

# Monitoring Wisconsin's Bear Population

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## Abstract

In the summer of 2006 a state wide tetracycline based mark recapture program was initiated. Approximately 500 volunteers were involved in the distribution of over 2,235 tetracycline laced baits across the state's bear range. The baits were placed at a frequency of 1 bait per 9 square miles. Baits consisted of 0.5 kg bacon which contained nine 500mg tetracycline tablets. Baits were housed in wooden boxes to reduce loss to non-target species. Nine hundred seventy one baits were taken by bears. Tetracycline incorporates into the bone tissue of exposed individuals serving as a biomarker. Ribs were collected from harvested bears for tetracycline analysis. The voluntary collection resulted in 2,592 ribs from 2006 harvest. This study will continue through the 2007 harvest. Results are pending. The goals of this research include a state wide black bear population estimate, modeling of distribution and habitat, and predictive modeling of agricultural damage.



Bait Box

## Habitat Modeling

The results of the baiting effort were used to model black bear habitat in the state. We used an occupancy estimation modeling framework which allows for the calculation of detection probability. Detection probability is the probability that a bait will be hit if a bear is present. The detection probability of our baits was 0.63. We modeled the occupancy of each township in the state using landscape level covariates. The covariates included stream density, road density, housing density, forest cover, agricultural land use, and wetlands. A map of predicted bear occupancy is found below. This model will be used to predict future expansion of bears which will allow for proactive management.



Preparing Bacon Baits



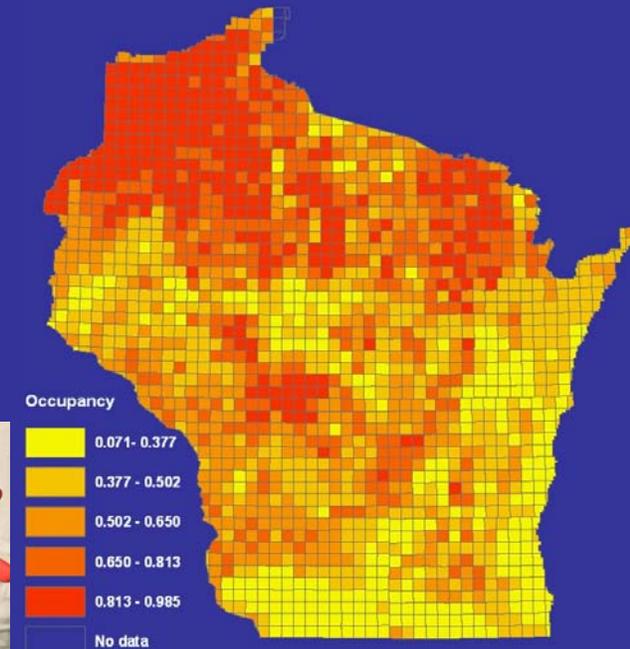
Bear Hitting a Bait



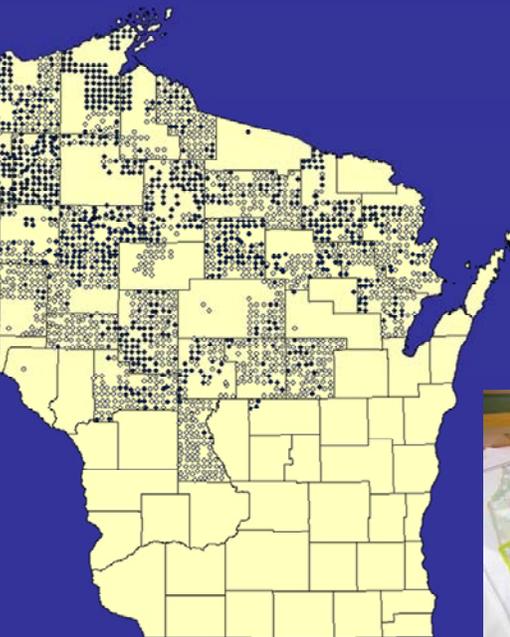
Volunteers Looking at Bait Maps



Rib Sample



Map of predicted bear occupancy



Baiting Results: light=not hit, dark=hit