



## Field Evaluation of Chemical Methods for Brown Tree Snake Management

NR – 22

### Background:

The brown tree snake (BTS) has caused serious ecological, economic, and social impacts on the Island of Guam. The snake is a major threat to the biodiversity on islands in the Pacific region and other areas at risk, such as the southern United States. Native to the New Guinea area, BTS probably arrived on Guam as stowaways in cargo and with no natural predators, their population exploded. BTS have caused or been a major factor in the extirpation of most of Guam's native birds and drastic declines in populations of fruit bats and lizards. BTS on Guam have also damaged agricultural interests by preying on poultry, killed pets, and poisoned, but not killed, numerous children. In addition, snakes crawling on power lines frequently cause power outages that are a significant economic burden to civilian and military activities. This project investigated a number of different chemical control methods for incorporation into an integrated program to control BTS on Guam and prevent their dispersal.

### Objective:

The overall goal of this research effort is to provide more tools, methods, and strategies that a variety of individuals and organizations, including DoD natural resource managers, military personnel, and others can use in controlling and confining snakes both on Guam and in other locations. Chemical methods research for BTS control has received Legacy funding since 1995.

### Summary of Approach:

DoD Legacy has provided funds for the first sustained, systematic research effort to identify and develop BTS chemical control agents and the associated delivery systems. These funds have focused research on fumigants, toxicants, repellents, and attractants for BTS control. The BTS team is currently concluding field evaluation of operational BTS control employing a chemical agent identified during initial laboratory and field screening. The final phase of the BTS project is to identify the role of chemical control agents in an integrated management plan, and secure a product registration with EPA for candidate chemicals.

### Benefit:

This research addresses many aspects of the integrated pest management approach outlined in the BTS Control

Plan developed June, 1996. These include containment on Guam (control at cargo storage and embarkation sites), eradication at new island sites, protection of endangered species and other wildlife, public health, possible reduction of snakes at power stations, reduced risk of transporting BTS during military maneuvers, and development of integrated management strategies.



Photo by G.H. Rodda

### Accomplishments:

This project received its final year of funding in FY 2003. Methyl bromide, a fumigant, and acetaminophen, an oral toxicant, have been registered with the EPA. Data for two other fumigants, sulfuryl fluoride and magnesium phosphide (phosphine) are in the final stages of being submitted to private companies and subsequent EPA registration. Three repellents, anise oil, clove oil, and cinnamon oil have been identified and approved for chasing snakes out of cargo. No effective practical alternative to live mice were identified for use in traps; however, dead mice were shown to be effective bait for delivery of a toxicant. Aerial baiting techniques for toxic baits will be necessary to manage BTS populations in remote areas on Guam. Research completed in FY02 demonstrated the effectiveness of aerial baiting, but more efficient delivery techniques are needed.

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