# Fighting cane toad invasion with toad lungworm

**Studies to help control the impact of cane toads on native animals are underway in the Northern Territory and Western Australia. This study looks at the introduction of 'toad lungworm' as a biological weapon to manage cane toad populations by assessing its potential and its risks.**

## Aims of the study

**The study aims to determine:**

- **What are the effects of the toad lungworm on toads?**
- **Can the toad lungworm infect native frogs?**
- **If so, what are the effects of this nematode on the frogs?**
- **Can the toad lungworm be transmitted by cannibalism?**
- **How much niche overlap is there between frogs and toads that could increase the chances of lungworms infecting the frogs?**

## Results so far

- The lungworms do enter the frogs' bodies, but they get lost and die in most cases.
- Metamorphs of green tree frogs can host high numbers of lungworm, but do not get very sick.
- Metamorphs of magnificent tree frogs host high numbers of lungworms and die due to the infections.
- Cannibal toads do get the lungworms if they ingest infected toadlets, and the infection affects their locomotor performance.

## Future work

- Radio-tracking and habitat surveys are planned.

## Methods

The study has been conducted in the Adelaide River floodplain area of the Northern Territory on floodplains, grasslands, monsoon forest and human residential areas, as well as Lake Argyle and the Kununurra areas in Western Australia in savannah habitats, escarpments and human residential areas. It comprised:

**Trials in the laboratory**

- A number of frog species are raised in a laboratory from eggs and put in contact with lungworm infective larvae cultured in toad faeces. Frog species raised included the ornate frog (*Opisthodon ornatus*), rocket frog (*Litoria nasuta*), Rothi's frog (*L. rothii*), Dahli's aquatic frog (*L. dahlia*), green tree frog (*L. caerulea*), magnificent tree frog (*L. splendida*) marble frog (*Limnodynastes convexiusculus*) and long-footed frog (*Cyclorana longipes*), as well as the cane toad.
- We score swimming, hopping performance, and survivorship at different times post-infection.
- After 40 to 60 days we euthanise animals and count the worms in the lungs. We look at the animals' tissues in the microscope to locate worms, then we compare the results for animals that were infected versus those that were not.
- Captive toads are feed exclusively on toadlets carrying lungworm larvae. After 40 days they are euthanised and checked for lungworms.

**Trials in the field**

- We survey and radio-track frogs and toads recording what type of habitat they use and where they hide.

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