

# Feral Animal Control for TB Eradication in the Northern Territory

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## Abstract

The removal of feral cattle and buffalo from the TB infected areas of the Northern Territory was essential to achieve TB eradication with Australia declared TB Impending Free (no known infected herds) at the end of 1992. TB eradication was most difficult in the partly or uncontrolled herds of Northern Australia where properties and herds are very large and clean musters are difficult to achieve.

TB eradication was achieved in the controlled herds by a combination of total destocking, age destocking, weaner segregation and testing programs. Stock in paddocks that could not be mustered for testing were destroyed. Stock from the uncontrolled or "bush" areas that could not be mustered for slaughter at abattoirs or for testing programs in the Controlled areas were removed by shooting from helicopters.

However, as stock populations were reduced to low levels, it became clear that alternative methods had to be adopted to locate the remaining stock for destruction. In the desert areas tracking from the air and the ground at the few permanent waters was successful. In the higher rainfall areas where there was abundant surface water with areas of dense vegetation, radio tracking used in wildlife research was used to locate groups of stock for destruction using "Judas animals".

The presentation will demonstrate the problem and the radiotracking technique used in the Northern Territory to achieve removal of the feral stock in bush destocking programs.

## Introduction

### Cattle Industry in the Northern Territory

There are about 1.3 million cattle in the Northern Territory on about 250 stations with small numbers of cattle on about 100 farms. The median size of a station is about 3,000 square kilometres with about 15,000 cattle. The climate ranges from arid with annual rainfall of 100mm to semi-arid with annual rainfall from 250mm to 650mm to tropical monsoonal climate with annual rainfall from 700mm to 1500mm in the northern coastal areas.

Stock densities are generally low ranging from 4 to 10 head per square kilometre but local high concentrations occur around watering points during the dry season and on islands in flooded areas in the wet season.

Prior to TB eradication some properties were totally fenced and were managed as a controlled herd with commercial musters in paddocks of about 70% to 90%. Some properties had a total feral herd with almost no stock management and harvested stock for slaughter when the prices were good. However, most properties had a mix of paddocks and "bush" country with commercial musters in the bush country of about 50% to 70%. Extensive fencing programs were done on many properties to develop controlled herds.

### Buffalo Industry in the Northern Territory

The buffalo industry was essentially the harvesting of feral buffalo for slaughter by contractors with little input by owners. There was about 400,000 buffalo in the northern coastal areas prior to TB eradication. Currently only about 50,000 buffalo remain as the industry was slow to change to a controlled herd.

### Feral stock population reduction

Owners had from 4 to 6 years to commercially muster the bush areas. From 1989 the remaining stock in the bush areas were destroyed by experienced and trained shooters from helicopters. The cost per head in the early stages varied from \$5 to \$10 per head depending on stock density and the nature of the country. As the stock population decreased, costs rapidly escalated to \$100 to \$200 per head during planned grid and watercourse helicopter searching was done.

Following exposure to a number of years of commercial mustering and aerial destruction activities the surviving stock had changed their behaviour. This includes nocturnal grazing with resting during the day in jungle and forest areas, remaining stationary when helicopters approach, rapid flight to local areas to avoid detection eg. creek channels, jungle or scrub, lie down and remain stationary (some even put their heads under a bush to hide). Consequently, the remaining stock that had avoided mustering or destruction were very difficult to locate and destroy.

It is acknowledged that it will be very difficult to remove all stock in the very large area (about 250,000 square kilometres) that must be destocked.

Infected bush areas were classified into three categories depending on the historical prevalence of TB. The categories are:

- Category 1: High Risk Area - historical TB prevalence of 1% or greater
- Category 2: Medium Risk Area - historical TB prevalence between 0.2% and 1%
- Category 3: Low Risk Area - historical TB prevalence of 0.2% or less.

However, once the stock density is reduced to less than 1 per 100 square kilometres in the Category 3 areas (low risk), it is unlikely than any remaining infected stock will spread TB to other stock in the bush area with any remaining disease being self limiting. Disease models suggested that a minimum 4 to 10 head were required to maintain TB. The bush destocking of the Category 3 areas was completed over 4 years from 1989 to 1992.

In the Category 2 areas (medium risk) the aim was to reduce stock density to less than 1 per 100 square kilometres and for the last two years to conduct post mortems of all stock that are destroyed. In practice about half of the stock destroyed are examined for TB due to access problems. The bush destocking of the Category 2 areas will be completed over 6 years from 1989 to 1994. In the event that TB was found at post mortem destocking activity was to continue for another two years.

In the Category 1 areas (high risk) the aim is to remove all stock. High resources are being provided to achieve extremely low stock densities in these high risk areas. The bush destocking of the Category 1 areas will be completed over 9 years from 1989 to 1997.

### Radiotracking

It is estimated that about 1% of the original stock population remain after commercial mustering and aerial shooting activities. The task is to locate and destroy the remaining stock. Radio-tracking used in wildlife research is used to locate the remaining stock. A radio transmitter powered by a long life battery (up to 5 years) is embedded in a collar that is placed around the animal's neck. Radio-tracking of "Judas animals" was trialed in mid-1989 and was shown to be time saving and cost effective. Less time is taken to find residual animals in the bush as the "judas" animal joins up with them, thereby leading the searcher to their location. The tracking is initially done monthly with the frequency of trackings decreasing.

The radio transmitter contained in the "Judas" animal's collar transmits a "beep" signal at one second intervals. The signals are detected by a receiver. In a radio-tracking operation, the receiver is tuned to the collar frequency (150.--- to 151.--- megahertz range) and the antenna aimed to follow the strongest signal, until the animal is intercepted. Most tracking is done from a helicopter with the pilot is responsible for the tracking. However, in some areas of dense vegetation ground operations are also used - quad bikes, motor bikes or horses.

Signals from collars on buffalo in medium density vegetation in north-west Arnhem Land have been heard from a distance of 25km, at an altitude of 1200m<sup>2</sup>. In woodland areas of Katherine, signals from collars on cattle are heard from a range of 15-18km, at an altitude of 100m<sup>3</sup>.

The location of the animal is recorded after darting/releasing, and then after each tracking, with a global positioning system (GPS).

Changes in Kill Rate from 1989 to 1993

	1989	1990	1991	1992	1993
<b>Darwin Region</b>					
No./heli hour	9.1	5.3	2.6	0.95	0.76
<b>Katherine Region</b>					
No./heli hour	11.9	9.5	3.0	1.8	0.96

Tranquillisation of local feral stock for "Judas animals"

Feral animals are sedated using a tranquilliser dart gun fired from a helicopter. The most widely used drug combination, for a 4ml dart, is 400mg xylazine into 250mg tiletamine/250mg zolazepam. Most animals receive one dart, though very large ones receive two, and young animals receive less.

Reversal of sedation is by yohimbine hydrochloride and 4-aminopyridine in the Darwin region. In the Katherine region, reversal is by 2.5mg RX821002A<sup>1</sup> per dart - an analogue of idazoxan.

One operator uses suxamethonium chloride for immobilisation of buffalo very successfully.

Local feral animals are the preferred animals to be used as "Judas animals" as they tend to stay in their home range area (within 15 kms). The aim is to have one "Judas animal" per 100 to 200 square kilometres. It is important that stock numbers are not reduced to very low numbers prior to the start of the radio tracking program.

Introduction of stock for "Judas animals"

Stock are purchased and following placement of a "radio collar" on the neck are relocated by either road or by helicopter to the required area. Cattle steers and young buffalo bulls or heifers are used as these animals tend not to remain in the areas where they are required. As these animals commonly move 10 to 50kms, they are not the preferred "Judas animal".

Sex and age of "Judas animals"

There are differing opinions on the preferred sex and age of "Judas animals". Young to middle aged cows are good for picking up breeding groups and young stock including young bulls. Young bulls are good for picking up breeder groups, other young bulls and sometimes older bulls. Old bulls are the most difficult to locate. They are sometimes found with breeder groups and may be found by young bulls.

### Other techniques

Other techniques being used to some degree are electronic traps using feed or licks or a heifer in season as a bait and ground tracking.

### Conclusion

Australia has achieved extraordinary disease eradication goals by achieving Brucellosis Free Area status at the end of 1989 and TB Impending Free status at the end of 1992.

The commitment and funding provided by both government and industry and extraordinary effort by individual producers, private vets and government staff were both important components of this success.

Australia has been fortunate that the reservoir hosts are only cattle and buffalo. Other hosts that have been infected are spillover hosts and do not constitute a risk to eradication. TB infection in spillover hosts is now rare.

The removal of the reservoir hosts from areas in Northern Australia that were not developed sufficiently to conduct effective test and slaughter programs was an essential component of the program. The use of radio tracking technology to locate the remaining stock in the bush areas was a necessary and innovative approach to the completion of bush destocking.

### References

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- <sup>2</sup> Carrick, P. "Destocking using radio tracking" *Bovine Tuberculosis Epidemiology Workshop, Townsville, Queensland, 24-27 November, 1992*; 379-416
- <sup>3</sup> Caple, P. "Stock removal program in the Katherine region using radio-tracked Judas cows" *Bovine Tuberculosis Epidemiology Workshop, Townsville, Queensland, 24-27 November, 1992*; 373-377