Surviving as a Black-footed Ferret

(based on Project WILD's Oh Deer!)

Objective:
Students will be able to : 1) Identify and describe food, water, and shelter as three essential components of habitat, 2) describe the importance of good habitat for animals, 3) define "limiting factors" and give examples, 4) recognize that some fluctuations in wildlife populations are natural as ecological systems undergo constant change, 5) introduce students to the many factors that affect this endangered species on the short grass prairie.

Method:
Students become "Black-footed Ferrets" and components of a prairie dog town in a highly involving physical activity.

Background:
A variety of factors affect the ability of wildlife to successfully reproduce and maintain their populations over time. Disease, predator/prey relationships, varying impacts of weather conditions from season to season (e.g., early freezing, heavy snows, flooding, drought), accidents, environmental pollution, and habitat destruction and degradation are among these factors.

Some naturally-caused (droughts) as well as culturally-induced limiting factors (legal hunting) serve to prevent wildlife populations from reproducing in numbers greater than their habitat can support. An excess of such limiting factors, however, leads to threatening, endangering, and possibly eliminating whole species of animals.

The most fundamental of life's necessities for any animal are food, water, shelter, and space in a suitable arrangement. Without these components, animals cannot survive. For many animals on the short grass prairie, these fundamentals of life center around the disappearing prairie dog communities.

This activity is designed for students to learn that:
- good habitat is the key to wildlife survival
- a population will continue to increase in size until some limiting factors are imposed
- limiting factors contribute to fluctuations in wildlife populations, and
- nature is never in "balance," but is constantly changing.

Wildlife populations are not static. They continuously fluctuate in response to a variety of stimulating and limiting factors. We tend to speak of limiting factors as applying to a single species, although one factor may affect many species. Natural limiting factors, or those modeled after factors in natural systems, tend to maintain populations of species at levels within predictable ranges.

This activity is intended to be a simple but powerful way for students to grasp some

basic concepts: that everything on the short grass prairie, or any other natural system, is interrelated; that populations of organisms are continuously affected by elements of the environment; and that populations of animals do not stay at the same static number year after year in their environment, but rather are continuously changing in a process of maintaining dynamic equilibria in natural systems.

The major purpose of this activity is for students to understand the importance of suitable habitat as well as factors that may affect wildlife populations in constantly changing ecosystems.

Materials:
Area- either indoors or outdoors- large enough for students to run, e.g., playing field; chalkboard or flow chart; writing materials.

Procedure:
1) Begin by telling students that they are about to participate in an activity that emphasizes the most essential things that animals need in order to survive. Review the essential components of habitat with the students: food, water, shelter, and space in a suitable arrangement. This activity emphasizes food, water, and shelter, but students should not forget the importance of the animals having sufficient space in which to live, and that all the components have to be in a suitable arrangement or the animals will die.

2) Ask your students to count off in fours. Have all the ones go one area; all the twos, threes, and fours go together to another area. Mark two parallel lines on the ground or floor ten to 20 yards apart. Have the ones line up behind one line; the rest of the students line up behind the other line.

3) The ones become "Black-footed Ferrets." All the ferrets need good habitat in order to survive. Ask the students what the essential components of habitat are again: **food, water, shelter, and space in a suitable arrangement.** For the purposes of this activity, we are emphasizing the ferret's need for prairie dogs and the prairie dog town (which provide food, water, and shelter for the ferret) in order to survive. When a ferret is looking for prairie dogs as food, it should clamp its hands over its stomach. When it is looking for water, it holds its hands over its mouth. When it is looking for shelter in the prairie dog town, it holds its hands together over its head. A Black-footed Ferret can choose to look for any one of its needs during each round or segment of the activity; **the ferret cannot, however, change what it is looking for;** e.g., when it sees what is available during the round. It can change what it is looking for in the next round, if it survives.

4) The twos, threes, and fours are prairie dogs (food), water, and tunnels in the prairie dog town (shelter)--components of the habitat. Each student gets to choose at the beginning of each round which component he or she will be during that round. The students depict which component they are in the same way the ferrets show what they are looking for; that is, hands on the stomach for food, etc.

5) The activity starts with all the players lined up on their respective lines (ferrets on one side; habitat components on the other side) - and **with their backs to the students at the other line.**

6) The facilitator or teacher begins the first round by asking all of the students to make their signs-each ferret deciding what it is looking for, each habitat component deciding what it is. Give the students a few moments to get their hands in place-over stomachs, mouths, or over their heads. (As you look at the two lines of students, you will normally see a lot of variety - some students with water, some food, some shelter. As the activity proceeds, sometimes the students confer with each other and all make the same sign. That's okay, although don't encourage it. For example, all the students in habitat might decide to be shelter. That could represent a drought year with no available food or water.) NOTE: If students switching symbols in the middle of the round is a problem, you can avoid that by having stacks of three different tokens, or pieces of colored paper, to represent prairie dogs, water, and the prairie dog town at both the habitat and the ferret's end of the field. At the start of each round, players choose one of the symbols before turning around to face the other group.

7) When you see that the students are ready, count: "one...two...three." At the count of three, each ferret and each habitat component turn and face the opposite group continuing to hold their signs clearly.

8) When the Black-footed Ferrets see the habitat component they need, they run to it. Each ferret must hold the sign of what it is looking for until getting to the habitat component person with the same sign. Each ferret that reaches its necessary habitat component takes the "prairie dog," "water," or "tunnel," back to the ferret side of the line. This is to represent the ferret's successfully meeting its needs, and successfully reproducing as a result. Any ferret that fails to find its food, water, or shelter dies and becomes part of the habitat. That is, in the next round, the ferret that died is a habitat component and so is available as food, water, or shelter to the Black-footed Ferrets who are still alive.

NOTE: When more than one ferret reaches a habitat component, the student who gets there first survives. Habitat components stay in place on their line until a ferret needs them. If no ferret needs a particular habitat component during a round, the habitat component just stays where it is in the habitat. The habitat person can change which component it is from round to round.

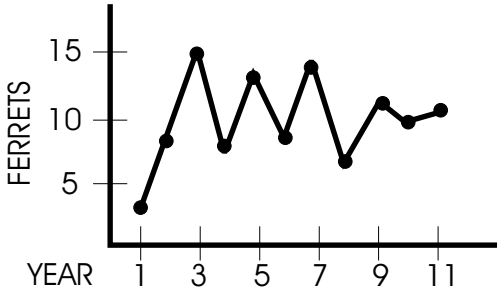
9) You as the facilitator or teacher keep track of how many ferrets are at the beginning of the activity, and at the end of each round. Continue the activity for approximately 15 rounds. Keep the pace brisk and the students will thoroughly enjoy it.

10) At the end of the 15 rounds, gather the students together to discuss the activity. Encourage them to talk about what they experienced and saw. For example, they saw a small group of ferrets (seven students in a class size of 28) begin by finding more

than enough habitat needs. The population of ferrets expand over two or three rounds of the activity until the habitat was depleted and there was not sufficient food, water and shelter for all the ferrets. At that point, ferrets starved or died of thirst or lack of shelter, and they returned as part of the habitat. Such things would happen in nature also.

NOTE: In real life, mammal populations might also experience higher infant mortality and lower reproductive rates.

11) Using a flip chart pad or an available chalkboard, post the data recorded during the activity. The number of ferrets at the beginning of the activity and at the end of each round represent the number of ferrets in a series of years. That is, the beginning of the activity is year one; each round is an additional year. Ferrets can be posted by fives for convenience. For example:



The students will see this visual reminder of what they experienced during the activity: the ferret population fluctuated over a period of years. This is a natural process as long as the factors which limit the population do not become excessive, to the point that the animals cannot successfully reproduce. The wildlife populations will tend to peak, decline, and rebuild-as long as there is good habitat and sufficient numbers of animals to successfully reproduce.

12) In discussion, ask the students to summarize some of the things they have learned from this activity. What do animals need to survive? What are some of the "limiting factors" that affect their survival? Are wildlife populations static, or do they tend to fluctuate, as part of an overall "balance of nature?" Is nature ever really in "balance" or are ecological systems involved in a process of constant change?

Variations:

1) The Black-footed Ferret depends on the prairie dog for both food and shelter. After the students have played several rounds of the activity, introduce predators into the game. Predators of the Black-footed Ferret include the Coyote and Great-horned Owl. The predators start in a designated "predator den" area off to the side. The predators have to skip or hop. This reduces the possibility of violent collisions between ferrets and predators. The predators can only tag ferrets when they are going towards the habitat and are between the habitat and ferret lines. Once a ferret is tagged, the predator escorts the ferret back to the den. The captured ferret becomes an additional predator. Predators that fail to tag someone die and become habitat. That is, in the next round, the predators that died join the habitat line. They will become available to the surviving ferrets as either food, water, or shelter. During each round, the teacher should keep track of the number of predators as well as the numbers of ferrets. Incorporate this data into the graphs.

NOTE: Be sure the students understand that captured ferrets are symbolic of the direct affect of predators on prairie dog populations. (Black footed ferret needs a large contiguous prairie dog town for both food and shelter).

2) Instead of drawing the line graph for students as described in procedure 11, have the students create their own graphs. Provide them with the years and numbers of ferrets. Depending on the age group, they can make picture, line, or bar graphs.