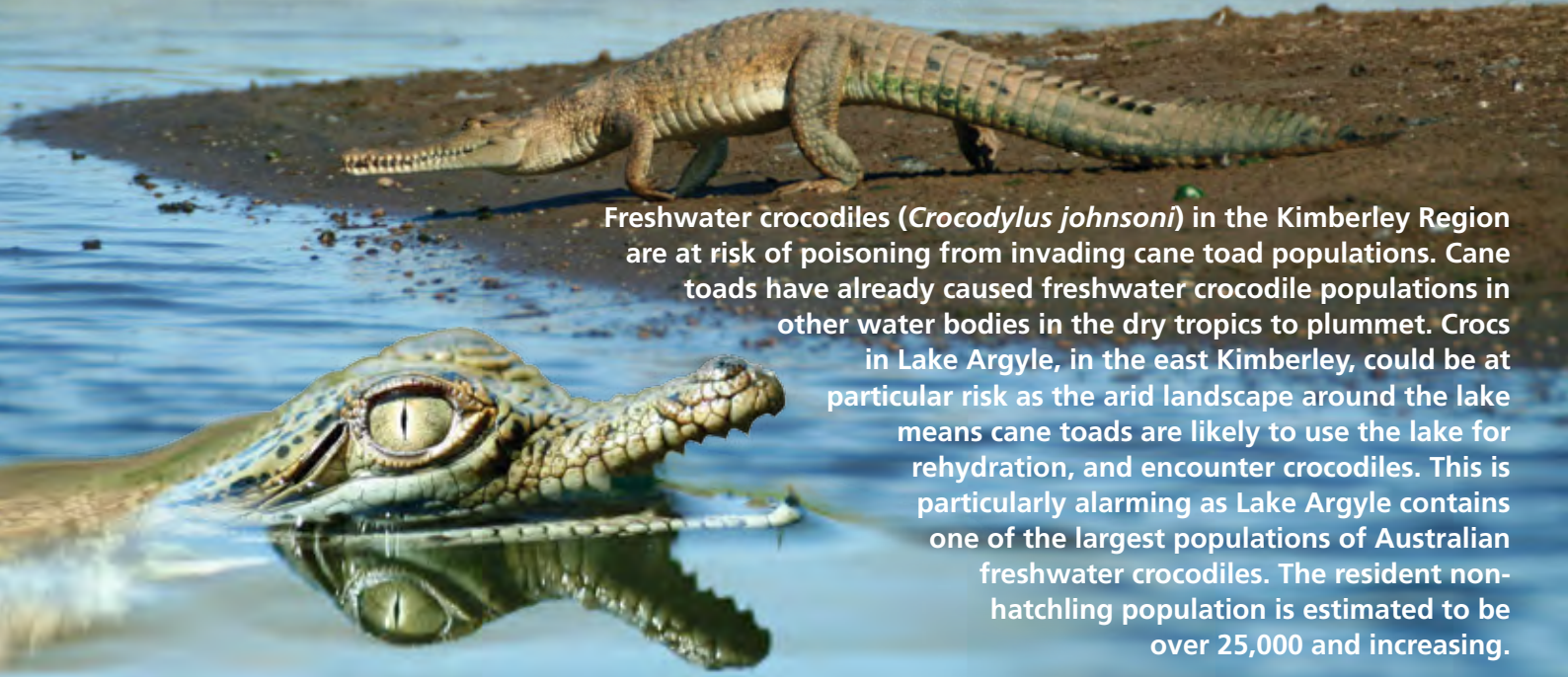


Species at risk from cane toads

Will cane toads threaten the freshwater crocs of Lake Argyle?



Freshwater crocodiles (*Crocodylus johnsoni*) in the Kimberley Region are at risk of poisoning from invading cane toad populations. Cane toads have already caused freshwater crocodile populations in other water bodies in the dry tropics to plummet. Crocs in Lake Argyle, in the east Kimberley, could be at particular risk as the arid landscape around the lake means cane toads are likely to use the lake for rehydration, and encounter crocodiles. This is particularly alarming as Lake Argyle contains one of the largest populations of Australian freshwater crocodiles. The resident non-hatchling population is estimated to be over 25,000 and increasing.

Aims of the study

The study aimed to predict the patterns of colonisation and effects of cane toads on Lake Argyle freshwater crocodiles. It aimed to determine:

- How would cane toads invade and spread in the lake?
- Would cane toads impact the crocodile population?
- What factors would determine the severity of the impact?
- What mechanisms would enable the crocodiles to recover?
- What are the indirect impacts of cane toads on crocodiles?

Results

- Cane toads arrived at Lake Argyle in early 2009, and spread to cover more than 300 kilometres of lakeshore, and colonise all of the larger islands, within a 24-month period.
- Radio and spool-line tracked toads moved extensively along the lakeshore, often into floating vegetation in the lake.
- Crocodiles encountered toads (up to 15 per cent of crocodiles were close to toads during some surveys), and infrequently seized them.
- Crocodile mortality was rare, and crocodile numbers did not decrease through time, nor differ between toad-infested versus toad-free areas of the lake.
- Dingoes were the main egg predators of crocodiles in northern parts of the lake. Dingoes are not known to be affected by cane toads thus may not have an indirect impact on the survival of crocodile eggs.

Conclusion

Availability of abundant alternative prey may have protected the Lake Argyle crocodile population from cane toad impact at least in the short term. The crocodiles' capacity to quickly learn to avoid cane toads means that, even if toads cause mortality of larger crocodiles, populations may recover through hatchling recruitment.

Methods

- Selected sites on the lake shore were surveyed every three months to study how cane toads spread and how populations change with season and time. Toads were attached with radio-transmitters and spool-line trackers to study their movements along the shoreline.
- Night-time spotlighting and daytime surveys were conducted from boats and ATVs along the shoreline four to five times a year to monitor the population changes and to look for dead crocodiles.
- The rate of encounters between crocodiles and cane toads in the wild was estimated during surveys along the lakeshore. For each crocodile seen on and close to the bank we counted the number of toads in a two-metre diameter.
- Laboratory experiments evaluated whether certain populations of crocodiles are more resistant to cane toad toxin than others and whether crocodiles possess innate taste-aversion leaning abilities.
- Nesting studies monitored nest predation activities through remotely triggered digital cameras to identify what nest predators take nests. A decline in these predators due to cane toads may result in an increase in nest survival.



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