

PROJECT REPORT

Project Title: Identification of attractants for the coyote lure operative device

Research Agency: National Wildlife Research Center

Principal Investigator: J. J. Johnston

Budget: \$235,210

Background:

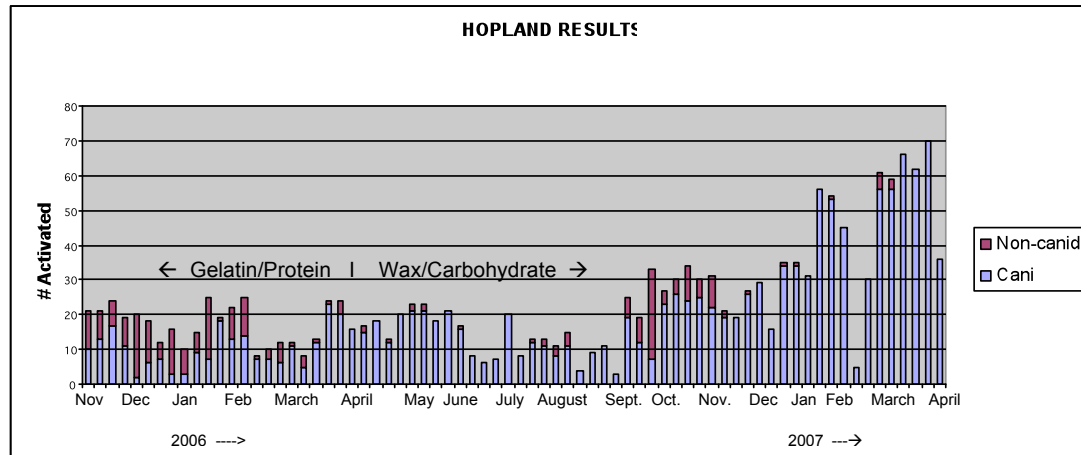
Research previously funded by VPCRAC (Field test of a bait delivery device for coyote management, and DNA identification of predatory coyotes using the coyote lure operative device or CLOD), has demonstrated that attractants are necessary to induce coyotes to bite CLODs and consume contents under field conditions. In these studies coyote consumption of CLOD contents dramatically increased in late winter/early spring and that a particular attractant was preferred. Previous attractant studies with penned coyotes also demonstrated seasonal effects for different attractants; different attractants worked better at different times of the year. Also, sex preferences were noted for some of the attractants. To improve the ability of the CLOD to deliver a toxicant (as well as drugs, vaccines, markers, etc.) to coyotes, effective attractants for year round delivery need to be identified.

This study will assess the ability of a variety of commercial attractants to induce coyotes to consume CLOD contents throughout the year.

Objectives:

1. Identify attractants for year round use of CLODs. Year 1 will identify the attractant most preferred by coyotes for each month of the year. DNA and camera monitoring will permit identification of non-target species' preferences for each attractant. DNA analyses will identify preferences for each attractant by sex. From these analyses we will identify the most promising attractant for each month of the year, which will then be further evaluated in year
2. Evaluate the effect of pre-baiting on CLOD activation. The effects of pre-baiting will be evaluated by focusing on a single attractant during each month of year 2. Comparison of the activation rate in the sub-study sites with and without pre-baiting will allow determination of the effects of pre-baiting on CLOD activation by coyotes. Comparison of individual genotypes from predated carcasses and CLODs will help determine if pre-baiting increases the percentage of predatory coyotes that activate CLODs.
3. Identify non-target species that investigate and/or activate CLODs. Camera and DNA monitoring of activated CLODs will identify non-target species. Non-target information will be critical for obtaining approval to use the CLOD to deliver active ingredients under field conditions.

Results



The gelatin coated CLODs used during Nov 2005 – February 2006 increased the activation rate to about 20 – 25% weekly. However, non-targets comprised about 50% of activation. In an effort to reduce the attractiveness of the CLODs to non-targets, the gelatin coating was replaced with attractant impregnated wax and the CLOD contents were replaced with corn syrup. This CLOD configuration has been used since March 2006. The switch to this wax/corn syrup configuration appeared to have no impact on overall activation rate while reducing the attractiveness of the CLODs to non-target species. Overall, there appears to be an increase in activation rate with time which reinforces the value of pre-baiting. Even though the activation rate has increased to nearly 70%, non-target activation appears to be minimal.

Throughout this study, we steadily refined our technique to collect and analyze DNA containing saliva from the activated CLODs. To date we have completed DNA extractions on 3526 CLOD swabs, 18 swabs from snared coyotes, 43 lamb carcass swabs and 3 wool samples from predated lambs.

- 1757 CLOD swabs yielded sufficient DNA for analysis.
- Analysis of the DNA indicates a minimum sample size of 20 coyotes.
- The samples that did not amplify with coyote microsatellite markers were sequenced to generate (non-target) species identification. These results indicate that the following species activated CLODs:
 - Coyotes (94%)
 - Opossum (3%)
 - Grey fox (1%)
 - Sheep (<1%)
 - Raccoon (<1%)
 - Mule deer (<1%)
 - Vole (<1%)
 - Woodrat (<1%)
 - Greyfox (<1%)

- Felid (<1%)
- 12/43 (25%) of carcass swabs yielded individual coyote genotypes
- 2/3 wool samples (67%) yielded individual coyote genotypes

Conclusions – 1. Swabbing attack sites on predated lambs provided sufficient DNA to identify the individual predator. 2. The CLOD is an effective tool for delivery of active ingredients to coyotes throughout the year! 3. Based on this research, the CLOD is being pursued as a delivery device for a new predacide which is being cooperatively developed by USDA and CDFA.

Extension of results:

Presentations:

Development of a coyote toxicant delivery device: California Field Study.
Research Update CDFA/VPCRAC meeting. Monterey, CA October 19, 2005.

Development of a coyote toxicant delivery device: California Field Study.
Research Update CDFA/VPCRAC meeting. Santa Rosa, CA April 19, 2006.

Development of a coyote toxicant delivery device: California Field Study.
Research Update CDFA/VPCRAC meeting. Lake Tahoe, CA October 25, 2006

Development of a coyote toxicant delivery device: California Field Study.
Research Update CDFA/VPCRAC meeting. Paso Robles, CA, April 25, 2007.

Development of a coyote toxicant delivery device: California Field Study. Final
Research Report CDFA/VPCRAC meeting. Sacramento, CA, October 17, 2007.

Development of a coyote toxicant and delivery device. California State WS
Meeting. Sacramento CA, December 2007

Development of a coyote toxicant and delivery device. USDA/APHIS/Wildlife
Services Management Team, Washington, DC January 6, 2008.

Manuscripts:

M. Neubaum, T. Piaggio, J. Johnston. (In Preparation) DNA analyses to support
the development of the Coyote Lure Operative Device.

J. Johnston, M. Neubaum, T. Piaggio. (In Preparation) The Coyote Lure
Operative Device: A California Field Study.

Last Updated:

01/21/11