



Interview transcripts—White-nose Syndrome in Bats

Tom Rodhouse 002

Beginning in the winter of 2007-2008 we began seeing, or hearing reports of these sick bats, what we now know as white nose syndrome. The bats were; the populations that were being affected initially were coming out of upper New York state and then that spread very rapidly in the subsequent years. The telltale sign of white nose syndrome is the muzzle with the white fungus; the white growth and so actually what was interesting is after these reports began to come out, some folks were able to go back and look at some photographs from 2006 and identify that same white nose look.

And so it appears as though the disease was already being; had been established in 2006 in a cave called House Cavern in New York state; that is the epicenter of the disease and now it has spread quite rapidly throughout the Appalachian Chain down into the Southeastern United States and now into the Midwest and up into Canada, and threatens to move into the rest of the United States in short order.

Tom Rodhouse 004

Bats are really unique in the way they hibernate. They're unusual mammals; very interesting. They are first of all the only mammal that's capable of true flight and then second of all one of the evolutionary strategies that they've developed is this ability to survive harsh, cold winter temperatures. That is why we have bats in the northern hemisphere for example. And the big strategy that they use to do this is during winter when there isn't enough energy; enough food, bugs to catch, is they go into torpor. They lower their body temperature down to the ambient temperature of a cave environment; cool, just slightly above freezing maybe. And unfortunately, that turns out to be the same environment that is best suited for this fungus, the *Geomyces Destructans* aptly-named that is associated with white nose syndrome. And that's causing this disease.

Pat Reed 001

It's a fungal disease that, though it doesn't apparently kill the bats directly, it does wake them up out of their hibernation in the winter and it makes them susceptible to the environment. They wake up they are stressed; they burn up the reserve of food and energy that they've been carrying through the hibernation. They go outside in search of food and they run into winter and they run into the fact

that there are no insects and, basically, they're dying from exposure and they're dying in masses. 92% to 100% in some bat populations and so it is devastating the bat populations across the United States as this fungal disease moves forward.

Paul Cryan 011

It's those wings and the skin of the bats that is the primary target of the fungus that we now know causes White Nose Syndrome and we think that the infection of that skin, the wing skin that the fungus gets in and destroys, has a lot to do with how White Nose Syndrome kills bats during hibernation.

Paul Cryan 012

So in addition to other predators not having access to bats during winter because they hide in these secluded places, we haven't before seen diseases getting to bats during this hibernation period. At least we don't know of other diseases. And that's remarkable because bats, when they're hibernating, are essentially shutting down their immune system. So their bodily functions that typically fight disease, when they're up and active, are shut down as far as we can tell.

Paul Cryan 013

And so with White Nose and the fungus that causes White Nose Syndrome, *geomyces destructans*, what's happened is that this fungus has found a way to somehow get into those vulnerable, hibernating bats, get around their immune system, and do some serious damage to their bodies that leads to their death.