Study: Bat disease may increase farm pesticide use

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This 2010 photo provided by the U.S Geological Survey shows a hibernating little brown bat in Pennsylvania, with white-muzzle typical of White-nose syndroms. The disease has devastated the populations of migratory bat species such as the little brown bat in the Northeast since it was discovered in New York in 2006. (AP Photo/U.S. Geological Survey, Paul Cryan)

A group of researchers says the threat posed to bats by a fatal disease isn't just a threat to the animals but to American agriculture, one they believe farmers and consumers alike scarcely appreciate.

Bats save American farmers at least $3.7 billion a year in pest-control costs by eating insects that feed on crops, a benefit that could be in jeopardy as a disease that has killed more than a million bats in the

Northeast spreads to the Midwest, the researchers said in a paper published in the April 1 edition of the journal *Science*. They and others fear the disease could eventually affect fruit- and vegetable-growing areas in the West as well.

"Almost daily, we get the question of why should we care about bats," said one of the paper's authors, biologist Paul Cryan of the U.S. Geological Survey. "We don't feel we have much time to get the word out that bats are important and why they're important."

White-nose syndrome has devastated the populations of migratory bat species such as the little brown bat in the Northeast since it was discovered in New York in 2006. Since then, the fungus that causes the disease has spread south and west to 16 states and parts of Canada. More than a million bats have died, according to the U.S. Fish & Wildlife Service.

But agriculture is a much smaller business in northeastern states like New York than it is in the Midwest. Just last month the disease was found in Ohio, one of the country's larger producers of corn and soybeans. It's also recently turned up in Indiana - another big corn and soybean state - while suspected cases have been reported in Missouri. White-nose syndrome also has been found this year in North Carolina, a big Southern farm state.

Some West Coast farmers and organic growers have talked for years about the effectiveness of bats as a means of pest control.

Cryan and the other researchers set out several years ago to measure that benefit, a task they and others say is very difficult. They began by looking at what bugs bats ate in the cotton-growing areas of south-central Texas. They were particularly interested in whether bats ate cotton boll worms, and they found they did - a lot of them. In all, each bat ate up to

8 grams (about the weight of two grapes) of bugs each night.

Earlier research the Science paper draws on indicates bats in the Midwest eat a range of pests - stink bugs, root worm moths and many others.

Using the consumption rate they found in Texas, the authors figured bats save farmers anywhere from $12 to $173 an acre a year in pesticide costs, depending on the crops they grow, pesticides they use and other factors.

The researchers consider their $3.7 billion estimate conservative, but they expect some skepticism.

"We expect there to be some people to disagree with the details of this, and we hope that that starts a broader scientific discourse," Cryan said.

He and his research partners also noted that, to a lesser extent, they're concerned about bats being killed by electricity generating wind turbines, particularly since the windy, flat Midwest has many.

Phil Nixon, an entomologist at the University of Illinois, works with corn and soybean farmers on crop protection and shares the authors' concerns about bats and white-nose syndrome. He just isn't sure bats could eat enough to cut down much on the many pests found in the millions of acres of corn, soybeans and wheat across the Midwest.

"I'm sure all of these would be impacted by bat feeding, but how much it is it's hard to say," Nixon said. "My guess is relatively small."

But bats are already playing a significant role in pest reduction in some Western crops.

University of California Extension Service entomologist Rachael Freeman Long works with numerous central California farmers who grow crops like walnuts and hang bat houses to attract and keep the mammals.

"Farmers love their bats in this area," Long said. "When you go onto the farm level and you talk to farmers, their idea is every pest that a bat eats is one less that they don't have to take care of."

Bob Borchard is one of those farmers. He says he and his bother Joseph have about 20 bat houses scattered over their 400 acres of walnut trees near Winters, Calif., primarily to get rid of a common pest called the coddling moth.

"They do a really good job," he said, explaining that bats take care of most of the brothers' pest-control needs. "It's about 80 percent."

No one knows how quickly white-nose syndrome could spread across the Midwest, Cryan and fellow bat-paper author Gary McCracken said, or whether it will eventually reach the West. But they worry that because the disease has moved quickly so far that it could drastically reduce bat populations in just four or five years - and force farmers to spray far more pesticides than they now do.

Until now, "It's not really been in the bread basket, so to speak," said Gary McCracken, a University of Tennessee professor of ecology and evolutionary biology.