

## Owls eat poisoned rats, suffer gruesome deaths

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British Columbia - With the spooky glow of his headlamp illuminating an antenna in his hand, Paul Levesque stalks one of Canada's last remaining barn owls.

"Are you getting anything?" research team leader Sofi Hindmarch asks over a walkie-talkie.

"I got it!" Levesque responds. Then a few seconds later, dejected, he radios back: "No. I lost the signal."

Working in darkness, with the quarter-moon obscured by clouds, these two scientists are trying to figure out what an elusive, radio-collared owl is eating along this country road just beyond the suburbs that ring Vancouver. Their mission is to determine whether the decline of Canada's barn owl is tied, in part, to super-toxic rat poisons.

Scientists know that at least some owls are dying under gruesome circumstances, bleeding to death from stomach hemorrhages in an agonizing and dayslong decline. The culprit: An extra-potent class of rodenticides that has flooded the market in recent decades, designed to more effectively kill rats, a food source for the owls.

Six of 164 dead barn owls, barred owls and great horned owls in a western Canada study had pesticide levels high enough to kill them outright, causing the fatal stomach hemorrhages. Pesticide readings in 15 percent to 30 percent of the others appeared toxic and seem likely to handicap owls in a variety of ways, scientists say.

The Canada study is the latest evidence amassed by researchers that poses an unsettling question: Are we willing to poison owls and a variety of other wild animals in order to fight rats? That's what this new generation of rat poisons does.

"We're finding this stuff all over the place," said John Elliott, an Environment Canada scientist who co-authored the owl study published last year. "There's a lot more rodenticide in the food chain than we would have ever thought. We're surprised that there's that much of the stuff kicking around."

Studies in Canada, the United States and Europe show that this new generation of rat poisons is killing a variety of wild animals, including mountain lions, bobcats, coyotes, foxes, skunks, deer, squirrels, possums and raccoons, along with bald eagles, golden eagles, owls, hawks and vultures.

Hundreds of wildlife poisoning deaths have been documented. In the United States, the pesticides have been found in hundreds of animals, according to a 2006 memo by U.S. Environmental Protection Agency biologist Bill Erickson.

Erickson's memo was part of a yearslong process at EPA that resulted in 2008 in new rules to better control the rat poisons. In June, those rules go into effect, although they did not go as far as desired by some wildlife advocates, including the U.S. Fish and Wildlife Service.

The chemicals in question are anti-coagulants, which prevent an animal's blood from clotting or coagulating. The first of these, synthesized in the 1940s, is known as warfarin - the same chemical sold to humans as Coumadin, a prescription blood thinner.

The new strain of rat poisons came along in the 1970s, after health authorities noted that the first generation wasn't working as well as it should. The reason: Warfarin and its cousins required the rats to return to feed on the pesticide over the course of several days. With the new versions, only a single dose is needed, although it might take five days or more to do the job. Brand names include Havoc, Talon, Contrac, Maki, Ratimus and D-Con Mouse Pruf II.

Some animals are ingesting the pesticides by eating poisoned rats as the rats stagger about, dazed but not yet dead. This goes on for days before the rats succumb, in the meantime making them easy targets for owls and other predators.

On a balmy but cloudy night in May, Hindmarch is trying to capture a barn owl, one of three owl species that ingested the rat poisons in the 2009 study. The hunt this night is in a gritty industrial outpost in Vancouver, where rats scamper boldly

between the defunct lumber yard where they live and the bustling grain terminal where they sneak their dinner.

### **Overnight shift**

Between the wail of trains running by on tracks perhaps 30 yards away, Hindmarch and Levesque fiddle with their owl traps, preparing for their 9-5 shift - 9 p.m. until 5 a.m., that is.

"Can you grab one of the girls?" Hindmarch asks Levesque, referring to the mice that they hope will lure an owl to their traps.

The scientists have to carefully put the mice inside cages that will protect the mice when an owl swoops down, attracted by the rodents noisily munching on the crackers that Hindmarch is unwrapping. Hindmarch, of Simon Fraser University, doesn't want the mice to be hurt.

"It's working time," Hindmarch says as she grabs the first mouse in its transport cage and scoots it through the open door of a small cage that's part of the owl trap. "You'll get crackers soon."

Levesque, a freelance contract scientist, takes the cage and searches for just the right spot to put it down in tall grass beside a nearby drainage ditch. He slips in some crackers and steals back to wait inside his truck to see the owl swoop in. Under the tall grass, the noisy snacking attracts barn owls, which are then caught in the trap.

Hindmarch's objective is twofold: to collect the owl's blood so it can be tested for rat poisons; and to fit the owls with radio transmitters so she can track them and figure out where they are feeding. She wants to know whether urban owls are eating more poisoned rats than their country cousins.

Her work is a follow up to the study analyzing owls found dead in British Columbia and the Yukon Territory, which showed that nearly three-quarters of the birds had rodenticides in their livers. The Canadian findings follow earlier studies in Europe, New Zealand, New York and elsewhere that documented the poisons spreading to wild animals.

The barn owls in and around Vancouver make up the last remaining population of barn owls in Canada. Although plenty remain alive in the United States, Hindmarch

and her colleagues are eager to find out what role rat poisons may be having in the Canadian owls' decline. The findings will have implications in the United States too.

Taken together, the research suggests that these improved rat-killers are imposing a toxic load on the environment that no one bargained for. It seems clear that some rats are being eaten by owls and other wild animals after they have ingested extraordinarily high doses of poison, researchers say.

"The rats are really little toxic packages running around before they die," said Michael Fry, a wildlife toxicologist and pesticides expert with the American Bird Conservancy. "If the rat is carrying 10 or 15 times a lethal dose, the animal that consumes it is at a much higher risk of consuming a lethal dose."

### **Long-lasting poison**

Once an owl or other animal eats a poisoned rat, the pesticides stay around in the predator's system for a very long time. It takes six months or longer for just half the dose to be eliminated from some animals' bodies.

Imagine you're a barn owl like the one Hindmarch is trying to catch by the grain depot.

"If you're just getting one dose on top of another, you get this constant exposure," said Nancy Golden, a U.S. Fish and Wildlife Service toxicologist. "It's one thing to have enough to kill you outright. But what about the ones that are just carrying this body burden? What effect does that have on their fitness? That's what worries me."

The birds' bodies are routinely scavenged by other wild animals, further spreading the poison into the food chain, endangering other animals.

California's threatened San Joaquin kit fox is an example. Scientists collected carcasses of the big-eared, long-legged fox that died from various causes in Bakersfield and in an area 30 miles out in the country. Nearly all the dead foxes from Bakersfield had residues of the long-lived second-generation rodenticides, while none from the outlying desert did.

Pushed by environmentalists who successfully sued in federal court, the EPA in 2008 issued rules for these rat poisons that largely take them out of the consumer market.

Pesticide manufacturers say EPA's action was overkill, but should eliminate any doubts about the products' safety for wildlife.

"There was not strong evidence to compel (EPA) to put into place the (new rules). However, they did so," said Karen Reardon, director of communications at Responsible Industry for a Sound Environment, which represents pesticide manufacturers. "We have now even further added protections for secondary wildlife exposure."

Under the new rules, use of the second-generation rat poisons by consumers will be curtailed. The sale of loose rat baits will be banned in "big box" stores like Home Depot as well as other retail outlets. However, consumers can purchase up to one pound of bait in bait "stations" that are designed to keep out kids and dogs.

Professional exterminators may continue to use the more-toxic second-generation rat poisons, and loose baits. However, they are required to use above-ground bait stations if the bait is left outdoors or in any place accessible to children, pets or wildlife.

Golden predicted that poisoning of wild animals will continue under the new rules.

"I wouldn't use anticoagulants in my back yard," said Golden. "These things are pervasive and are turning up in places we did not expect. ... They're certainly not contained where we think they are."

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