



Bat Habitat

Summary:

This lesson connects Puerto Rico and Wisconsin through bat species. The idea is to briefly look at how many species live in each location and their habitats. Once students are aware of the importance of bats and the decline in numbers, they will put together a bat house to aid in saving these populations.

Background Information:

Forty percent of all bat species in the world are endangered or threatened! That's pretty scary when you consider how important bats are for people and for the environment. Bats eat millions of pounds of insect pests yearly, pollinate flowers, and even disperse seeds that help the rainforests grow. You'd think that with all the benefits we derive from bats that people would have learned to appreciate them. Sadly, the fact is people still believe destructive myths about bats-like all bats have rabies, bats are blind, bats will fly into your hair, and bats will attack people. These myths contribute to millions of bat deaths each year (Placer.)

On the island of Puerto Rico there are 13 bat species. Most of the species on the island are dependent on caves. One particular highway project may harm the Cucaracha Cave, home to so many thousands of bats. Even the development of large cave systems for tourism has failed to take into account the impact on bats. One example of this is the Camuy Caves. The Karst Region of Puerto Rico is where many bats are found. Because of the decline in the number of bats, organizations such as the Citizens of the Karst (CDK) are formed. This group lobbies to protect what Dr. Rodriguez-Duran calls "Puerto Rico's bat country," the limestone region in the north of the island. A significant achievement of CDK has been the purchase of a 110-acre property, now known as the Mata de Platano reserve, that contains Cueva Culebrones. This cave is named after the endemic Puerto Rican boas that prey on bats during their nightly exodus, the cave is home to an estimated 300,000 bats of five or six different species.

Wisconsin has seven species of bats, all of them insect eaters. One other species that may occur in Wisconsin is the Indiana bat (*Myotis sodalis*) which is listed as federally endangered. An abandoned iron mine in the town of Neda, Dodge County, is the largest known bat hibernaculum, in the Midwest.

Grade Level:

9th grade

Goal:

To make students aware of the many species of bats and their habitats.

Key Concepts: biodiversity, habitat

Objectives:

- 1) Students will identify distinguish between caves and Karst region
- 2) Students will determine the important role of bats in the ecosystem and why there are some issues of survival.
- 3) Students will construct a bat house to aid in the conservation of the bat population.

Teaching Location:

In the classroom

Lesson Time:

Three 50 minute class periods:
1 intro and discussion/notes
2 for bat houses

Subject Areas for Infusion:

Biology, Earth Science,
Environmental Science

Standards:

Science:

A.8.4
A.12.1
F.12.7

Environmental Education:

A.8.1 D.12.1
B.12.3
B.12.9

Even though many parts of the mine were inaccessible for census, the population was estimated to include at least 300,000 bats.

Materials

Suggested for each bat house:

- 2' X 4' outdoor grade plywood
- 1 piece 1" X 2" X 8' pine strip
- 20" X 22 ½' mesh plastic netting
- 20-30 1 ¼" coated screws
- flat water-based paint or stain
- water-based primer
- paintable latex caulk
- 5/16" stainless steel staples
- 1" X 3" X 28" board for roof (option)
- Wet sand or clay

Vocabulary

Cave or cavern: large underground chamber

Karst region: Topography characterized by sinkholes, sinkhole pond, lost rivers, underground drainage

Bats: mammals; there are about 950 different kinds, about one-fifth of the world's mammal species

Set-Up:

Prior to lesson show material list to students asking for some things to be brought into class. Teacher obtains the remainder of materials.

Procedure:

Introduction.

Introduce subject matter by giving students background information. Describe the different types of bats and ecosystems in Wisconsin and Puerto Rico. Describe lesson to students.

Activity 1.

- 1.) Teacher writes the words 'caves' and 'Karst region' on the blackboard telling the students that these are two types of habitats for bats.
- 2.) Students work with a partner and are given three minutes to form their clay or sand into a representation of each.
- 3.) The majority of the students should know what a cave is but most or all will not know what is meant by Karst region.

Activity 2.

- 1.) The teacher leads a discussion and 'show and tell' of the groups' figures.
- 2.) The class discusses the difference between Karst and caves and talks about all the different habitats of bats. The teacher should also point out that some bats are endangered. Lead discussion as to why bats are important.

Activity 3.

- 1.) The class is broken up into groups of 4.
- 2.) They are shown worksheet 3 (see attached) as a model for construction of a bat house.
- 3.) The groups are given some time to assess the plan and materials.
- 4.) Their assignment is to construct a bat house that can fit at least 10 bats and is likely to attract bats.

This is done primarily in class, unless students are ambitious enough to work extra.

Conclusion.

There are bats species all around the world. The species in Wisconsin and Puerto Rico are important to the earth's biosphere and are therefore imperative to study. Since over 40% of the world's bat populations are either endangered or threatened, we need to help them. This activity of building the bat houses is a positive step in the right direction.

Assessment.

A simple rubric (found on worksheet 3) for the construction of the bat house is used to award a group grade to the final project. Individual assessments can be done by giving a pop quiz, open-note quiz, or discussion from class.

References:

Namowitz, Spalding. McDougal Littell Earth Science, McDougal Littell Inc., Evanston Il 2003. pgs 272-273.

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Bloomfield Hills, MI 48303-0801
800-276-7074

Placer, Jose Julian., The Bats of Puerto Rico, VOL16, SUMMER 1998, PG 13-15.
obcbats@aol.com

Department of Natural Resources Information on bat species:
<http://www.dnr.state.wi.us/org/land/er/publications/bats/bats.htm>
<http://dnr.wi.gov/org/es/science/wildlife/bats.htm>

National Parks Conservation Association: How to build a bat house
http://www.eparks.org/wildlife_protection/wildlife_facts/bats/bat_house.asp