



THE OSPREY

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Every Bat is Precious; Facts about Bats in the Era of COVID-19

Ruth Heil

On the day I wrote this, scientists still hadn't identified which mammal the pandemic-causing coronavirus came from. They may never know.

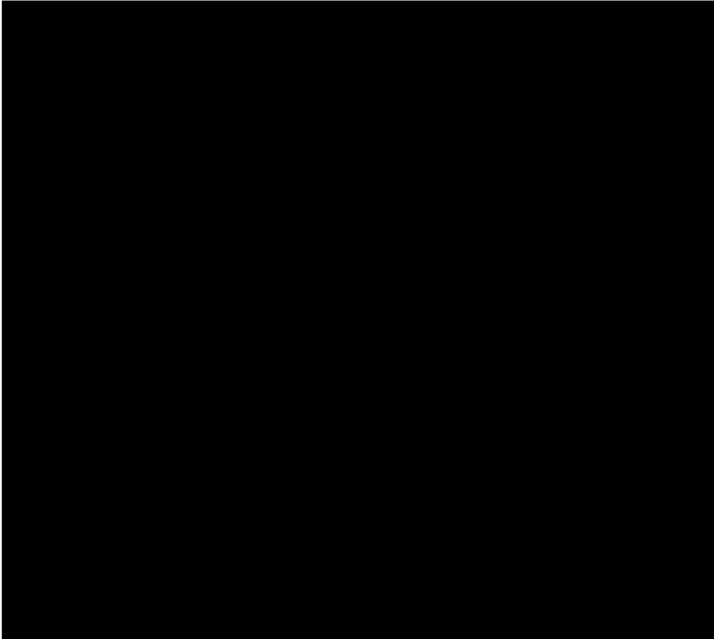
They are, however, certain it's another zoonotic disease, meaning it came from a nonhuman vertebra, which probably jumped species through excrement (urine, feces, saliva). Early research suspected snakes and pangolins, but the genetics then pointed towards bats. And so, bats have earned another undeserved badge of loathing, pinned alongside the vampire image of rodents that fly into your hair and give you rabies.

It's true that bats' antiviral defenses allow them to live with viruses that are otherwise deadly to other mammals. It's true that coronaviruses have been found in bats throughout the world. And yes, bats have been implicated in other diseases besides rabies, including Ebola, although that connection, like COVID-19, is hypothetical.

Still, with no match identified, COVID-19 remains novel. It has never been found in any other organism besides human beings. In addition, scientists and epidemiologists are struggling to determine the route the pathogen took to infect us. This is an equally important piece of the disease-intervention puzzle. How it got to us matters as much as where it came from.

The Path to Disease

When Malaysian pig farms expanded their industrialized operations into bat habitat, 100 people died of a virus called Nipah. It came from bats, but the transfer started with pigs. Host bats fed upon nearby tree fruit and dropped contaminated pieces into the pig pens. The pigs that ate the fruit developed a severe respiratory infection, which spread to other farms when they were sold, which eventually spread to the farmers. Nipah has a 75 to 90 percent fatality rate. But the outbreak was contained because countermeasures were taken to rebuild the natural ecological and geographical barriers that previously existed. The



problem ended when pig farms left the bat habitat.

Further, overuse of antibiotics in animal husbandry benefits pathogens, making antibiotic resistant bacteria one of the most important sources of disease emergence today.

But such problems aren't limited to meat production. Antifungals used in plant agriculture have resulted in antifungal-resistant aspergillus infections in ICU flu patients.

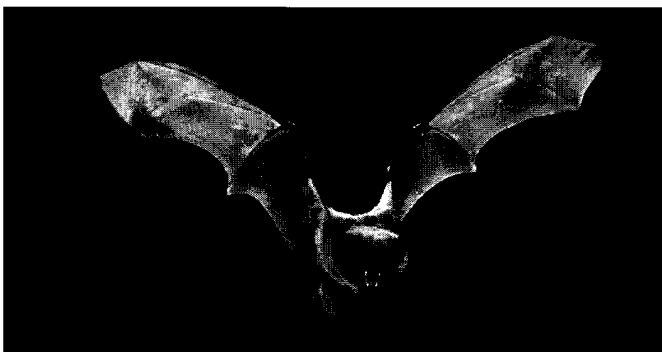
So who should we fear in all this: the bats, the pigs, the plants, or the humans?

Knowns Versus Unknowns

Gaps in knowledge of the COVID-19 origin don't just increase the risk of the disease's spread, it further risks our wellbeing when, in an effort to find blame, we wind up crucifying the bats.

Bat conservationist, Merlin Tuttle, sees the impact of COVID-19 on bats as a "viral witch hunt" (MerlinTuttle.org). Other vertebras are known to carry coronaviruses. But it's far more complicated and dangerous to get a sample from an alligator or a cobra snake than it is a bat. Thus the catalog of known animal pathogens references bats more often than other known hosts. And some of the worst zoonotic pandemics did NOT come from bats, such as the bird flu, which had adapted to birds.

Aside from what we don't know, everything we do know about bats reveals that we have no reason to fear them. Instead, we need them for a variety of reasons, foremost of which are pest control and pollination.



Big Brown Bat is the one bat species that seems to have weathered the storms hitting our other species. Big is relative. Its wingspan is 13 inches. Photo by Angell Williams on flickr CC BY 2.0.

Here are few truths about bats:

- Bats do not attack people.
- Bats are no more prone to rabies than any other warm-blooded mammal.
- Bats keep themselves very clean in order to fly.

- Parasites that do inflict bats are specialized and rarely pose problems to humans.
- Bats are long lived and slow to reproduce (average one pup per year).
- Insectivores, bats consume up to 25 percent of their body weight in a single feeding.
- Bats send ultrasonic calls to detect pray via echos, called echolocation.
- Bats are our only night-time flying insect eater. Consuming bugs, beetles, flies, and mosquitoes, they are our farmers' friend.
- While bats are famous for hibernating in caves, some like the Hoary Bat, roost in trees and migrate to warmer climates in winter.
- Some bats are pollinators
- Bat poop, called guano, is mined for sale as fertilizer.
- Bats are the only mammals that can fly.
- In predation, humans are a bat's greatest threat.

Bats are in Serious Trouble

Our misguided fears of these creatures is a calamity when you consider that, since 2007, 98 percent of Pennsylvania's six hibernating species have died as a result of human activity. We accidentally spread a disease called White Nose Syndrome, named for its telltale sign: a cottony white growth on the face. The pathogen moved with us from cave to cave and mine to mine, most often as a result of a recreational exploring. Bats suffered to such an extent that some places which once housed thousands are now occupied by just a few individuals struggling to survive.

We also built large-scale windfarms. There, migrating bats are the primary victims. Spinning blades knock out thousands of bats a year. Like bird-to-window collisions, an exact number cannot be tallied since victims are picked up by scavengers. In addition to collisions, because the turbines are so massive in size, their rotation causes an abrupt pressure change, inducing Barotrauma when the bats pass through the zones.

Helping the Bats

Bats need our help, not our misplaced hatred or fear. There are many ways you can give them a hand.

- Build or buy and install a bat box.
- Learn about bats. In addition to reading literature, attending presentations, and watching for bats in your yard, you can invest in a tool to interact. Ultrasonic signal detectors are on the market that, when combined with an app, will allow you to hear the signal. They

will even identify the species for you.

- Spread the love by informing your friends about bat truths.
- Respect cave closures.
- Follow gear-cleaning guidelines when visiting open caves and mines.
- Demand bat-safe wind.
- Join a bat advocacy group such as Bat Conservation International

In May 2014, the Pennsylvania Game Commission partnered with WQED Multimedia in Pittsburgh to create the documentary, "Race to Save Pennsylvania Bats." Search for it on YouTube.

Caution: the images are disturbing and sad. I can assure you that, if you watch it, you'll be forced to agree with DeeAnn Reeder, Ph.D. who is the Associate Professor of Biology at Bucknell University when she says, "Every bat we find is precious."

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