slowly.
- Vegetation helps prevent flooding by absorbing water.
- Vegetation helps to filter and detoxify pollution.
- Plants provide shade that keeps stream temperatures cool and increases the dissolved oxygen available to aquatic organisms.
- Logs, root wads, low-hanging branches, and other streamside vegetation provide protective cover for fish.
- Trees contribute large woody debris to streams, which creates varied habitats such as riffles and pools, and controls the flow of sediment, keeping it out of spawning gravels.
- Leaves provides a food source for aquatic invertebrates.
- Plant roots stabilize stream banks and prevent erosion.
- Riparian vegetation provides important habitat for many species of birds and other wildlife.

2. Silent Sit

Break students into small groups and assign a teacher or counselor to each group. Sit in small groups along the trail to where it meets the creek. Ask the students to observe nature and note what they can see or hear. At the end of the trail, have them record one observation on their worksheet. Have students take turns pointing out what they observed. Take this time to share anything you have observed.

3. Fish Habitat

Question: What is “habitat”?

Habitat is the environment in which an animal lives. Habitat includes food, water, shelter and adequate space.

Question: What are the specific habitat needs of salmon?

Salmon habitat includes free passage up the rivers to spawn, spawning habitat, places to hide from predators, clean spawning gravels, and cold clean water.

Activity: Record the temperature of the air and the water. Note the salmon habitat.

There is white water rushing off rocks (dissolved oxygen), pools formed by rocks (cool hideouts), and spawning area just downstream of the pool area.

Stop #2: Where Rivers Meet

Talk about the confluence, a place where two different water sources merge. Look downstream and upstream, compare the size of French Creek before and after the confluence with Payne’s Creek. Talk about the path the water in French Creek will take to the ocean. Discuss the confluences along the way. Discuss estuaries, and pollution from rivers and creeks.

Question: Where does the water go? Where does it end up?

Scott River / Klamath River / Pacific Ocean

Stop #3: The Creek Viewed from the Footbridge

1. What Happened?

Question: How did the large boulders wind up on the banks edge?

Looking upstream and downstream talk about the riparian vegetation growing along the creeks edge. Even though the river has moved a lot of material, there is still vegetation. Note the shade provided for the stream. Look at the riparian vegetation.

2. The Flood Plain

Question: How is the vegetation here different?

It is smaller (younger), and there is less of it.

Activity: Have the students guess the age of the trees and record it on their worksheet.

Question: What are two reasons why the vegetation might be smaller?

1. The flood ripped it out and it is growing back.
2. Poor soil.

Note the difference in the soil from soil in other places at camp. Touch the soil and discuss how soil forms. What does soil provide for plants?

Stop #4: The Meadow

Question: Does this look like a good place to live? Why?

It provides shelter from wind and heat, it is close to water and moisture creates food. It is a good place to hide; animals can find camouflage in the vegetation.

Riparian Tree ID: Take this opportunity to key out some of the riparian vegetation along the creek.

Activity: Sketch the leaf of one of the riparian trees in the area.

Stop #5: Habitat Protection

Discuss water diversions and the hazard they pose to juvenile fish. Show them the control valve.

Question: What happens to the fish that don't go back into the stream?

Show them the fish screen and explain how it routes the fish back into the creek. (*Don't let them see the fish screen until they have seen the valve control.*)

Stop #6: The Watershed View

Question: What is a watershed?

“Lead” the students into the answer: What happens when rain falls on the tops of the mountain? Where does it go? Point out the snow pack, how it provides for the dry summer season. Link the watershed to French Creek and the riparian creek study.

Stop #7: Pond Life

Question: What are the differences between the pond and a creek?

Lead” the students into the answer:

Stop #8: Macro Invertebrates

Question: Why do we think aquatic insects are important?

A diversity of aquatic insects indicates a healthy stream system, as they are very intolerant of poor water quality. They are the primary food source for fish.

Question: Where do you look for aquatic insects?

They are found in leaf piles, under rocks, and at the edges of the creek.

Demonstration: Give a demo on how to use the equipment. Team students up and let them find three different types of aquatic insects. They should ID them using the key.

Activity: Have the students draw one or two insects on their worksheet and have them share.

Collect the equipment and return it to the campfire circle. Also collect the student data sheets. Walk the students by the restroom and have them fill their water bottles. Meet back at the campfire circle.

Thank you for leading the Riparian Field Study!

Riparian Field Study Data Sheet

Name: _____

Cabin: _____

Stop #1: Riparian Zone

Located at the _____.

Name two differences between the riparian zone and the forest:

1. _____

2. _____

Silent Sit (Near the bridge at Paynes Creek)

Name the observation you made on the silent sit: _____

Is the air temperature colder or warmer than the creek?

Yes or No

Stop #2:

Where Rivers Meet

Confluence: Where _____ different _____ sources merge into one.

Stop #3:

What Happened?

Name two differences between the flood plain and the forested area.

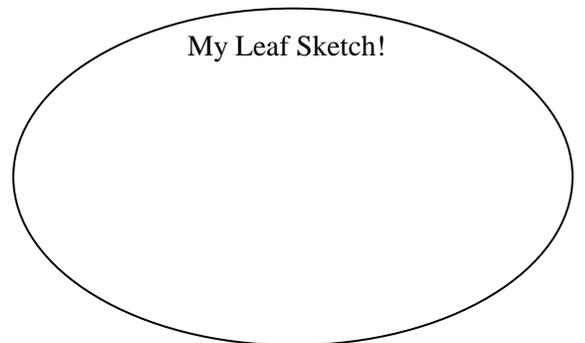
1. _____

2. _____

Air Temperature: _____

Stop#4: Meadow

Leaf Name _____



Stop # 5: Which Way to Crescent City?

Upstream or Downstream (Circle)

Fill in the blanks:

_____ help save the fish.

Stop #6: The Watershed View (Look at the Russian Wilderness above the ranch)

What is a watershed?

Stop #7:

Pond Life

Name three differences between the pond and the creek.

1. _____
2. _____
3. _____

Stop #8:

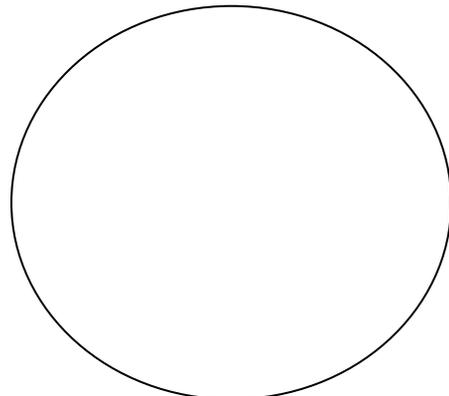
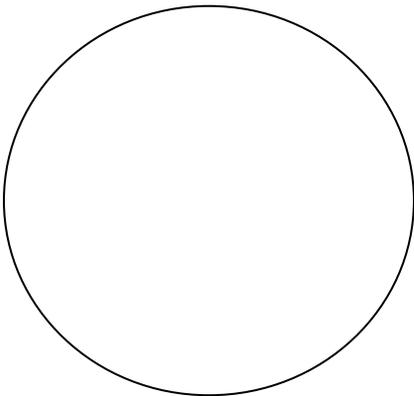
Macro Invertebrates

We all live in one (It is not a house!) _____

Identify and draw two Aquatic Insects.

Insect Name: _____

Insect Name: _____



Name one thing that contributes to the health of this creek: _____

California Standards and Framework for Riparian Creek Field Study

6th Grade CA Science Standards

Area: Focus on Earth Science

Sub-Strand: Shaping Earth's Surface

Concept 2 Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:

Standards:

a Students know water running downhill is the dominant process in shaping the landscape, including California's landscape.

b Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.

d Students know earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats.

Sub-Strand: Energy in the Earth System

Concept 4 Many phenomena on Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept:

Standards:

Standard a. Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

Sub-Strand: Ecology

Concept 5 Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:

Standards

a. Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.

b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.

c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Sub-Strand: Resources

Concept 6 **Sources** of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation. As a basis for understanding this concept:

Standards:

Standard b. Students know different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and know how to classify them as renewable or nonrenewable.

Area: Investigation & Experimentation

Sub-Strand 7: Scientific progress is made by asking meaningful questions. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

Standards

b. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.

e. **Recognize** whether evidence is consistent with a proposed explanation.

h. Identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, and a hill slope).

5th Grade CA Science Standards 5th Grade

Area: Physical Sciences

Sub-Strand: 1 Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept:

Standards:

Standard g. Students know properties of solid, liquid, and gaseous substances, such as sugar (C₆H₁₂O₆), water (H₂O), helium (He), oxygen (O₂), nitrogen (N₂), and carbon dioxide (CO₂).

Area: Life Sciences

Sub-Strand 2 Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

Standard

Standard a. Students know many multicellular organisms have specialized structures to support the transport of materials.

Area: Earth Sciences

Sub-Strand 3 Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:

Standards

a. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.

b. Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.

c. Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.

d. Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.

Area: Investigation & Experimentation

Sub-Strand 6 Scientific progress is made by asking meaningful questions. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

Standards

- a. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.
- f. **Select** appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.
- g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.

California Framework

History-Social Science Framework

Goal: Goal of Knowledge and Cultural Understanding

Strand: Geographic Literacy

Key Concept: Develop an awareness of place.

Key Concept: Understand human and environmental interaction.

Goal: Skills Attainment & Social Participation

Strand: Participation Skills

Key Concept: Develop Personal Skills

Key Concept: Develop group interaction skills.

Key Concept: Develop social & political participation skills

Physical Education and Health Framework (same as Geology).

Oregon Social Science Standards

Content Strand: Geography: Understand and use geographic skills and concepts to interpret contemporary and historical issues.

Common Curriculum Goal: Understand how people and the environment are interrelated.

Content Standard: Understand how humans affect the physical environment.

Area: Benchmark 2 (Grade 5)

Standard: Understand how physical environments are affected by human activities.

Content Standard: Understand how physical characteristics in the environment and changes in the environment affect human activities.

Area: Benchmark 3 (Grade 8)

Standard: Understand how changes in a physical environment affect human activity.

Common Curriculum Goal: Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions.

Content Standard: Identify and analyze physical and human characteristics of places and regions, the processes that have shaped them, and their geographic significance.

Area: Benchmark 2 (Grade 5)

Standard: Identify physical and human characteristics of regions in the United States and the processes that have shaped them.

Common Curriculum Goal: Understand the geographic results of resource use and management programs and policies.

Common Curriculum Goal: Understand how differing points of view, self-interest, and global distribution of natural resources play a role in conflict over territory.

Oregon Science Standards

Content Strand: LIFE SCIENCE: Understand structure, functions, and interactions of living organisms and the environment.

Common Curriculum Goal: ORGANISMS: Understand the characteristics, structure, and functions of organisms.

Content Standard: Describe the characteristics, structure, and functions of organisms.

Area: Benchmark 2 (Grade 5)

Standard: Group or classify organisms based on a variety of characteristics.

Standard: Describe basic plant and animal structures and their functions.

Common Curriculum Goal: DIVERSITY/INTERDEPENDENCE: Understand the relationships among living things and between living things and their environments.

Content Standard: Explain and analyze the interdependence of organisms in their natural environment.

Area: Benchmark 2 (Grade 5)

Standard: Describe the relationship between characteristics of specific habitats and the organisms that live there.

Content Standard: Describe and analyze diversity of species, natural selection, and adaptations.

Area: Benchmark 2 (Grade 5)

Standard: Describe how adaptations help a species survive.

Content Strand: SCIENTIFIC INQUIRY: Use interrelated processes to pose questions and investigate the physical and living world.

Common Curriculum Goal: COLLECTING AND PRESENTING DATA: Conduct procedures to collect, organize, and display scientific data.

Content Standard: Collect, organize, and display scientific data.

Area: Benchmark 2 (Grade 5)

Standard: Collect, organize, and summarize data from investigations.