Bat Blitz

Hundreds of insects, hungry bats—but what happens when disease strikes?

Objectives

Students will be able to (1) explain the role of little brown bats in an ecosystem; (2) interpret data from simulations in order to formulate hypotheses and predict future outcomes; and (3) predict impacts to an ecosystem if bats were no longer present.

Background

Bats are an incredibly diverse group of mammals. Of the approximately 5,000 species of mammals found worldwide, over 1,300 of them are bats. That's over 20 percent of all mammal species, and second only to rodents. Bats inhabit a variety of ecosystems and are found worldwide except for the Artic, Antarctica, and a few oceanic islands. The smallest bat species (Kitti's hog-nosed bat) has a wingspan of 6 inches and weighs less than a penny. The largest bat species (flying fox) has a wingspan of 6 feet and weighs over 3 pounds. Bat species not only vary in size but in their diet as well. Bats can specialize in eating insects (insectivore), fruit (frugivore), fish (piscivore), small animals (carnivore), nectar/pollen (nectarivore), and blood (sanguivore). (There are only three species of sanguivore bats in the world, found in Mexico, Central America, and South America.)

Most bats are considered crepuscular (active at dusk and dawn) and nocturnal. Some bat species, especially those that feed on insects, rely on echolocation to locate objects and their food. Other species rely on their sight and smell to navigate their environment. Despite the differences, bats have one unifying characteristic: they are the only mammal capable of true flight. The bat mammalian order, Chiroptera, means "hand-wing" and alludes to the unique thin membrane of skin between a bat's elongated hand bones.

Over 500 plant species worldwide are pollinated by bats, enabling the plants to reproduce. The flowers of mango trees, agave, and wild bananas all rely on bat pollination. Fruit-eating bats disperse many seeds for ecosystems, and in response

Grade Level: Upper Elementary, Middle School

Content Areas: Science, Math, Language Arts, Environmental Education, Physical Education

Method: Students simulate bats feeding on insects then perform calculations based on the number of insects caught during the activity.

Materials: Cones, chalk or rope; hula hoops, small discs, or placemats; one small bag or cup per student; poker chips, beans, or other tokens; timer; paper to record data; **OPTIONAL:** *Bath Math Challenge* (page 145, one copy for each middle level student)

Activity Time: one or two 45-minute sessions

People Power: 15 or more students

Setting: outdoors or large indoor area

Conceptual Framework Topic Reference: IDIB, IDIIB2, IDIIC, IDIIC1, WPIIA, WPIIA2b2

Terms to Know: echolocate, roost, hibernacula, insectivore, forage, ecosystem service

Appendices: Simulations, The Ecosystem and Project WILD