

The cane toad (*Bufo marinus*)



Cane toads, introduced into Australia to control beetles that were destroying sugarcane crops, are still spreading across Australia. They failed to control the cane beetles, and became a major pest themselves. Cane toads can harm native wildlife by eating small animals and poisoning larger predators that try to eat them. Household pets are also at risk from poisoning. So far, there is no known way to control cane toads across large areas, but scientists are searching for a biological control agent that is specific to the toads.

History

The cane toad is a native animal of South and Central America. In the early 1900s cane toads were widely exported in an effort to use them as a biological control against beetles infesting sugarcane crops. In 1935, about 100 cane toads were shipped from Hawaii to Gordonvale, in northern Queensland. However, there had not been an adequate assessment of whether the toad would be able to do the job it had been imported for, and after the release it was found that the toad could not control the insects. Instead, it quickly established itself as another pest animal.



Distribution of cane toads in Australia

Adapted from: Clarke GM et al (2000). *Environmental Pest Species in Australia*. Internal report, Department of the Environment and Heritage, Canberra.

Since then, the range of cane toads has expanded through Australia's northern landscape at 27–50 kilometres a year. Cane toads had reached Brisbane by 1945, Burketown in north-western Queensland by the early 1980s, Iron Range on the Cape York Peninsula by 1983 and the tip of the Cape by 1994. By 1995 they had reached the Roper River, in the Gulf of Carpentaria in the Northern Territory; by March 2001 they had reached Kakadu National Park. In 2003, cane toads were established at Yamba and Port Macquarie on the north coast of New South Wales, after being introduced at Byron Bay in about 1965.

The cane toad continues to expand its range southwards at about 1.3 kilometres a year, and is also spreading across the tropical north towards Western Australia. The toads can be accidentally transported to new locations, for example in pot plants or loads of timber.

Ecology

Cane toads forage at night in a wide variety of habitats. The toad is a ground-dwelling predator and eats any prey that it can fit into its mouth, including small lizards, snakes, frogs and their tadpoles, marsupials and mice, snails, and terrestrial and aquatic insects. It even takes food left out for pets. Cane toads can use their keen sense of smell to find food and breeding mates.

Cane toads need constant access to water to survive. Instead of drinking, they absorb water through the skin on their belly — from dew, moist sand or any other moist material, including areas deliberately kept moist with their own urine. If forced to stay in flooded conditions, cane toads can absorb too much water and die. They can also die from water loss during dry conditions. In Australia there are no specific predators or diseases that control cane toads.



The cane toad, introduced in 1935, is spreading to more and more parts of Australia. Australia has no predators or diseases that control cane toad numbers. Photo: Queensland Environmental Protection Agency

The toads can breed at any time of year but seem to prefer the weather conditions that occur with the onset of the wet season. They will lay their eggs in temporary or permanent, still or slow-moving waters, with the females laying 8000–30 000 eggs at a time.

In comparison, most Australian native frogs typically lay 1000–2000 eggs per year. Cane toad eggs hatch in two or three days and the tadpole stage lasts between four and eight weeks. In tropical conditions, the toadlets can reach adult size within a year, but may take twice that long in colder climates.

Impact

The cane toad is poisonous in all its life stages, from egg to adult. Adult cane toads produce venom from glands over their upper surface, but especially from bulging glands on their shoulders — these exude the venom when the toad is provoked. While some birds and a few other native predators have learned to avoid the poison glands of adult toads, almost anything that eats the toad dies rapidly from heart failure. The poison is absorbed through body tissues such as those of the eyes, mouth and nose, so that even mouthing the toad can cause death.

The recent arrival of cane toads in Kakadu National Park has been linked to a marked decline in native predators in the park, especially northern quolls *Dasyurus hallucatus* and large goannas. Household pets are also at risk.

Cane toads may also eat native animals, with a heavy impact on some species, particularly those that are already threatened. Adult cane toads may compete with native animals for food (particularly insects) and shelter, for example under rocks and logs. Cane toads may also outcompete native frogs for breeding sites, and their tadpoles may outcompete native tadpoles because they are produced in such large numbers.

Cane toads readily eat faeces and, where human hygiene is poor, the toads have been known to transmit diseases such as salmonella.

Control

It is possible to control cane toad numbers humanely in a small area, such as a local creek or pond. This can be done by collecting the long jelly-like strings of cane toad eggs from the water or by humanely disposing of adult cane toads. Control is best at the egg or adult stages, because cane toad tadpoles can easily be confused with some native tadpoles, which could be accidentally killed. This approach to cane toad control requires ongoing monitoring of the creek or pond. Fine-mesh fencing can also assist in keeping cane toads from ponds that are in need of special protection.

At present there is no broadscale method available to control cane toads in Australia. Researchers are attempting to identify a biological control agent, such as a virus, that is specific to cane toads. They are also looking at the toad's impact on native fauna to try to clarify its significance as a pest and to aid in diagnosing better ways to manage its impact and spread.



*The northern quoll *Dasyurus hallucatus* could become threatened because it preys on cane toads, which are poisonous. Photo: Greg Miles, Parks Australia North*

Illustration of cane toad by Sharyn Wragg

Printed on recycled paper (2004)

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