

The Impact of Anticoagulant Rodenticides On Fishers (*Pekania pennanti*)

Introduction

Anticoagulant rodenticide (AR) poisoning of non-target wildlife is a significant conservation concern. Multiple studies conducted across the country and in Canada have demonstrated that fishers, among other predators, are highly impacted by ARs and that these toxins pose a threat to predator populations (1, 6, 11). As a keystone and indicator species, declining fisher populations is a cause for alarm (11).



The Fisher

The fisher is a mammal native to North America and is closely related to the American marten, an endangered species in Vermont (4). Fishers have few predators besides humans who have trapped them for their fur. In the middle of the 20th century, Vermont's fisher numbers declined due to long trapping seasons and loss of habitat from logging and farming. A moratorium was placed on trapping fisher from 1929-1958. Fishers were reintroduced in 1967 to manage porcupine overpopulation (13).

As top predators, fishers eat small to medium sized mammals, fruits, nuts, berries, reptiles, and amphibians (4). They are territorial, elusive, solitary, prefer dense forested habitat, and nest hidden in the cavities of large trees. Fishers are extremely sensitive to human-caused environmental disturbances and are considered an indicator species. A healthy fisher population is the sign of a mature and well-balanced forest ecosystem. But fisher populations appear to be declining in New England due to habitat loss and fragmentation, trapping, and the use of rodenticides (11).

Anticoagulant Rodenticides

Anticoagulant rodenticides (ARs) are commonly used to kill rodents in urban, rural, agricultural, industrial, and suburban locations. These toxins work by preventing blood from clotting and causing fatal internal hemorrhaging. ARs are classified as either first generation (FGARs) or second generation (SGARs) compounds (1, 6, 11, 12). SGARs are used more commonly due to their greater toxicity but all ARs can take from 4 to 9 days to kill the target animal. SGARs poison wildlife in two ways: 1) primary poisoning when a targeted animal eats the bait and dies several days later, or 2) secondary poisoning, when a predator or scavenger eats prey that has eaten poisoned bait. Secondary poisoning has been documented in birds of prey like eagles, hawks, and owls, as well as mammals like foxes, fishers, bobcats, and coyotes (3, 8).

Sublethal exposure to SGARs is equally devastating to wildlife (2, 3, 7, 11) resulting in compromised immune and circulatory systems and abnormal clotting mechanisms. A minor wound can be fatal for an animal made much more vulnerable to hemorrhaging (6). In fishers with sublethal levels of AR toxicity, tick infestations become life threatening. Nursing mothers will transfer lethal toxins to their kits, and there are more miscarriages and stillbirths. SGARs clearly have the potential to decimate fisher populations (10).

The Impact of ARs on Fisher populations

The effects of ARs on fishers were first studied in 2012 in California to document presumed threats to isolated populations (6,7). Vermont Fish & Wildlife's studies reveal that 100% of fisher tested in both 2021 and 2022 tested positive for rodenticide poisoning. Data showed that ARs pose a threat to fishers through direct mortality, fitness compromise, and a risk to viable populations.

A 2023 study focused on the prevalence of AR exposure in fishers in New England (1). A biologist and wildlife veterinarian from the Vermont Fish & Wildlife Department were among the researchers who found that 98% of the Vermont fishers in the study tested positive for AR compounds. The carcasses sampled were obtained from geographically diverse areas across Vermont (1). Results demonstrated that fishers "are highly exposed to a wide spectrum of ARs across Vermont". The authors stated, "the near universal exposure of the fishers sampled suggest that AR exposure is widespread and represents an underestimated health risk to wild fishers."

Researchers at SUNY Environmental Science and Forestry are currently investigating the relationship between the number of AR compounds found in fisher livers to the decline in local populations (2). Fishers from five northeastern states were tested. Vermont had the highest incidence of AR exposures with 100% of the fishers testing positive. The researchers found that "rodenticide exposure is an important driver of population decline." According to Vermont Fish & Wildlife's recent Catch Per Unit Effort (CPUE) data, Vermont's fisher population is in decline (13). CPUE is a common method state Fish & Wildlife Departments use to monitor population trends on certain species.

AR Regulations

Commercial rodenticide is usually dispensed in ready-to-use or refillable bait stations/containers. AR usage is regulated by the Environmental Protection Agency and, as of 2008, consumer retailers are prohibited from selling SGARs. Current use of SGARs is limited to licensed pest controllers, as well as certain agricultural users (12).

Regulations associated with ARs are aimed at protecting children and domestic pets from accessing the poisons. But, because they are most often placed outside buildings, they do not protect wildlife from exposure to poisoned prey. And, despite the EPA regulations, SGARs are still available online to anyone. Unlawful use is a serious problem (1, 8). In addition to the Federal restrictions, several states have recently introduced legislation to restrict or ban SGARs (8).

Conclusion

Fishers, as well as numerous other predators impacted by ARs, are critically important to Vermont's ecosystems. Data suggest rodenticides may play a large role in fisher decline. Loss of forested habitat and nesting/denning sites, and trapping, are also major drivers of fisher decline in the northeast (3, 5). Considerable evidence has established that they are endangered by SGARs and that this threat is on the population level. According to Audubon Vermont, there are more than 175 rat poison products available on the open market, which do not pose the same level of risk to rodent-predators (8). In addition, many basic non-lethal preventative measures can reduce rodent infestations. A moratorium on fisher trapping would add needed protections for this vulnerable species.

Sources:

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