Elk Activity: Migration Headache

In this activity, students role-play migrating elk traveling between their summer and winter range and simulate the effects of hazards at each end of the migration. They will experience some of the important factors that affect the survival of elk that migrate.

Grade Level: 4-12

Number of students: 20-40

Duration: One 45-minute period

Background

Healthy populations of elk show little change in numbers over a course of several years. However, various factors can lower a population's number from one year or season to the next. For example, when extremely heavy snows come early in the mountains, elk may become trapped in a narrow valley where there is little winter food. Many elk might die and thus the population would be much lower in the spring. This activity simplifies the events of migration. For the simulation, the hazards of migration occur at either the calving or the wintering areas. In reality, many of the hazards faced by migrating elk occur enroute between the two ranges or are encountered gradually rather than all at once. After the simulation you may want to emphasize this point. Also be aware that elk populations can be quite large, so each student may represent many elk, not just one. Because of this, try not to emphasize occasional losses to predation and other events of a relatively small scale during the simulation as they are not likely to affect the size of a real elk population.

Materials

- Large playing field (at least 70' X 40')
- Two paper plates for every three students
- Large sheet of butcher paper or graph paper
- Marking pens

Objectives

The student will be able to list limiting factors affecting populations of migrating elk and predict the effects of such limiting factors.

Procedure

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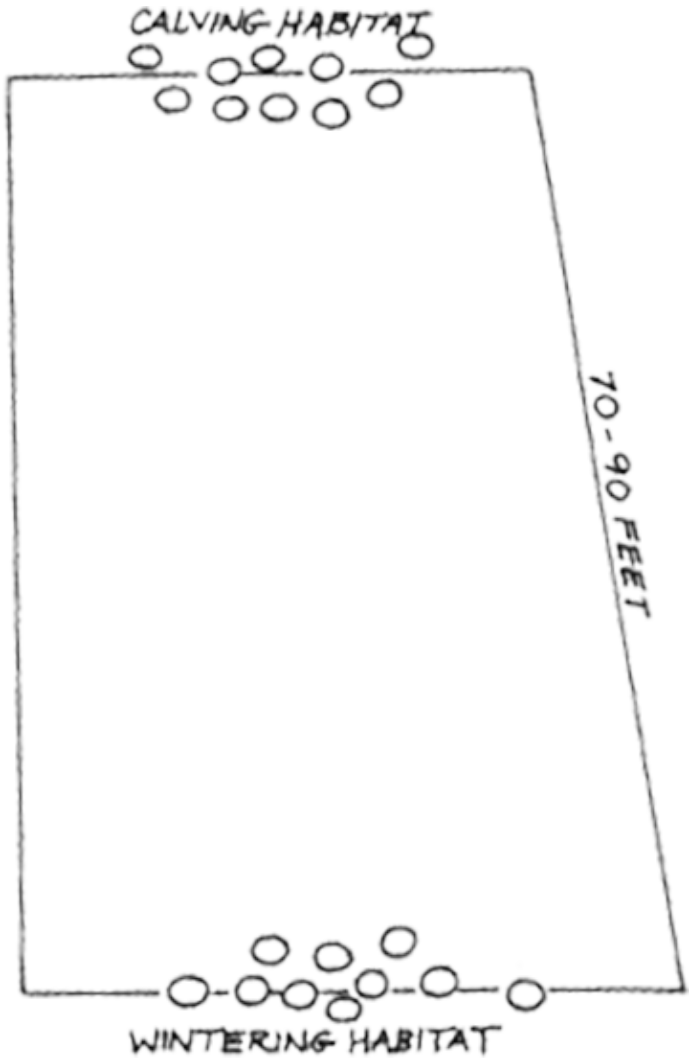
1. Place half of the paper plates in a patch at one end of the playing field and the other half of the plates in a patch at the other end.
2. Explain to the students that they are elk and will migrate between these two areas at your signal. Explain that as they migrate, students must walk because elk do not run when they migrate. Tell them that the paper plates represent suitable habitat for elk. As students what must be in an elk habitat.
3. Explain that at the end of each journey the students will have to have one foot on a paper plate in order to continue. Tell them that for the purposes of the activity only three elk can occupy a habitat (paper plate) at any one time. If they cannot get their foot on a plate, that means they have not found any suitable habitat and they "die." Elk that have died move to the sidelines - at least temporarily - and watch.



4. Begin the activity with all students at the wintering habitat. There should be three students for each paper plate. Announce the start of the first migration. Have students migrate to the calving habitat. Because there is enough habitat (paper plates), all the elk will migrate successfully to the calving habitat.
5. Explain that many factors can limit the survival of populations of migrating elk. Some of these factors involve changes in the wintering and calving habitats. For example, there may be times when there is abundant food, water, shelter and space suitable for the elk. At other times any or all of these elements may be reduced, limiting the elk's potential for survival.
6. Before the elk migrate back to the wintering habitat, remove one plate from the wintering range. Explain that a road has been built through the wintering range resulting in a loss of habitat and an increase in accidents with cars.

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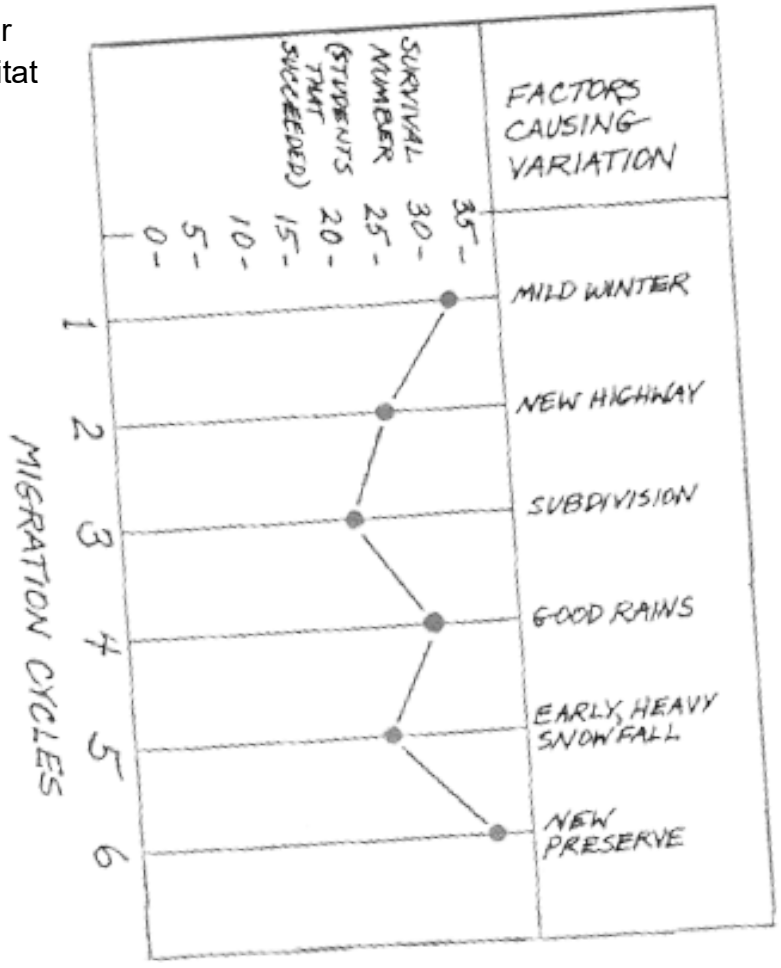
7. Repeat the instructions to migrate and send the elk to the wintering habitat. Three students will be displaced; have them stand on the sidelines. Tell the students that these three elk died as a result of habitat loss and accidents. Remind any "dead elk" that they can come back as surviving calves when habitat is available in the calving area.
8. You may want to graph the migration cycles using butcher or graph paper.
9. Remove three plates in the calving habitat. Explain that this catastrophic loss is due to a new subdivision that reduced the amount of habitat. Instruct the students to migrate. This will result in many students waiting on the sidelines, so provide them with an opportunity for reentry in one of the next cycles.
10. Repeat the process for eight or ten migration cycles to illustrate changes in habitat conditions that affect elk. Be sure to create one or more "disaster" years to illustrate catastrophic loss of large areas of habitat. Overall, suitable habitat for elk is diminishing and so the activity should end with less habitat than the elk need.
11. Lead a discussion about what students learned including:
    - What are the apparent causes of the elk population decline?
    - What seem to be the major factors contributing to habitat loss and degradation?
    - What factors affect the success of elk migration?
    - Which are human factors and which are environmental factors?
    - What kinds of things can and should be done to protect and restore habitats for migrating elk?
    - What are the potential tradeoffs of these recommendations?



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Factors limiting survival of migrating elk populations

- Urban expansion
- Drought
- Pollution and contamination of water
- Poaching
- Highways
- Heavy snowfall (greater than 24") causing lack of winter food
- Wet, cold weather during calving season
- Human activity on roads during times of migration
- Loss of migration corridors
- Loss of thermal cover and hiding cover
- Human activity on calving and wintering grounds

Factors favoring survival of migrating elk populations

- Preservation of range lands
- Preservation of migration corridors
- Early spring plant growth due to mild temperatures and abundant rain
- Restoration of habitat
- Regulation of hunting
- Dynamic balance with predators
- Freedom from disturbance during wintering and calving times
- Road closures on public lands
- Restrictions of public lands during periods of elk use

Evaluation

Have students write about the following: Name two human activities and two environmental factors that might interfere with elk migration. For each, describe possible effects on the elk. Distinguish between effects on individual elk and effects on populations of elk, and indicate if the effect is long or short term.