Habitat Pen Pals

GRADES
2-6

TIME
1 hour

OBJECTIVE
Students will explain the relationship between animals and their habitats, and identify relationships between organisms within habitats.

METHOD
Students will learn about the four major habitats of Turnbull National Wildlife Refuge and Northeast Washington/North Idaho. Students will come up with animals that are specific to each of the habitats and some that are found in more than one habitat. Students become animals and write a letter to a pen pal about themselves and their habitat. Letter recipients have to guess the identity of their pen pal.

VOCABULARY
forest, wetland, grassland, riparian area, habitat

MATERIALS
pictures of the 4 different habitats; pictures of native NW animals and plants; easel flip chart or whiteboard; markers; reference books (insect, fish, bird, mammal, reptile/amphibian, tree, wildflower); small slips of paper with 4 habitats on them and a hat or a sack to draw lots out of

BACKGROUND
A habitat is defined as the place where a living organism normally finds its food, water, shelter and sufficient space to live and care for their young (6). Habitats are characterized by dominant vegetation types, climate and geological features. Some species are adapted to living in only one kind of habitat, while others use different habitats depending on time of day or season. In the Inland Northwest and at Turnbull National Wildlife Refuge, we have four major habitats (3).

The first habitat is the forests. Turnbull's forests are made of ponderosa pine *(Pinus ponderosa)*. Ponderosa pine is the most abundant and widely distributed pine in the West (1). It has many amazing adaptations that help it achieve this honor. Starting from the bottom, ponderosa has a deep, water-seeking taproot that can go over 30 feet straight down and spreading, shallow roots that extend out 100 feet or more from the trunk. The root system allows it to colonize very dry and rocky soils (5). Ponderosa bark is very thick on older trees. This is fire-resistant insulation. Without periodic fires, stands of ponderosa pine become overcrowded and overloaded with debris such as needles and twigs. Fire keeps ponderosa forests healthy and open so that they can support an understory of grasses, forbs and shrubs that shelter and feed wildlife. Ponderosa pine is a rapidly growing, sun-loving species. The seeds require sun to germinate and flourish, and do well in a recently burned seedbed (1). Ponderosa needles (leaves) are very long, up to 10 inches and come in little bundles of three that form tufts or brooms at the ends of the branches. Ponderosa pine needles can withstand tremendous heat and subzero temperatures (5).

Ponderosa pine is a great provider for many forms of life. Ponderosa pine nuts are an important source of nourishment to nuthatches, red squirrels, flying squirrels and chipmunks (2,7). The needles are one of the chosen foods of pine white butterfly larvae (4). Porcupines eat the sugary cambium just below the bark. Deer and elk browse on young ponderosas, and mice and voles feed on their cambium. Bats often roost by day in dead tops, cracks in the bark, or under loose bark that is shedding off of dead pines (2). Dead treetops provide nesting sites for raptors (7). Ponderosa pine supplies a support for many species of lichen. These examples are among the many direct interactions ponderosa pine has with certain organisms. However, ponderosa pines, and the other evergreens that occur as you go further north, create a habitat that many animals need.

Animals that call the forest habitat home for a significant portion of their lives include porcupines, wandering shrews, ruffed grouse, woodpeckers, ravens, nuthatches, chickadees, brown creepers, juncos, pine siskins, western tanager, kinglets, owls, white-tailed deer, coyotes, bobcats, cougars, black bear, raccoon, bobcats, woodrats, red squirrel, flying squirrel, western blue-tailed skink and a host of beetles, butterflies, moths, ants, wasps, bees and flies (1,2,3,4,7).

The next type of habitat to recognize is the wetland. People have different words for different sorts of wetlands. There are many types of wetlands including bogs, fens, marshes, ponds and swamps. They differ from rivers and streams because they have, at least seasonally, waterlogged soils and standing water. Wetlands stay wet for any number of reasons: they are in a low spot that fills up by rain, they are fed from below by groundwater that is close to the surface, they are near a larger body of water that floods its banks periodically, or made by humans or beavers obstructing normal water flow. Wetlands are often drained so that the land may be put to "good use" in development or agriculture. This, however is a grave mistake! Wetlands slow water down allowing it to return to the water table instead of running off, causing erosion, water contamination and flooding (8).

Turnbull's wetlands depend on precipitation to fill them. They are at the mercy of drought and flood to determine their water levels. They host two major species of emergent plants along their shallows and banks: cattails *(Typha latifolia)* and hardstem bulrush *(Scirpus acutus)*. These emergents provide vital cover, shelter and food to many waterfowl and songbirds. Growing in the wetlands are many species of aquatic plants, such as sago pondweed *(Potomogeton pectinatus)*, mare's-tail *(Hippuris vulgaris)* and duckweeds *(Lemna sp.)*. These provide food, cover and shelter to the numerous species of aquatic invertebrates found in wetlands: crayfish, scuds, backswimmers, giant pond snails, predacious diving beetles, giant water assassins, juvenile dragonflies and mayfly larvae among them (3).

Animals that call a wetland habitat home for a significant portion of their lives include ducks, geese, swans, frogs, salamanders, western painted turtles, garter snakes, shore birds, great blue herons, American bitterns, kingfishers, grebes, northern harriers, yellow-headed blackbirds, red-winged blackbirds, marsh wrens, common yellowthroats, beavers, muskrats, moose, raccoon, mink and otter (2,3,7,8).

The third habitat is grasslands. Grasses, forbs, and wildflowers dominate grasslands. Turnbull's grasslands are where the Native Americans of the area came to harvest camas bulbs *(Camassia quamash)*, bitterroot *(Lewisia rediviva)*, biscuitroot or cous *(Lomatium sp.)*, wild onions *(Allium sp.)* and arrowleaf balsamroot *(Balsamorhiza sagittata)*. These were all important staples in the

diets of the Spokan, Kalispel, Nez Perce, Coeur d'Alene and Colville Tribes. These people would also bring their horses to the grasslands to graze. The most common native grasses at Turnbull are idaho fescue *(Festuca idahoensis)* and bluebunch wheatgrass *(Agropyron spicatum)* (3).

Grasslands are the preferred habitat for mice, voles, pocket gophers, Columbian ground squirrels, yellow-bellied marmots, badgers, coyotes, mule and white-tailed deer, elk, prairie ringlet butterflies, grasshoppers, magpies, western meadowlarks, western bluebirds, shrikes, kingbirds, short-eared owls and barn owls. Raptors and aerial insectivores like common nighthawks and swallows often hunt in grasslands. Also, many dabbling ducks nest in grasslands within 100 feet of water (2,3,4,7).

The final habitat we will take a look at is the riparian zone. Riparian areas border lakes, wetlands, stream and rivers where the soil remains moist most of the time. These areas are transition zones between water and forest or grassland habitats. They contain plant species that won't be found anywhere else like quaking aspen *(Populus tremuloides)*, red-osier dogwood *(Cornus stolonifera)*, willows *(Salix sp.)*, black hawthorn *(Crataegus douglassi)*, chokecherry *(Prunus virginiana)* and cow parsnip *(Heracleum lanatum)*. Riparian habitat provides critical nesting sites for cavity nesting and canopy nesting birds. They also shade the water that they border, keeping water temperatures cool and stable. Roots of riparian vegetation hold soil in place and prevent bank erosion (3,8).

Riparian habitat is used by moose, elk and deer who browse on the leaves, buds, shoots and bark of the shrubs and aspen. It is also the hunting grounds of river otters, weasels and mink. Riparian areas are also needed by Pacific chorus frogs, black bears, bobcats, skunks, raccoons, wood ducks, owls, kingfishers, osprey, bald eagles, and numerous butterflies and songbirds (2,3,4,7).

PROCEDURE

1. Have the students think about some nearby natural areas. Have them describe and classify these areas. Write these habitats on the board as the students brainstorm them.
2. Explain that each of these areas make up all or part of an animal's habitat. Ask the students if they know what habitat is. Once habitat has been defined as the place where an animal lives, and where it takes care of finding its own food, water, shelter, mates and space, describe the four major habitat types. Use the pictures of these habitats while you talk about them and hang them up on the board where everyone can see them. If the children are older, talk about a few of the plants found in these habitats using visuals again. Explain how climate and soil conditions affect what lives and grows in different habitats.
3. As you describe each habitat, ask the children what species of animals depend upon them most. Record the names of the animals below each habitat picture. Ask questions as to when you would find a particular animal in a certain habitat. What is the animal doing in that habitat? Does it always stay there? Does it depend on the season or time of day? How is this animal affecting the living (biotic) and nonliving (abiotic) components of that habitat?
4. Have each student pick one of the habitat slips out of the hat.
5. Tell the students to choose one animal from the lists that you all made together that lives in the habitat that they drew. They are to become this animal. Explain that they, as their animals, will be writing a letter to another "pen pal" animal.
6. Write the following questions and statements on the board, or any questions you like:

   What's the weather like in your habitat?

What does your habitat look like?
What are some of the other animals and plants that share your habitat with you?
What do you eat and where do you find food and shelter in your habitat?
What is unique about your habitat?

7. Their letters should at least answer these questions, but they can add as much detail as they want. Show them how to use the reference books and field guides to research their animal.
8. When everyone is finished writing, partner the children up as "pen pals", but make sure that they keep their identities and habitats secret!
9. Have "pen pals" exchange and read each other's letters. If someone is having a hard time discovering the identity and habitat of their "pen pal", then have them share their letter with the class and get everyone's opinion.

WRAP-UP

Review what habitat is and the four habitats of Turnbull National Wildlife Refuge and the Inland Northwest. Ask about any interesting facts that students would like to share about their animal or their pen pal animal that they learned. Collect the letters and review for creativity and accuracy of facts. This could be the jump-off activity to an entire report on this animal and it's habitat.