

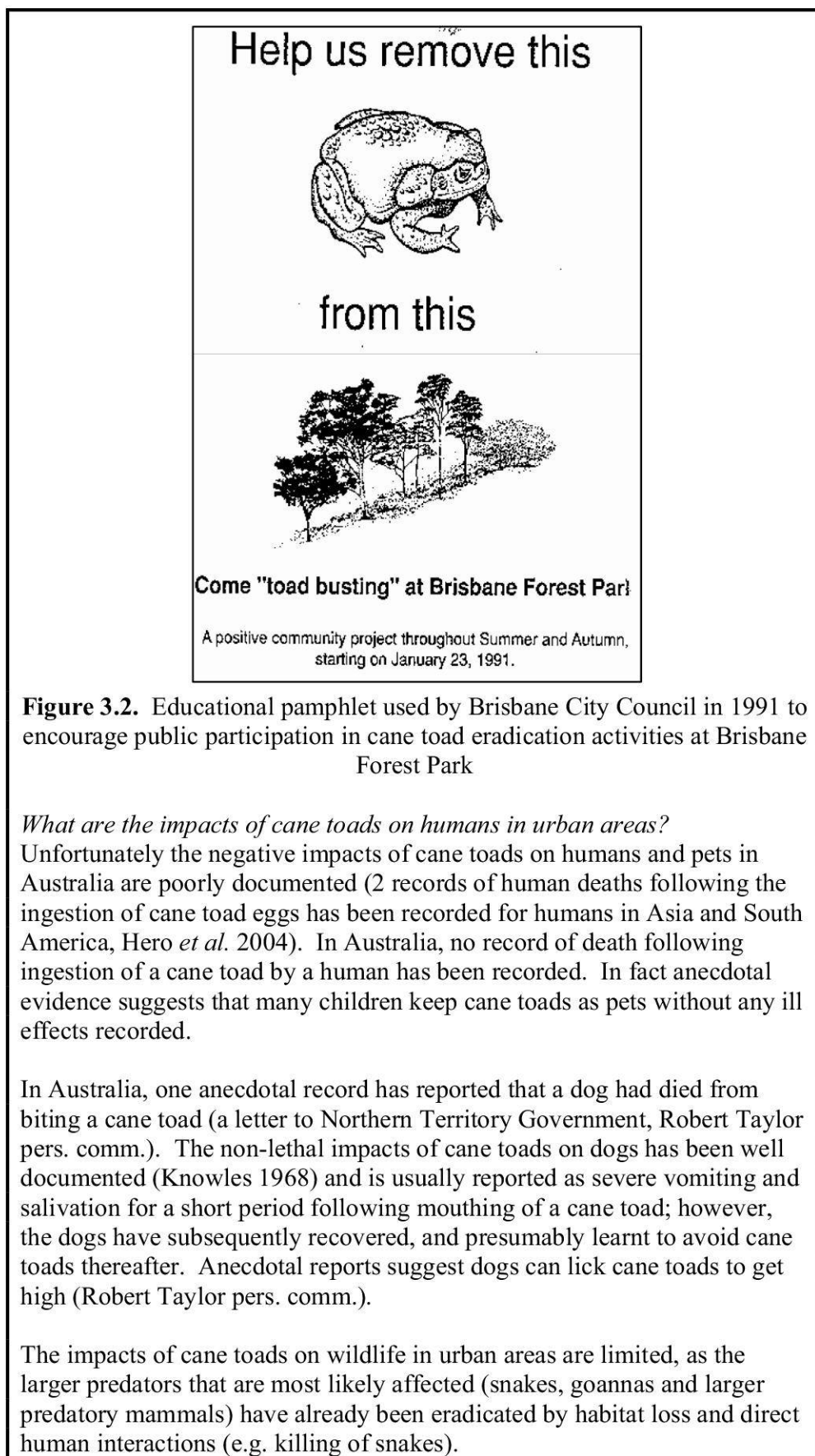
Evaluating public cane toad eradication programs

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The cane toad invasion of Australia has been followed by varied responses from the general public. For obvious biological reasons cane toads have been negatively portrayed in information provided by government agencies (federal, state and local) and the media. These have focused on why the cane toad is bad (i.e. it is toxic to humans and pets) rather than the biological consequences of reducing the number of snakes and other reptile and mammalian predators that have been severely impacted by cane toads – primarily outside urban areas.

In Brisbane “Toad Buster” evenings were promoted in the early 1990’s as “a real family affair” (The Courier Mail, January 4, 1994). While some of these cane toad hunts were supervised by Brisbane Forest Park rangers (Fig. 3.2) their impacts on cane toads have not been critically evaluated. Subsequently public cane toad eradication programs (e.g. “Cane Toad musters” and “Toad Buster” public activities) have been executed in major cities along the east coast of Australia (Brisbane, Mackay, Townsville, Yamba and more recently in the Northern Territory).

Herein I will examine the perceived impacts of cane toads in urban areas, the objectives and effectiveness of public participation in cane toads harvesting programs, and the ethical considerations of these programs.



What are the objectives of cane toad eradication programs?

Public cane toad eradication programs have been executed in major cities along the east coast of Australia (Brisbane, Mackay, Townsville, Yamba and more recently in the Northern Territory); however the objectives are rarely specified. Various agencies have reported specific events where large numbers of cane toads were collected, however there is no information on how this has impacted on the local populations in the long term. The general objective seems to be “to reduce the impacts of cane toads”.

Some indications suggest that locally cane toads numbers can decrease in the short term. However, the long term benefits are likely to be negligible. Anecdotal evidence that numbers have reduced is expected from those who remove them from their personal space (i.e. remove them from their yard or local park). However no data have been collected at the population level. Anecdotal decreases in cane toads within urban areas are likely to be due to natural influences (e.g. decreased activity in periods of low rainfall) and the continued destruction of breeding habitat as urbanisation becomes more intense (i.e. the inevitable increase in density of houses and people through time). Separating these confounding influences on the perceived number of cane toads (reflecting cane toad activity rather than actual abundance) would require undertaking expensive research.

Are cane toad eradication programs effective?

To date, cane toad harvests have been short-term projects, focused on small geographic regions (e.g. small parks in the Brisbane region). These control programs have been ineffective for several reasons:

- a. The actual number of toads collected is unlikely to have an impact on the population. Using a harvesting model for the Gold Coast we predict that if the population of cane toads in this region is 1 million then 330,000 animals/year will need to remove before there will be an impact on the abundance of this species (calculated as the maximum sustainable yield). These numbers are unlikely to be reached in a single year. Due to their extremely high fecundity (up to 30,000 eggs /female/year) cane toad numbers will recover quickly to pre-harvesting levels.
- b. To be an effective control agent, harvesting must be sustained on a continuing basis (i.e. ad-indefinitum). The problem is that, while these cane toad harvests have been initiated and funded by local councils, no research has been done to evaluate their effectiveness.

What are the ethical considerations of cane toad eradication programs?

Methods of collecting, euthanasia and disposing of cane toads are issues that must be evaluated before any cane toad harvest begins. Freezing has been recommended as the principal method for killing cane toads (Brisbane City Council 1993, Northern Territory Government 2004). However; this method is no longer recognised as humane (ANZCCART 2001). The Australian and New Zealand Council for the Care of Animals in Research and Teaching recommends using pentobarbitone sodium, MS 222 benzocaine and chloral hydrate as the most suitable techniques for the humane destruction of amphibians(ANZCCART 2001). In Queensland

these methods may only be done by veterinarians, inspectors under the *Queensland Animal Care and Protection Act 2001*, or prescribed entities. ANZCCART (2001) does not recommend the physical methods of hypothermia (freezing) and decapitation alone.

Another associated issue is that encouragement of killing cane toads has led some adults and children to promote a cult in Queensland of killing cane toads using golf clubs and cricket bats (personal observation). The long-term social impacts of training the public to kill wildlife has not been investigated but is likely to have a negative impact on all Australian wildlife. A disregard for the value of wildlife will also be exacerbated by the problem of misidentification. Volunteers may accidentally kill native frogs, an issue that can only be overcome by training the participants in frog and toad identification. Identification of adult toads is relatively easy and may be done using written information leaflets. However, juvenile toads and tadpoles can closely resemble native frogs and an experienced frog biologist is needed to confirm their identification before eradication.

Positive outcomes of public cane toad harvests?

The reported positive outcomes of cane toad harvests (see David Newell's comments above) are not cane toad control, but rather public education and public participation in collecting information on cane toad densities, and the potential to monitor their impacts on native fauna and current distribution to the south (New South Wales) and west (Northern Territory). However these objectives can more appropriately be met without harvesting operations. Public participation in monitoring programs could be used to evaluate cane toad densities and the abundance of other native wildlife (i.e. frogs, snakes and other vertebrate predators) that are likely to be negatively impacted by the presence of cane toads.

Recommendations

Public cane toad eradication programs are unlikely to succeed unless they are funded and maintained in perpetuity. The ethical issues involved outweigh the potential benefits that are also minimal.

Harvesting of cane toads should only be encouraged in areas where they are likely to be an effective control measure (e.g. islands and other isolated areas of mainland Australia (see section 3.6)).

Public monitoring programs could be used to evaluate the current distribution and abundance of cane toads throughout their current range and also in areas in front of the expanding populations (i.e. northern New South Wales and western Northern Territory). Furthermore these programs could be used to monitor the impacts of cane toads on local wildlife.