



HABITAT: HEALTHY OR HURTING?

TIME: 1 Hour

OBJECTIVE: To understand the carrying capacity of land and the necessity for managing forest cover.

MATERIALS: Grocery bags or boxes
Canned food or cutouts of food from magazines
Markers and large labels

BACKGROUND:

The health of a forest and its wildlife inhabitants can be encouraged through good forest cover management and a determination of an area's carrying capacity.

Carrying capacity, the number of living things that can be supported by a certain amount of land, is usually stated by the number of acres needed to sustain a type of animal such as deer. Humans rarely think of carrying capacity since they are able to bring resources to their home, but the concept is crucial to wildlife and plant life.

Carrying capacity and wildlife sustainability are influenced by natural conditions and human intervention. Wildlife populations generally fluctuate around changing natural conditions. If a food source is plentiful, animal populations will grow, but this growth becomes problematic if the animals have no natural predators in the area. A herd of deer with a good food source but no predators will grow unchecked until the habitat is destroyed and the deer succumb to disease and starvation.

Climatic changes such as drought, too much rain, or temperature extremes or fluctuation can influence plant growth preventing grazing by herbivores. If herbivores die, carnivores suffer. Conversely, too many herbivores can overgraze an area, leaving the animals without a food source.

Decomposers, naturally occurring microorganisms, play a part in carrying capacity by acting upon dead plants and animals. Their actions help to maintain a balance in nature.

Human intervention in the form of forest management through thinning, replanting, harvesting, prescribed burning, and vegetative control can increase carrying capacity. For instance, removal of trees or plants through harvesting or thinning allows the regeneration of low vegetation

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that is a food and cover source for wildlife. The amount of scarce or nonexistent wildlife can then increase. Other management practices and results can include the following:

Action	Result
plant food plots	increase food source
thinning/harvesting/ prescribed burning	increase food source
fertilize existing cover	increase quality/ quantity of food
dig small ponds	water source
build brush piles	increase cover
erect nest boxes	increase cover

Carrying capacity extends beyond wildlife considerations; it refers also to the number of trees that an acre of land can support. This determination allows foresters to schedule effective thinning operations. Otherwise, trees would die from the natural competition for sunlight, water, and nutrients.

BEFORE THE ACTIVITY:

Make an animal label for each student. Mark some of the labels young, some old, male, female, female with young, strong, weak, or injured. Labels may name specific animals who require different foods. For example, rabbits eat fresh vegetables while cardinals like sunflower seeds.

LEAD-IN:

Suppose that all the people on your block had to live in only two small houses. What might happen?

Suppose that the trucks that bring food to the grocery stores stopped running. What could happen?

Situations like this can happen in the wild. Animals can be faced with too little food if a cold spring damages plants. Homes and food sources can be destroyed by a forest wildfire.

We're going to try two exercises that show us how changes can affect not just one species, but all species. And, we're going to look at how we might allocate (share) resources.

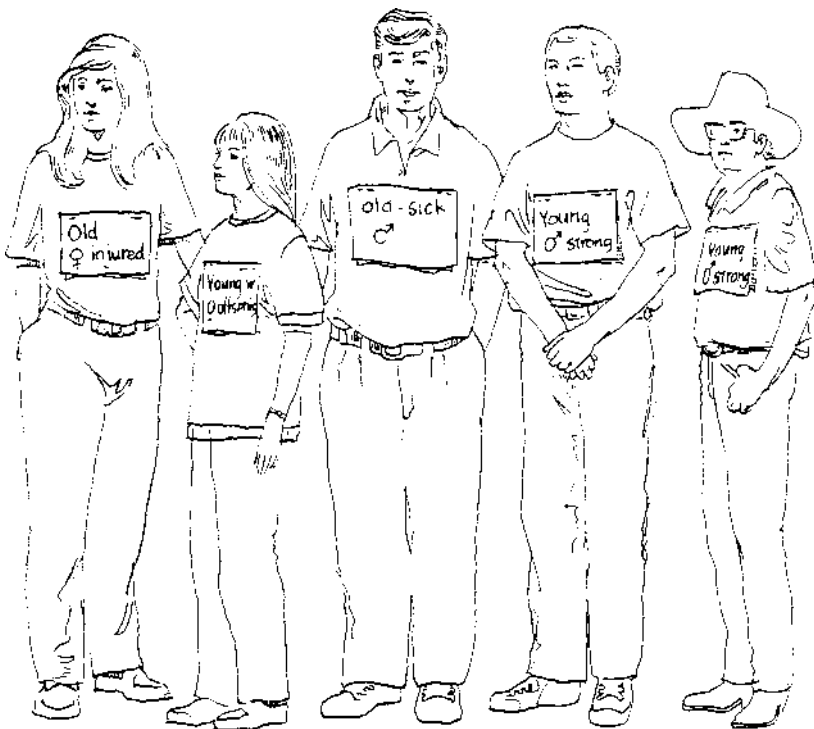
(This activity is appropriate for all ages, but if it appears too young, students could research individual types of animals and their food source.)

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ACTIVITY:

1. Distribute labels to students.
2. Have two bags or boxes of groceries with fewer groceries than students.
3. Announce that there is food for the animals in the bags or boxes. Some of the food could be tainted or toxic, but the animals may not know this.
4. If you have different types of animals, some food may be used by certain types but not by others.
5. After the food is distributed, who remains unfed? What would likely happen to them?
6. Reenact this scene with the introduction of a natural predator and/or a human. The predator could “kill” an animal by tagging it or the prey could escape. The human could “kill” the animal, watch it, or take food to it. The human could eat the food intended for an animal.

Have the class decide upon the rules.



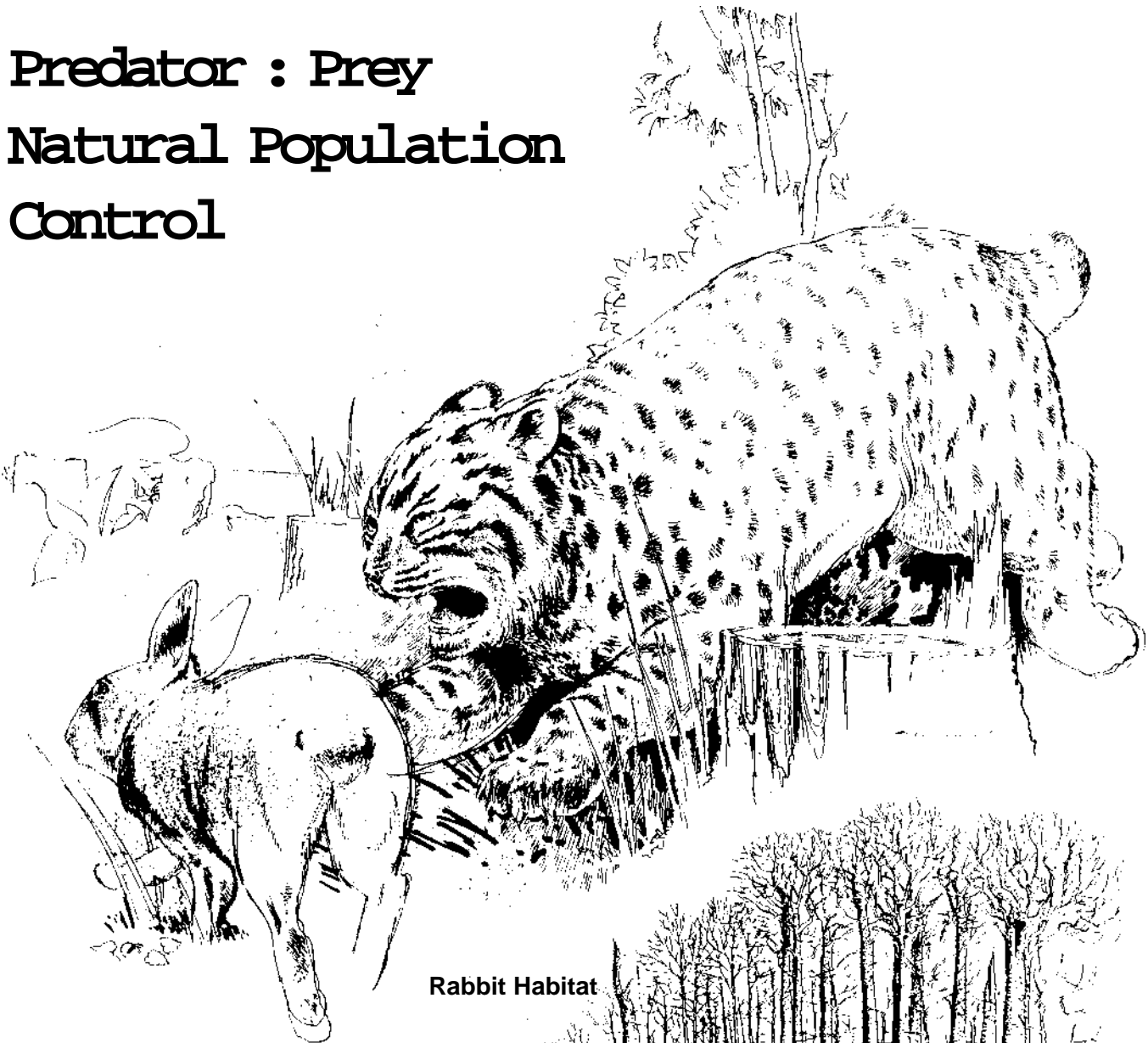
Natural Balance: Resources don't seem limited to humans because there is always more food, fuel and shelter to be had if you have the money to acquire it. Playing the carrying capacity game can help students understand “limited resources” first hand.

BRANCHING OUT:

1. Have students research vegetation carrying capacity. They may answer questions such as which types of trees can crowd other types of trees? What types of vegetation come back first after a fire?
2. Consider how human behavior could affect animals' food sources. What would be a positive way? A negative way?
3. How can setting aside certain lands help or harm animals?
4. What do people give up when they set aside land for animals?
5. List forestry and wildlife techniques that increase carrying capacity.
6. Give pro's and con's of the following activities: fertilization, prescribed burning, harvesting, road construction, food plots, putting up nest boxes.
7. How can students increase the carrying capacity of their backyards, school grounds, community parks and stream edges? What volunteer groups could help students? (Audubon Societies, Ducks Unlimited, Quail Unlimited, National Wildlife Federation, North Carolina Wildlife Federation)
8. Visit a stand of thick pine that has never been thinned. Observe what other types of growth are and are not there.

Predator : Prey

Natural Population Control

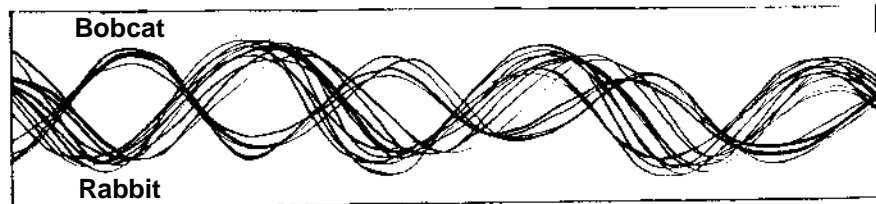


Rabbit Habitat



Suitable Habitat. Rabbits need young, recently disturbed or abandoned cropland to survive.

0-----100 years
Young seedlings -----Mature forests



Predator and prey relationship: When rabbit (prey) populations rise - the bobcat (predator) population increase to take advantage of the surplus. As rabbits decline, the bobcat population also decline.