

COMPLETED PROJECT REPORT

Project Title: Development of a natural predator control toxicant

Research Agency: National Wildlife Research Center

Principal Investigator: J. Johnston

Budget: \$26,345

Background:

In 1998, California voters passed Proposition 4 which banned the use of sodium cyanide and Compound 1080 for the control of livestock predators such as coyotes. As these were the only pesticides registered for the control of livestock predators in California, Proposition 4 severely limited the ability of ranchers and pest control personnel to limit livestock losses due to predation.

Compound 1080 and sodium cyanide were used in the Livestock Protection Collar (LPC) and M-44 ejector units for controlling predation by coyotes. As these compounds were registered for use in these protection devices but are now banned, these protection devices are useless to California ranchers. However, if another predator toxicant becomes available, it is likely that it could be registered for delivery in the LPC or M-44.

The goal of this research is to take advantage of the selective toxicity of methylxanthines (i.e., theobromine, theophylline, caffeine) to canids by developing a coyote toxicant from concentrated extracts of cocoa, tea and coffee. While these extracts will be very toxic to coyotes, they will be virtually non-toxic to humans, environmentally benign and relatively safe for non-target wildlife. It is hoped that the increased level of safety associated with this product will lead to increased public acceptance of the new toxicant for reducing predatory livestock losses.

Objectives:

1. Develop a low cost natural Generally Recognized as Safe product extract containing elevated concentrations of caffeine and theobromine that can be used as a predator control toxicant.
2. Determine the dose of the predator control substances required to control canid predators.

Summary:

The following have been accomplished:

1. Identified the natural products that are highest in methylxanthines.

2. Developed two prototype natural product toxicants suitable for testing on coyotes.
3. Conducted toxicity tests with the toxicant developed in objective 1.

Conclusions: Natural cocoa-based theobromine:caffeine (92:8) extract has potential as a selective, humane predacide. Delivery of a lethal dose may be well suited to the coyote lure operative device (CLOD). Increasing the proportion of caffeine may increase the potency of the predacide (reduce the mass of the require lethal dose).