

The Outside Story

The Trouble with Rodenticides

By Anna Morris

Last autumn, around the same time I was laying the winter quilt on our bed, my cat became very interested in the space beneath the kitchen sink. Unsurprisingly, a mouse was huddled down there, seeking shelter in the warmth. Though I was sympathetic, and all wildlife is welcome in our yard, I'd prefer they remain outside the house. What to do?

As I considered how to deal with our unwanted guest, pesticides were immediately off the table. As an educator at the Vermont Institute of Natural Science (VINS), I speak frequently about rodenticides – rat and mouse poisons – and entreat our visitors to reach for nontoxic alternatives when trying to control pests. Although these poisons target rodents, raptors – and other animals, both tame and wild – that eat those rodents may be harmed or killed via secondary poisoning, known as relay toxicosis.

Twice after giving this talk, a visitor has gotten in touch to ask if a particular rodenticide their exterminator is using is “safe” for raptors, as they had been assured. It heartened me to hear that people are concerned about this issue, and I wanted to investigate this possibility – are there any “raptor-safe” rodenticides?

Modern rodenticides can be split into three categories: first-generation anticoagulants, second-generation anticoagulants, and non-anticoagulants. Both types of anticoagulant rodenticides work by blocking the action of an enzyme that recycles Vitamin K, thereby reducing the availability of a key component of the blood clotting pathway and causing fatal internal bleeding. First-generation anticoagulants require that rodents feed on the poisoned bait multiple times. Second-generation anticoagulants, however, can kill with a single dose, and are toxic even through inhalation or skin contact. Both can also kill birds of prey through relay toxicosis, as both are stored in rodents' livers and remain there even after death.

There is a wealth of literature about anticoagulant rodenticides being found in the tissues of wild-living raptors across North America. A three-year study in New York state found that of 265 birds of prey tested, 49 percent had an anticoagulant rodenticide in their systems. Among the species affected were some of the most common and cosmopolitan raptors: great horned owls, red-tailed hawks, Cooper's hawks, and eastern screech owls.



The three second-generation anticoagulant rodenticides that pose the greatest risk to raptors are brodifacoum, difethialone, and bromadiolone. Fortunately, the EPA restricts use of these to licensed pest management companies, so they are not sold “over the counter.” However, all three can still be used by pest management companies in Vermont and New Hampshire.

Any chemical designed to be highly toxic to mammals is likely to be at least somewhat toxic to birds, which have much faster metabolisms. The risks of secondary poisoning from non-anticoagulant rodenticides, such as cholecalciferol and zinc phosphides, have not been studied thoroughly, but are thought to pose a low risk to birds – but not *no* risk. These poisons work in unique ways, causing muscle spasms, paralysis, or organ failure.

For a wildlife rehabilitator, diagnosing rodenticide poisoning is difficult, because symptoms can overlap with other diseases. At VINS’ Center for Wild Bird Rehabilitation in Quechee, Vermont, birds that come in exhibiting lethargy, bruising, and excessive bleeding are suspected of poisoning. Rehabilitators treat these birds with supportive nutrition and supplemental Vitamin K to replace what the rodenticide has depleted. This therapy can take three to four weeks and relies very much on the bird’s own fortitude.

So, are there rat poisons out there that are safe for birds of prey and other non-target wildlife? The answer is no. If you are looking for a rodenticide that will target only mice and leave owls completely alone, there is currently no such miracle. All chemicals on the market to kill rodents are also toxic to birds to some degree.

There is, however, a huge diversity of non-chemical alternatives. Integrated pest management involves gaining an understanding of the natural history and behavior of your pest species. Be sure to seal off any places where they could be getting into your home, secure food sources (especially compost and trash), and encourage natural predators by managing your yard to be wildlife-friendly. Snap-traps and Havahart traps are also safer alternatives to chemicals. (Avoid glue traps – they are responsible for plenty of nontarget wildlife deaths, too, through dehydration or starvation.) For these small efforts, your local hawks and owls will thank you by continuing their natural pest control and helping to maintain the balance of biodiversity.

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