



Migration Threats: Natural and Human Caused



Essential Question

What impact do natural, and human caused threats have on migratory animals?

Objective

Through active game-play simulating migration of various animal groups, students will be able to explore and identify the impacts of various natural and human caused threats to migration.

Extension objective: Students will investigate ways to mitigate human caused impacts on migration and create an action plan.

Background

Migration is frequently linked with birds moving seasonally in a north south pattern for breeding purposes, but migration in the animal world is complex, with groups of animals migrating east-west, in the oceans, in fresh water, on land, as well as combinations of migrations over and in all types of land and water forms. Equally, animals migrate for various reasons beyond breeding, such as for food or for better living conditions.

Natural barriers to migration such as deserts, lakes, rivers, mountains and oceans exist and inflict losses on migratory populations. There are manmade barriers that migratory groups face, too, which often pose a far greater problem for the population of those migratory groups. Manmade barriers include loss of habitat through land development or fishing grounds, dams, roads, air travel, windmills, pollution and climate change.

Materials

- 3x5 index cards (white and colored)
- 8-24 Small traffic cones (or other means of marking distances)
- 2-10 cones marked with tape
- Long tape measure to mark distance (or pace out distances by steps)

One stack of white index cards are natural barriers for migration. Leave blank on one side while on the opposite side list the following information:

1. Natural barrier
2. Set of 3-6 cards that say death due to exhaustion/ starvation, population reduced by 3%
3. Set of 3-6 cards that say death due to predators, population reduced by 2%
4. Set of 3-9 cards that say death due to age, population reduced by 1%
5. Set of 3-9 cards that say death due to weather, population reduced by 1%
6. Set of 2 or 3 cards that say Safe

One stack of white index cards are manmade barriers for migration. Leave blank on one side while on the opposite side list the following information:



1. Manmade barrier
2. Set of 3-6 cards that say death due to climate change, population reduced by 5%
3. Set of 3-6 cards that say death due to habitat loss, population reduced by 3%
4. Set of 3-6 cards that say death due to roads, dams or other obstructions, population reduced by 3%
5. Set of 3-6 cards that say death due to pollution, population reduced by 3%

One stack of 100 colored index cards

Websites for further background information on migration:

- [Colby College](#)
- [Exploring Solutions to Human Impacts on Animal Migration](#)
- [Issues.org](#)
- [Migration Barriers Threaten Wildlife](#)

Procedure

Choose the appropriate level of pre-teaching for migration using the above websites for reference before going outside.

1. Set up 8-24 traffic cones at least ten feet apart
2. Divide the 100 colored cards among the students
3. Designate a place to migrate from before the first cone and a place to migrate to after the last cone.
4. Using only the natural barrier cards, have students migrate to the first cone where a random card is drawn. If the percentage on the card is 3, for example, 3 colored cards must be given up by the student who drew the natural barrier card.
5. After the first migration stop, the class moves to the next cone where another student draws a natural barrier card. This proceeds until the class migrates to their destination.
6. At the end of the migration, all the remaining-colored index cards are counted.

For the second round of migration, manmade barrier cards are added.

1. Set the cones marked with tape at random migration stops
2. At stops where there are now multiple barriers, two students will draw cards, one from the natural barrier stack and one from the manmade stack. Colored cards are given by the students according to the number on the cards they draw.
3. At the end of the second migration, the colored cards are again counted and compared with the number from the first migration.

Assessment/ Conclusion

Have a sense making discussion with students about why the numbers of colored cards might be different.

Adaptations

Teachers can change the number of colored cards available to work on math standards related to percentages and have students' problem solve fractions of cards.

Teachers can have students make up the natural and manmade index cards based on actual migratory animal groups.