Bobcats Are Loading Up on Rat Poison Across the Northeast, Study Finds

October 12, 2026
in Science News



BY **Gavin Prescott** Scienmag Editorial Profile - Ecology and Ecosystem Dynamics

A quiet chemical crisis is unfolding in the forests, suburbs, and farmlands of the northeastern United States, and the bobcat is its most telling sentinel. A new study published in PLOS One has documented widespread contamination of bobcats (Lynx rufus) with anticoagulant rodenticides, the compounds designed to kill rats and mice by disrupting blood clotting. Drawing on more than a decade of samples collected between 2013 and 2024, researchers detected seven different rodenticide compounds in 352 bobcats across four states, with 59 percent of the animals showing evidence of exposure. The findings reveal not only how deeply these poisons have penetrated wild food webs, but also a troubling trajectory: despite federal restrictions on the most toxic second-generation compounds taking effect during the study period, detection rates climbed steadily, rising by roughly 25 percent per year.

Anticoagulant rodenticides work by interfering with the vitamin K cycle, effectively preventing blood from clotting and causing fatal internal hemorrhage in the target rodents. The problem for wildlife is that these compounds do not stay where they are deployed. Rodents that consume poisoned bait often die slowly, sometimes days later, wandering into the open where predators and scavengers encounter them. In the process, the poison moves up the food chain. Second-generation anticoagulants, developed after rodents evolved resistance to earlier formulas, are particularly insidious because they are far more potent and persist in liver tissue for months. A single poisoned rodent can deliver a lethal or sublethal dose to a fox, an owl, a fisher, or a bobcat, and repeated exposure compounds the risk through bioaccumulation.
The research team, led by Jennifer A. Grauer and colleagues from institutions across the Northeast, took advantage of an unusual but powerful resource: opportunistic samples from bobcats harvested by hunters and trappers, along with animals recovered as roadkill, collected across New Hampshire, Vermont, New York, and New Jersey. Liver tissue, where anticoagulant residues concentrate, was analyzed for the presence of seven rodenticide compounds. Because the samples came from animals already dead, the study avoided the ethical and logistical challenges of trapping and sampling live carnivores, while still providing a statistically rich picture of exposure across a large region and a long time span. The approach also allowed the researchers to compare exposure between animals taken by hunters and those killed on roads, a distinction that turned out to matter.

The spatial results were striking. Exposure was not uniform across the landscape. **New Hampshire and Vermont recorded the highest levels of contamination, and a spatial clustering algorithm identified localized hot spots of rodenticide detection in those two states as well as in New Jersey.** New York, by contrast, emerged as comparatively cold in the analysis, with fewer clusters of

positive detections. This patchiness matters because it suggests that rodenticide exposure is driven by local conditions, likely the density of human development, pest-control practices, and the structure of the food web connecting poisoned rodents to wild predators, rather than by broad regional factors alone. The hot spots provide concrete targets for mitigation efforts, from restrictions on consumer-grade poisons to public education campaigns in the affected areas.

Within individual animals, the picture was one of multiple, accumulating exposures. Bobcats that tested positive carried between one and four different rodenticide compounds in their systems, with a mean of 1.07 compounds among exposed individuals and a standard deviation of 1.17. Co-exposure to several compounds is particularly concerning from a toxicological standpoint, because different anticoagulants act through the same physiological pathway and their effects can be additive. An animal carrying multiple compounds may face a substantially higher risk of hemorrhage than one carrying a single residue, especially under stressors such as injury, disease, or starvation. The presence of several compounds in a single bobcat also indicates repeated encounters with poisoned prey over time, painting a picture of chronic, ongoing contamination rather than a one-off accident.

Age emerged as one of the clearest predictors of exposure. The researchers' statistical models showed that the predicted odds of anticoagulant rodenticide exposure increased by approximately 35 percent, and the predicted number of compounds in an animal's system rose by roughly 17 percent, for each additional year of bobcat age. This pattern is consistent with bioaccumulation: older animals have had more years to accumulate persistent residues from contaminated prey, and they may also occupy higher positions in the food web, taking larger prey that themselves carry accumulated burdens. Exposure rates varied by state, by age, and by sampling source, with harvested animals differing from roadkill in their likelihood of testing positive, but the models found no difference between male and female bobcats. That absence of a sex effect suggests that both sexes face similar dietary exposure risks across their ranges.

Perhaps the most sobering finding is the temporal trend. Second-generation anticoagulant rodenticides, the most potent and persistent class, have faced federal restrictions in the United States that went into effect during the course of the study, limiting their availability to professional applicators and removing them from many consumer products. Yet detection rates in bobcats did not decline. Instead, they increased steadily at a rate of approximately 25 percent per year across the 2013 to 2024 sampling window. The researchers are careful not to over-interpret the mechanism behind this rise, but the pattern suggests that current regulations have not yet translated into reduced contamination of wild predators. Possible explanations include lag effects from the persistence of residues in the environment, **continued legal use by licensed professionals,** illegal or off-label use, and the movement of regulated compounds across jurisdictions where rules differ.

The study gains additional weight from a comparison with another northeastern carnivore. The spatial patterns of exposure observed in bobcats closely mirrored those previously documented in fisher (Pekania pennanti), a mustelid predator with very different habitat preferences and

hunting behavior. Fishers tend to occupy deep forest interiors, while bobcats range across a broader mosaic of forest edge, farmland, and suburban development. If two predators with such divergent ecologies show similar geographic fingerprints of contamination, the implication is that rodenticides have become ubiquitous in the northeastern food web, reaching animals regardless of how or where they hunt. The poisoned rodent, in effect, has become a common item on the menu of the region's mesocarnivores.

For wildlife managers and conservationists, the study provides something that has been lacking: a long-term, region-wide baseline for a species of growing public interest. Bobcats have been recovering across the Northeast in recent decades, expanding back into areas where they were once eliminated, and their return has been celebrated as a conservation success. That recovery now carries a hidden cost, as expanding populations intersect with landscapes saturated with rodenticides. Sublethal exposure can impair health, reduce survival, and potentially affect reproduction, even when it does not kill outright, and the cumulative burden across a population remains difficult to quantify. The baseline established by this research will allow future monitoring to track whether regulatory changes eventually bend the exposure curve downward.

The broader lesson is one about the reach of human chemicals into ecosystems that seem, on the surface, far removed from suburban garages and city basements. Rodenticides are deployed to solve a narrowly human problem, yet their residues now appear in more than half of the bobcats tested across a four-state region, in hot spots that map onto the interface of development and wild land, and in concentrations that grow with every passing year of an animal's life. As evidence accumulates across species, from fishers to bobcats to birds of prey, the case for rethinking how these compounds are used, regulated, and replaced grows stronger. The bobcats of the Northeast, silently carrying seven different poisons in their livers, are delivering a message that regulators and consumers alike cannot afford to ignore.

Subject of Research: Anticoagulant rodenticide exposure in bobcats across the northeastern United States

Article Title: Spatiotemporal patterns of anticoagulant rodenticide exposure in bobcats across the northeastern United States

Article References: Grauer, J. A., Needle, D. B., Schuler, K. L., Connelly, P. J., Fowles, G., Miller, E. A., Furfey, B., Royar, K., Watson, M. B., DeBow, J., & Frair, J. L. (2026). Spatiotemporal patterns of anticoagulant rodenticide exposure in bobcats across the northeastern United States. *PLOS One, 21*(10), e0360055. https://doi.org/10.1371/journal.pone.0360055