

# **STOP THE TOAD**

## **KEEP WA CANE TOAD FREE**

**DISCUSSION DRAFT**

## **Cane Toad Barrier Fencing Trial**

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**DISCUSSION DRAFT**

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### **1 BACKGROUND**

Hand capture of cane toads has been used extensively in NSW and some areas of QLD and has been shown to have a significant impact. FrogWatch is using this mechanism as a part of its programme in the Northern Territory (NT). The hand capture process has been extended to include tadpoles, eggs and metamorphs. Kimberley Toad Busters have refined the model for the Western NT and shown that they can reduce toads in a given area.

Other mechanisms for controlling cane toads have been researched and refined by FrogWatch over the past two years; their work has added the concept of cane toad traps, especially self powered long term placement traps, to the cane toad control toolset. Whilst there are still many questions about the most effective strategies the process of refinement continues.

Barriers and fencing have been talked about as possible solutions but have not, to our knowledge, been trialled, especially on a large scale. Contact with Queensland frog groups and researchers have revealed a number of types of fencing that effectively keep toads out of small areas. This provides some ideas on suitable materials and the appropriate height of barriers.

This discussion paper proposes setting up barrier fences in the Victoria River area to gauge their usefulness:

1. In halting the westward advance of the cane toad; and
2. Evaluating the combined impact of fences, traps and hand collection.

The proposal is to erect a temporary barrier fence adjacent to the river in suitable locations and to monitor the impact of such a fence in relation to the overall movement of cane toads along the river corridor as well as issues with the management of such a fence. It is planned to set up the fences during the current wet season and monitor them through to the following dry season.

At this stage there is no plan to put a grid on the road and so the trials will not be a complete exclusion system, but it will allow us to gain information about a number of issues relating to the ability of such barriers to increase the effectiveness of traps and hand collection and to disrupt the migration of toads.

FrogWatch has a model of a spring loaded fence design and there are several ways we think this can be deployed in a temporary manner. This will allow the fence to be moved and the resources re-used. It will also allow the extension of the fence into areas like the river bed during the dry season. We are planning to investigate the attachment of material such as shade cloth to existing fences to create temporary barriers.

## **2 RATIONALE**

This plan is not being proposed as a formal research study that would require a significant budget and major inputs of time but rather as an adaptive management research<sup>1</sup> model where an active trial can provide useful insight into the potential of such a strategy as a part of a dynamic management model for cane toads.

## **3 EVALUATION**

Evaluation will involve a number of monitoring activities and will include trap captures and observations as well as data from the existing CALM traps and the hand collection activities of the CALM team, the Kimberley Toad Busters and other groups. Trials need to be conducted in locations with existing cane toad populations or are at imminent risk of cane toad invasion; it is only under these circumstances that fence performance in relation to cane toads can be evaluated. Management issue such as construction, maintenance and impact on natural systems will also be evaluated.

## **4 TRIAL SITES**

There are three proposed trial sites. Ideally all three locations would be implemented; however management issues and on-ground practicalities may see only one or two sites implemented. Balancing the challenges of implementation, management and benefits in regards cane toads, the priorities for implementation are:

1. Auvergne Boundary Option 1
2. Victoria Highway to Victoria River
3. Auvergne Boundary Option 2

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<sup>1</sup> This model is derived from Action research models and some further details are at [http://fosonline.org/resources/Publications/AdapManHTML/Adman\\_1.html#intro](http://fosonline.org/resources/Publications/AdapManHTML/Adman_1.html#intro)

#### **4.1.1 AUVERGNE BOUNDARY**

##### **4.1.1.1 OPTION 1**

Fence length – approximately 4km

This location provides an opportunity to modify an existing barrier and evaluate this model as well as the impact of a barrier and the management issues associated with such a barrier.

The proposed trial site is the boundary fence between Auvergne Station and Gregory National Park adjacent to the Gregory Tree access road. This location is approximately 15km, by road, west of Timber Creek. The boundary fence has an unsealed but well maintained, all season road on the National Park side of the fence. This location represents a good trial site for several reasons:

- good access year round;
- the opportunity to retrofit an existing quality stock fence; and
- the location is currently close to the toad front line.

This should ensure a robust trial of a fence design typical of what might be used on a broader scale and a low cost, easily implemented trial.

##### **4.1.1.2 OPTION 2**

Fence Trial Length – approximately 2km

An option exists to construct a fence to the south of the Highway to complement Option 1. There is no appropriate station fence to retrofit on the southern side of the highway; a new fence using a combination of techniques would be built. This area represents a considerable challenge due to the flooding that occurs immediately south of the Highway and the nature of the terrain in that direction. Benefits include:

- a more complete barrier to toads; and
- evaluation of fencing in more challenging terrain.

This option extends the fencing trial to include a more diverse representation of landscape scale implementation issues within a single trial.

#### **4.1.2 MATERIALS, CONSTRUCTION & COSTS**

##### **4.1.2.1 OPTION 1**

This fence design will consist primarily of shade cloth being clipped on to the bottom two wires of the existing boundary fence, to a height of approximately 600mm. A skirt of shade cloth will be anchored with pegs and buried.

#### 4.1.2.2 FOLDING FENCE DESIGNS

Frogwatch have developed a model of a spring loaded barrier design. The core feature of this is a hinged post, that, when securely anchored to the ground can fold flat with flood waters, strong winds and animal passage and spring back up (reset itself) to remain a barrier to cane toads.

The post and hinge module can be fitted to half fence pickets (driven flush with the ground) or bolted directly to rock depending on terrain. The post would be 600mm high and strung with two plain wires to support shade cloth or similar. This system can be combined with conventional fencing techniques and retrofitting to allow for flood prone sections and other high risk areas.

As with all fences maintenance will be necessary and these trials will help to evaluate the practicality of this design and the maintenance levels required.

Construction work, for Option 1, will consist of measuring and cutting cloth, clipping to fence and the use of a tractor/grader to grade the strip at base of fence and regrade to deposit earth on (bury) the trailing cloth skirt. Gates will require additional work, and the bottom of each gate will have a stiff skirt of rubber attached from the lowest rung to ground level. Spring loaded barriers will be used in areas where water may flow through the proposed fence line.

#### 4.1.2.3 SAMPLE TABLE OF COSTS

Item	Description	units	\$/unit	Cost (\$)
Spring loaded posts	Post and Hinge Assembly	30	30.00	900.00
Wire	2 runs of 4ww fencing wire	20	0.30	6.00
Shade Cloth	Shade Cloth (1800mm wd)	2000	5.00	10000.00
Clips	Jambro Clips	16000	0.02	320.00
Shade cloth clips	Clips to join cloth sections	640	0.20	128.00
Pegs	To anchor cloth skirt to ground	8000	0.20	1600.00
Rubber Matt	Stiff barrier under gate	10	15.00	150.00
Tools	Sledge Hammers, cutting blade, cordless drill, clip pliers etc Jambro dispenser \$105			500.00
Grading		8	120.00	960.00
Removal	2 * 2 days	32	35.00	1120.00
				15684.00

*These figures represent estimates only; the Foundation presents them only as a guide. One expected outcome of these fence trials will be reliable data on construction and maintenance costs.*

#### 4.1.2.4 OPTION 2

A low fence (approximately 600mm high), running two wires on half picket posts, with shade cloth attached will make up the majority of Option 2. This technique will be similar in overall effect to the Option 1 fence. Advantages of the reduced height fence on Option 2 include; reduced cost (without heavy strainers and full pickets) and less need to have the fence stock-proof. Spring loaded barrier design will be used in areas where water may flow through the proposed fence line.

Construction of the Option 2 fence will be more labour intensive. The reduced height fence will be built first then fitted with shade cloth in a similar manner to Option 1. Where grading is not possible (or perhaps desirable), the skirt might be buried using hand tools or perhaps pegged down. In both options, where the fence may be in the path of flowing water, the spring loaded barrier design will be trialled.

#### 4.1.2.5 SAMPLE TABLE OF COSTS (ASSUME 2KM)

Item	Description	units	\$/unit	Total Cost (\$)
Fence Posts	Half Pickets	300	4.50	1350.00
Wire	1 run of 4mm fencing wire 1 run of 2.5mm fencing wire	2000	140.25/ 500m 181.50/ 1500m	1122.00 242.00
Spring loaded posts	Post and Hinge Assembly	10	30.00	300.00
Shade Cloth	Shade cloth (1800mm wd)	1000	5.00	5000.00
Clips	Jambro	8000	0.02	160.00
Shade cloth clips	Clips to join cloth sections	320	0.20	64.00
Pegs	To anchor cloth skirt to ground	4000	0.20	800.00
Tools	Sledge Hammers, cutting blade, cordless drill, clip pliers etc Jambro dispenser \$72.55 Post Driver \$85.90 Fencing pliers \$29.15			500.00
Grading		4	120.00	320.00
Fence removal	2 * 4dys	64	35.00	2240.00
Totals:				12098.00

*These figures represent estimates only; the Foundation presents them only as a guide. One expected outcome of these fence trials will be reliable data on construction and maintenance costs.*

#### **4.1.3 MAINTENANCE**

Options for fence maintenance include volunteers, CALM Cane Toad team staff, Timber Creek indigenous ranger groups, and NT Parks and Wildlife rangers. The fences are obviously susceptible to fire, strong winds, flooding and animal damage. Initial maintenance inspection will be frequent and reduced over time as an appropriate regime becomes apparent.

#### **4.1.4 MONITORING**

A network of cane toad traps will be setup along both sides of the fence, with more intensive installations at either end. These traps could be serviced by CALM staff and volunteers. We hope to test the exclusion properties of the fence, the funnelling effect to either end and the robustness and practicality of the structure in the field. We will also be monitoring to evaluate the impact of the barriers on natural systems.

#### **4.1.5 TRIAL EVALUATION**

The trial is proposed to run for 6 months. At the end of this time we hope to have sufficient insight into any benefits and/or impacts to be able to make decisions about extending the trial to other areas and into the following wet season (end of 2006).

The groups involved in the cane toad control will all be approached about playing a role in the provision of feedback and data for the evaluation and some specific monitoring and research components will be set up as a part of the trial.

This will include the set up of specific traps and survey transects. An aspect of the monitoring will be to evaluate impact on native species. Management of the fences will provide important insight into future challenges for landscape scale fencing.

### **4.2 VICTORIA HIGHWAY TO VICTORIA RIVER**

#### **4.2.1 PROPOSED LOCATION**

Fence length – approximately 200m

The proposed fence trial site is a transect from the Victoria Highway to the Victoria River approximately in line with CALM's Cane Toad Trap Grid Row 4. This is approximately 2 kilometres west of the Old Victoria River Crossing turnoff

This location represents a good trial site for several reasons:

- very short fence required;
- the existing CALM traps may form part of the monitoring regime; and
- the existing CALM traps suggest management/heritage clearance might be more easily obtained than at other locations.

This site would require a short fence and represents an affordable and easily implemented trial.

#### 4.2.2 MATERIALS, CONSTRUCTION & COSTS

It is proposed to use the spring loaded barrier design here as the sloping portion of the fence (closest to the road) is on a very rocky scree slope and the lower (flatter) half is subject to frequent surface water flows and animal passage. Post modules can be bolted to the boulders that form the scree slope much more easily than fence post could be driven in. Half pickets welded to square metal plate can be driven flush with the ground to facilitate mounting the spring loaded post modules on the flatter alluvial terrain.

It is planned to run two plain wires along the fence and to attach shade cloth or similar to form the barrier.

##### 4.2.2.1 SAMPLE TABLE OF COSTS

Item	Description	units	\$/unit	Total Cost (\$)
Spring loaded posts	Post and Hinge Assembly	40	30.00	1200.00
Wire	2 runs of 4mm fencing wire	400	0.30	120.00
Shade Cloth	Shade cloth (1800mm wd)	100	5.00	500.00
Clips	Jambro	800	0.2	16.00
Tools	Sledge Hammers, Stanley knife, cordless drill, clip pliers  Fencing pliers \$50 Picket driver \$80 Jambro dispenser \$105			500.00
Shade cloth clips	Clips to join cloth sections	50	0.20	10.00
Pegs	To anchor cloth skirt to ground	600	0.20	120.00
Grading	n/a	n/a	n/a	n/a
Strainers		2	120.00	240.00
Concrete		4	17.40	70.00
Fence removal	2 workers x 2 working days	32	35.00	1120.00
Totals:				3896.00

*These figures represent estimates only; the Foundation presents them only as a guide. One expected outcome of these fence trials will be reliable data on construction and maintenance costs.*

#### 4.2.3 MAINTENANCE

Options for fence maintenance include volunteers, CALM Cane Toad team staff, Timber Creek indigenous ranger groups, and NT Parks and Wildlife rangers. The fences are obviously susceptible to fire, strong winds, flooding and animal damage. Initial maintenance inspection will be frequent and reduced over time as an appropriate regime becomes apparent.

#### 4.2.4 MONITORING

A network of cane toad traps will setup along both sides of the fence and with more intensive installations at either end. CALM Cane Toad Trap Grid Row 4 already exists and can be used as part of the monitoring regime. This location represents a nearly



continuous barrier from escarpment to river. These traps could be serviced by CALM staff and volunteer workers. We hope to test the exclusion properties of the fence, the funnelling effect to either end and the robustness and practicality of the structure in the field. We will also be monitoring to evaluate the impact of the barriers on natural systems.

#### **4.2.5 TRIAL EVALUATION**

The trial is proposed to run for 6 months and may be extended if the evaluation is positive. At the end of this time we hope to have already begun some broader scale fencing programs and will reallocate the resources as they are withdrawn from the trial.

The trapping regime will allow us to get an indication of the effectiveness and/or any impacts from the barrier. If there is a significant build up of toads on the eastern side of the fence and a decline on the western side of the fence it will give us an indicator that the barriers may be worth pursuing further. Similarly hand capture of toads along the fence corridor will allow insight into how barriers can be integrated with this activity.

### **5 PLANNING & IMPLEMENTATION**

Planning will involve the STTF, CALM and NT Parks and Wildlife with additional groups brought into the project as required. It is hoped that volunteers, such as the Kununurra based SEEKS and Kimberley Toad Busters, will contribute to construction and maintenance. Funds will be sought from CALM to assist with the cost of materials and costs associated with the erection of the barrier. It is planned to implement this as a rapid response trial and to commence construction of the barrier before the end of April 2006.

The Foundation will undertake to remove the fence in entirety in the event that:

- the trial is completed and the resources are allocated to other fencing locations,
- the fencing trial is abandoned or otherwise curtailed or becomes a threat to current or future human safety.

Suggestions and input are sought to plan and implement this project as rapidly as possible. Direct inquiries to Graeme Sawyer, Regional Coordinator, Stop the Toad Foundation – using Microsoft Word 'Track Changes', email or by phone.