

An Invader Worse Than a “B” Movie

by Ken Burton

As fiction, the story might be rejected even by the low-budget kings of the worst that Hollywood has to offer: an alien snake makes its way to a South Pacific island as a silent stowaway. Within 10 years, it is firmly entrenched and manages to eliminate a handful of native birds while posing a threat to infant humans and other small mammals, short-circuiting high-voltage power lines, and inflicting serious economic damage.

The story, unfortunately, isn't B-grade fiction; the very real brown tree snake (*Boiga irregularis*) made its way from New Guinea to Guam, probably aboard a freighter, in the mid-1950s. By the late 1960s, the snake had dispersed across the island, leaving a monumental example of the kind of environmental havoc that can be wrought by a single invasive species.

Brown tree snakes are mildly venomous and nocturnal. Lacking natural predators, and with a rapid reproduction cycle that produces a dozen eggs twice a year, up to 13,000 snakes per square mile (5,020 per square kilometer) can be found in some forested areas of Guam. They consume lizards, small mammals, and birds (including their eggs), all at a voracious rate. At least 12 species of birds have disappeared from Guam and three other species, the Guam rail (*Gallirallus owstoni*), Mariana crow (*Corvus kubaryi*), and Guam Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*), are precariously close to the same fate.

Brown tree snakes have not stopped with wreaking terror on the Guam ecosystem. Although they are not known to be fatal to adult humans, they have been known to enter houses and to bite infants in their bed. Brown tree snakes crawling on electrical power lines cause

short circuits and are responsible for frequent power outages on Guam. Since 1978, the snakes have caused more than 1,200 power failures, leading to food spoilage and computer failures as well as considerable economic burdens to the island's civilian government and military installations.

“The brown tree snake in Guam is a classic horror story. It is also a demonstration of what human carelessness can do to a closed ecosystem and how formidable and frustrating the problem can become — not to mention how difficult it can be to eradicate this kind of problem once it is out of the bottle,” said Cathleen Short, the Service's Assistant Director for Fisheries and co-chair of the interagency Aquatic Nuisance Task Force.

The battle against the brown tree snake was elevated when Congress named it specifically in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, which established the task force. By serving as its co-chair and as chair of the Brown Tree Snake Control Committee, the Fish and Wildlife Service has provided leadership in the development of a cooperative Brown Tree Snake Control Plan. Within the Department of the Interior, the Office of Insular Affairs and the U.S. Geological Survey/Biological Resource Division also play key roles in coordinating activities among insular governments to help keep the snake from spreading to other islands, and in conducting critical research activities.

The U.S. Air Force and U.S. Navy have joined the fight against the snake and have focused on airports and aircraft inspections in an effort to keep the snake from spreading by air, while the government of Guam gives special attention to the island's civilian international airport.



Photo by Thomas Fritts/USGS

There is some excitement about a Department of Agriculture finding that acetaminophen, the active ingredient in some over-the-counter painkillers, is proving to be a lethal weapon in the battle against the brown tree snake. “Two 300-milligram tablets in a dead mouse, ingested by a brown tree snake, kills a snake within 3 hours,” said Mike Pitzler, a scientist with the U.S. Department of Agriculture who is based in Hawaii.

As promising as this approach may be, further research is needed before the household pain killer can be used indiscriminately across Guam. The acetaminophen apparently kills the snake by causing massive internal bleeding, and now researchers must determine if other species, such as carrion-eating wildlife, would be similarly affected.

Pitzler said 2 to 5 years of research trials still lie ahead before, and if, acetaminophen can be declared safe for the rest of the environment before being widely used to eradicate Guam's pre-eminent wildlife headache.

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