



eriss submission to the
Northern Territory
Government Inquiry into
the issues associated
with the progressive
entry into the Northern
Territory of cane toads

D Walden & CM Finlayson

May 2003

***eriss* submission to the Northern Territory
Government inquiry into issues associated with
the progressive entry into the Northern Territory
of cane toads**

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Environmental Research Institute of the Supervising Scientist, Supervising Scientist Division,
Environment Australia

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LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY

Sessional Committee on Environment and Sustainable Development

INQUIRY INTO ISSUES ASSOCIATED WITH THE PROGRESSIVE ENTRY INTO THE NORTHERN TERRITORY OF CANE TOADS

BACKGROUND PAPER AND CALL FOR SUBMISSIONS

Establishment of Committee

On 27 November 2002, the Legislative Assembly established the Sessional Committee on Environment and Sustainable Development to inquire into and from time to time report upon and make recommendations on matters referred to it by the relevant minister or resolution of the Legislative Assembly on any matter:

- (a) concerned with the environment or how the quality of the environment might be protected or improved;
- (b) concerned with the sustainable development of the Northern Territory.

Membership of Committee

Membership of the committee comprises:

Ms Delia Lawrie MLA (Chair)
Mr Tim Baldwin MLA
Mr Matthew Bonson MLA
Mr Stephen Dunham MLA
Mr Elliot McAdam MLA
Mr Gerry Wood MLA

Matters referred to Committee

On 27 November 2002, the Legislative Assembly referred the following matters to the Committee to inquire into and report on:

1. The efficacy of the establishment of an Environmental Protection Agency for the Northern Territory inclusive of but not restricted to –
 - (a) arguments for and against the establishment of an Environment Protection Agency for the Northern Territory;
 - (b) options for the structure of an Environmental Protection Agency, taking account of the demographic, geographic and financial context of the Northern Territory; and
 - (c) if a particular model is recommended, options for its staged introduction.
2. Issues associated with the progressive entry into the Northern Territory of cane toads.

This background paper relates only to the issues associated with the progressive entry into the Northern Territory of cane toads.

Inquiry Process

The Committee is of the view that, in conducting this inquiry, it is essential to achieve maximum community representation and to consult widely with as many Territorians as possible.

To this end, the Committee is seeking submissions in respect of the following, but not limited to:

- The identification of the problem and risks associated with cane toads in the Northern Territory.
- The potential extent and effects cane toads have or will have in the Northern Territory.
- The cultural, socio-economic and other factors associated with the encroachment of cane toads into the Northern Territory.
- Identifying the current level of understanding concerning cane toads to date and assessing the need for public education and awareness programs.
- Identifying ways to manage the environmental impact of cane toads in the Northern Territory.
- Community concerns and expectations in respect of the progressive entry into the Northern Territory of cane toads generally.

The above list is not an exhaustive list, but could be used as a guide or focal points in addressing these important issues. There may well be other issues that the community may wish to raise with the Committee and therefore invites submissions in respect of them.

Advertisements for the calling of submissions will be placed in all major Northern Territory newspapers shortly.

The Committee is currently preparing a program of public hearings in selected major centres and Aboriginal communities within the Territory during May this year. Further notification of the Committee's programme of meetings and public hearings will be placed in Northern Territory newspapers.

Submissions

As part of the process of presenting its report and recommendations to the Legislative Assembly, the Committee invites individuals or organisations wishing to express views on this matter to lodge a submission or to express interest in appearing before the Committee at a public hearing.

The official closing date for written submissions is Friday 16 May 2003.

Requests for further information, or queries in respect of the work of the Committee, should be directed to:

Mr Rick Gray

Executive Officer

Sessional Committee on Environment and Sustainable Development

Telephone: 8946 1480

Fax: 8946 1504

E:mail: rick.gray@nt.gov.au

Website: www.nt.gov.au/lant



Supervising Scientist

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1 May, 2003

doc name: Inquiry into issues associated with the
progressive entry into the Northern Territory
of cane toads

The Executive Officer
Sessional Committee on Environment and Sustainable Development
Legislative Assembly of the Northern Territory
GPO Box 3721 Darwin NT 0801

cc:

ATTN: Mr Rick Gray

Dear Sir

Your call for submissions which appeared in the Northern Territory News on Saturday, 5 April 2003, refers.

This letter serves to advise that the Environmental Research Institute of the Supervising Scientist (*eriss*) recently completed a report for Parks Australia North on the potential risks of cane toads entering Kakadu National Park. For your interest a copy of the report (Supervising Scientist Report 164) is enclosed. In doing this report we adopted the formal risk assessment protocol recommended by the Bureau of the Ramsar Convention on Wetlands.

The majority of the risk assessment undertaken involved identifying the problem, the potential extent and effects of the problem, the risk and subsequent recommendations on monitoring. Major information gaps relevant to predicting impacts and developing appropriate monitoring programs were also identified. The risk assessment was based on information from published and unpublished scientific and anecdotal reports. Information on Kakadu National Park was derived from relevant research projects undertaken in the Park since the early 1980s. A number of relevant Territory and Commonwealth agencies were consulted, as were relevant cane toad, native fauna and/or wildlife management experts from around Australia. Discussions were held with community members in the Borroloola and Mataranka regions to gain an indigenous/cultural perspective of the cane toad issue. The findings of these discussions are also enclosed (Internal Report 389).

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We trust that these findings will be of interest to the Sessional Committee and, as an interested party in the region, confirm our willingness to discuss these issues further, as appropriate.

Yours faithfully

Dr C M Finlayson

Director, Environmental Research Institute of the Supervising Scientist



LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY

Sessional Committee on Environment and Sustainable Development

9 May 2003

Dr CM Finlayson
Director
Environmental Research Institute of the Supervising Scientist
GPO Box 461
DARWIN NT 0800

Dear Dr Finlayson

INQUIRY INTO ISSUES ASSOCIATED WITH THE PROGRESSIVE ENTRY INTO THE NORTHERN TERRITORY OF CANE TOADS

This is to confirm that you and officers of your organisation will be presenting a submission to the Committee at 12 Noon on Monday 12 May 2003, in the Litchfield room, 3^d Floor Parliament House.

Attached is a copy of the draft program, general background on the Committee's terms of reference and copy of the witness guidelines.

Should you have any queries regarding the above, please contact me on telephone 8946 1480.

On behalf of the Chair, Ms Delia Lawrie, MLA I thank you, for your interest in this matter.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Rick Gray', with a large, stylized flourish at the end.

RICK GRAY
Executive Officer



LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY
Sessional Committee on Environment and Sustainable Development

PUBLIC HEARING

DARWIN – 12 May 2003

VENUE: Litchfield Room - 3rd Level - Parliament House

12 NOON — 6:00 PM

TIME	PERSON	ORGANISATION
12:00 PM	Dr C M Finlayson and Dave Walden	Environmental Research Institute of the Supervising Scientist, Darwin
1:00 PM	Dr Greg Brown	Fogg Dam
2:00 PM	Mr Dan Baschiera	Private Citizen
2:20 PM	Ms Kirsten Blair	NT Environment Centre
2:45 PM	15 Minute Recess	
3:00 PM	Dr Mike Tyler	University of Adelaide
4:20 PM	Mr Mick Denigan	Private Citizen, Mick's Whips
4:40 PM	General Discussion	General Discussion
5:15 PM		
6:00 PM	End of Hearing	

5 Slides from PowerPoint presentation

SUPERVISING SCIENTIST DIVISION

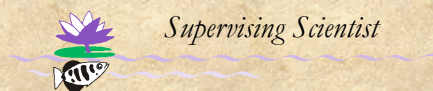
Environment Australia

Represented by

Max Finlayson¹ & Dave Walden²

¹ Chairman of the RAMSAR Scientific Panel
Director of the Environmental Research Institute of the Supervising Scientist (eriss)
President of Wetlands International

² Project officer - eriss

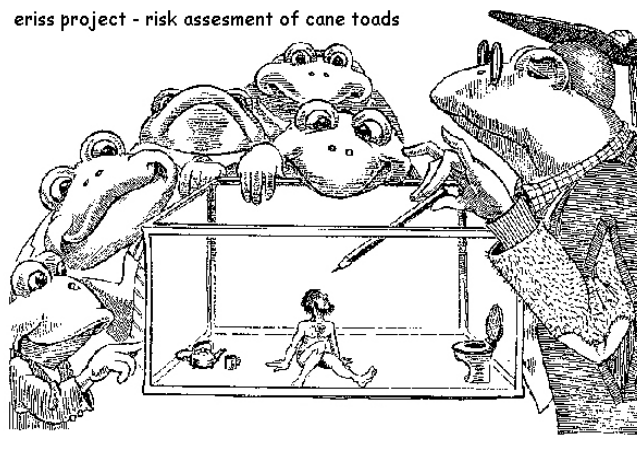


A preliminary risk assessment of cane toads in Kakadu National Park

Rick van Dam, Dave Walden & George Begg

Environmental Research Institute of the Supervising Scientist (eriss)
GPO Box 461 Darwin NT 0801 Australia, ACT, 2601

eriss project - risk assesment of cane toads

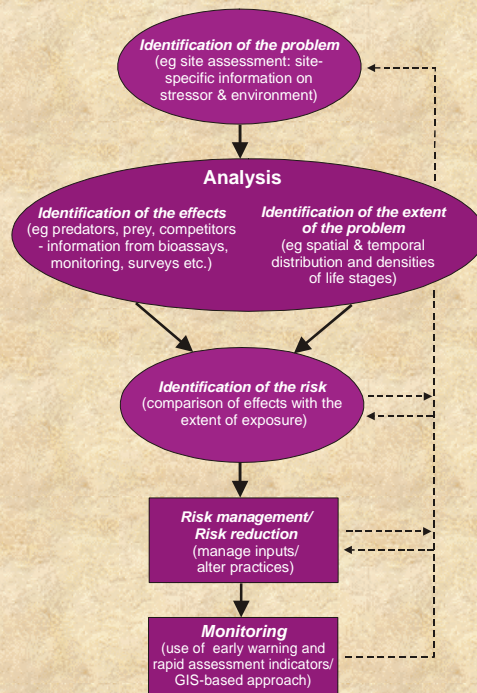




The major aims of the risk assessment were:

- To predict the likely extent of impacts of cane toads in Kakadu National Park
- To use this information to identify key vulnerable species and habitats that could form the basis of a comprehensive monitoring program

Wetland risk assessment framework (adapted from van Dam et al 1999)



Identification of the problem

- Possess highly toxic chemical defences to predators
- Higher fecundity than native frogs
- Breed opportunistically
- Develop rapidly particularly in warmer waters
- Diet and habitat generalists
- Tolerate a broad range of environmental conditions
- Compete for resources with many native species
- No effective control method exists

Potential effects (predators)

The following criteria were used to determine the degree of susceptibility of potential cane toad predators:

- *Definite*:- documented adverse effects upon populations have been reported in the literature (11 species)
- *Probable*:- documented in the literature as having eaten cane toads or their early life stages and adverse effects on individuals reported, but not on populations (16 species)
- *Possible*:- documented in the literature or through expert consultation as eating, or thought likely to eat, native frogs or their early life stages, but effects of eating cane toads unknown (124 species)

Northern Quoll



Northern Sand Goanna



Western Brown Snake



Northern Death Adder



Will anything eat cane toads?

- Some aquatic invertebrates – water scorpions, water bugs & beetles, dragonflies, freshwater prawns, shrimps, crabs & crayfish
- Centipedes, large spiders
- Keelback snakes
- Some turtle species
- Some bird species
- Water rats

Potential effects (prey)

- Eat mainly ants, termites and beetles
- No studies to specifically investigate impacts upon ground dwelling arthropods
- Also eat small mammals, birds, reptiles and frogs but generally in very small numbers



Potential effects (competition)

- Limited information on competition between cane toads and native animals (resources such as food, shelter and breeding sites)
- Cane toad's heavy reliance on ground dwelling arthropods generally excludes them from competition
- Reports suggest there is segregation of breeding sites between cane toads and native frogs
- Timing of arrival of tadpoles can affect competitive ability

Potential effects (cultural)

- Decline in numbers of bush tucker species such as monitor lizards, snakes and turtles
- Traditional ceremonies altered to request spirits to return foods and totem species
- Despoliation of waterholes and springs regarded as sacred sites
- Urban areas will have high densities of toads – impact upon outdoor recreational activities – likelihood of pets being poisoned – home invasions

Potential effects (economic)

- Potential for a decline in tourism????

- **Beneficial uses of toads**

- Laboratory dissection
- Leather industry
- Paper weights etc.
- Medicinal value
- Consume household pests

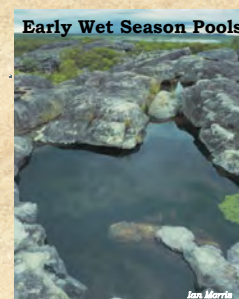
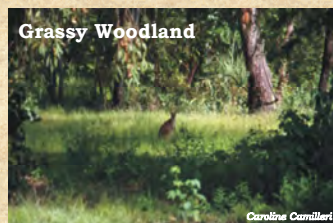


Potential effects (other)

- Contamination of water and water supplies
- Human Health
 - Spread of disease (eg *Salmonella*, tapeworm, hookworm)
 - Substance abuse (toad smokin')
- Ecological benefits
 - Feral cat and pig declines
 - Ground-nesting birds (eg partridge pigeons, quail)

Potential extent (key habitats)

- **Early mid-Dry season** – floodplains and their margins, shallow billabongs, temporary pools
- **Late Dry season** – permanent billabongs and pools, *Melaleuca* swamp, monsoon forest, seepage zones
- **Wet season** – woodlands/open forest and their associated wetlands
- Preference for disturbed areas such as urban environments
- May occur in, but not prefer, saline regions eg coastal plains, intertidal mudflats, mangroves, beaches, tidal creeks



Wet season



Dry season



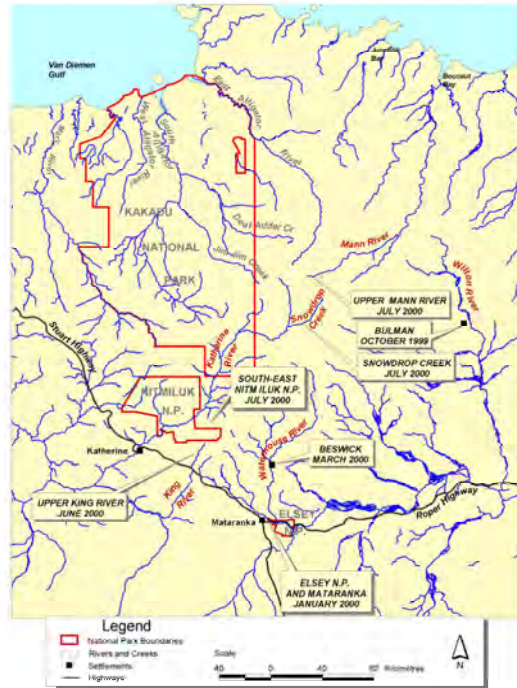


Potential extent (continued)

Other considerations

- Current and potential distribution
- Invasion rates
- Densities (different life stages)
- Methods of dispersal and factors affecting dispersal
- Preferred bioclimatic conditions

Documented west
north-west range of
cane toads in the Top
End as of July 2002



Identification of the risks (comparison of effects and extent)

- A species may be susceptible to cane toad toxin, but if the cane toad does not constitute part of its diet or if very few individuals of the species ever encounter cane toads (eg arboreal species), then the risk to the overall population is negligible
- This principle also generally applies to prey and competition

Criteria for determining risk categories and level of priority for predatory species susceptible or potentially susceptible to cane toads

Risk category	Priority	Criteria
1. Likely <i>Population level effects likely</i>	Highest	Endangered, vulnerable, notable or flagship species considered <i>definitely</i> susceptible to cane toads, regardless of relevant habitat information.
	High	As above, but for species not listed as notable or flagship.
2. Possible <i>Individual mortalities probable, population level effects unknown but possible</i>	High	Endangered, vulnerable, notable or flagship species considered <i>probably</i> susceptible to cane toads, unless relevant habitat/ecological information suggests they are at less risk.
	Moderate	As above, but for species not listed as notable or flagship. Species considered <i>possibly</i> susceptible to cane toads, where relevant habitat/ecological information suggest they are at greater risk.
3. Uncertain <i>May or may not eat cane toads, with effects on individuals or populations unknown</i>	High	Endangered, vulnerable, notable or flagship species considered <i>possibly</i> susceptible to cane toads, unless relevant habitat/ecological information suggests they are at less risk.
	Moderate	As above, but for species or species groups not listed as notable or flagship. Species considered <i>probably</i> susceptible to cane toads, where relevant habitat/ecological information suggests they are at less risk.
4. Unlikely <i>Effects on individuals or populations are unlikely</i>	Low	Species considered <i>possibly</i> susceptible to cane toads, where relevant habitat/ecological information suggests they are at less risk.

Uncertainty and information gaps (extent)

- Densities of cane toads
- Effects of fire
- Degree of land disturbance
- The escarpment as a barrier

Uncertainty and information gaps (effects)

➤ General cane toad impacts

- Few quantitative studies
- Body mass of predators

➤ Effects on Kakadu National Park species

- Species population, distribution and habitat information
- Dietary information
- Invertebrates
- Fish
- Frogs
- Snakes
- Freshwater turtles
- Red Goshawk
- Bats
- Endemic species

What can we do in our area?

- Swimming pools, spas, fish-ponds etc can be protected with the use of low mesh screens
- Familiarise ourselves with the appearance and call of cane toads to help prevent early incursions
- Familiarise ourselves with the identification of native frogs similar in appearance to cane toads to avoid accidental killing of these species
- Awareness campaigns must discourage acts of cruelty towards cane toads

