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**Alternatives to the Use of 1080 Program**

**RESEARCH BRIEFING**

**IMPACTS OF WILDLIFE BROWSING ON PASTURES IN  
TASMANIA**

**Summary of Workshop**

**Held at**

**Mt Pleasant Laboratories, DPIW & TIAR  
Launceston, Tasmania**

**6 August 2008**



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**IMPACTS OF WILDLIFE BROWSING ON PASTURES IN  
TASMANIA**

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Dr Richard Rawnsley, Dr Mick Statham

**Summary of Workshop**

**1. Background to the Study**

The ‘Alternatives to the Use of 1080 Program’ has been established by the Australian and Tasmanian governments to examine options for managing the impacts of native wildlife in agricultural and forestry landscapes in Tasmania. Sodium monofluoroacetate or compound 1080 has been used in Tasmania to control introduced and native wildlife browsing damage since the early 1950’s. Due to increasing social resistance to its use, The Tasmanian Government has been progressively working towards a phase out of 1080 by 2015. The current code of practice for the use of 1080 emphasises the use of alternatives such as shooting and fencing before a permit for 1080 will be issued.

The Tasmanian Institute of Agricultural Research (TIAR) was contracted in 2007 to undertake a three year research project entitled ‘New decision support tools to quantify and monitor the impact of herbivory of native wildlife on pastures & identify alternative control

mechanisms'. Funding from the project is provided under the 'Alternatives to the Use of 1080 Program'.

Our study aims to quantify and monitor the impact of herbivory ("browsing damage") by native marsupial species and game on native and introduced pastures supporting agricultural production (eg. dairy, beef, sheep) in Tasmania. Herbivory species include the Tasmanian Pademelon *Thylogale billardierii*, Bennett's Wallaby *Macropus rufogriseus*, Forester Kangaroo *Macropus giganteus*, Brushtail Possum *Trichosurus vulpecula*, and Feral Deer. The intention is to achieve the aims by using a combination of spatially-explicit models of herbivore population density and predictive pasture growth models coupled with quantitative field measurements of herbivore population density and in-situ estimates of herbivory and pasture production.

Our research is intended to allow the development of computer-based tools that can be used to quantify the pasture loss resulting from browsing by native herbivores at a range of spatial scales from paddock to sub-catchment and catchment, and to estimate the financial cost of pasture loss. The research is intended to allow the development and evaluation of alternative control mechanisms for native wildlife in pasture production systems.

## **2. Why the Study is Necessary**

Native species such as the Tasmanian Pademelon, Bennett's Wallaby and Brushtail possum may cause serious browsing damage on native and introduced pastures supporting agricultural production in Tasmania. These impacts may lead to a significant financial impost on farmers due to the loss of income resulting from pasture loss from both well established and newly established pastures used for dairy, beef and wool production. In a short term study of the effects of wildlife on pasture growth at Elliot in North West Tasmania, Donaghy and Tegg (2001) reported that pasture dry matter production was reduced by 21% under dryland and 34% under irrigation. Statham and Raynor (1995) using exclosure cages reported losses of between 17 and 100% of pasture production, and Statham (2000) demonstrated an increase in carrying capacity of over 35% on dryland pastures in the North East and South East of Tasmania when wallabies were excluded.

*However, no long term study has been undertaken in Tasmania to quantify the impacts of native wildlife browsing on pastures, although short term studies and anecdotal information indicate the impacts may be extreme.* Our study addresses this gap in knowledge and will provide scientific information to document the impacts of pasture production and economic impost on farmers.

### **3. Purpose of the Workshop held on 6 August 2008**

The workshop was designed to provide an update or briefing to the farming community and other stakeholders about our research project and some of the preliminary findings. The main aims of the briefing were to:

- Discuss the preliminary findings of some of the TIAR research on the impacts and economic costs of browsing by native wildlife
- Consider some general trends & the implications for property & catchment level management
- Outline the next steps in the project
- Seek advice, input and support from stakeholders for the next phase of work.

In addition, the opportunity was taken to present participants with a briefing on related work underway on King Island through the Alternatives to the Use of 1080 Program, and relevant recent activities pursued by the Game Management Unit of DPIW.

### **4. Main Research Questions discussed at the Workshop**

Our study addresses a large number of research questions. Of these, the focus of the workshop was on the following:

- How do the herbivores interact with the pastures?
- What is the impact of wildlife browsing on pastures?
- How does pasture loss vary in space and time?
- Does the location, size and shape of farms influence browsing?
- What are the economic costs of wildlife browsing impacts?

## **5. Major Findings of the Research**

### From North West and North East Tasmania

Native wildlife browsing can have a significant impact on pasture production, with the economic cost likely to be significant. Pasture percentage loss expressed as kg DM/ha due to wildlife browsing varied according to system (the extent of differential browsing impacts in irrigated versus dryland pastures is unclear at present), location, and wildlife abundance at all 12 sites. Pasture loss to wildlife browsing ranged from 12 to 100%, with an average of 65% over the 12 sites for the six month monitoring period.

‘Edge effects’ were evidence at all 12 of the main sites, with browsing generally higher near the bush line. The higher the abundance of wildlife, the greater the likelihood of browsing impacts away from the ‘edge’. Edge effects can influence both pasture production and pasture species composition, however the full nature and degree of preferential browsing is currently unclear.

Wildlife management may be one of the most important factors influencing production and profitability. It is important to have an adequate understanding of wildlife number and movements/impacts on a property. While wallaby proof fencing has been proven to be effective, we have yet to test the benefits and costs on both an environmental and economic level. Dr Mick Statham and Helen Statham of TIAR (Prospect) are currently undertaking a review of wallaby proof fencing for DPIW as part of the Alternatives to the Use of 1080 Program.

### From the Midlands of Tasmania

It is important to have a good understanding of the native/introduced wildlife on any property, since the diversity and number of species on a property can be high. Wildlife is capable of moving large distances to food sources, both within and across properties. On a daily basis wildlife can preferentially graze/browse within a paddock and across a property on different pasture species and at different times. In the current study, wildlife appears to be preferentially grazing cocksfoot and ryegrass rather than phalaris.

Observed wildlife grazing patterns, feeding together and apart, is consistent with previous observations. Interactions between sheep and wildlife vary, and while less due to fencing (since fences may exclude sheep but not wildlife), interactions are dependent upon the quality and availability of feed. Spelling paddocks appears unproductive unless wildlife is managed. The current level of wildlife culling, if intended to reduce pasture browsing pressure, appears ineffectual, but may have both direct and indirect environmental and animal welfare benefits.

### From King Island

In order to effectively manage wildlife populations on King Island it is first necessary to accurately estimate population size. Previous abundance estimates based on roadside spotlight monitoring have placed population sizes of Bennett's Wallaby (BW) on King Island at around 150,000 individuals.

New estimates, based on a greater sample sizes and contemporary methods have indicated that the population of pasture-foraging BW on King Island is between 440,000 and 540,000 individuals. In contrast, Tasmanian Pademelon were fewer in numbers (18,000 – 31,000) and have more restricted distribution as they prefer different roosting habitat to BW, and are possibly more susceptible to diseases such as Toxoplasmosis. Brushtail Possum numbers on King Island were again surprising, with an estimated pasture-foraging population between 55,000 and 93,000.

These new figures are based on a pasture area of 71,000 hectares on King Island, and do not take into account the animals foraging in nature reserves or vegetation on private property, which represent 35% of the island. Densities of macropods and possums foraging within vegetated areas of the island are suspected to be substantially lower than those in pasture.

## **6. Next Steps of the Research**

The research is on-going until 30 June 2010. During that period we will continue to update our stakeholders with the latest findings and the implications for wildlife and property management.

- The immediate next steps of the research include to:
- Continue monitoring of browsing impacts & wildlife surveys at existing properties
- Expand browsing impact assessments more widely across properties in Tasmania
- Commence pasture establishment trials in midlands
- Commence Phase 2 of King Island research
- Model browsing impacts at a farm and landscape scale
- Predict the economic impacts of browsing across regions
- Identify property management options for mitigating browsing impacts
- Link our research to Property Management Planning and other relevant activities within or associated with the Alternatives to the Use of 1080 Program.

**PROPERTY OWNERS WHO WOULD LIKE TO HAVE THEIR PROPERTIES INVOLVED IN THE RESEARCH ARE ENCOURAGED TO CONTACT THE RESEARCH TEAM.**

## **7. Acknowledgements**

We are grateful to the Tasmanian DPIW for supporting the research, the Program Advisory group, and particularly acknowledge the contributions of Dr John Dawson and Dr Greg Hocking.

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Jayne Mollema and Linda Redman provided invaluable assistance with organising the workshop.

## 8. Caveats

The views and interpretations expressed in these reports are those of the authors and should not be attributed to DPIW or any other organisations associated with the project. Because this report summarises work in progress, it should not be reproduced in part or whole without the written authorization of the lead author, Prof. Tony Norton.

Any comments and questions on the research briefing or the on-going research program will be gratefully received and should be directed to:

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