

Habitat Wonderers

Relevant Science Standards for Grades K-1

EALR 1: Systems (Part-Whole Relationships)

K-1 SYS A Living and nonliving things are made of parts

Ss learn about animal adaptations (“parts” of an animal) that help the animals survive in their habitat.

B Some objects can easily be taken apart and put back together again while other objects cannot be taken apart without damaging them

Ss learn that an animal cannot survive without its adaptations.

EALR 2: Inquiry (Making Observations)

K-1 INQ A Question and Investigate

Ss observe aquatic macroinvertebrates and try to figure out what adaptations help them survive in their habitat.

EALR 4: Life Science

K-1 LS1 Structures and Functions of Living Plants (Plant and Animal Parts)

A The human body is made up of various external parts

Ss look at human body parts in terms of specific adaptations that help them survive.

B All plants and animals have various external parts.

Ss relate animal adaptations to external body parts (e.g. fins for swimming in the water).

C The parts of a plant or animal appear different under a magnifier compared with the unaided eye.

Ss are shown macroinvertebrates (that they caught earlier) magnified by a videomicroscope and projected onto a screen.

D Different animals use their body parts in different ways

Ss learn how different body parts are used to help creatures survive.

E Animals have various ways of obtaining food and water.

Ss compare different adaptations and not how they are used to get food.

K-1 LS2 Ecosystems (Habitats)

A There are different kinds of habitats where many different plants and animals live together

Ss explore several different habitats and discuss how plant and animal life varies between them. Ss also relate animal adaptations to the habitat the animal lives in.

B A habitat supports the growth of many different plants and animals by meeting their basic needs of food, water, and shelter

Ss learn that habitats have sunlight, water, air, and earth.

C Humans can change natural habitats in ways that can be helpful or harmful for the plants and animals that live there.

Ss discuss ways to be careful of the plants and animals in the nature park they are walking through.

Soil Adventurers

Relevant Science Standards for Grades K-1

EALR 1: Systems (Part-Whole Relationships)

K-1 SYS A Living and nonliving things are made of parts

- Ss learn that soil is made up of living and nonliving things.

EALR 2: Inquiry (Making Observations)

K-1 INQ A Question and Investigate

- Ss investigate soil samples and the nature park in search of the creatures and things that make soil.
- Ss observe and compare soil samples from different locations.

C Explain and Infer

- Ss discuss how different soils affect the plants and animals in their habitat.

D Communicate

- Ss listen to and use the observations made by other students.

EALR 4: Earth and Space Science (Earth Systems, Structures, & Processes)

K-1 ES2 B Earth materials include solid rocks, sand, soil, and water.

- Ss describe soil samples in terms of their wetness, smell, color, and feel.

K-1 ES2 C Some Earth objects are made of more than one material.

- Ss observe and describe the different layers in soil and the variety of things found in their soil sample.

EALR 4: Life Science

K-1 LS1 Structures and Functions of Living Organisms (Plant and Animal Parts)

B All plants and animals have various external parts.

- Ss identify the external parts of various soil macroinvertebrates, noting the differing number of legs and other features.

C The parts of a plant or animal appear different under a magnifier compared with the unaided eye.

- Ss are shown macroinvertebrates (that they caught earlier) magnified by a videomicroscope and projected onto a screen.

K-1 LS2 Ecosystems (Habitats)

A There are different kinds of habitats where many different plants and animals live together

- Ss explore several different types of soil (in different habitats) and discuss how plant and animal life varies between them. Ss also relate soil type to the habitat a plant lives in.

B A habitat supports the growth of many different plants and animals by meeting their basic needs of food, water, and shelter

- Ss learn that habitats have sunlight, water, air, and earth.

C Humans can change natural habitats in ways that can be helpful or harmful for the plants and animals that live there.

- Ss discuss ways to be careful of the plants and animals in the nature park they are walking through.

K-1 LS3 Biological Evolution (Classifying Plants and Animals)

A Some things are alive and others are not.

- Ss divide soil makers into living and nonliving categories.

C External features of animals and plants are used to classify them into groups.

- Ss learn how soil macroinvertebrates can be divided into different groups based on their number of legs and/or other features (e.g. millipedes, insects, arachnids, and gastropods).

Relevant Science Standards for Grades 2-3

EALR 2: Inquiry (Conducting Investigations)

2-3 INQ C Infer

- Ss distinguish between observations and inferences when observing differences in soil and inferring causes for the differences.

D Investigate

- Ss use magnifiers and a soil core sampler to aid in their observations of macroinvertebrates and soil.

EALR 4: Earth and Space Science

2-3 ES2 Earth Systems, Structures, and Processes (Water and Weather)

A Water plays an essential role in Earth systems, including shaping landforms.

- Ss identify water as a nonliving soil maker.

EALR 4: Life Science

2-3 LS1 Structures and Functions of Living Organisms (Life Cycles)

A Plants have life cycles.

- Ss explore the life cycle of a tree (including sprouting, becoming full grown, dying, and being decomposed into soil that future trees can use).

2-3 LS2 Ecosystems (Changes in Ecosystems)

A Ecosystems Support all life on the planet, including human life.

- Ss learn that humans can not survive without soil.

D Humans impact ecosystems in both positive and negative ways.

- Ss discuss ways they can avoid negative impacts on the nature park as they travel through it.

Wetland Naturalists

Relevant Science Standards for Grades 2-3

EALR 2: Inquiry (Conducting Investigations)

2-3 INQ A Question

- Ss make observations about differences between a forest habitat and a wetland habitat.

2-3 INQ C Infer

- Ss use their observations about the wetlands to make inferences about what is causing the differences between forest and wetland habitats.

2-3 INQ D Investigate

- Ss use magnifiers to make more precise observations as they draw a picture of an aquatic macroinvertebrates that they captured.

EALR 4: Life Science

2-3 LS1 Structures and Functions of Living Organisms (Life Cycles)

B Animals have life cycles.

- Ss observe aquatic macroinvertebrates in different life cycle stages and learn about complete and incomplete metamorphosis as two different kinds of life cycles.

2-3 LS2 Ecosystems (Changes in Ecosystems)

A Ecosystems support all life.

- Ss learn five ways that a Wetland Ecosystem benefits humans and animals.

B All Ecosystems change over time as a result of natural causes.

D Humans impact ecosystems in both positive and negative ways.

- Ss do a learning activity in which various natural and human changes impact the wetland ecosystem that migratory birds need to survive. The Ss decide with each change whether it has a positive or negative impact on the wetland.

Salmon Stewards

Relevant Science Standards for Grades 4-5

EALR 2: Inquiry (Planning Investigations)

4-5 INQ A, B, D, & G, H, I

Ss discuss an investigative question (whether the Mercer Slough is a good place for salmon) and make an initial hypothesis as to the answer. Then they discuss options for investigating the question and make a plan (including a field study, tolerance level investigation, and pH testing) for their study. Over the course of the day they gather and record data. At the end of the day, they revisit their data and discuss whether their hypotheses was correct or needs to be changed.

EALR 4: Life Science

4-5 LS1 Structures and Functions of Living Organisms (Structures & Functions)

A Plants and Animals can be sorted according to their structures and behaviors.

Ss learn how to use a dichotomous key and use one to identify aquatic macroinvertebrates.

B Each Animal has different structures and behaviors that serve different functions.

Ss relate salmon stages and behaviors to the needs of salmon at different points in their life cycle.

4-5 LS2 Ecosystems (Food Webs)

A ...Plants and animals depend on one another and the nonliving resources in their ecosystem to survive.

Ss learn ways that salmon habitat and food sources are affected by wetland plants, animals and soils.

F People affect ecosystems both positively and negatively.

Ss discuss the impact of human pollution on streams and salmon.

Ecosystem Explorers

Relevant Science Standards for Grades 4-5

EALR 1: Systems (Complex Systems)

4-5 SYS A A system is a group of interacting parts that form a whole.

- Ss learn that an ecosystem is an example of a system made up of smaller parts (the plants, animals, & environment contained within it).

EALR 4: Energy: Transfer, Transformation and Conservation

4-5 PS3 B Energy can be transferred from one place to another

- Ss explore the flow of energy through ecosystems.

EALR 4: Life Science

4-5 LS1 Structures and Functions of Living Organisms (Structures & Functions)

A Plants and Animals can be sorted according to their structures and behaviors.

- Ss sort organisms according to their trophic level behavior (producer, consumer, tertiary consumer, and decomposer).

4-5 LS2 Ecosystems (Food Webs)

A ...Plants and animals depend on one another and the nonliving resources in their ecosystem to survive.

- Ss identify the living and non living parts of several ecosystems and explore how the plants and animals in them depend upon each other to survive.

B Plants make their own food using energy from the sun. Animals get food by eating plants. ...

- Ss discuss the flow of energy through an ecosystem and observe the changes in population numbers at different trophic levels.

C Plants and animals are related in food webs with producers, consumers, and decomposers.

- Ss create a food web incorporating creatures they found during their field study and/or aquatic macroinvertebrate investigation.
- Students examine the differing niches of producers, consumers, and decomposer aquatic organisms.

D Ecosystems can change slowly or rapidly.

- Ss discuss the ways that impacts can spread through a food web.

Relevant Science Standards for Grades 6-8

EALR 1: Systems (Inputs, Outputs, Boundaries and Flows)

6-8 SYS B The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.

- Ss explore several different ecosystems that are part of a larger ecosystem (Bog, Forests, Pond, & Meadows contained within the Mercer Slough Nature Park).

EALR 4: Life Science (Ecosystems)

6-8 LS2 A An ecosystem consists of all the populations living within a specific area and the nonliving factors they interact with. One geographical area may contain many

ecosystems.

Ss explore a variety of ecosystems.

B Energy flows through an ecosystem from producers to consumers to decomposers. The relationships can be shown for specific populations on a food web.

Ss investigate quantities of aquatic and terrestrial organisms at each trophic level and work together to create a food web that illustrates the connections between the organisms.

C The major source of energy for ecosystems on Earth's surface is sunlight.

Ss learn that producers gain their energy from the sun and discuss the impact that removing the sun would have on a food web.

D Ecosystems are continuously changing.

Ss predict the impact on an ecosystem that could occur with loss of individual species.

Wetland Ecologists

Relevant Science Standards for Grades 6-8

EALR 1: Systems (Inputs, Outputs, Boundaries and Flows)

6-8 SYS A Any System may be thought of as containing subsystem and as being a subsystem of a larger system.

Ss learn that an ecosystem has subsystems within it and is part of a larger system.

B The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.

Ss explore several different ecosystems that are part of a larger ecosystem. Ss delineate between wetlands and non-wetlands as well as different types of wetlands.

EALR 2: Inquiry (Questioning and Investigating)

6-8 INQ A Scientific Inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.

Ss discuss a general investigative question (whether the Mercer Slough is “healthy”) and refine and narrow the question to determine specific components that can be investigated further.

B Different kinds of questions suggest different kinds of scientific investigations.

Ss make a hypothesis about the health of the wetlands. They discuss options for investigating their question and make a plan (including a field study, tolerance level observation, and ph testing) for their study. Over the course of the day they gather and record data with other students.

D It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.

At the end of the day, the Ss revisit the data from their investigation. They review their results and discuss whether their original hypothesis was correct. Finally they come to a conclusion as to the health of the wetland.

EALR 4: Life Science (Ecosystems)

6-8 LS2 D Ecosystems are continuously changing. Causes of these changes include nonliving factors such as the..., as well as living factors such as the disappearance of species through disease, predation, and overuse of resources or the introduction of new species.

Ss learn that biodiversity is important to the health of an ecosystems and that some species can not survive in polluted environments. Then they seek out terrestrial and aquatic biodiversity and look at the tolerance levels of aquatic macroinvertebrates that they find.

EALR 4: Matter: Properties and Change (Atoms and Molecules)

6-8 PS2 C All matter is made of atoms. Matter made of only one type of atom is called an element.

Ss learn that Hydrogen ions affect acidity and Oxygen is an important element for aquatic creatures as well as terrestrial ones. Then they measure pH and Dissolved Oxygen in water samples.