



bats need your help

Bats are among the most beneficial, yet misunderstood mammals. They control insect populations, pollinate cacti and tropical fruit trees, and are important to medical and scientific advances. More than 1,100 bat species have been identified — a fifth of all known species of mammals. **Sadly, bat colonies throughout the world are declining drastically due to human activities and disease.**

Fascinating Flyers

Bats are the only mammals that developed true flight, thanks to their unique “hand wings.” Additionally, they are among the few mammals that use a specialized, highly sophisticated echolocation system, similar to sonar, to navigate and locate food. Found throughout the world, except in the polar regions, bat species have developed individual preferences for roosts, which include caves, abandoned mines, bridges, buildings, wells, culverts, trees, cliff crevices, and even beneath stones. Most bat species produce only one pup each year and like all mammals, female bats nurse their young. Each type of bat has specialized to feed on just a few types of food, including flying insects and agricultural pests, centipedes, spiders, frogs, fish, lizards, mice, birds, fruit, nectar, and pollen.

Echolocation

Bats aren’t blind! However, insect-eaters rely on **echolocation** to navigate in the dark and search for food. After emitting high-frequency sound waves, bats listen for the sound to bounce off objects in their flight path. This ability is so advanced that some species of bats can locate and capture tiny insects in total darkness while flying through a forest. Their hearing is so sensitive that bats can hunt entirely by listening for the sounds made by their prey. However, fruit-eating bats rely on their eyesight and keen sense of smell to find food because they generally forage in daylight.

Nearly all North American bat species are insect eaters, and the quantity of insects they consume is astounding. For example, scientists estimate that the bat colony in Bracken Bat Cave in Texas eats more than **200 tons of insects every night**. As a result, crop and timber damage from insect pests is reduced, as is the need for pesticides that may harm the environment.

Fruit-eating bats control insect populations as well, by eating over-ripened fruit that otherwise attracts destructive fruit flies. These bats also disperse seeds, helping sustain desert and tropical ecosystems. Nectar-feeding bats play a critical role in pollinating tropical cash crops such as bananas, cashews, mangos, and figs, as well as key desert plants, including agave, saguaro, and organ pipe cactus.

Underground, bats supply essential nutrients and food resources critical to cave life, such as microbes, invertebrates, fish, and salamanders. Throughout the world farmers use bat guano for an effective organic fertilizer.

Did you know?

- Most North American bats are insect eaters, and populations in just one cave can consume tons of insects every night.
- Fruit-eating bats eat over-ripened fruit and disperse seeds to help sustain deserts and tropical forests
- Nectar-feeding bats pollinate important tropical fruit trees and desert plants.
- Farmers value bat guano as an organic fertilizer.
- Bat guano provides the basis of many cave ecosystems by supplying essential nutrients and food critical for cave life.
- Only three uncommon Latin American bat species feed on animal blood.

Advancing Science and Medicine

The study of bats has led to significant medical advances including: sonar-type devices to assist blind people; anti-clotting drugs for stroke and cardiac patients; and techniques used by fertility clinics. In addition, bacteria discovered in bat guano have amazing cleansing potential, and are proving valuable for many uses, from creating new detergents to cleaning up oil spills.

Home Sweet Cave

At some point in their life cycles, two-thirds of the 46 species of bats in the U.S. use caves or cave-like structures. Inside caves, bats give birth and rear their young in the summer months, and hibernate in the winter. **Even quiet groups of cavers with dim lights can disturb hibernating bats, causing them to waste the limited energy stores they need to survive the winter.** Disturbing pregnant females in the spring can cause them to lose their young. Human interference also may force bats to abandon their homes for less suitable roosts, causing further declines in bat populations. During their active season, some species of bats select temporary roosts other than caves.



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Threats to Bats

Although their nighttime activity, remote habitats, and ability to fly help protect bats, they do have natural predators, including raccoons, snakes, foxes, house cats, hawks, and owls. However, humans are responsible for far too many bat deaths, often by eliminating habitat and food sources. For example, land development destroys habitats, and outdoor enthusiasts disturb cliffs, caves, and other rock formations that serve as quiet bat roosts. Worst of all, bats are killed deliberately by people who don't know any better.



White-nose syndrome (WNS), a fungal disease discovered in 2006, has killed millions of cave-dwelling bats in eastern North America, decimating populations. Scientists are working to learn more about WNS, discover a way to stop its spread, and develop methods to protect the few bats that survive. Learn more about WNS on the NSS website.

Our Endangered Friends

Sadly, many of the world's bats may be headed for extinction. Almost half of the 46 bat species in the U.S. are listed as Endangered or Threatened, or are being considered for this status. Even relatively common species are vulnerable, particularly in the face of WNS.

Bats Need Your Help

Spread the word that bats need friends! You are welcome to pass along copies of this brochure (available at no charge from the National Speleological Society). If you belong to a Scouting, outdoors, or conservation group, or a church or civic organization, consider arranging a presentation about bats.

- Avoid visiting caves with large bat populations, especially during winter hibernation or summer maternity seasons.
- Follow the U.S. Fish and Wildlife WNS advisories when visiting caves.
- Encourage the installation of well-placed bat houses to help offset the loss of natural roosts.
- Partner with local wildlife management agencies to assist biologists in roost surveys and other bat research and conservation work. Training workshops are offered at NSS Conventions and from Bat Conservation International.



To learn more and join, visit www.caves.org

Find out more

Suggested Reading

The Bat House Builder's Handbook,
by Merlin D. Tuttle and Donna L. Hensley

Walker's Bats of the World, by Ronald M. Nowak

For Educators

Discover Bats!, by Bat Conservation International

On the Internet

Bat Conservation International

www.batcon.org

Bat World

www.batworld.org

National Speleological Society

www.caves.org

The National Speleological Society (NSS) has more than 10,000 members dedicated to exploring, studying, and protecting caves.

Bat Conservation International (BCI) is the world's foremost organization devoted to conservation, education, and research initiatives involving bats and the ecosystems they serve.



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Discovering Caves

Bats

Photo by Bob Biddix

