

BROWN TREESNAKE FACT SHEET

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The brown treesnake, an invasive species, likely was introduced to the island of Guam as a passive stowaway in a military cargo ship that moved material after World War II. This non-indigenous 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-indigenous lizards supplemented the already abundant prey base as regional and international trade increased following World War II.

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.

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 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.

Ecological Impacts

The brown treesnake is directly responsible for the extinction or local extirpation of 9 of 13 native forest birds, 3 of 12 native lizards. The rapid nature of the decline of the birds on Guam was dramatic. In the early to middle 1980's, certain native bird species were relatively common during standardized surveys of Northern Guam but declined rapidly over a one to three year period. Overall, the snake's impact on Guam has been catastrophic ecologically. It is the single greatest terrestrial ecological threat to the Commonwealth of the Northern Mariana Islands and is one of the greatest terrestrial ecological threats to Hawaii.

Economic Impacts

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.

A University of Hawaii economic study recently estimated that the introduction of the brown treesnake to State of Hawaii could cause between \$28,515,800 and \$405,174,800 annually.

Human Health Impacts

The brown treesnake is a rear-fanged venomous snake. The snake has a very primitive mechanism for venom injection compared to 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 type 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.

Risk of Brown Treesnakes to Other Sites

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.

Island Breakdown:

Rota:	2 credible BTS sightings resulting in 2 BTS captures
Tinian:	5 credible BTS sightings resulting in 0 BTS captures
Saipan:	62 credible BTS sightings resulting in 11 BTS captures
CNMI Total:	69 credible BTS sightings, 13 BTS captures

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.

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.

1981: In April, a juvenile brown treesnake is found in the Customs area of the Honolulu Airport, having hitched its way presumably from Guam.

1981: In July, a second snake is discovered near an aircraft hangar at Barbers Point Naval Air Station.

1986: On May 5, a brown treesnake is found on Hickam Air Force Base after an early morning arrival from Guam.

1989: In October, yet another brown treesnake makes its way to Hickam Air Force Base.

1991: The sporadic stream of snakes to Hawaii continues. On September 3, a brown tree snake is found stunned near the tire of a parked plane on the Hickam Air Force Base runway. Just 8 hours later, another snake is found dead on the taxiway.

1994: In December, a brown treesnake is again found on Oahu. The live subadult is discovered in an Army warehouse containing supplies recently shipped from Guam. Ironically, this snake was transported by truck from Hickam Air Force Base after its flight from Guam.

1997: In July, two military policemen report a brown snake on the alert pad of the Hawaii National Guard at Hickam Air Force Base, within 200 yards of the site where aircraft arriving from Guam are positioned upon landing. The snake eluded capture and was not confirmed as a brown treesnake, but the circumstances warrant consideration as a possible dispersal event. *The snake was never captured.*

1998: In August, a brown treesnake is found dead in the wheelwell of a Continental Air Micronesia Airliner on Oahu, following two round-trip flights to Guam in the prior days.

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.

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.

- 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>