Quick Freeze Prairie Dogs

(based on Project WILD's Quick Frozen Critters)

Objective:

Students will be able to: 1) discuss predator/prey relationships on the short grass prairie, 2) describe the importance of adaptions in predator/prey relationships, and 3) recognize that limiting factors, including predator/prey relationships, affect wildlife populations centered around the short grass prairie.

Method:

Students play an active version of "freeze tag."

Background:

Predator - An animal that kills and eats another animal for food.

Prey - An animal that is killed and eaten by other animals for food.

Limiting Factors - There are many influences in the life history of any animal. When one of these (e.g., disease, climate, pollution, accidents, shortages of food or places to live) exceeds the limits of tolerance of that animal, it becomes a limiting factor. It then drastically affects the well-being of that animal. Predators are limiting factors for prey. Prey are limiting factors for predators.

Animals display a variety of behaviors in predator/prey relationships. These are adaptions to survive.

Some prey behaviors to escape detection or capture by predators are: signaling to others, flight, posturing, scrambling for cover and even "freezing" on the spot. The kind of behavior exhibited partly depends on how close the predator is when detected by the prey. Each animal has a threshold for the threat levels. If the predator is far enough away for the prey to feel some safety, the prey may signal to others that the prey is near. If the predator comes closer the prey may try to run away. If the predator is too close to make running away feasible, the prey may attempt to scurry to a hiding place. If the predator is so close that none of these alternatives is available, the prey may freeze in place. The closer the predator comes to the prey animal, the more likely it is that the prey will "freeze" in place. This "freezing" occurs as a kind of physiological shock in the animal. (Shelter or camouflage may also make them invisible to the predator when they freeze.) Too often, people who come upon animals quickly and see them immobile infer that the animals are unafraid when, in reality, the animals are "frozen", or, as the adage goes, "frozen stiff."

On the short grass prairie, the prairie dog town provides the ecosystem for many predator/prey relationships. Predators like coyotes, bobcats, and foxes hunt on the edges of the towns and capture prairie dogs when they leave their burrows. The badger digs deep into prairie dog burrows while weasels and black-footed ferrets enter the burrows to capture the prairie dog as prey. Hawks and eagles search and soar around prairie dog colonies in search for mice, rabbits and prairie dogs. Birds, such as the

meadow lark and small rodents such as the kangaroo rat, are attracted to the towns because of higher seed or insect availability.

Materials:

Food tokens (pieces of cardboard), enough for three per student; gym vests or other labeling devices to mark predators; four or five hula hoops to serve as "cover" prairie dog burrows, pencil and paper to record number of captures if desired.

Procedure:

1) Select any of the following pairs of animals from the short grass prairie.

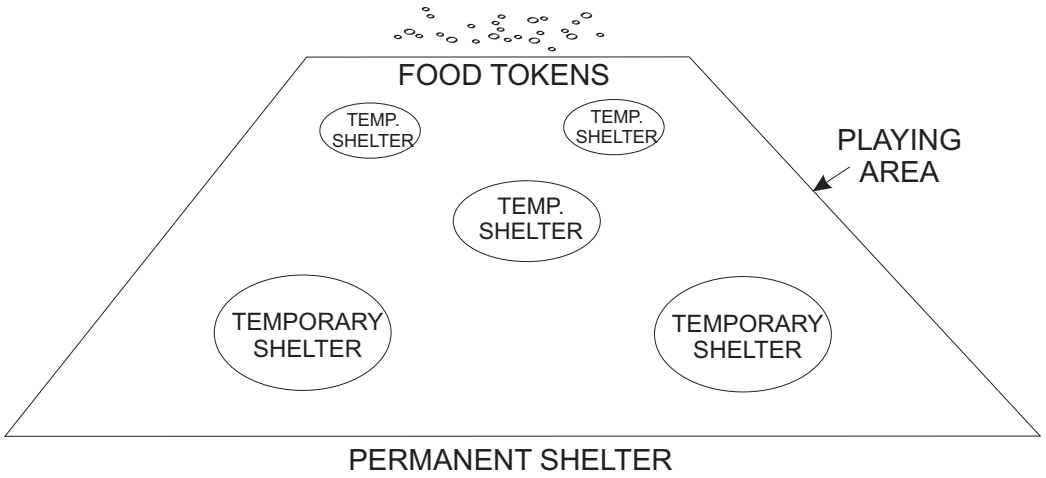
PREY	PREDATORS
Prairie Dog	Black-footed Ferret
Prairie Dog	Ferruginous Hawk

Identify students as either "predators" or "prey" for a version of "freeze tag"- with approximately one predator for every four to six prey.

2) Using a gymnasium of playing field, identify one end of the field as the "food source" and the other end as the "shelter."

3) Four to five hula hoops are placed on the open area between the "shelter" and the "food." These represent additional shelter or "cover" for the prey and can be randomly distributed on the field. (If hula hoops are not available, string might be used, or chalk on asphalt.)

4) Food tokens are placed in the "food source" zone on the ground. Allow three food tokens for each prey animal. For example:



5) Predators should be clearly identified. Gym vests or safety vests might be available.

6) Use a whistle or some other prearranged signal to start each round. When a round begins, prey start from their "shelter." The task of the prey animals is to move from the primary shelter to the food source, collecting one food token each trip, and returning to the primary shelter. To survive, prey have to obtain three food tokens. (NOTE: In the wild, prairie dogs spend most of their time foraging. They each consume up to two pounds of grasses and broad leaf plants during the spring and summer months). The prey's travel is hazardous. They need to be alert to possible predators. If they spot a predator, they can use various appropriate prey behaviors-including warning other prey that a predator is near. (NOTE: In the wild, prairie dogs have at least 11 distinct calls and a variety of postures and displays. When a prairie dog detects danger, it gives a warning yip or bark. Other prairie dogs will stand on their hind legs to survey for the danger and join the "barking" chorus.) During the activity, prey have two ways to prevent themselves from being caught by predators: they may "freeze" any time a predator is within five feet of them; or they may run to cover (with at least one foot within one of the hula hoops.) Frozen prey may blink, but otherwise should be basically still without talking.

7) Predators start the activity anywhere in the open area between ends of the field and thus are randomly distributed between ends of the prey's food and primary shelter. Predators attempt to capture prey to survive, tagging only moving (not "frozen") prey. (Optional: Prey can have bandannas in their pockets that the predators have to capture to represent a successful predation.) Predators must each capture two prey in order to survive. Captured prey are taken to the sidelines by the predator who captured them.

NOTE: Establish ground rules for student behavior: Behave in ways that are not harmful to other students, even when simulating predator behavior; e.g., no full tackles!

8) A time limit of five to seven minutes is suggested for each round of the game. (Captured prey on the sidelines will get restless if rounds are much longer.) Remind prey that they can remain frozen for as long as they like, but if they do not have enough food at the end of the activity they will starve to death. In nature, an animal must balance the need to find food with the sometimes conflicting need for safety.

9) Play four rounds, allowing each student to be both prey and predator.

10) Discuss with the students the ways they escaped capture when they were prey. Which ways were most effective? What means did they use as predators to capture prey? Which ways were best? What did predators do in response to prey animals who "froze?" In what ways are adaptions important to both predator and prey? Ask the students to summarize what they have learned about predator/prey relationships. How do predator/prey relationships serve as natural limiting factors affecting wildlife?

Variations:

Do the activity with any other predator/prey pairs on the short grass prairie including the coyote/rabbit or the swift fox/mountain plover.