

The Environmental Impacts of Chemical Rodent Control



Robert Williams October 17, 2024

Cape Ann Wildlife, Inc

Overview

- Introduction/Background
- SecondaryExposure/Ingestion
- Documented Impacts
- Observed Local Use
- Pest Control Alternatives
- Efforts to Restrict Use
- Conclusions/Questions

Background

What are rodenticides?

- Acutely Toxic Compounds
 - Anticoagulants Excessive Bleeding
 - Nerve Toxins Respiratory Distress
 - Activated Vitamin D3 Kidney Failure, Cardiovascular
 Abnormalities, Tissue Mineralization
 - Zinc Phosphide Inhibits Cell Energy Production





Issue

Secondary Exposure/Ingestion

- Poisoned Rodents are Weakened Rodents
 - > Take days to die
 - Do not remain in traps
 - Make easy prey

Effects in Predators

Anemia, Mange, Lethargy, Compromised Immune System,
 Internal and External Hemorrhaging, others

Treatment Difficulty

- Timeliness of discovery
- Arduous process





Research

Documented Impacts

- Odds of Great Horned Owls testing positive for rodenticide exposure were 10 times greater and Red-tailed Hawks 9 times greater than all other bird species studied. 62 percent overall exposure level
 - > Anticoagulant Rodenticide Exposure in Raptors from Ontario, Canada. Thornton et al. 2022
- 100 percent of the Red-tailed Hawks in the present study tested positive for exposure to anticoagulant rodenticides. 91 percent tested positive for two or more different types
 - > Continued Anticoagulant Rodenticide Exposure of Red-tailed Hawks in the Northeastern United States with an Evaluation of Serum for Biomonitoring. Murray. 2020.
- 97 percent of New England Fishers were positive for exposure to anticoagulant rodenticides, 84 percent positive for more than one type
 - > High prevalence of anticoagulant rodenticide exposure in New England Fishers. Buckley et al. 2023.
- 68 percent of New York State Red-tailed Hawk livers tested for anticoagulant rodenticide exposure had detectable residues
 - > Prevalence of anticoagulant rodenticide exposure in red-tailed hawks and utility of clotting time assays to detect coagulopathy. Hopf-Dennis et al. 2022.

Environmental Science and Pollution Research (2022) 29:34137-34146 https://doi.org/10.1007/s11356-022-18529-z

RESEARCH ARTICLE



Anticoagulant rodenticide exposure in raptors from Ontario, Canada

Grace L. Thornton 1.2 · Brian Stevens 1.2 · Shannon K. French 1.2 · Leonard J. Shirose 1.2 · Felipe Reggeti³ · Nick Schrier³ · E. Jane Parmley 2.4 · Alexandra Reid⁵ · Claire M. Jardine 1.20

Received: 13 October 2021 / Accepted: 2 January 2022 / Published online: 16 January 2022

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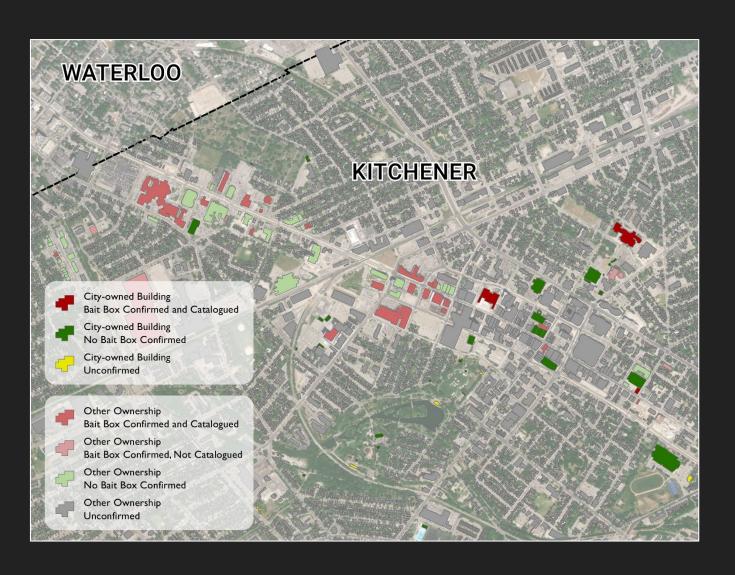
Abstract

Anticoagulant rodenticides (ARs) are used globally to control rodent pest infestations in both urban and agricultural settings. It is well documented that non-target wildlife, including predatory birds, are at risk for secondary anticoagulant exposure and toxicosis through the prey they consume. However, there have been no large-scale studies of AR exposure in raptors in Ontario, Canada since new Health Canada legislation was implemented in 2013 in an attempt to limit exposure. We collected liver samples from 133 raptors representing 17 species submitted to the Canadian Wildlife Health Cooperative (CWHC) in Ontario, Canada, between 2017 and 2019. Liquid chromatography-tandern mass spectrometry (LC-MSMNS) was used to quantitatively assess the level of exposure to 14 first- and second-generation ARs. Detectable levels of one or more ARs were found in 82 of 133 (628) tested raptors, representing 12 species. The most commonly detected ARs were bromadiolone (54/133), difethialone (40/133), and brodifacoum (33/133). Of AR-positive birds, 34/82 (42%) contained residues of multiple [> 1) anticoagulant compounds. Our results indicate that AR exposure is common in raptors living in southern ontario, Canada. Our finding that brodifacoum, difethialone, and bromadiolone were observed alone or in combination with one another in the majority of our sampled raptors indicates that legislative changes in Canada may not be protecting non-target wildlife as intended.

 $\textbf{Keywords} \ \ Anticoagulant \ rodenticide \cdot Brodifacoum \cdot Bromadiolone \cdot Difethialone \cdot Raptors \cdot Wildlifethialone \cdot Brodifacoum \cdot Bromadiolone \cdot Difethialone \cdot Raptors \cdot Wildlifethialone \cdot Brodifacoum \cdot Bromadiolone \cdot Difethialone \cdot Brown \cdot Bromadiolone \cdot Difethialone \cdot Brown \cdot Bromadiolone \cdot Brown \cdot$

Red-tailed Hawk Niagara Peninsula Hawkwatch - Beamer Conservation Area - spring Trend (1975-2019): -2.27%/year (Ct. -3.25% /-1.39%) *; (2009-2019): -7.04%/year (Ct. -9.34% /-4.88%) * 8 1980 1990 2000 2010

Observations





Alternatives

Integrated Pest Management

- Reduce Attractants
 - Food and Waste Management
- Shelter Exclusion
 - Seal Building Entry Points
- Removal
 - Traps
 - One-Way Exit Doors





Restrictions

Efforts Across North America

- Legislation in Effect
 - > Provincial/Statewide Restrictions
 - Municipal Action
- 2023-2024 Legislative Consideration
 - Rodenticide bills introduced in eight United States
- Legal Petition
 - Harvard Law Review













CANADA

Pickering becomes Ontario's first city to pass Animal Poisoning Prevention Policy

By Ojasvini Parashar • Global News
Posted July 7, 2023 2:16 pm • 3 min read



More Information/Questions

Robert Williams r.j.williams044@gmail.com (519) 585-7477