

BUILD A BAT HOUSE!

ACTIVITY

3

Summary:

Students build a bat house for their Backyard Wildlife Habitat™ or Schoolyard Habitats® Site.

Grade Level:

2-8

Time:

2 hours (plus painting and installation time)

Subject:

science, art, math

Skills:

construction, description, analysis

Learning Objectives:

Students will be able to:

- ✓ Identify reasons for building a bat house.
- ✓ Demonstrate a method for building a bat house.
- ✓ Identify key criteria for successful bat houses.

Materials:

(for each house)

- ✓ 1/4 sheet (2" x 4") 1/2" CDX (outdoor grade) plywood
- ✓ One piece 1' x 2' (3/4" x 1 3/4" finished) x 8" pine (furring strip)
- ✓ 20 to 30 1 1/4" coated deck or exterior-grade Phillips screws
- ✓ One pint black, water-based stain, exterior-grade

- ✓ One pint water-based primer, exterior-grade
- ✓ One quart flat water-based paint or stain, exterior-grade*
- ✓ One tube paintable latex caulk
- ✓ 1" x 3" x 28" board for roof
- ✓ 6 to 10 7/8" roofing nails

* Years of research have shown that bat houses are far more successful at attracting bats if they are painted or stained. Painting helps maintain the proper internal temperature for bats and also increases the life span of the bat house. Appropriate color depends upon geographic location and amount of sun exposure. Adjust to darker colors for less sun. Use exterior-quality, water-based stain or latex paint, and choose flat paint rather than gloss or semi-gloss.

Recommended Tools

- ✓ table saw (for adults only) or handsaw, caulking gun, variable speed reversing drill, paintbrushes, Phillips bit for drill, tape measure or yardstick, scissors (optional), staple gun (optional)

Bat House Color Recommendations Based on Average Daily High Temperatures in July

Less than 85° F = black

85° to 95° F = dark brown or other dark shade

95° to 100° F = medium brown or other medium shade

100° F or greater = light tan or other light shade

Background

Why Build a Bat House?

America's bats are an invaluable natural resource. Yet, due to decades of unwarranted human fear and habitat loss, bats are in alarming decline. The loss of bats contributes to growing demands for toxic pesticides that increasingly threaten our personal and environmental health.

The most important goal is to preserve America's most abundant bats in sufficient numbers to maintain nature's balance. If you live in areas of bat habitats, putting up a bat house near your home or school can help provide a critical safe haven for bats. Bats make good neighbors; as primary predators of night-flying insects, they play a vital role in maintaining the balance of nature. People with occupied bat houses on their properties benefit from having fewer lawn and garden pests, and they enjoy learning about bats and sharing their knowledge with friends and neighbors. Few efforts on behalf of wildlife are more fun or rewarding than helping bats.

Note: Some teachers opt to buy ready-to-hang bat houses and concentrate the lesson instead on selecting a good site for mounting



it. Superior quality bat houses are available through the Bat Conservation International catalogue at 1-800-538-BATS in the U.S. and Canada.

Looking for additional or other ways to provide better bat habitat? You can try these other simple actions to attract bats to your Backyard Wildlife Habitat or Schoolyard Habitats site, by providing the insects to eat, water to drink, and places to hide that bats need for their habitat.

- ✓ Got an anti-bug zapper in your yard? You might want to think about getting rid of it! Zappers are useless on most biting insects and only kill light-attracted moths, which are good food for bats.
- ✓ Trees and shrubs, even dead ones left standing, are excellent hideouts for bats—and birds.
- ✓ Bats need water to drink. If you build a mini-pond, you'll also attract frogs and many other water creatures. Find out how to do this on NWF's website: www.nwf.org/backyard-wildlifehabitat/ or at a garden center or library.
- ✓ Close up any holes in your attic to ensure that your

neighborhood bats use your outdoor wildlife habitat, and not your house!

Preparation

1. Measure and cut plywood into three pieces for each group: 26 1/2" x 24" for the back board, 16 1/2" x 24" for the front top, 5" x 24" for the front bottom.
2. Pre-drill 11 screw holes on the back board, four on each side and three across the top.
3. Pre-drill nine screw-holes on the front top board, three on each side and three across the top.
4. Pre-drill four screw holes on the front bottom board, two on each side.

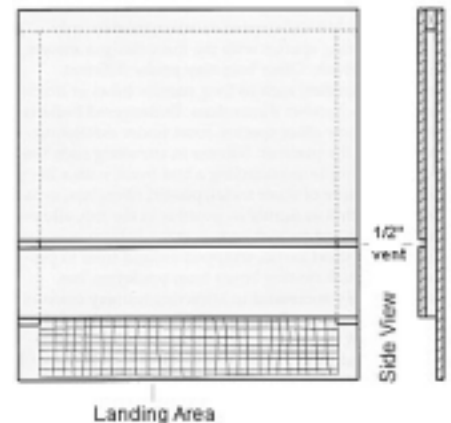
Procedure

1. Ask students, *What do you know about bats?* Make a list on the board. *What would you like to know?* Make a parallel list. Discuss some of the major characteristics of bats (from background) with the students, and refer back to their list for later explorations.
2. Explain to students that many bats are highly endangered (*What does that mean?*) due to habitat destruction

and disturbance. *If you live in an area bats use for habitat (check www.enature.com if you need to check), what could you do to help them?*

One idea is to build a bat house to provide additional habitat for them.

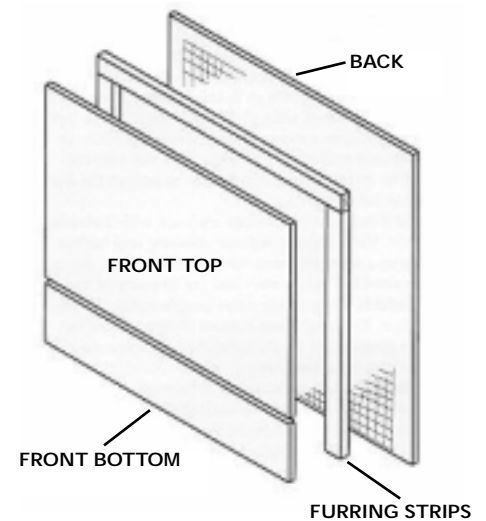
3. Divide your students into small groups to make bat houses, or make one together as a large group. Make sure to use all appropriate safety considerations, equipment, and adult supervision for use of tools.
4. Roughen inside of back-board and landing area by cutting horizontal grooves with sharp object or saw. Space grooves about 1/2" apart, cutting 1/32" to 1/16" deep. Ask students, *why you might want to do this?* (The bats need such texture for climbing and roosting.)





5. Apply two coats of black, water-based stain to interior surfaces. Do not use paint, as it will fill grooves, making them unusable.
6. Measure and cut furring strips into one 24" and two 20¹/₄" pieces.
7. Attach furring strips (3/4" wide) to back, caulking first.

- Start with 24" piece at top. Roosting chamber will be 3/4" wide (front to back).
8. Attach front to furring strips, top piece first (don't forget to caulk wherever pieces meet along both top and sides). Leave 1/2" vent space between top and bottom front pieces.



KEY CRITERIA FOR SUCCESSFUL BAT HOUSES

DESIGN: - All bat houses should be at least 2 feet tall and 14 inches or more wide, with a landing area extending below the entrance at least 3 to 6 inches.

- Most houses have one to four roosting chambers—the more the better. Roost partitions should be carefully spaced 3/4 to 1 inch apart.
- All partitions and landing areas should be roughened. Wood surfaces can be scratched or grooved horizontally, at roughly 3-inch intervals, or covered with durable plastic mesh (1/8 inch or 1/4 inch mesh, available from companies such as Internet, Inc. at 1-800-328-8456).
- Include vents 6 inches from the bottom of all houses to be used where average July high temperatures are 85° F or above. Front vents are as long as a house is wide; side vents are 6 inches tall by 1/2 inch wide.

HABITAT: Most nursery colonies of bats choose roosts within 1/4 mile of water, preferably a stream, river, or lake. Greatest bat house success has been achieved in areas of diverse habitat (with lots of different species present). Bat houses are most likely to succeed in regions where bats are already attempting to live in buildings.

MOUNTING: Bat houses should be mounted on poles or buildings. Houses mounted on trees or

metal siding are seldom used. Wood or stone buildings with good solar exposure are excellent choices, and locations under the eaves often have been successful. Mounting two bat houses back to back on poles is ideal. Place houses 3/4 inch apart and cover both with a galvanized metal roof to protect the center roosting space from rain. All bat houses should be mounted at least 12 feet above ground; 15 to 20 feet is better.

PROTECTION FROM PREDATORS: Houses mounted on sides of buildings or on metal poles provide the best protection from predators.

AVOIDING UNINVITED GUESTS: Wasps can invade bat boxes before bats fully occupy it. Use of 3/4-inch roosting spaces reduces wasp use. If nests accumulate, they should be removed in late winter or early spring before either wasps or bats return. Open-bottom houses greatly reduce problems with birds, mice, squirrels or parasites, and guano (bat droppings) does not accumulate inside.

TIMING: Bat houses can be installed at any time of the year, but are more likely to be used during their first summer if installed before the bats return in spring.



9. Caulk around all outside joints to further seal roosting chamber.
10. Attach a 1" x 3" x 28" board to the top as a roof, if desired (optional, but highly recommended).
11. Paint or stain exterior three times (use primer for first coat).
12. Where will you put up your new bat house? Ask students to identify criteria for good placement, based on what they know about bats. Consider:
 - permission to put it up, close to a pond, stream, or lake where bats feed and drink,
 - diverse habitat that supplies a variety of insects,
 - lots of sunshine to warm the house (at least six hours daily in hot climates, more in cool locations, so young stay warm and grow fast),
 - facing east, west, or south (avoiding west in exceptionally hot climates)
 - on a pole or the side of a building),
 - about 12-15 feet above ground,
 - in an open area at least 20 feet away from nearest trees or other obstacles. For each of these factors, ask students to consider how it

contributes to successful bat habitat.

13. Install your bat house and observe it! *What do you discover?*

Assessment

- ✓ Write a letter to Ranger Rick Raccoon at the National Wildlife Federation about your bat house, explaining what you learned about building and planning your bat house. Ask any bat-related questions you have. Be sure to use Bat Stamps on your envelope!
- ✓ Design a brochure showing how to build and where to place a bat house.