

Migration Mishaps game

Migration Mishaps is a game that helps to demonstrate why animals that migrate, such as hummingbirds, are threatened by habitat destruction.

Subject areas: science

Key concepts: habitat, migration, survival, competition, limiting factors, population dynamics

Skills: graphing (extension activity)

Location: outdoors

Time: 20 minutes

Materials: 2 paper plates or pieces of cloth (“habitat havens”) for every 3 students, migration cards (next page); 3-5 soft foam balls (adaptation); wipe-off board and marker (extension activity)

Preparation: Review with students the definition of habitat (food, water, shelter and space suitably arranged) and explain that many factors limit the survival of populations of hummingbirds, including changes in the two habitats on which they depend. Have students research wintering and breeding habitats of hummingbird species in your area. (Ruby-throated hummingbirds winter mainly in Mexico and Central America, while their nesting habitat is in eastern United States and southern Canada).

Procedure:

1. Select a large area up to 20 meters (70 feet) in length. Designate one end of the area as the wintering grounds and the other end as the nesting grounds. Distribute the “habitat havens” (paper plates or cloth pieces) equally in the wintering and nesting grounds.
2. Begin the activity with all students at the wintering grounds, assigning no more than three players to each habitat haven. Explain that at your signal they are to migrate to a habitat haven in the nesting grounds.
3. For the first round, select a migration card that requires removing habitat havens. Read the card aloud and remove habitat havens in the area to which the hummingbirds will be migrating (in this round, the nesting grounds).
4. Give the signal to migrate. If players cannot find space at the new habitat (remind them that only three birds can share one habitat haven), they must die and move to the sidelines temporarily. These “dead” birds may re-enter the game as hatchlings when favorable conditions make more habitat havens available in the nesting grounds.

Safety note: Even though hummingbirds are aggressive and territorial, caution students that there should

Hummingbird True or False

This quick quiz highlights some little-known facts and dispels some misconceptions about hummingbirds. Use the quiz as a pre- and post-assessment. As your class learns more about hummingbirds, let them add their own items to the quiz or create a whole new quiz for another class to take.

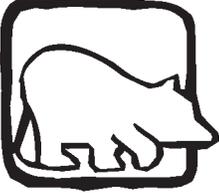
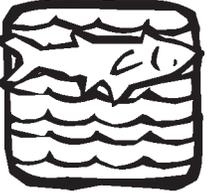
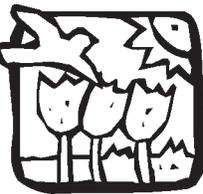
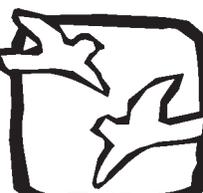
Time: 10 minutes

- ___ 1. Hummingbirds eat only flower nectar.
- ___ 2. Hummingbirds can fly upside down.
- ___ 3. Hummingbirds suck nectar from flowers.
- ___ 4. Hummingbirds migrate on the backs of Canada geese.
- ___ 5. A hummingbird’s heart beats over 1,000 times per minute.
- ___ 6. Hummingbirds search for nectar only from red flowers.
- ___ 7. Leaving up a hummingbird feeder late into fall can slow or prevent migration.
- ___ 8. Hummingbirds are most attracted to flowers with strong fragrances.
- ___ 9. Each hummingbird species makes a different “humming” sound.
- ___ 10. Hummingbirds will attack larger birds such as crows and hawks.

Answers

1. *False.* As hummingbirds need protein, they eat small insects and spiders. They also feed on tree sap and sugar water in hummingbird feeders.
2. *True.* Hummingbirds can fly upside down briefly, by doing a backward somersault.
3. *False.* Hummingbirds do not suck nectar. They lap up the nectar at about 13 licks per second!
4. *False.* Hummingbirds and Canada geese migrate at different times, live in different habitats, and migrate to different areas.
5. *True.* A hummingbird’s heart beats 1,260 times per minute, or 21 times per second!
6. *False.* Hummingbirds are most attracted to red but will feed from any nectar-producing flowers.
7. *False.* Hummingbirds migrate based on changes in day length, not availability of food.
8. *False.* Hummingbirds do not have a well-developed sense of smell. They locate their food by eyesight.
9. *True.* The rush of air created by the wings makes a different humming, buzzing, or whistling sound in each species.
10. *True.* Hummingbirds are fiercely aggressive and are not intimidated by size. They have been observed attacking crows, hawks, and other larger birds.

Migration Cards for Migration Mishaps

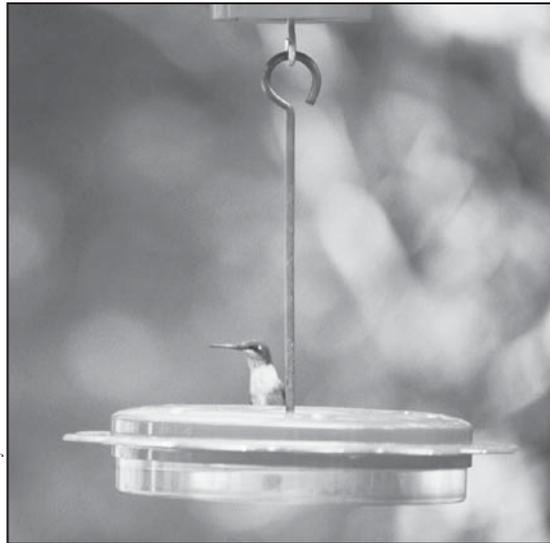
 <p>A large habitat was designated as a wildlife preserve. Gain 3 habitat havens.</p>	 <p>A wetland is filled so a new highway can be built. Lose 2 habitat havens.</p>
 <p>Pollution severely damaged a riverside habitat. Lose 2 habitat havens.</p>	 <p>The construction of a new subdivision and golf course destroys a forest habitat. Lose 3 habitat havens.</p>
 <p>A concerned school group improved a damaged habitat by creating an outdoor classroom and garden. Gain 2 habitat havens.</p>	 <p>A neighborhood creates backyard wildlife habitats. Gain 2 habitat havens.</p>
 <p>Drought killed some flowering plants. Lose 2 habitat havens.</p>	 <p>An apartment dweller plants hanging baskets with hummingbird-attracting flowers. Gain 1 habitat haven.</p>
 <p>Tougher laws are passed to protect bird habitat. Gain 1 habitat haven.</p>	 <p>A homeowner plants a row of trees for shelter. Gain 1 habitat haven.</p>
 <p>Pesticides contaminated the flowers' nectar. Lose 2 habitat havens.</p>	 <p>A late frost killed the first spring flowers. But sap is available through a sapsucker's holes in some trees. Gain 1 habitat haven.</p>
 <p>Insecticides killed insects needed for protein. Lose 1 habitat haven.</p>	 <p>A school hangs up hummingbird feeders. Gain 2 habitat havens.</p>
 <p>Trees used for shelter and nesting are cut down to make paper. Lose 2 habitat havens.</p>	 <p>A city-dweller hangs up a hummingbird feeder. But there are no trees for shelter in the area. Sorry, no habitat haven.</p>

be no pushing or shoving over habitat. You may want to make a rule that students migrate in slow motion by walking instead of running.

5. Play several more rounds, beginning each round by reading a migration card, and adding or removing habitat havens in the habitat to which students will migrate.

Wrap-up: Ask students to summarize what they have learned about some of the many factors that affect migrating birds and their habitat. Discuss what students can do about habitat loss and degradation. What can they do to improve hummingbird habitat?

Adaptation: Hummingbirds face perils along the migration route as well as in wintering and nesting grounds. Soft foam balls can represent such perils as storms or running out of energy. Let students in the “dead bird”



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zone take turns tossing the balls into the path of “migrating” students. When a ball makes contact with a migrating student, he/she becomes a “dead bird.”

Extension: Use a wipe-off board and marker to graph the shifting hummingbird population after each round. Students in the “dead bird” zone can help with this while they are waiting to re-enter the game.

Kim Bailey is a regional editor of Green Teacher magazine and the coordinator of the Environmental

Education in Georgia on-line clearinghouse. At its website (<<http://EEinGEORGIA.org>>), educators can find more hummingbird activities as well as other lesson plans and resources for environmental education.

The Migration Mishaps activity was adapted from “Migration Headache,” Project WILD Aquatic Activity Guide.

RESOURCES

- Newfield, Nancy L., and Barbara Nielsen. *Hummingbird Gardens: Attracting Nature's Jewels to Your Backyard*. Houghton Mifflin, 1996.
- Osborne, June. *The Ruby-throated Hummingbird*. University of Texas Press, 1998.
- Sargent, Robert. *Ruby-throated Hummingbird*. Stackpole Books, 1999.
- Stokes, Donald, and Lillian Stokes. *The Hummingbird Book: The Complete Guide to Attracting, Identifying, and Enjoying Hummingbirds*. Little, Brown & Company, 1989.
- Tyrell, Esther Quesada. *Hummingbirds: Their Life and Behavior, A Photographic Study of the North American Species*. Crown Publishers, 1985.
- Williamson, Shed L. *A Field Guide to Hummingbirds of North America*. Houghton Mifflin, 2001. (A Peterson Field Guide.)

HELPFUL HUMMINGBIRD WEBSITES

- <www.hummingbirds.net> This site lists hummingbird species by state and province, and provides spring migration maps and much more.
- <www.portalproductions.com/> The Hummingbird Web Site includes approximate migration dates by species for the United States and Canada.

- <www.mbr-pwrc.usgs.gov/> The North American Breeding Bird Survey provides hummingbird species distribution maps.
- <www.learner.org/jnorth> Journey North records hummingbird migration tracking and other resources for the study of hummingbirds and other migratory animals.
- <www.rubythroat.org> Operation Rubythroat provides cross-disciplinary hummingbird activities and inquiry project ideas for teachers (K–12).
- <www.naturalinstinct.com> Natural Instinct is dedicated to collecting and distributing information on the flora and fauna of North America's backyards (includes hummingbird investigations).
- <www.hummingbirdsplus.org> Hummer/Bird Study Group is a non-profit organization focusing on the study and preservation of hummingbirds and other neotropical migrants.
- <www.hummingbird.org> The Hummingbird Society is a non-profit corporation dedicated to encouraging international understanding and conservation of hummingbirds.
- <www.nanps.org> North American Native Plant Society includes a list of state and provincial native plant societies that may help you to identify the indigenous plants preferred by hummingbirds in your area.