

PROJECT REPORT

Project Title: Evaluation and Development of Bird-Repellent Rodenticide Baits for California Rodents

Research Agency: Animal and Plant Health Inspection Services

Principal Investigator: Scott J. Werner

Background:

Zinc phosphide is an inorganic, acute rodenticide that is commonly used to control rodent populations in Africa, Asia, Australia, Europe, and North America. Although zinc phosphide is relatively non-selective and it is considered to be highly to extremely toxic to both mammals and birds, zinc phosphide is one of the safest rodenticides available and should continue to be used as a field rodenticide (Johnson & Fagerstone 1994). Because field applications of zinc phosphide rodenticide baits can sometimes cause non-target take, or primary hazards for a variety of bird species, the development of control techniques is needed to optimize target-specificity, protect non-target animals, and effectively manage populations of targeted species.

Objectives:

1. Evaluate the potential repellency of anthraquinone-treated baits for California's voles in captivity (Year 1).
2. Investigate the conditioned avoidance of ultraviolet-treated baits for California's voles in captivity.
3. Evaluate the toxicity of anthraquinone + zinc phosphide-treated baits for California's voles in captivity (Year 3).

Results:

For the purpose of developing a bird-repellent rodenticide bait, we predicted that repellency of anthraquinone-treated food would be <40% (Werner et al. 2011a) in California voles. Had we observed predicted repellency in Experiment 1, we planned to pursue Objectives 2 and 3 in Years 2 & 3. We observed >40% repellency, however, among California voles offered oats treated with 0.5%, 1%, or 2% anthraquinone. The results of Experiment 1 therefore precluded the continuation of this study beyond Year 1. We therefore withdrew our request for VPCRAC funding for our proposed Year-2 & Year 3 studies.

For the purpose of developing rodenticide baits that protect non-target birds whilst maintaining the efficacy of the rodenticide for target rodents, this proposed

research project will evaluate 1) the potential repellency of anthraquinone-treated baits and 2) rodenticide efficacy of anthraquinone-treated zinc phosphide baits for voles associated with California rodenticide applications.