

# Whiskeytown Environmental School

## Clear Creek Field Experience for First Grade

### Aquatic and Riparian Habitats

Revised Fall 2008

#### **Unit Overview:**

In this unit, students will be introduced to the concept of a habitat as an area that has everything that a plant or animal needs to survive. They will record their observations and data with pictures, numbers, and/or a bar graph.

#### **Classroom Lesson 1: *Everybody Needs A Home***

Through guided imagery and art, students express similarities and difference about the places where people, other animals and plants live.

#### **Classroom Lesson 2: *Tree Habitat Survey***

Students observe and record the living things they find on a tree and explain how the tree provides living things with what they need to survive. This outdoor activity will also help to develop the desired behaviors and skills necessary for the field trip.

#### **Classroom Lesson 3: *Dream A Stream***

As a pre-assessment activity, the class will create a mural of a stream.

#### **Field Lab Lesson 4: (Taught by WES Staff at Clear Creek)**

Activity One: Riparian Habitat Survey

Activity Two: Stream Habitat Survey

Activity Three: Habitat Hide-out

Activity Four: Caring for Aquatic Habitats – Water Conservation

#### **Classroom Lesson 5: Follow Up/ Post Assessment**

Students will demonstrate their knowledge of the elements of an aquatic habitat by adding to the mural in their classroom. This will be followed by a lesson on water conservation in the classroom.

# Science Content Standards – First Grade

State of California, State Board of Education

## Life Science

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept, students know the following:

- a. Different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.
- b. Plants and animals both need water; animals need food, and plants need light.
- c. Animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.

## Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content of the other three strands, students should develop their own questions and perform investigations.

Students will do the following:

- a. Draw pictures that portray some features of the thing being described.
- b. Record observations and data with pictures, numbers, and/or written statements
- c. Record observations on a bar graph

# My Science Journal

Name \_\_\_\_\_

# Classroom Lesson 1: *Everybody Needs A Home*

## Objective

Through guided imagery and art, students express similarities and differences about the places where people, other animals, and plants live.

## CA Science Standards – 2a, 2b, 2c, 4a

### Time/Setting

30 minutes; Classroom

### Materials

Pictures of animal, plant, and human homes  
Paper for drawing  
Crayons

### Subjects

Language art, art, science

### Vocabulary

Survival, survival needs, habitat, home

## Background Information

Humans, other animals (including pets, farm animals, and wild animals), and plants share basic survival needs, specifically food, water, shelter, and space. Every living thing needs a home but that home is not just a “house” like people live in. Homes for animals are often big areas and outdoors; plant “homes” are areas that provide the right amount of sunlight, water, and soil to meet the needs of a particular plant. The scientific name for an animal or plant’s home is “habitat.” A habitat has everything an animal or plant needs to survive.

Humans build houses, apartments, trailers, and other kinds of shelter in which to live. Animals don’t need a home that looks like a house, but they do need some kind of shelter. Animal shelter might be underground, in a bush, among rocks, or inside the bark of a tree.

The main purpose of this activity is for students to understand that everybody needs a home. “Home” is bigger than a “house” and is more like a “neighborhood” that provides everything needed for survival.

## Advanced Preparation

Gather pictures of homes of people, other animals, and plants from calendars, books, or magazines. You might have students help you collect the pictures.

## Procedure

1. Take your students on imaginary excursions, using guided imagery. Have the students relax and close their eyes. Then, guide them by describing a scene, like this (ellipses indicate a pause): “Close your eyes and imagine that you are a small bird...Think about what it feels like to be a bird... You have feathers all over your body... You have a beak... Imagine that you don’t have arms but you have wings... You are flying among trees and bushes... You are looking for something to eat... You spot something delicious on the bush so you land and eat it... Think about what it is you are eating... Now imagine that you are thirsty and you go to look for water... Imagine that you find a puddle of water in a field and you drink from it... Now imagine that you are going back to your bird home... Think about what your bird home looks like and where it is... Make yourself comfortable in your home... When you are ready, open your eyes. “ Ask students about their experiences. “What did it feel like to be a bird? Where was the bird’s home you imagined? What was it like? How did you get your water? How did you get your food?”

2. Have students close their eyes again and imagine that they are a flower. “Your petals and leaves are reaching toward the sun... Your roots are reaching deep into the ground... Think about what it feels like to be a flower... Where you live is your home... Think about what it feels like in your flower home... Think about how the ground around you feels... Look around you... Are there other plants or animals living near you... Now imagine that you are thirsty... Imagine that your roots reach for water in the ground and through you roots you drink as much water as you need... Now imagine that you are hungry... Imagine that you reach up for the sun with your leaves and with power from the sun your leaves are able to make all the food you need... When you are ready, open your eyes.” Ask students about their experiences. “What did it feel like to be a flower? Where was your flower home? What was it like? How did you get your water? How did you get your food?”
3. Have students close their eyes and envision their own home. “Imagine that you are just getting home from school... Imagine walking through the door and into your house... Think about what it feels like to be home... Imagine that you are hungry and that you look for something to eat... Now imagine that after you snack you are thirsty... You get a glass of water... After you have finished your glass of water, make yourself comfortable in a chair... When you are ready, open your eyes.” Ask students about their experiences. “What does it feel like to be in your home? How do you get your water? How do you get your food?”
4. Ask students to point out similarities and differences among the animal, plant, and human homes they have envisioned. Discuss how every living thing needs food, water, shelter, and space in its home. Emphasize that although homes are different, everyone needs a home.
5. Show students pictures of different places where people, other animals, and plants live. Talk about how “home” is actually bigger than “house”; in some ways it is more like “neighborhood.” The neighborhood where all of the survival needs of an animal are met is called a “habitat.”
6. Ask students to draw a picture of where they live. Have students include in their drawings the things they need in order to live where they do; for example, a place to obtain and keep food, a place to sleep, and a place to play. Ask students to point out the things they need to live that are included in their drawings.

### **Discussion Questions**

- Why do people need homes?
- What do homes provide for you?
- What do homes protect you from?
- Why do animals need homes?
- What do homes provide for animals?
- What do homes protect animals from?

### **Evaluation**

Give students cut out pictures of animals from magazines or calendars and pictures of different habitats (such as forests, grasslands, oceans, deserts, and marshes). Have students match the animals with their habitats; for example, a camel in a desert, whales in the ocean, or a deer in the forest.

**Home Learning Suggestion**

Send a note home to parents asking them to spend 15 minutes with their children looking for places where animals live in their yard or neighborhood. Point out to parents that animals can be found in windowsills or in cracks of sidewalks. Be sure to stress to parents and students that they not disturb the animals or their homes. Next day in class discuss with students what they found and have them draw a picture of an animal home they discovered.

**Source of Activity**

*The California State Environmental Education Guide*

Carolie Sly, Coordinator

Alameda County Office of Education

313 West Winton Avenue

Hayward, CA 94544-01198

Adapted from *Project WILD*, "Everybody Needs a Home."

Boulder, Colo.:Western Regional Environmental Education Council, 1985.

# An Animal Home I Discovered

Draw a picture of the animal home you discovered near your home in the box below.



## Lesson 2: *Tree Habitat Survey*

### Objective

Students observe and record the living things they find on a tree and explain how the tree provides living things with what they need to survive.

### CA Science Standards –2a, 2b, 2c, 4a, 4b; optional - 4c

#### Time/Setting

30-45 minutes; outside area with several trees (school grounds or nearby park)

#### Materials

Butcher paper  
Crayon or marking pens  
One pencil per pair of students  
One data sheet for each pair of students  
One clipboard or hard writing surface for each pair of students  
One hand lens for each pair of students (optional)  
Construction paper (optional)

#### Subjects

Science, math, art

#### Vocabulary

Species, habitat

### Background Information

This activity allows students to look closely at a tree, which is one habitat that provides the things some animals and plants need to survive. A tree is the habitat of many tiny animals that spend their entire lives in the tree's leaves or bark. It can also be the habitat of plants that grow on tree trunks and branches, such as algae, moss, and lichen. Although larger animals like birds, squirrels, and raccoons collect nuts or fruit from trees for food or use branches for nesting or shelter, trees are only a part of their habitat. They go elsewhere to gather other food, hide from predators, and raise their young.

Many kinds of insects and other small bugs can be observed crawling on the tree bark and leaves. Oftentimes galls can be seen growing on leaves, stems, twigs, and other plant points. Galls are formed when a chemical excretion from a female insect or newly-hatched larvae is put onto the tree. The chemical causes the tree to grow a bulb around the larvae, keeping larvae safe from predators and giving them a food supply – the inside wall of the gall. Galls are most common on oak and willow trees.

Evidence of another type of insect larvae, called leaf miners, can be observed by looking carefully at leaves. Leaf miners cause leaves to have white or pale green spots that look like a winding path, fingerprint, or paint splatter. By holding the leaf up to the light, leaf miners can be seen inside. Leaf miners usually are the larvae of moths, flies, or beetles.

Borings in the bark, tent caterpillar nests, and bird and squirrel nests are other evidence of animals that live in trees. Leaves that have been chewed also indicate animals are present.

### Advanced Preparation

Make a copy of the data sheet that follows this lesson (*Kind of Animal/How Many*) for each pair of students. Inside the classroom, draw a large outline of a tree on butcher paper. Allow students to practice using the hand lens.

Ask students for suggestions on how to study living things without harming them. Use their suggestions to emphasize that care must be taken when studying plants and animals. Make sure students understand that plants and animals can be held only temporarily for observing,

and then should be returned unhurt to their original spot. Ask volunteers to act out the desired behavior for the class.

### **Procedure**

1. Introduce students to the activity by saying, “We have been studying our own habitat. We’ve looked at the kinds of animals that live in our habitat and at the different ways we get the things we need. Today we will be observing the plants and animals that live in a different habitat – a tree. A tree is a fairly small habitat compared to our own habitat, so to see the different things that live in it we will have to be very careful observers. We will pretend that we are on a safari. We must search in small nooks and look way up into the branches, underneath leaves, and around the tree trunk to find as many living things as we can.”
2. Pair students with partners and pass out data sheets and crayons. Explain to students that they will draw a picture of each kind of animal they see and next to the picture they will record the number of each kind of animal they observe.
3. Take the class to an outside area with several trees. Remind students to be careful not to harm the plants and animals they observe.
4. Assign each pair of students a tree to observe. Have students look for evidence of animal inhabitants (like insects, birds, and mammals). Students may use hand lenses for closer observation.
5. Inside the classroom, discuss with students their observations. Generate a list of the animals observed by students and help them label the pictures they drew. If you do not know an animal’s specific name, generic names like “brown bird” or “insect” are fine. Have the students draw onto pieces of paper the animals they found or cut out shapes from construction paper. Place the animals on the tree outline you have prepared so that they are in the same area they were found on the live tree.
6. **Option;** to support standard 4c, create a simple bar graph from the information the students collect. Put the name of the organisms (i.e. ant, brown bird, spider, moss, etc.) across the bottom of the graph. Put a small post-it note above the word “ant” for each ant observed, carefully placing them directly above one another so they form a column. Repeat the procedure for the other animals. If the post-its are lined up vertically and do not overlap, they will create a fairly accurate bar graph. A y-axis is not necessary with this type of graph, but it would be helpful to write the total at the top of each column (If 10 ants are found, there should be a column of 10 post-its with the number 10 written on the top post-it).

### **Discussion Questions**

What kinds of animals did you observe?

Which kinds of animals were most likely to be found in branches?

Which kinds of animals were found in or on the trunk of the tree?

Which animal did you observe the most of?

How were animals using the tree?

How does the tree help other living things get the things they need to survive?

Do you think the tree is being helped or harmed by the animals? Why do you think so?

Did you notice any plants living on the tree (like moss or lichen)?

### **Evaluation**

Have students draw a picture that shows one way in which a tree provides the survival needs of other living things. This can be included in their journal.

**Source of Activity**

*The California State Environmental Education Guide*

Carolie Sly, Coordinator

Alameda County Office of Education

313 West Winton Avenue

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Name \_\_\_\_\_

Activity \_\_\_\_\_

Kind of Animal

How Many?

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Kind of Animal	How Many?

# Tree Habitat Survey

**Draw a picture that shows one way in which a tree provides the survival needs of other living things.**

## Lesson Three: *Dream A Stream*

### Objective

Students create a mural of a stream as a preparation for the field lab. The mural will be used in a follow-up activity.

### CA Science Standards – 2a, 2b, 4a

#### Time/Setting

30-45 minutes; Classroom

#### Materials

Roll of butcher paper  
Crayons or markers

#### Subjects

Science, language arts, art

### Advanced Preparation

Have the butcher paper and markers ready so that there will not be too long a delay between the guided visualization and mural creation.

### Procedure

1. All the children should sit in a circle, close their eyes, and imagine themselves at a stream. What does it look like? Sound like? Each child should tell or write down an adjective to describe the imagined stream.
2. Sort the children into groups according to types of stream adjectives, such as fast-flowing, slow-moving, etc.
3. Roll out a long sheet of paper and have each group illustrate its stream on a section of it, forming one long stream with varying sections.
4. Ask the students to predict what plants or animals they might see in or near the creek. Make a list of their answers on the board or a large sheet of paper. Ask the students to describe how each plant/animal on their list would use the water in the creek.
5. Save the completed stream and animal/ plant predictions for a follow-up activity

### Source of Activity

*Hands-On Nature: Information and activities for Exploring the Environment with Children.* 1986.

Jenepher Lingelbach, Editor

Vermont Institute of Natural Science

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## Field Lab Lesson 4: (Taught by WES staff at Clear Creek)

### Objective:

#### \*\*\*\*SALMON\*\*\*\*

As the students do their observation of the stream in the second activity, ask them if they see any salmon. Discuss the habitat needs of salmon (clean and cold water, food and spawning gravel). Point out these features in the creek.

#### Time

20 minutes - Habitat Hideout

30 minutes - Riparian Survey/leaf rubbings

40 -50 minutes - Stream Survey

5 minutes - Water Conservation

#### Materials

Yellow rope cut in 25 ft lengths

Data sheets – 10 "Stream"; 10 "Riparian"; 20 "Life at the Creek" per class

Hand lenses

Blank Half sheets of paper for rubbings

Crayons and pencils to do the rubbings and/or record the data

Clipboards – enough for every 2 or 3 students

Two-way viewers

Large kick nets

Small nets

Ice cube trays (for sorting)

Tweezers

Boots

Stuffed animals - at least 10

**Read Aloud:** Eliza and the Dragonfly if timing is right

### Activity One – Habitat Hideout – 15/20 minutes

#### Advanced Preparation

Hide the stuffed animals on the path on the way to the creek. Try to hide some in an area with similar colors (moss, dead leaves) and don't forget the branches of the tree. For a change, ask the students to look for evidence of birds and hide feathers, nests, and eggs.

#### Procedure

1. As students walk along path, talk about what might be hiding in the trees/bushes.
2. Let the students observe.
3. Caution them about giving away the location of animals to the other groups.
- 4.

Bring the group together and discuss which animals were adapted to the habitat. Introduce the term "camouflage". Disguise for protection, food seeking.

## Activity Two - Riparian Plant Observation – 30 minutes

### Procedure

1. Lead the students to a common riparian plant (alder or willow) and let them observe it with hand lenses for 3 to 5 minutes. The plant should be large or there should be several of them so that each group has plenty of room. Discuss the adaptations necessary to live in the riparian zone (needs a lot of water, can survive floods).
2. Lead a discussion based on their observations.  
How do you think this plant might be used by animals?  
Did you see evidence of animals using it for food or shelter?  
Are there some animals that might use it and not leave any traces?
3. Leaf rubbings, willow and alder

## Activity Three – Stream Survey - 40 minutes

### Advanced Preparation

Use the data sheet labeled "Stream." Make sure each group of has the data sheet and a clipboard. Set up a white tube, two-way viewer, net, and clipboard for each group of students. Have ID keys available for reference. If the water is too cold, get the bugs ahead of time.

### Procedure

1. At each site set boundaries and discuss what is "OK" and "not OK." If the weather is warm enough, let the students help collect the insects from the stream. Have the students try to sort the animals into the ice cube trays. When they have put them all into the trays, model how they should record the information on their data sheet. They can either draw or use names in the first category. If they prefer to draw the insects, point out the number of legs, antennae, and other features.

## Activity Four - Water Conservation

Using the following questions, lead the students in a discussion about water conservation. Be sure to include salmon in the discussion.

How is water important to us? How do we use water?

How is water important to the plants and animals we saw today? How do they use it?

What happens if we use/waste too much and there isn't enough for the plants and animals?

How can we save/conserve water?

When you get back to your classroom, you will be learning how you can conserve water.

**Life at the Creek Worksheet:** Have the students draw a picture of three living things they saw today that share the water in Clear Creek. This picture will go in their journal.

## **Lesson Five: *Stream Mural Assessment and Classroom Water Conservation***

### **Activity One – *Stream Mural Assessment***

#### **Objective**

Students place the plant rubbings and pictures they created at Clear Creek on their classroom mural. They can also graph the insect data.

#### **CA Science Standards – 2a, 2b, 4b, Optional: 4c**

#### **Procedure**

1. Have the students recall the stream animals that were found on the field trip. List the animals and plants on the board. Compare this to the list they created before they visited the creek.+
2. The teacher can draw in large features (rocks, sun, clouds, trees, etc) on the stream mural and label these for the students.
3. Each student can draw and cut out an animal and a leaf/plant or they can cut up their data sheets, rubbings and pictures from the field trip.
4. When everyone is finished drawing or cutting, have one student at a time place his/her drawing or rubbing in the appropriate part of the stream mural. As the student places their picture on the mural, ask them to explain how their plant/animal uses the water in the creek.
5. **Option:** to support standard 4c, create a simple bar graph from the information the students collect. Put the name of the organisms (i.e. mayfly, caddis fly, worm, etc.) across the bottom of the graph. Put a small post-it note above the word “mayfly” for each mayfly observed, carefully placing them directly above one another so they form a column. Repeat the procedure for the other animals. If the post-its are lined up vertically and do not overlap, they will create a fairly accurate bar graph. A y-axis is not necessary with this type of graph, but it would be helpful to write the total at the top of each column (If 10 mayflies are found, there should be a column of 10 post-its with the number 10 written on the top post-it). If you have already done graphs in your classroom, use the same procedure for the stream data.

### **Optional - Activity Two – *Classroom Water Conservation***

#### **Objective**

During a week of charting classroom water use and monitoring their own behavior, students act to conserve water in the classroom.

#### **CA Science Standards – 2b, 4b, 4c**

#### **Time/Setting**

One 30 minute period, then 15 minutes a day on four consecutive days/ Classroom

#### **Materials**

Dishpan  
75 plastic party cups, eight ounces or larger  
Butcher paper or poster-sized graph paper  
Blue construction paper

#### **Subjects**

Science, math, social studies

#### **Vocabulary**

Water, conservation, reuse, waste, choice

### Background Information

Water is considered a renewable resource but it is also an overused resource. Large water projects divert huge quantities of water from a number of rivers around the state, frequently removing enough water to change or destroy the habitat for fish and other wildlife. The plants and animals that were observed in the aquatic and riparian habitats at Clear Creek will not survive if too much water is taken from the creek.

This activity emphasizes awareness of water waste and teaches students that they can make choices about their actions. For example, they can choose not to let the water run or choose to reuse wasted water.

To capture water that would normally go down the classroom sink, you need a dishpan or bucket that will fit under the faucet in the sink but still allow access to the water. To measure the captured water, use plastic party cups. After students have counted and graphed the day's catch, empty the cups and reuse them the next day.

Unless they have had concrete graphing experiences already, many young students will have difficulty understanding the meaning of the graph. Each day emphasize that the construction paper cups on the graph represent the real cups of water.

### Advanced Preparation

Make a graph on butcher paper similar to the one drawn below. Keep some extra butcher paper handy so that you can add another piece if needed. (You will probably be surprised at how much water is wasted.)

Cut rectangles 1" by 2" from construction paper to represent cups of water on the graph. Call your local water department to find out the source or sources of local water. Call the local waste water treatment facility to find out how waste water is treated.



### Procedure

1. Discuss the importance of water for all living things (plants, fish, people, and other animals). Talk about how water is used, such as for drinking, for cleaning, and for transportation.
2. Remind students that one of the ways to help care for the environment is not to waste. Ask students to think about how they use water in the classroom. "So you think you may be wasting water? What are some ways you use water that could be considered wasteful?" Tell students that they will keep track of how much water is wasted in the classroom.
3. Demonstrate the system for capturing water in the pan. Have several students show how to capture water while getting a drink or washing their hands. Explain that at the end of the day

or whenever the pan is full, students will pour or scoop out the water into the plastic drinking cups. This way they can see how many cups of water were wasted each day. You may want to have students estimate at the beginning of the day how many cups of water will be wasted.

4. At the end of the day or whenever the pan is full, have several students help transfer water to the cups. Line up the cups so that everyone can see them and count how many there are. A student can graph the day's water use on the chart using the construction paper cups. (For example, if there are 50 cups at the end of the day, students need to put 50 pictures of cups on the graph.) Make sure the meaning of symbols on the graph is clear.
5. Ask students to think of ways to reduce water waste and to reuse the captured water (like watering indoor and outdoor plants, mixing up poster paint, or washing paint brushes). Emphasize to students that they should not drink the water or use it for any classroom pets. (You may want to discuss possible health hazard of drinking waste water.)
6. At some point during the week, let students know where their water comes from and where waste water (from sinks, toilets, agricultural use, and industry) goes.
7. As the week progresses and the class is wasting less water, point out to students that they are wasting less water because they are making choices about how to use water and are reusing water. Ask students how they think the environment benefits when they waste less water and when they reuse it.

### **Discussion Questions**

What are some of the ways we use water?

How do plants and other animals use water?

Could it be bad for the environment (plants, animals, rivers, etc) if we waste a lot of water?

How do we sometimes waste water in our classroom?

What are some ways we can use less water in our classroom?

Did you make some choices that helped the class use less water?

Why did we use less or more water today?

Where does the water go when it goes down the drain?

Does it really go "away?"

Is water clean when it goes down the drain?

How might this dirty water harm the environment?

What do we use water for at home?

How is water sometimes wasted at home?

What could you do to waste less water at home?

### **Evaluation**

Ask students to name three ways they sometimes waste water and three ways they can conserve or use less water.

### **Source of Activity**

*The California State Environmental Education Guide*

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