

## **Chemical Companies, Monsanto/GM Crops Threaten Eco Collapse**

by Jerome Taylor via nann - Independent UK Friday, Oct 29 2010, 7:59pm

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### **Bat disease threatens ecological catastrophe**

*First the bees now bats have succumbed to the horrors of pollution and genetic tampering with our food crops. Nevertheless, we allow Monsanto and a host of Chemical Corporations to continue to turn a profit!*

*The typically short term 'solution' Corporations are pursuing is to purchase unpolluted and untampered with arable land offshore in poorer nations and other food producing nations stupid enough (Australia) to surrender their prized fertile lands to Transnational Corporations -- that, by nature, would eventually see all viable ecologies replicating the destruction which is occurring in the USA. Ed.*

### **A virulent and deadly pathogen in America is exterminating a predator that is vital to farmers for controlling insect pests.**

As a biologist with more than four decades of experience in the field, Thomas Kunz is not prone to exaggeration. He likes the data to do the talking. But when it comes to describing the recent deaths of more than a million bats across the eastern United States he is unequivocal.

"I've worked with bats over 45 years and never have I seen, or even known about, any kind of mortality rate comparable to what we've seen," he says. "The analysis that we've done here indicates that bats - in at least the north-eastern US - are going to die out within 20 years."

Dr Kunz, a biology professor at Boston University and one of a handful of bat specialists in America, is describing the terrifying advance of white-nose syndrome. In just four years the virulent fungal infection has spread from a single cave in upstate New York to massacre more than a million bats across the North-east.

Scientists and conservationists have been astonished by both the virulence and viciousness of the disease. When a cave becomes infected 75 per cent of the bat colony is likely to be wiped out during the first winter hibernation. After the next winter 90 per cent of the original colony will have succumbed.

This savage fatality rate threatens to destroy one of North America's top predators, leaving a gaping hole in the continent's food chain with as yet incalculable knock-on ecological effects. One senior US wildlife official has gone so far as to describe the massacre as "the most precipitous decline of North American wildlife caused by infectious disease in recorded history".

Jim Dreisacker doesn't need to read the scientific research to know that bats are dying. Westchester Wildlife, his family run business in upstate New York, has been trapping animals for 30 years. Raccoons, skunks, woodchucks and beavers keep him busy all year round. But each summer the 49-year-old would normally expect a windfall from hundreds of callouts from homeowners asking him to remove summer colonies of little brown bats from their roofs and porches.

"The past two years I don't think we've had a single call," he says. "The little brown [bat] has just gone. That's a good 20 per cent of my business up in smoke."

The first outbreak of white-nose was discovered just 200km north of Mr Dreisacker's home in Howe Caverns, a popular tourist attraction outside the state capital Albany. In 2006 a caver reported that many of the bats inside the cave were displaying white growth on their noses and wings. The infected bats were weaker than their non-infected cousins, they came out of hibernation too early and died off rapidly from either starvation or exposure.

By the following winter white-nose syndrome had spread across upstate New York. The next year it had reached Vermont, Massachusetts and Pennsylvania, infecting critical hibernacula (winter hibernation caves) in the Appalachians. Canada was hit in 2009, with infections in Quebec and southern Ontario. This year new outbreaks have been reported as far south as Tennessee, Oklahoma and Missouri. Biologists and pathogen experts have been scrambling to try to understand how white-nose syndrome broke out and how it can be stopped or at least reduced.

"One of the biggest problems we're facing is that we don't really know much about bats or this fungus," says Hazel Barton, a British born professor of microbiology at the University of Kentucky whose team are concentrating on studying the fungus behind the deaths. "But what we do know is that everything is stacked against bats. It's like this disease was tailor-made to kill them off in their millions."

How white-nose syndrome kills is still a matter of scientific inquiry but the most generally accepted hypothesis is that the fungus attacks the bats' immune system and interferes with their hibernation patterns.

Throughout the winter, when food is scarce, many species of North American bats retreat to hibernacula (the largest ones in the North-east can contain up to 800,000 bats).

They huddle together in their tens of thousands, allowing them to save energy by lowering their body temperature. But this also provides perfect conditions for transmitting disease.

Throughout hibernation bats briefly rouse from torpor, the semi-comatose state that allows them to preserve energy. In most species the arousal rate is once every 12 to 20 days but white-nose infected bats wake up two to three times as often. The theory is that, just like other fungal infections such as Athlete's foot, white-nose is uncomfortable and wakes the bats.

"Every time they arouse it's an enormous drain on their energy levels," says Dr Kunz, adding that bats have to raise their body temperature every time they wake. "Energy-wise, one arousal is about the equivalent of 30 days in torpor so when white-nose bats wake early from their hibernation they are severely undernourished."

Desperate for food the bats will head to the mouth of the cave in search of insects. Most of them don't make it and those that do are usually killed by exposure in a matter of hours.

The results are horrendous. Colonies have suffered very high death rates with carcasses littering the floors of caves. Of greatest concern to conservationists are two critically endangered species that have been infected, the Grey bat and the Indiana bat. But four other species of hibernating bat have also been heavily infected.

Yet the potential extinction of America's bats is more than just a conservation issue. During spring

and summer bats eat more than half their bodyweight in insects every night to store up fat reserves for the long winter hibernation. If America's bats die out scientists say the loss to the farming industry would be devastating.

"Bats are one of nature's greatest pesticides," says Dr Kunz. "During the 180 days or so that they are out of hibernation, a million little brown bats will eat – and this is a conservative estimate – in the region of 500 tons of insects. If bats die out farmers will have to use so much more pesticides."

The University of Boston, using a test study compiled over eight counties in Texas, believes the US farming industry will go from spending \$1bn (£630m) a year on pesticides to \$9bn.

Places such as Tennessee and Missouri are now the front line in the bid to stop the fungus from spreading to the West Coast. The border of the Midwest rests on an enormous belt of porous limestone and is littered with caves like a geological Swiss cheese. Beyond that, western states such as California, Oregon and Washington boast some of the largest bat populations in the country.

"Fortunately the Great Plains and the Rockies act as a sort of natural barrier," says Dr Barton. "There's not a lot of evidence showing that bats from places like Tennessee can fly as far as the West Coast. Our biggest fear is human transmission."

Just as small-pox, carried by ships from the Old World, killed millions of Native Americans, early scientific investigations suggest white-nose fungus was brought to the US by someone from Europe. It then either mutated into a virulent and deadly pathogen or already was one for bats that didn't have the required immunity. A number of bats in Germany, Hungary and Switzerland have recently been found to carry the white-nose fungus but are not affected by it suggesting that Europe's bat population has already experienced a mass fatality and become resistant.

In response the US Government has closed all caves on public land but all it would take is a careless caver to bring it out West. "If humans bring it to the West, that would be catastrophic," says Dr Barton.

The symptoms

A cluster of hibernating little brown bats showing signs of white-nose syndrome. The fungus attacks the bat's immune system and interrupts their hibernation patterns causing them to become severely undernourished and die. The mortality rate among little browns with white-nose can exceed 90 per cent in some caves.

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