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NWRC Spotlight: Capturing Valuable Snake Data Using Cameras

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Invasive brown treesnakes are known for their elusiveness, making it difficult for researchers and managers to assess the effectiveness of various management tools. Traditional methods used to detect the snakes in Guam, such as trapping, can violate model assumptions and lead to inaccurate estimates of snake density and potential predation risks to native species, such as the endangered Guam rail.

“Recent work with wildlife cameras has led to a new method for estimating potential predation risks to native birds by brown treesnakes,” states Wildlife Services-NWRC research wildlife biologist Dr. Shane Siers. “We can more accurately measure snake activity in an area by capturing images of snakes at live lure chambers versus trapping the snakes.”

Management Goals

Since their accidental introduction shortly after WWII to the island of Guam, brown treesnakes have caused millions of dollars in damages to the island's power infrastructure, inflicted painful bites to humans, preyed on domestic animals, and caused the extinction or extirpation of nearly all of Guam's forest birds. Great strides have been made by Wildlife Services and its partners to reduce damage and suppress snake populations opening the possibility of re-introducing native birds and lizards to some parts of the island. But before that can happen, more information is needed on potential predation risks at reintroduction sites.

Building On What We Know

Although live lure contact rates may be a cost-effective way to determine the frequency of brown treesnake predation attempts, not all snake encounters carry the same risk of predation.

Previous research has shown that brown treesnakes can grow up to 10 feet (3 meters) in length. Differences in body weight and length directly affect prey and habitat selection, as well as daily activity and movement.

"To know whether a local snake population is more or less likely to prey upon reintroduced species, we need to estimate not only the abundance of snakes in an area, but also their size distribution," notes Siers.

The live lure camera system allows researchers to do just that. A commercial wildlife camera is mounted overhead of a live lure (i.e., live mouse or bird) housed in a protective chamber. The chamber sits on a small, elevated platform marked with size standards to take measurable images of a snake's head as it investigates and attempts to prey on the lure. Head length alone is a precise predictor of brown treesnake body length.

The live lure camera system can be used to determine the size distribution of the snake population in an area, as well as the frequency of their predation attempts, as estimated by contact rates. This information can then be used to evaluate the predation risk from snakes in areas where their numbers have been suppressed by management efforts. Such data will help decisionmakers determine whether

suppression efforts are adequate to allow for the reintroduction of some of Guam's native birds and lizards.

For more information, please contact NWRC@usda.gov.

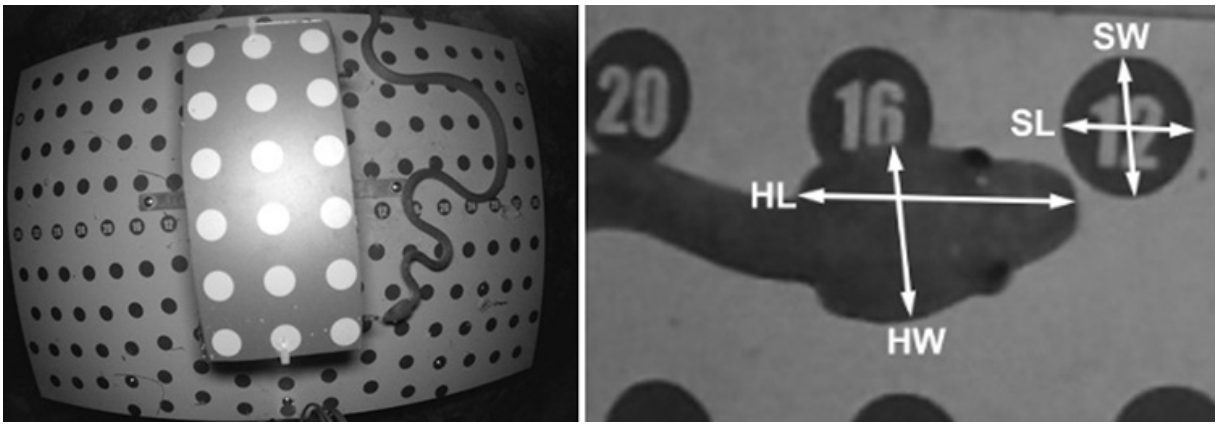

Image from a live lure camera system (left) and close-up of a snake's head. Head length (HL) or head width (HW) can be calculated from the image using the standard length (SL) or standard width (SW) of 20-mm measurement circles. These measurements can be used to calculate the snake's overall dimensions.

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