

INTRODUCTION



- Before beginning the unit, photocopy the student notes onto overhead transparencies. These notes convey much of the knowledge-based content of the unit. (Teachers not wanting to use the overhead projector can simply write the notes on the board.)
- Certain pages of the notes (especially pages with detailed drawings) can simply be photocopied and given to the students to paste into their notebooks.
- Words important to the unit are in ***bold print*** throughout the notes.

UNIT OVERVIEW



Realizing the importance and fragility of the world's ecosystems is critical for today's student. Acid rain, global warming, the endangerment and extinction of a variety of plants and animals are real threats to our very survival. This unit takes a close look at the different habitats that make up the world's ecosystems, and the components of these habitats that make them unique. The unit also examines aspects such as the adaptation of plants and animals to change, and the infringement of *civilization*. It is hoped that students will not only gain a better understanding of the world they live in, but may also be more concerned with protecting the fragile environment of which we are all a part of.

STUDENT ASSIGNMENT AND ACTIVITIES

1. **What Is A Habitat?** - *A Home For Everything* activity
2. **Mini Habitats** - *Mini Habitats* project
- *Desert Habitat Rummy* game
3. **Producers And Consumers** - *How Plants Breathe* activity
- *Producer, Consumer or Decomposer* activity
4. **Photosynthesis** - *A Demonstration of Photosynthesis* experiment
- *Crossword Puzzle* activity
5. **How Animals Get Food** - *Excuse Me, Are You Dangerous?* activity
6. **Food Chains** - *Food Chain Mobile*
- *The Food Web Game*

DESIGNING A HABITAT

Objective: Students will identify the components of habitat that are essential for animals to survive in a mini habitat, like the ones listed in the student notes, "Mini Habitats". They will then put together their own simple mini habitat.

Duration: Either in class (2 - 45 minutes periods), or a project to do after school.


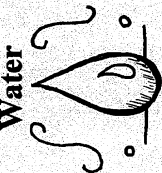
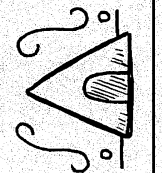
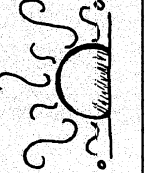
Group Size: Groups of 2 - 4 students. Can be modified to accommodate different numbers.

Background: As we have seen in the previous study sheet, habitats can vary greatly, but they all contain the essential elements for creatures to survive - food, shelter, air, water and space - in a suitable arrangement. Concern for the physical requirements of animals must go beyond minimum survival needs. Attention should be given to the animals' comfort, creating conditions as similar to those in their natural habitats as possible. It will probably be necessary for the students to research more information on the particular habitat they choose to create, to ensure (as much as possible) not only the survival of their creatures, but their comfort as well. If your mini habitat isn't doing well, be sure to return it to the outdoors. All creatures should be returned to their original homes once you've finished watching them.

Your task!

Working in groups of three or four students, create a mini habitat. The mini habitat can be one of the habitats from your student notes, "Mini Habitats", or another of your choosing. Be sure to investigate what will be necessary to include in your habitat and what is essential to making sure the life forms survive.

HABITAT INFORMATION CHART

	Whiptail Lizard	Javelina	Mountain Lion	Spade Toad	Road-runner	Red-tailed Hawk
Food 	Insects	Cactus fruits, roots, prickly pear pads, grubs, bird eggs	Javelina, deer, skunks, rabbits, other small mammals	Insects	Lizards, insects, small snakes	Rodents, birds, snakes
Water 	Adapted to minimum water use	Any available water source	Any available water source	Ephemeral pools	Any available water source	Any available water source
Shelter 	Rock crevices	Digs out bed under shrubs along arroyos	Rock caves for dens (biting only), dense shrubbery	Burrows in mud.	Underbrush	Trees, rocky cliffs
Space 	Desert flats, Rocky hillsides	Desert, mountains, riparian zone	Desert, mountains, riparian zone	Desert, flood plains, arroyos	Desert flats, riparian zone	Desert, mountains, riparian zone

HOW PLANTS BREATHE

Breathing is as important for a plant as it is for people. To demonstrate this, apply a thin coat of petroleum jelly to the bottom surface of a leaf from a living plant. Next, apply a thin coat to the top surface of another leaf. Leave the coatings in place for a day or two.

After a couple of days examine both leaves. You should see that the leaf with the petroleum jelly on the bottom surface is dying.

Tiny air holes called *stomata* (little mouths), so small that they can only be seen with a microscope, are on the underside of the leaf. These holes are valves that open and close to bring in air and to give off water. The stomata usually open in daylight and close in darkness. There are many thousands to a square inch of leaf surface. The petroleum jelly sealed the holes so that the leaf could no longer breathe and thus started to die.

Some leaves, however, do have their stomata in their upper surfaces (water lily), because the lower surface is often in the water.



A DEMONSTRATION OF PHOTOSYNTHESIS AND TRANSPIRATION

Objective: Students will examine the effect that light and air has on green plants.

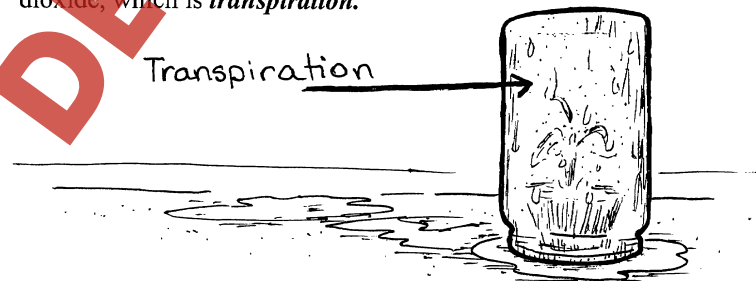
Materials: two planting containers
seeds (lima beans, peas, broad beans...)
soil
a dark area and a bright area
a glass bottle or jar



Method: Give the seeds a head start by soaking them in water overnight. Have the class plant a few seeds in each container. Place one container in a dark place and the other in the sunlight (i.e. by a window). Ask students to **predict** and **record** what they believe will happen to both sets of seeds. Have them consider what might happen to the seeds both above and below the soil. Keep the seeds in their places for a little over a week, watering them when the soil gets dry. At the end of the week, remove the seed from the dark place and compare it to the one placed in the bright place. Ask students to record what they see. Were their predictions correct?

Separate one seedling from each container and compare the root systems. Ask students to record what they see. Were their predictions correct? Discuss with the class the reason for the differences. Explain *photosynthesis* (Simple definition: *plant using light to make food for itself*). Place the rest of the unhealthy seedlings in the bright place, record any changes. Place the healthy seedlings in bright place with a clear bottle or jar on top of them.

Overnight, condensation will collect on the inside of the bottle or jar. This is the water vapor that is emitted by the plant when it exchanges oxygen for carbon dioxide, which is *transpiration*.



PRODUCER, CONSUMER OR DECOMPOSER?

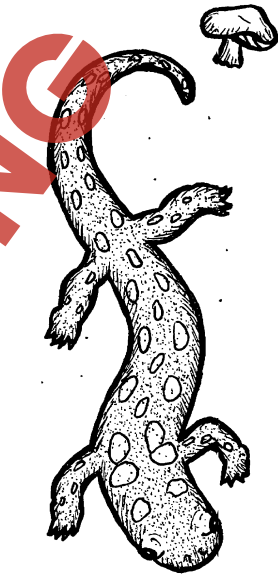


Name: _____



Classify the following as either a **producer**, **consumer** or **decomposer**. You may have to investigate one or two of them further before answering.

1. Earthworm _____
2. Weeping willow _____
3. Salamander _____
4. Dragonfly _____
5. Mushroom _____
6. Mold _____
7. Venus Flytrap _____
8. Jack-in-the-Pulpit _____
9. Broad-billed Sapayoa _____
10. Mildew _____



Did You Know?

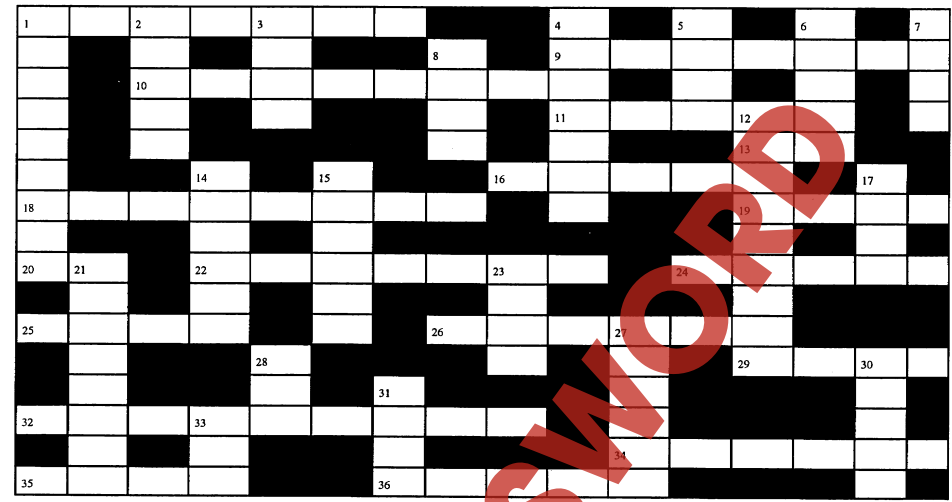
In nature, there are lots of animals responsible for recycling. Some animals eat dead animals or carrion. They are called **scavengers**. They help break down or reduce organic material into smaller pieces. These smaller pieces are then eaten by **decomposers**.

CROSSWORD PUZZLE



Name: _____

Before we get too far into the study of Habitats, it would be an excellent idea to get to know some of the words that we will encounter. For each clue, select the appropriate answer from the list of words in the box below to complete the crossword puzzle.



ACROSS

1. Place where a plant or animal normally lives
9. Grassland.
10. Creature that eats both meat and vegetation.
11. Rock-like deposit in the ocean.
16. To summarize.
18. A life form.
19. Feature of the desert during the day.
20. Extra Terrestrial.
22. An early frog.
24. Rather plump.
25. Schools of marine mammals.
26. Habitat of the Arctic.
29. A bird may make this.
32. A habitat is part of a larger _____.
34. A small mammal.
35. An aquatic organism.
36. To get up on.

DOWN

1. A creature which eats only plants.
2. Large ecosystem.
3. Canvas dwelling.
4. Type of creature.
5. An animal's den.
6. Main food of baleen whale.
7. Rock-like formation in the sea.
8. Extinct bird.
12. Animal who lives on land and water.
14. Desert plant.
15. A decomposer.
17. They love to live in caves.
21. Ecosystem, _____ Rainforest.
23. Most creatures avoid _____ noises.
27. Hot, dry regions.
28. Food for mammals like the horse.
30. A view.
31. Plant part.
33. Home of the dolphin.

EXCUSE ME, ARE YOU DANGEROUS?

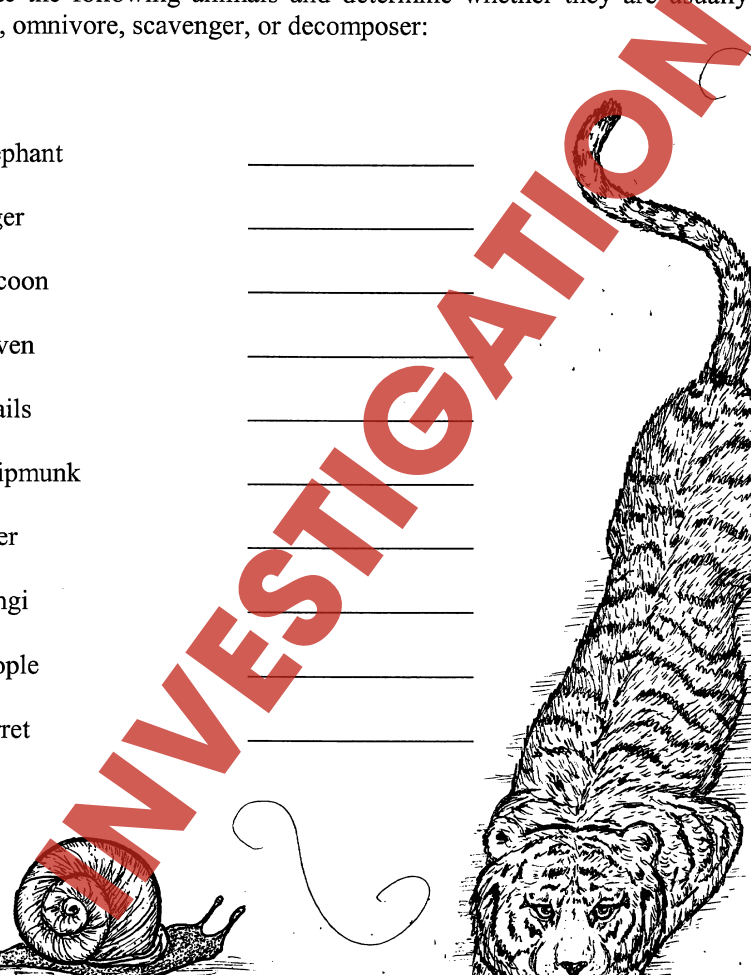


Name: _____



Investigate the following animals and determine whether they are usually herbivore, carnivore, omnivore, scavenger, or decomposer:

1. Elephant _____
2. Tiger _____
3. Raccoon _____
4. Raven _____
5. Snails _____
6. Chipmunk _____
7. Deer _____
8. Fungi _____
9. People _____
10. Ferret _____



FOREST HABITATS - COMPREHENSION QUESTIONS



Name: _____

After reading the selection, *Forest Habitats*, answer the following questions.

1. Which habitat generally has a harsher climate - a *temperate deciduous forest* or a *temperate coniferous forest*?

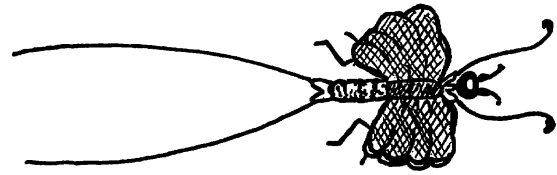
2. Look up the definition of the word *temperate* in a dictionary.

3. What are the two ways that animals cope with living in temperate forests?
1. _____
2. _____
4. List the names of the three animals not mentioned in this article which make temperate forests their home.
1. _____ 2. _____ 3. _____
5. What prevents a coniferous tree from freezing during the winter?

6. About half the Earth's species live in tropical rainforests. **T** or **F**
7. In which of the four layers of a rainforest do most of the larger forest animals live?

8. Why is it difficult to grow things in the soil of the forest floor of a rainforest?

WATERY WORLDS - WORDSEARCH



Name: _____

Find as many of the 15 watery words from the wordbox that are hidden in the Wordsearch Puzzle. The words can be horizontal, vertical, diagonal - they may even be backward!

P	L	A	N	K	T	O	N	A	S	D	F	G	T
O	H	B	Q	W	D	N	A	L	T	E	W	R	G
L	P	O	N	D	Q	W	E	R	T	Q	O	Z	V
L	Z	G	T	X	C	V	B	N	Y	P	Z	X	C
U	I	P	O	O	U	Y	T	L	I	L	I	E	S
T	N	W	E	R	S	E	R	C	O	R	A	L	W
I	S	F	R	G	H	Y	A	J	K	L	M	N	A
O	E	X	E	C	V	L	N	C	X	Z	C	B	M
N	C	W	P	E	R	T	Y	T	U	U	I	O	P
Q	T	E	T	R	M	A	R	S	H	R	T	Y	U
L	K	J	I	G	F	D	S	C	V	E	B	N	M
N	M	J	L	G	A	L	G	A	E	F	S	D	S
S	D	F	E	G	H	J	K	L	C	V	B	I	N
R	T	Y	S	N	A	I	B	I	H	P	M	A	S

ANSWER KEY

WETLAND
PHOTOSYNTHESIS
POND
SWAMP
BOG

LILIES
AMPHIBIANS
REPTILES
MARSH
INSECT

PLANKTON
ALGAE
CORAL
POLLUTION
TROPICAL

Answers

WATERY WORLDS - WORDSEARCH

	A	N	K	T	O	N							T
	B			D	N	A	L	T	E	W	R		
	O	N	D								O		
	G	T							P				
			O					L	I	L	I	E	S
				S				C	O	R	A	L	W
		R			Y	A							A
		E			L	N							M
		P						T					P
		T		M	A	R	S	H					
		I							E				
		L		A	L	G	A	E		S			
		E										I	
		S	N	A	I	B	I	H	P	M	A	S	

