CANE TOADS: The Conquest

Toad Facts

The Cane Toad Invasion

- Cane toads are natives of Central and South America.

- 102 cane toads were brought into Australia in 1935. There are now more than 1.5 billion of them.

- The cane toad was supposed to act as an introduced predator for the “white grub”, (the larvae of the greyback cane beetle, a sugarcane pest).

- The cane toad was introduced into the Australian ecosystem at the Mulgrave River near Gordonvale, Queensland in August 1935. By March of 1937, 62,000 toadlets had been released into the wild.

- In 1935 a New South Wales Government entomologist named W W Froggatt protested the release of the cane toad, claiming that they may do massive long-term damage to the ecosystem. His protests were dismissed.

- After toads were released in Queensland, they expanded their territory at about 10 km per year in the first few decades. This rate has gradually increased to an average of about 55km per year.

- The toads now occupy over 620,000 square miles of territory.

- In 2010, the cane toads have advanced as far west as Kununurra, just inside the Western Australian border. This is a distance of about 2,424 km or 1,506 miles.

Size

- Average-sized adult cane toads are 10-15cm long.

- In 2007 ‘Toadzilla’ was captured in the Northern Territory. He was 20.5cm long and weighed 840 grams (1.9 pounds).

- In 1988, Dr Glenn Ingram, a Queensland Museum zoologist, was given an enormous cane toad called Big Bette. Big Bette measured 22cm (8.6 inches) in length and weighed 1.8 kilos (4 pounds) - about the same weight as a Chihuahua. Bette was doomed to a lonely demise because the museum was unable to find a male big enough to mate with her.

- In 1975, a submission was made to the Guinness Book of Records about a cane toad from Proserpine, QLD. Gerty allegedly weighed 3 kilograms (6.61 pounds) and was raised on a diet of beer. She had been entered in Proserpine’s novelty cane toad race but was crushed under the metal chair of an excited spectator. The Guinness adjudicators rejected the record claim due to lack of evidence.

Life Expectancy

- Cane toad life expectancy in the wild is 10 to 15 years, but they can live as long as 35 years when kept in captivity.
• The RSPCA suggests that if you must kill a cane toad, the most humane approach is refrigeration. To do this, put on a pair of gloves and catch the toad. Put the toad in a plastic bag or container, seal it up, then refrigerate 12 hours. The toad will go to sleep. Next, put the bag into the freezer for at least 24 hours and the toad will die painlessly.

• At one point the RSPCA recommended dispatching the toads humanely by smearing them with hemorrhoid cream. This method did not gain popularity.

• Cane toads are extremely hardy and have been observed hopping out of bush fires, climbing out of freshly tamped hot tar and hopping away after being impaled or run over.

Uses
Uses for cane toads include:

• Poison for arrow tips (traditional South American use)

• A Bufotenin-based traditional medicine called "ch'an su" (China) or "senso" (Japan) is used as an aphrodisiac (applied directly to the penis), hair-restorer, mild anesthetic, cancer treatment, and to regulate the heart-rate of cardiac surgery patients (China, Japan).

• Liquid fertilizer made from pulverized cane toad carcasses (Australia)

• Leathergoods and novelty items like cane toad key rings (Australia)

• Pregnancy testing – (mid 20th century, for about 20 years) a woman’s urine was injected into a male toad and if sperm appeared in the toad’s urine, the woman was deemed pregnant.

Toxins

• Bufotenin is a toxic alkaloid produced by cane toads, as well as some mushrooms, plants and mammals. It is secreted through the toads’ skin.

• Ingesting Bufotenin may have psychedelic effects. However, the venom also contains cardiac glycosides, which affect the heart rate, leading to ventricular tachycardia (racing heartbeat), fibrillation (trembling heart muscles) and sudden death.

• Bufotenin is listed as a Schedule 1 controlled substance in Australia’s Drugs Misuse and Trafficking Acts (alongside heroin, cannabis and LSD), and is also a Schedule 1 controlled substance in the USA.

• Cane toad toxin is absorbed through the body tissues in the eyes, nose and mouth. A direct hit to the eye with a spray of cane toad toxin causes immediate temporary blindness.

• Cane Toad Venom is deadly to almost all native Australian animals. Cane toads have reduced native populations of dingoes, crocodiles, northern quolls, crows, kookaburras, goannas, frill-necked lizards, frogs, snakes, native snails and leeches. Studies show that many of these species bounce back after time.

• Toad venom is so potent that it will quickly dispatch with a 9 Foot Crocodile.

• There have been no recorded reports of Australians having died from cane toad poisoning.

• A first-year medicine student at the University of Sydney who was dissecting a female cane toad in a lab class was encouraged to eat cane toad ‘caviar’. He said he wouldn’t eat it unless all his friends threw in a dollar, which they did. After consuming the eggs, he had his first cardiac arrest after 20 minutes, was in intensive care for five weeks, and had two
Breeding

- The fastest, strongest toads form the invasion front. These athletic toads breed with each other and produce extremely robust babies. Scientists call this the “Olympic Village” effect. As a result Australia’s cane toads are **evolving** unusually quickly, developing longer legs, bigger bodies, and more directional migration habits than their ancestors.
- A female can lay up to **50,000 eggs twice a year**. The eggs hatch within 24-72 hours. In tropical areas the toads can reach sexual maturity within 12 months.
- Cane toads mate by a process called ‘amplexus’. Males seize the females from behind and grab them tight under the armpits to avoid being shoved off by bigger, stronger males.
- Cane toads have an especially **strong drive to mate** and have been observed in their over enthusiasm mating with rocks, clumps of dirt, human feet and roadkill.

Habits and Habitat

- Cane toads are homophilic – they like people and seem to enjoy living near us, in places that have been altered by humans.
- Cane toads mostly eat insects, but **they will eat anything that fits into their mouths** – living or dead. Analysis of a cane toad's stomach contents has revealed various insects, rocks, sticks, small mammals and other cane toads.

Wacky Facts

- A Queensland University academic estimated that more than 200 tons of cane toad flesh is squelched on Queensland roads each year.
- Vets have recorded cases of clever domestic dogs consistently licking the toads in controlled doses in order to enjoy the effects of the venom.
- Prince Charles and Lady Diana were given a book bound in cane toad skin as a wedding present. Charles, in his “thank you” letter, said it would give them much pleasure in their married life.
- In 2008, a cane toad named Spew survived for 40 minutes in a dog’s stomach after being swallowed whole. Dog and toad were unharmed.

Toad links

The Australian Museum Cane Toad information Site
[http://australianmuseum.net.au/Cane-Toad](http://australianmuseum.net.au/Cane-Toad)

The Department of Environment Cane Toad information Site

Website of Rick Shine and his toad research team
[http://www.canetoadsinoz.com](http://www.canetoadsinoz.com)
Toad Busters:
A Catalogue of Toad Control Methods

As the cane toads have hopped across Australia, invading one dismayed town after the next, a variety of “control” methods have sprung up. Here are a few of the common and innovative methods – and why most of them don’t work.

Method: Barriers to Toad Progress
Implementation: Fences, Enclosures and Walls
What Really Happens: Barriers take a lot of time and resources to build and maintain; and toads tend to ultimately find a way around or through them

Method: Hand Collecting Toads One by One
Implementation: Teams of “toad collectors” or individuals collect or kill toads on sight
What Really Happens: A group of people might be able to hand collect hundreds or even thousands of toads, but can’t outpace their efficient reproduction

Method: Trapping Toads
Implementation: Cages and Other Cleverly Designed Traps
What Really Happens: Traps have not been very effective at attracting toads in sufficient numbers and can harm other animals

Method: Biological Control
Implementation: Turning the table on the cane toad, who was brought to Australia as a means of biological control itself, some are now looking at biological control to halt their spread, namely by using parasites that might kill them or pheromones that disrupt their normal behavior
What Really Happens: Still in the experimental stages, the consequences of these methods are not fully known yet
Invasion of the Invasive Species:
A Brief History of Environmental Menaces

Wherever you live, there are aliens among us, and they are wreaking havoc right under our noses. The cane toad is only one particularly charismatic example. But all over the world, environmentalists are facing the ongoing menace of invasive species – non-native plants, insects or animals who have been introduced into new eco-systems, often with unforeseen, harmful results. One study estimates that invasive species cost the United States alone some $100 billion every year (source: National Invasive Species Information Center).

Invasive species spread rapidly, alter new ecosystems they encounter and drive other species to extinction – leading some to ponder if the most successful invasive species of all time might, in fact, be . . . our own. Here are a few other examples of invasive species, neither toad nor human, running rampant in the world:

**Fire Ants:** These aggressive, stinging ants were accidentally introduced in the U.S. in the 1930s and have spread through 13 states, endangering other species, damaging structures and electrical systems and scaring families who find them in their home.

**The Glassy-Winged Sharpshooter:** this large, leafhopper insect arrived in California accidentally via shipments from the Southeast, and has spread a foreign bacteria that destroys grapes, to the tune of $35 billion in losses to the Wine Country every year.

**Kudzu:** This harmless looking vine from Asia was introduced into the U.S and quickly started growing over anything and everything in its path – including other plants, trees and houses. It is reported to cost the U.S. $500 million in economic losses each year.

**Gypsy Moths:** These hungry, leaf-munching, flying insects were accidentally released from a research facility in North America in 1869 and have since caused the destruction of entire forests.

**Nile Perch:** Europeans introduced this non-native fish to Africa’s Lake Victoria, only to watch the voracious fish eat nearly all the life in the lake and then perish of starvation, leaving the local people without their major food source.

**Zebra Mussels** – These mussels native to southeast Russia spread to Europe in the 1700s. More recently, in the late 1980s, European ships transported Zebra Mussels to the Great Lakes region of the U.S., where they have devoured the local plankton supply, starving other species, and causing clogged pipes and extensive damage to nearby electrical plants. The U.S. Coast Guard estimates that economic losses and control efforts cost the U.S. $5 billion a year.

**Water Hyacinth:** It might sound beautiful, but this plant native to South America is causing headaches in China, where, once used to feed pigs, it has grown out of control, blocking waterways and damaging eco-systems. China spends as much as 1 billion yuan each year to keep the Hyacinth at bay.

**Wild Boars:** Brought to North America in 1539 by the conquistador Hernando de Soto, wild boars are now found in 39 states where they have been known to spread disease, destroy croplands, eat gardens and golf courses, and cause $800 million in property damage annually.