

### **Field evaluation of baits for brown treesnakes**

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The goal of these studies is to develop a bait to replace dead neonatal mice (DNM) that are used as the matrix for the oral toxicant, acetaminophen, for brown treesnakes (*Boiga irregularis*). Field evaluations of bait consumption (bait-take) were conducted on Guam in April (dry season) and August (wet season) 2007. Test baits were placed in bait stations (5.1 cm diameter x 30.5 cm long polyvinyl chloride tubes) with a bolt secured halfway across each end to mitigate bait access by non-target animals. Bait stations were positioned horizontally about 1.5 m high in vegetation at 20 m intervals along the forest perimeter adjacent to roads and trails. Bait types were randomly assigned to bait stations. In April five baits were tested: (1) unadulterated DNM (uDNM), (2) dehydrated DNM (dDNM); (3) freeze-dried DNM (fdDNM), (4) unadulterated beef (ubeef), and (5) beef treated with the decomposition products of uDNM that had “aged” under field conditions for 48 h. The 4-day cumulative bait-take (n=30 per treatment) were: uDNM – 93%; dDNM – 63%; fdDNM – 73%; ubeef – 7%; and treated beef – 67%. In August three baits were tested: uDNM, ubeef, and beef treated with decomposition products from DNM “aged” for 0, 24, 48, 72, and 96h under field conditions. The 3-day cumulative bait-takes (n=40 per treatment) were: uDNM – 85%; ubeef – 30%; and ranged from 43% to 93% for beef treated with “aged” DNM. Bait consumption for the beef treated with 48h “aged” DNM was 93%. Results from these two studies show that decomposition odors of dead mice can be used to substantially increase brown treesnake bait consumption of beef. Future studies will be directed towards evaluation of synthetic bait matrices treated with decomposition products of “aged” DNM.

### **Canine team detection of free-ranging radio-telemetered Brown Treesnakes**

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We are investigating canine teams (dogs and their handlers) as a potential tool for finding Brown Treesnakes (BTS), especially incipient populations on islands other than Guam. Canine teams have demonstrated proficiency at finding captive snakes in hidden tubes. Teams also find free-ranging BTS in various habitats, but detection rates for the latter are unknown. Dog handlers usually rely on visual searchers to locate BTS once a dog has signaled snake presence. At times, dogs signal but the visual search team cannot locate the snake; this complicates attempts to quantify detection rates. Our research aims to estimate detection rate of free-ranging BTS by canine teams as a function of snake attributes, characteristics of snake refugia, and environmental conditions. In each trial, canine teams search a defined 40m x 40m forested area with a snake that has consumed a dead mouse containing a radio-transmitter. A tracker knows the snake's location, but dog

handlers and data recorders do not. We record data on dog alerts and on-scent behavior during the trial. This study will provide initial estimates of canine team efficacy when searching for free-ranging BTS in complex habitats and information on optimizing visual search strategy after a dog signals snake presence (defining size of area to search, identifying preferred refugia, etc.). Trials were initiated in December 2007 and are ongoing. We discuss experimental design, challenges and initial results.

### **An evaluation of the potential economic impacts of the introduction of the brown treesnake on tourism in Hawaii**

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In 2004, a study estimated the economic impacts likely to occur to the Hawaiian Islands by the translocation of the brown treesnake (*Boiga irregularis*) from Guam. The approach was to collect and compile data about the snakes' impacts from Guam and extrapolate the impacts to Hawaii. There were three categories of economic impact due to brown treesnake examined; medical treatments, electrical outages and tourism losses. Potential medical and electrical impacts to Hawaii were extrapolated using data gathered on Guam. Impacts from the brown treesnake to the tourism sector of the economy had never before been estimated and therefore a hypothetical range of decreased tourist numbers (1% - 10%) was projected using an input-output model. In order to more accurately define the range of potential tourist impacts from the brown treesnake a survey was conducted in Oahu during January 2008. This survey elicited responses from the major tourists groups (i.e. U.S. West, U.S. East, and Japan) on how they would alter their behavior in response to the presence of the brown treesnake. Survey results indicated that initial estimates of the 2004 study were conservative. This presentation will describe the major findings of the survey and discuss the implications of the brown treesnake to the Hawaiian economy.

### **Successful large-scale quarantine programs**

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APHIS- Plant Protection and Quarantine (PPQ) develops and oversees extensive offshore programs to mitigate risk of U.S. introduction of animal and plant pest and diseases. Several examples of these programs are the military preclearance program in the U.S. European Command and U.S. Central Commands. This is a collaborative program between the Department of Defense (DoD) and APHIS-PPQ where PPQ works as a team member to provide training and accreditation of military Customs Border Clearance Agents (CBCA). This extensive program provides the dual purpose of regulatory compliance and to expedite arrival of military cargo, vehicles, and passengers. In addition, PPQ has a joint program with foreign governments to authorize predeparture vessel inspections for Asian gypsy moth in seaports of Russia and Japan. In addition to these countries, gypsy moth survey trapping is conducted in partnership for AGM in