Australian Government
Department of the Environment, Water, Heritage and the Arts

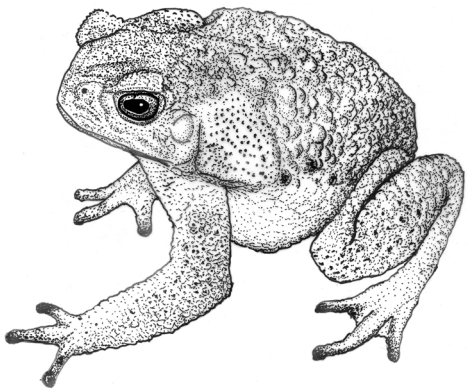
THE CANE TOAD *(BUFO MARINUS)*

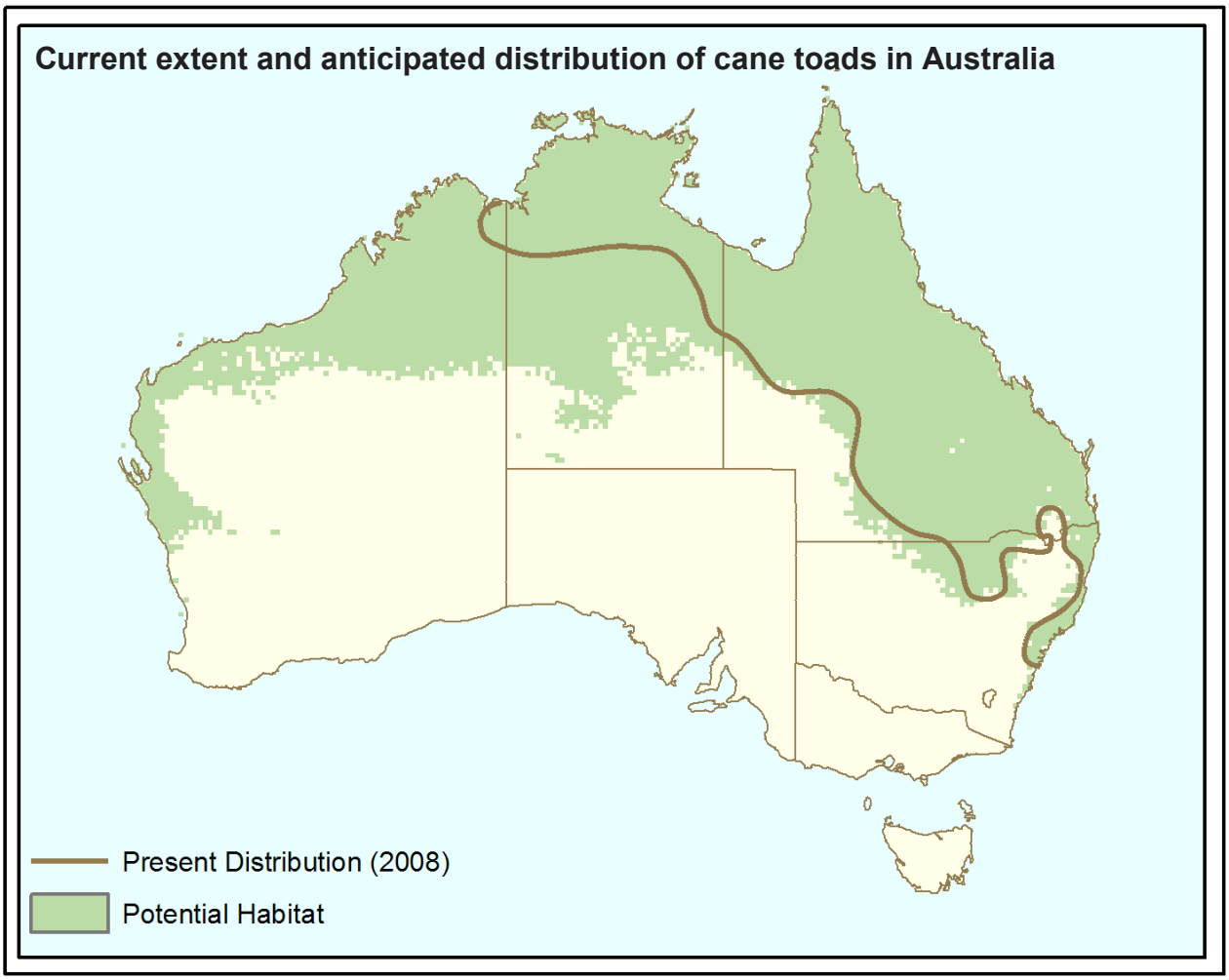
Cane toads became pests after being introduced into Australia to control destructive beetles in Queensland's sugarcane crops. Cane toads are capable of poisoning predators that try to eat them and they continue to spread across Australia. There is no broadscale way to control this pest but scientists are developing a better understanding of the impacts they have on the environment and the ways in which assets, such as rare and vulnerable wildlife, can be protected.

History

Cane toads are native to South and Central America. They are extremely hardy animals and voracious predators of insects and other small prey. These qualities led to their introduction into Australia as a means of controlling pest beetles in the sugar cane industry in 1935, before the use of agricultural chemicals became widespread.

Since then, the range of cane toads has expanded through Australia's northern landscape and they are now moving westward at an estimated 40 to 60 km per year. Cane toads 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, their westward expansion had reached the Roper River in the Gulf of Carpentaria in the Northern Territory. By March 2001, they had reached Kakadu National Park. In February 2009, cane toads crossed the Western Australian border with the Northern Territory (over 2000 km from the site they were released 74 years before). To the south, cane toads were introduced to Byron Bay in 1965 and then spread to Yamba and Port Macquarie on the north coast of NSW in 2003.





Source: Kearney, M, Phillips, BL, Tracy, CR, Christian, KA, Betts, G & Porter, WP 2008, 'Modelling species distributions without using species distributions: the cane toad in Australia under current and future climates', *Ecography,* vol. 31, pp. 423–434.

Ecology

Cane toads forage at night in a wide variety of habitats. The toad is a ground-dwelling predator, primarily eating terrestrial and aquatic insects and snails. Toads will even take food left out for pets.

The toads can be accidentally transported to new locations, for example in pot plants or loads of timber.

Cane toads need constant access to moisture to survive. Instead of drinking, they absorb water through the skin on their belly — from dew, moist sand or any other moist material. 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 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 still or slow-moving waters. Females can lay 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 this may take twice that long in colder climates.

Impact

The cane toad defends itself through poison and is poisonous, to varying degrees, during all its life stages. Adult cane toads produce toxin from glands over their upper surface, but especially from bulging glands on their shoulders — these exude venom when the toad is provoked. While some birds and native predators have learned to avoid the poison glands of adult toads, other predators are more vulnerable and die rapidly after ingesting toads. Toads contain poisons that act on the heart and on the central nervous system. The poison is absorbed through body tissues such as those of the eyes, mouth and nose.

The arrival of cane toads in Kakadu National Park was linked to a marked decline in some native predators in the park, especially northern quolls (*Dasyurus hallucatus)* and large goannas. However, based on current evidence it appears that some native predator species which are heavily impacted when toads arrive make rapid adaptations (both behavioural and physiological) allowing for population recovery in the longer term.

Adult cane toads may compete with native animals, particularly for shelter. For example, a 2004 study showed that cane toads ruined one-third of nest attempts of ground-nesting rainbow bee-eaters by usurping their nest burrows and preying upon their eggs and young nestling.

The cane toad, introduced in 1935, is spreading to more parts of Australia. Australia has no predators or diseases that control cane toad numbers (QLD Environmental Protection Agency).

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. Adult cane toads are also readily confused with some of the larger native frogs. Care should be taken to ensure you can correctly identify your local frog fauna before you become involved in projects to remove cane toads from the environment. 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.

There is unlikely to ever be a broadscale method available to control cane toads across Australia. Researchers are beginning to understand the toad's impact on native fauna and to appreciate the ways in which native species are adapting to

the presence of cane toads and recovering from the impact of their arrival. Protecting our most vulnerable native species on a local scale is the focus of current planning around cane toads.

How the Australian Government is dealing with a national problem

'The biological effects, including lethal toxic ingestion, caused by Cane Toads (Bufo marinus)' are listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Australian Government is preparing a threat abatement plan to set out the research, management and other actions necessary to reduce the key threatening process concerned to an acceptable level in order to maximise the chances of long-term survival in nature of native species and ecological communities affected by cane toads.

Caring for our Country

The Australian Government cane toad commitment is providing more than $2 million over two years (2008-09 to 2009-10) to reduce the impacts of cane toads and to develop a national cane toad plan. Through these investments under the *Caring for our County* initiative, the Government is continuing to assist with funding for ground-control work, as well as research and development of sustainable control measures. In 2009-10, the Government provided over $1 million for community-based control activities and research to reduce cane toad numbers.

The Government will continue to work with regional natural resource management organisations and with state governments to achieve outcomes for our environment and sustainable agriculture.

Further information on the Caring for our Country initiative is available at:
www.nrm.gov.au/business-plan/10-11/index.html

For further information on Australian Government policy on cane toads go to:
www.environment.gov.au/biodiversity/invasive/ferals/cane-toads.html

or contact:

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