

## **BROWN TREESNAKE FACT SHEET**

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The brown treesnake, an invasive species, likely was introduced to the island of Guam in the late 1940's or early 1950's, as a passive stowaway in a military cargo ship that moved material after World War II. They were first detected around the Naval port in the 1950's and they spread across the entire 549 sq mile island within 20 years. This non-native snake's historic range is portions of Indonesia, New Guinea, the Solomon Islands, and Australia.

Upon arrival in Guam, the brown treesnake encountered an abundant prey base and an absence of natural predators and pathogens. Several extremely abundant non-native lizards supplemented the already abundant prey base as regional and international trade increased following World War II. Population estimates were about 40 snakes per acre in some areas in the 1970-80's, but may now number closer to 20 snakes/acre in forest areas.

The brown treesnake's accidental introduction to Guam placed the species beyond its historic range, triggering a cascade of extinctions and an ecological disaster. The brown tree snake has been the principal cause of the destruction of Guam's native bird and reptile fauna and has imposed significant stress on the island's economic and agricultural interests, thereby harming the integrity and environmental stability of the island's ecosystems and economy. Brown treesnakes are responsible for the extinction or local extirpation of nine of the 12 native forest birds, two of 11 native lizards on Guam, and have contributed to the decline of native fruit bats.

The presence of the brown treesnake is a documented economic and human health hazard on the island of Guam. The brown treesnake occurs on Guam at extremely high densities. Due to the high abundance of this snake on Guam, it has been accidentally transported from Guam to other sites worldwide through infested civilian and military vessels and cargo.

The brown treesnake causes frequent electrical power outages. Snakes have caused more than 1600 power outages in the 20-yr period of 1978-1997 and most recently nearly 200 outages per year. Costs to the island's economy have exceeded \$4.5 M per year over a 7-year period without considering transformers, and damages inside electrical substations.

USDA APHIS Wildlife Services has conducted visual and canine inspections of cargo and conveyances leaving Guam, and trapping and night fenceline searches around all ports of exit and power stations, resulting in the removal of 7,000 brown treesnakes each year.

The brown treesnake is a rear-fanged venomous snake. The snake has a very primitive mechanism for venom injection compared to some other poisonous snakes (e.g. rattlesnakes) that are familiar to residents of the mainland United States. Snakebite is the cause of approximately 1 in 1200 emergency room visits on Guam. Infants constitute a disproportionately high number of the snakebite cases taken to emergency medical facilities on Guam. A review of 166 snakebites suggests that most bites are due to active foraging by brown treesnakes. This pattern is not observed in the mainland United States, where the typical snakebite victim is an adolescent male bitten by a snake that is defending itself. There are no known mortalities due to snakebite on Guam. Snakebite is treated symptomatically.

The snake is a growing threat to the biodiversity, economy, and human health within the Pacific region. The brown tree snake poses a direct, significant, and growing threat of dispersal to other areas outside of its historic range, including the Commonwealth of the Northern Mariana Islands, the State of Hawaii, the mainland of the United States and other sites regionally and internationally.

A new study by the National Wildlife Research Center (Shwiff et al., 2010) has projected that the damages to Hawaii will fall within the range of \$593 million to \$2.14 billion EACH YEAR if brown treesnakes were introduced (a previous study estimated between \$28 and \$405 million per year in damages).

The movement of brown treesnakes from Guam is tied with the movement of vessels and cargo, yet inspection of cargo for snakes prior to departure from Guam is not mandatory. Hawaii and Saipan are two snake-free destinations for a lot of Guam cargo and have had to develop programs to meet and search uninspected crafts and cargo on arrival.

### **Risk of Brown Treesnakes to Hawaii**

A total of eight brown treesnakes have been found live or dead in Hawaii since the mid-1980's. All snakes were associated with the movement of civilian and military vehicles or cargo from Guam. This list does not include the reports of sightings of possible brown treesnakes in natural areas or communities, such as the sighting of a supposed brown treesnake in Hana, Maui in August 2004.

### **BTS FOUND IN HAWAII**

**APRIL 1981:** A live snake is found crawling in the customs area at the Honolulu Airport.

**JULY 1981:** A dead snake is found at Barbers Point Naval Air Station.

**MAY 1986:** A live snake is found on a post guide-wire at Hickam Air Force Base.

**OCTOBER 1989:** A dead snake is found next to a cargo jet at Hickam Air Force Base.

**SEPTEMBER 1991:** A dead snake is found on runway at Honolulu Airport and a live snake is found under a cargo jet at Hickam Air Force Base.

**DECEMBER 1994:** A live snake is discovered in a warehouse on Schofield Barracks.

**AUGUST 1998:** A dead snake was found in the wheel well of a commercial aircraft being serviced at Honolulu Airport.

### **Other Snakes In Hawaii**

Although BTS are the most well-known of the snakes threatening Hawaii, we are at substantial risk from other species of snakes (most info from .

- Between 1990-2000, there were 236 credible snake sightings.

- 137 were recovered, either found roaming around, or dead, or turned in
- Where are the other 99+ snakes??
- Of the 137 snakes recovered, only 22 were accidental tourists. The others were illegal pets (boas, pythons, corn snakes, etc)
- 2001 HDOA encountered a live “snake on a plane”, the inspector saw it and picked it up from the cargo bay of the aircraft from the Philippines and put it in a bag. It was later identified as a cobra...and to top it off, he also learned that there was no anti-venom in Hawaii.
- We should be concerned—most of these snakes are like BTS—same prey, tree-dwelling, night-active, they can have as many or more young.

## **WHAT TO DO IF YOU SEE A SNAKE**

- 1** If the snake is resting or hiding in an enclosed area, do not disturb it.
- 2** If you are unable to contain it, track its location until authorities arrive.
- 3** If the snake attempts to flee, and it is safe to do so, kill it by striking the back of its head with a heavy object, cut in half with a shovel, or other implement.
- 4** If the snake is dead, put it in a plastic bag and store it in the freezer or in a cool, dark place. Label the bag with the location and date of capture.

## **REPORT ALL SIGHTINGS TO 643-PEST HAWAII DEPARTMENT OF AGRICULTURE**

Although Hawaii Department of Agriculture has a secondary screening program for brown tree snakes that may arrive on flights, vessels and cargo arriving from Guam, they are unable to inspect all arrivals due to staffing and budget shortfalls.

### **Commonwealth of the Northern Marianas Islands (CNMI)**

There have been 97+ snake sightings reported in the CNMI since 1982. Sixty-nine of these sightings are considered credible brown treesnake sightings. Of the 65 confirmed sightings, 13 BTSs have been captured in the CNMI.

Currently, there is general agreement between brown treesnake experts that there are brown treesnakes on Saipan but it is not clear if they are breeding or self-sustaining. It is hard to tell if there is an established or incipient (breeding) population of snakes on Saipan. There have been no gravid female or juvenile snake captured in the CNMI thus far but this pattern was true on Guam previously.

### **Elsewhere**

The following additional locations are sites where brown treesnakes have been credibly sighted, captured, or found dead associated with cargo or transportation leaving Guam.

On September 12, 2005 Base personnel at McAlester Ammunition Plant in Oklahoma captured a live brown treesnake in a shipment of military supplies that left Guam in June. The amazing

ability of this snake to move and the projected doubling of military movement from Guam is cause for significant concern.

Other sites include:

- Corpus Christi, Texas
- Anchorage, Alaska
- Wake Island (unincorporated territory of the U.S.)
- Kwajelein, Republic of the Marshall Islands
- Pohnpei, Federated States of Micronesia
- Darwin, Northern Territory, Australia
- Diego Garcia (British Indian Ocean Territory)
- Taiwan
- Okinawa, Japan
- Rota, Spain

For account descriptions of some of these events, visit

<http://www.mesc.usgs.gov/resources/education/bts/invasion/colonize.asp#continental>