



Ecological Benefits of Bats and Conservation Considerations Jeremy Chen

Bats live all over the world, and there are over 1500 species. Bats make up 20% of all mammal species (Brian, 2021). Wherever there are humans, there are bats, which is why people need to know about bats. Most people think that bats only have negative impacts, especially since COVID, but there are many ways that bats can be helpful. Bats control pests, disperse seeds, and fertilize plants, all of which can be extremely helpful to both farmers and the environment. Despite having a bad reputation, bats are actually more helpful than harmful.

1. *Bat ecology and benefits of bats in ecosystems and farms*

Bats are pollinators, and many people don't know that. When bats fly from flower to flower, they pick up and release pollen as they feed on the nectar in the flower. This is beneficial because it allows flowers and fruit trees to make seeds and fruit, so new trees and flowers can grow. Bats pollinate many plants that farmers grow for money. The main plants that bats pollinate include saguaro cactus, durian, guava, banana, mango trees, and agave, which is a primary ingredient in tequila. The bats that pollinate these plants live in Africa, Southeast Asia, the Pacific Islands, and the American Southwest. By pollinating these plants around the world, bats help farmers grow more fruit to sell and make local economies grow.

Additionally, when bats eat fruits, they also consume seeds, which they then disperse by pooping them out. Seed dispersal allows fruit trees to grow in places far from the tree that produced the seed, which allows trees to get enough sunlight to grow well. Moreover, when bats poop, seed dispersion isn't the only benefit. When bats poop, they also fertilize plants and make the soil richer. For example, bats fertilize avocado, banana, fig, mango, peach, and so much more. (González-Anguiano 2024) They also fertilize a special kind of plant called *Nepenthes Hemsleyana* that has evolved to have extraordinary leaves that reflect echolocation calls extremely well. They do this to get fertilizer or poop from the bats. In return, they give the bats roosting spots.

Bats also eat many pests, such as mosquitoes and crop destroyers. Some plants they protect are corn, rice, cucumbers, squash, and much more (Pennsylvania State 2024). They use echolocation to hunt prey, making sounds and listening to the echoes that reflect back. Bats save 3.7 billion dollars annually in North America alone (Boyles et al. 2011). They eat the pests that would have eaten crops, which saves money and reduces the need for pesticides. They find these pests and other food using echolocation which is when they send high-frequency sounds and listen to returning echoes.

2. *Diversity of bat behaviors*

It is important to know about the special kinds of bats so you can understand the ways bats can contribute to the environment and you can identify bats. There are many special bats with special features you might not know about like the Long fingered bat, the vampire and greater false vampire bat, the hammer head bat, and the ghost bat. The long fingered bat



catches fish with its long claws and lives in Africa, Asia, and Europe. Vampire bats live in Mexico and parts of Argentina. The common vampire bat drinks the blood of tapirs, cows, horses, and pigs. Their saliva prevents the wound that they bite from closing (Fonseca). Ghost bats mainly live in Australia and they eat insects, birds, frogs, lizards, and sometimes other bats. They are carnivorous, meaning they only eat meat. They are called ghost bats because when they fly it is hard to see their wings because of their thin skin.(The Australian Museum).

3. *Case study of pallid bats*

Pallid bats are really important in the ecosystem of California. They are also the state bat of California. Pallid bats became the state bat of California because of a 12 year old's passion for bats. Pallid bats eat scorpions, crickets, grasshoppers, and beetles. Pallid bats also have a feature no other bat has, they are immune to scorpion venom (W Frick). This helps them safely hunt scorpions without having to worry about getting stung. They sleep in a wide variety of places like rock crevices, caves, mines, hollow trees, man-made structures like buildings, bridges, and under porches.

I interviewed Dr. Winifred Frick about pallid bats. Dr. W Frick is the chief scientist at Bat Conservation International. Her research has shown that the pallid bat is facing dangers because of noise pollution. Pallid bats find prey by listening for beetles or scorpions moving around on the ground, but with all the noise that humans make, they can't find enough food to survive. You can help pallid bats and conservation efforts by creating protected areas that have natural soundscapes. Dr. W Frick said, "Pallid bats, like most bats, have very sensitive hearing. Pallid bats often use "passive listening" meaning they just listen for the sounds of scorpions or large beetles scuttling along the ground to find their prey. Therefore, they are particularly sensitive to noise pollution. We can prevent noise pollution by making sure we have protected areas that have natural soundscapes that are protected from the noise of generators, loud equipment and roads."

4. *Conclusion*

Bats are not bad animals as many people think but they are actually helpful animals. They pollinate plants, control pests, provide plants with fertilizer, and disperse seeds which helps farmers and the ecosystem. They save billions of dollars each year but are being harmed by things like noise pollution and wind turbines. These things can be countered by creating areas where bats can safely hunt without sound pollution interfering with their echolocation. Bat conservation is extremely important because they help farmers save lots of money on pesticides and crop damage , they disperse plant seeds to less dense areas, and give plants fertilizer.

References



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