

# **A way forward** *for Tasmania's forests*

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## **TASMANIAN COMMUNITY FOREST AGREEMENT**

### **RESEARCH INTO ALTERNATIVES TO THE USE OF 1080**

## **STRATEGIC PLAN**

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Australian Government



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ALTERNATIVES TO THE USE OF 1080**

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**FOCUS AREAS FOR FUNDING**

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## Introduction

The “Research into Alternatives to the Use of 1080” Program is a component of the 2005 Tasmanian Community Forest Agreement (TCFA). The TCFA is a joint commitment of the Australian and Tasmanian Governments to enhanced protection of Tasmania’s forest environment and growth in the Tasmanian forest industry. One of these joint commitments by the Commonwealth and Tasmanian Governments is to reduce the use of 1080 on private land through the research and development of alternatives to 1080 for controlling browsing animals. Specifically, this program arises from two clauses within the TCFA which read –

*Clause 39. The Parties agree to work collaboratively on a joint program to accelerate research into, and implementation of, alternative strategies for browsing animal control on private forest and agricultural lands. The Commonwealth will invest \$4 million in a research, field testing and demonstration program to provide alternative options for private landholders, and work with the State in the light of these results to continue to reduce the usage of 1080 on private lands.*

*Clause 41. The Parties note that the wallaby management plans for Flinders and King Islands are currently being developed for public consultation prior to formal consideration by State and Commonwealth regulatory bodies in accordance with relevant legislation. The State will develop a pilot wallaby management plan for a forested area on the Tasmanian mainland as a priority as an alternative animal browsing control strategy.*

The objectives of the alternatives to the use of 1080 program are to develop practical, effective and financially viable alternatives to 1080 in controlling Tasmanian browsing animals on private forest and agricultural land through implementing a coordinated research, field testing and demonstration program. The overall aim is to ensure that alternative strategies or treatments are thoroughly assessed in order to provide effective alternatives for land managers and, through extensive demonstration trials, encourage the adoption of alternative approaches.

In moving towards achieving these objectives, an independent review of alternatives to 1080 was conducted by LandCare Research (New Zealand). This review was initiated with a two day workshop of key researchers and stakeholders from across Australia which was designed to clearly identify the issues facing stakeholders with regards to the use of 1080. Further extensive consultations were continued with key stakeholders including a one day workshop which involved around fifty individuals from forestry, agricultural and conservation groups to discuss the draft report prepared by LandCare Research.

The final report was submitted to the Federal Minister for Fisheries, Forestry and Conservation, Senator the Hon Eric Abetz and the Tasmanian Minister for Primary Industries and Water the Hon David Llewellyn MHA in June 2006. The report can be viewed at: [www.daff.gov.au/tcfa](http://www.daff.gov.au/tcfa) . The report assessed the full range of research and demonstration activities into alternative browse-damage management approaches based on economic feasibility, environmental sustainability and social acceptability. The report further identified a wide variety of potential alternatives and included a range of recommended research topics, from both “blue sky research” areas to on farm, extension based activities, for consideration by this program.

## ***Background to the Use of 1080 in Tasmania***

Significant reductions in the use of 1080 for the control of browsing damage has already occurred in Tasmania with the use of 1080 decreasing from 15.2kg in 1999-00 to 4.7kg in 2005-06. Tasmania currently uses 2.3% of the estimated 200kgs of 1080 used nationally.

The reduction in Tasmania has been driven by initiatives to promote the use of alternatives to 1080 through Property-based Game Management Plans by the farming sector, a large investment in the research and trials of alternatives by the forestry sector, and restricting the use of 1080 to a control method of last resort. This included the introduction of two game management officers in the Department of Primary Industries and Water who work directly with landowners to develop Game Management Plans. These officers are in part funded from a 1080 usage levy introduced in 2004.

In 2005, the Tasmanian Government further announced they would end the use of 1080 for browsing animal control in State forests in December of that year. This initiative was recognised as part of the TCFA and has led to a drop in 1080 usage over the last year. It has also driven Forestry Tasmania to invest significant effort in looking into alternative tools including trapping, fencing, chemical and acoustic repellents and the ongoing development of browsing management decision support tools.

The Tasmanian Government has also recently introduced a revised Code of Practice for the use of 1080 for Native Browsing Animal Management. The revised Code of Practice requires land managers to implement Game Management Plans on their properties, and requires that before a permit to use 1080 is issued that an independent authorised officer is satisfied that the following requirements have been met:

- that there is an unacceptable risk to a crop or pasture,
- that the use of 1080 does not pose an unacceptable risk to a population of non-target species and,
- that alternative control measures have been adequately considered and implemented as far as practicable and judged to be ineffective.

These initiatives have increased the implementation of Property-based Game Management Plans across the State and there are currently over 500 Property-based Game Management Plans covering 1.5 million ha of land. Due to their wide spread use and effectiveness in reducing the use of 1080 within Tasmania, Game Management Plans will be essential in providing a vehicle for the extension of viable alternatives to land managers and are seen as a critical component in achieving the overall objectives of this program.

There will be a strong emphasis within this program on the extension and demonstration of alternatives to 1080. This includes integration of browsing management knowledge into Property-based Game Management Plans, improvements in the extension tools supporting the Code of Practice for the Use of 1080 for Native Browsing Animal Management, and the use of the regional NRM framework as primary vehicles for the delivery of information of alternative management tools to landowners.

## Summary of Key Research Priorities

This section summarises the key research priorities for funding that have been identified by the “Research into Alternatives to the Use of 1080” Implementation Committee.

In selecting these key research areas, it is important to note that although there are a vast number of potential alternative research, demonstration and extension activities that could be funded, the key areas identified reflect the range of practical extension and research activities that are felt to offer the greatest potential to deliver cost effective, environmentally sound and financially viable alternatives to 1080 within the terms of reference of this program.

The Implementation Committee has been guided in this selection by the Independent Review report conducted by LandCare Research, consultation directly with stakeholders, researchers and other interested parties and on advice from this program’s Stakeholder Advisory Group and Technical Panel.

The Implementation Committee will continue to refine the allocation of funds to specific research, extension and demonstration projects over the life of the program. As set out in the Research into Alternatives to 1080 Operating Plan the Technical Panel and Stakeholder Advisory Group will continue to be consulted and updated on the progress of the program.

The five main focus areas that have been selected are summarised below while a detailed description and breakdown of specific projects under each focus area is contained in the final section of this report.

A core aspect of the program will be the focus on how existing, new and improved control techniques can be used together to improve browsing damage control, and how these can be integrated into and implemented through the existing property and game management planning frameworks in Tasmania.

### *1. The development of best practice guidelines and information products for fencing and barriers.*

Funding in this area will focus primarily on extension-based activities and the development of practical information products and guidelines for use by land managers affected by browsing damage.

Information gained from research into this area will be integrated into the Game Management framework and demonstrated to land managers, including cost benefit decision models. A key approach to this will be practical trials and demonstration of how fencing can be integrated into an overall game management strategy for private landowners, especially farmers.

It is expected that funding in this area will be focussed on extension and demonstration based activities.

### *2. Investigation and demonstration of the effectiveness of shooting and trapping as a control mechanism for land managers including behavioural research on key browsing animals.*

Significant behavioural research into target animals will be undertaken to improve the understanding of the effectiveness of lethal control techniques on browsing damage, including developing an understanding of animal immigration response after lethal control campaigns.

This area will include research and demonstration into various techniques to improve the effectiveness of shooting effort and investigation into integrated trapping, shooting and commercial harvesting strategies.

As per clause 41 of the TCFA, an output of this program will be the development of a wallaby Management Plan on mainland Tasmania by the Tasmanian Government.

It is expected that funding in this area will deliver a mix of research, demonstration and extension based activities.

### *3. Practical extension and research into increasing the effectiveness of bioacoustic, chemical, nursery and genetic browsing deterrents.*

The focus will be on evaluating chemical repellents, in conjunction with other control techniques and the potential of soil based tablets that decrease seedling palatability in lowering browsing impact with a focus on short term control and integration of these findings into the property and game management frameworks in Tasmania. The investigation of genetic or other tree breeding characteristics that may decrease palatability for commercial tree species will also be investigated. Some funds may be also be used on further research into bioacoustic controls.

Funding in this area will be aimed at a mix of research and demonstration projects.

#### *4. Research into species specific delivery mechanisms for fertility control and existing alternative toxins to manage browsing damage.*

This research will be focused on providing information on developing targeted mechanisms to deliver chemical fertility agents to the major browsing animal species whilst minimising non-target species impacts. This work is a necessary precursor to any future introduction of fertility control agents in Tasmania.

Other alternative toxins currently used throughout the world in controlling browsing damage will be investigated to assess their applicability, effectiveness and compliance with Animal Welfare standards. If any potential alternative toxins are identified, further examination of species specific delivery mechanisms may be funded.

Funding in this area will be primarily focussed on research.

#### *5. Integration of alternative control mechanisms within existing land management tools including the development of improved tools to allow landowners to monitor and measure browsing damage impacts.*

This focus area will include research into the understanding of how landowners currently manage and respond to browsing impacts, providing land managers with an understanding of how population densities relate to browsing damage and increasing our understanding of how species mix and composition can affect browsing damage and therefore the optimal way of carrying out a property based or regional population control strategy. The overall aim from this area will be the integration of the knowledge gained from this project into Game Management Planning and the NRM framework, including the development of decision support, and economic analysis tools.

Funding in this area will be primarily focussed on the development and extension of decision support tools for use by land managers. There will be scope for the engagement of extension officers to assist in the communication of research results contained within the broader program outcomes.

## Specific Research Areas

### *1. The development of best practice guidelines and information products for fencing and barriers.*

At an enterprise level, the primary management goal is to prevent, or at least reduce, browsing damage, particularly at key periods of the pasture, crops or trees life cycle.

The Independent Reviewers identified a number of alternatives that can be used to prevent browsing animals from damaging pastures, crops and trees by preventing access to the crops including the use of fencing and tree guards. Although many of these techniques have been used for some time, there is often little quantitative information on their effectiveness (both as a deterrent and their financial cost), the potential for the intergration of various techniques and the most effective areas or situations in which these tools could be used. The focus of funding for barrier controls will primarily be aimed at extension and demonstration and to strengthening the use of these control tools as a browsing control strategy within Game Management Plans. This will include addressing key operational and cost effectiveness issues.

The program will not be providing grants for fencing on farms, fencing will only be funded as part of a specific research or extension project.

#### Key Projects

##### **a. Fencing**

There appears to be a growing number of landowners who are using game proof fencing and finding it to be part of an effective browsing management strategy. These landowners provide a potential body of knowledge on the benefits and costs of fencing.

Despite its high initial costs, ongoing maintenance costs and varying levels of permeability, fencing is recognised by some as a primary alternative management tool to 1080 for management of browsing damage in the agricultural sector. However it is clearly not a solution by itself or for all situations and the economic costs and benefits need to be demonstrated to landowners, including how to best integrate fencing with other tools as part of an overall management strategy.

Focus areas will include.

- How to best integrate fencing into an overall browsing management strategy, how to best erect wallaby proof fence lines on different terrains such as through gullies, roads and creeks, and how to most effectively monitor and maintain a fenceline over time including dealing with seasonal changes in browsing pressure, breaches by wallabies and wombats.
- The development of a knowledge base / case studies /extension toolkit as part of the Game Management Planning framework to allow farmers to identify the costs and benefits of wallaby fencing, including quantifying the cost effectiveness of fencing in different environments.
- Research into impacts of fencing on non target species, and as part of the overall

information package, development of information on how to overcome these issues, or identify where game proof fencing may not be appropriate due to impacts on non-target species.

This research reflects aspects of research areas 3a, 3c (at least as far as setting management objectives and monitoring tools), 3d and 3e from the Independent Reviewer's report.

## **b. Tree guards**

Tree guard technology primarily applies to the forestry stakeholders, but also has some relevance for tree planting on farmland. However, tree guards have had mixed results and there have been repeated and catastrophic failures of tree guards when the tree emerges from the protection of the tree guard. Although significant research has already gone into this area, the primary knowledge gap appears to be that there are currently no commercially available tree guards that appear to be cost effective in the Tasmanian environment.

Research focus will be aimed at:

- Research into determining effective tree guard designs eg. target specific tree guards for protecting high pressure hotspot areas.

This research area is in line with the independent reviewer's research area 3e.

## *2. Investigation and demonstration of the effectiveness of shooting and trapping as a control mechanism for land managers including behavioural research on key browsing animals.*

The use of shooting (including commercial harvesting) and trapping are generally used to lower local population numbers in areas of high browsing pressure.

The use of lethal control methods, primarily shooting, have been the primary control method used by landowners for crop protection control over the last two decades, and with a few exceptions, a demonstrated significant shooting effort is a requirement under the Code of Practice for the use of 1080 for Native Browsing Animal Management prior to 1080 being used for crop protection in Tasmania.

Commercial harvesting, contract shooting, recreational shooting, crop protection shooting and trapping animals are often done by the same groups of people and often with overlapping purpose. The integration of these techniques provides the greatest opportunity for an immediate, cost-effective reduction of browsing pressure for landowners before resorting to 1080.

## Key Projects

### **a. Trapping**

Trapping may involve lethal (where the trapped animal is euthanized) and non lethal methods (where the animal is relocated). Possum trapping is a well established technique for commercial harvesting and for the protection of some pine plantations.

Use of trapping is generally low due to the perceived higher costs (particularly capital costs) and effort required in comparison to other alternatives. However, trapping advocates point out that trapping is a much more effective control per captured animal, and that capital costs can be overcome in a similar way to contract shooting *ie.* leasing or the use of traps and trapping contractors.

Since the phase out of 1080 on State forests, Forestry Tasmania is increasingly using trapping as their primary technique in controlling browsing animal population. There is also continual development and improvement of trapping designs both by Forestry Tasmania and private developers which show evidence of increased effectiveness.

It should be noted that trapping has been mainly focussed at smaller browsing animals (possums and pademelons) although some newer trap design may provide options for trapping larger browsers such as the Bennetts wallaby.

Focus areas will include:

- Assessing the relative cost effectiveness of trapping for pademelons, wallabies and possums in both forestry and farming situations with a focus on properties considering the use of 1080 under Game Management Plans. If this proves effective, research will be expanded to include ways trapping can be integrated alongside other alternatives such as fencing and shooting to further increase the overall effectiveness.
- Research and trials to examine if existing traps can be modified to effectively and humanely trap Bennetts Wallabies.

These research areas are in line with the Independent Reviewer's recommendations 8a to 8f.

### **b. Shooting and commercial harvesting**

Shooting is currently the most commonly used management technique for controlling browsing damage and plays an integral role in controlling browsing damage, particularly in high browsing areas.

However, the Independent Review report noted that there is actually very little scientific data about the effectiveness of shooting (recreational, commercial and contract shooting), and whether it is actually a cost effective control strategy.

There is also further scope for the investigation of techniques that could increase the effectiveness of shooting e.g. feed dumps, infra-red spotlights or night scopes. The output of this research should also increase the viability of commercial harvesting activities if they can decrease the cost per animal taken.

Industry proponents argue that there are large markets for the major browsing animal species (possums, pademelons and Bennetts wallabies) both nationally and internationally and that commercial harvesting will assist in increasing the effectiveness of alternative control mechanisms by making shooting more cost effective and by reducing the total population browsing animals.

The Tasmanian Government will progress the development of a wallaby Management Plan on mainland Tasmania to allow for the commercial export of wildlife products as required under the *Environment Protection and Biodiversity Conservation Act 1999*. The Management Plan underpins the granting of export permits for native species and will assist in the potential commercialisation of the key target species.

Focus areas will include:

- Quantify the relative efficiency and cost effectiveness of shooting and trapping for mitigating browse damage in forestry and agriculture by reducing densities of critical browsers to target levels over the short and medium term.
- Determining the increased effectiveness of using tool such as night scopes, red-filtered spotlighting and baiting sites over shooting without these aids.
- Development of a wallaby Management Plan on mainland Tasmania

These research areas are in line with the Independent Reviewers research topics 9a, 9b and 9c.

### *3. Practical extension and research into increasing the effectiveness of bioacoustic, chemical, nursery and genetic browsing deterrents.*

#### **a. Chemical repellents;**

Past research and field trials with chemical repellents suggests that they are most likely to be effective where there is low browsing pressure and an alternative food source nearby. However, in areas of high browsing damage, where deterrents are most needed, they have generally been found to be ineffective.

Despite this shortcoming, chemical repellents may provide a useful short term tool in situations where other alternatives cannot be used due to the proximity of residential areas or where roads pass through exclusion fencing. The forestry industry has advocated for research into the use of soil based repellents that decrease seedling palatability. Chemical repellents when used in conjunction with other management tools may further increase their overall effectiveness and provide a useful management option for landholders who prefer non lethal control methods.

Focus areas will include:

- Determining if repellents do actually work, and if so quantifying the effects of animal density and alternative food availability on the effectiveness of these repellent.
- Evaluating repellents in combination with techniques such as initial culling or maintenance of protective vegetation cover in plantations.
- Investigation of the potential effectiveness of using slow release pellets for plantation forestry in preventing browsing damage.
- Improvements in plantation nursery and breeding practices that may decrease the browsing damage in plantations.

These research areas are in line with Landcare Research's research topics 1a, 1b, 1c and 1e.

### **b. Acoustic repellents**

There is very little scientific support for the effectiveness of acoustic repellents for land based animals due to the proven habituation of animals to artificial sounds over time. Acoustic repellents appear to be more effective for birds, which are much more able to move to alternative food sources. Land managers have generally expressed little confidence in their effectiveness against terrestrial animals. Similarly to chemical repellents, the most likely adoption of acoustic repellents is as a supplemental control in specific forestry applications or as combination control for high value agriculture crops where residential or other situations restrict more effective alternatives. Further, due to the fact that acoustic repellents are non-lethal behavioural changing tools, they may provide a useful management option for landholders who prefer non-lethal techniques. Forestry Tasmania is currently funding some research in foot thumping techniques, which is the only acoustic repellent research showing promise at this time.

Focus area may include;

- Follow on research from the Forestry Tasmania research into foot thumping technologies if it identifies promising leads.

This research area is in line with the Independent Reviewer's research area 2a.

#### *4. Research into species specific delivery mechanisms for fertility control and existing alternative toxins to manage browsing damage.*

The use of fertility control (specifically chemical sterilants) hold out the promise of effective, non-lethal, long term control mechanisms for lowering local and regional population levels so that other control mechanisms are more effective in controlling browsing damage.

Existing alternative toxins may offer a more humane and efficient means of controlling browsing damage than 1080. Some toxins identified by the independent review have shown some benefits over 1080 with respect to reduced secondary poisoning risk and humaneness. A more detailed examination of these toxins will take place and if results indicate that they have potential benefits over 1080, the program may fund further testing of these products.

Chemical sterilants and alternative toxins may offer viable alternatives for managing browsing animal damage. Following initial scoping, if either alternative shows potential, the next step will be to investigate target specific delivery mechanisms for the species in question. If effective delivery mechanisms can be developed they can then be integrated into other research programs and management strategies.

Any research into alternative toxins will be consistent with advice from the Australian Pesticides and Veterinary Medicines Authority and both Governments will support any decision by the independent regulator.

Focus areas:

- Investigate the potential effectiveness of fertility control mechanisms, particularly chemical sterilants, to control populations of key target species.
- Investigate the potential effectiveness, humaneness, non-target risk and cost of alternative toxins against key Tasmanian browsing species.
- Development of target specific delivery systems which would include behavioural studies.

This research area is in line with Landcare Research's research area 4c and 7.

#### *5. Integration of alternative control mechanisms within existing land management tools including the development of improved techniques to more accurately monitor and measure browsing damage impacts.*

Effective wildlife management must focus on the strategic management framework within which the individual control techniques will be used. Landholders can not choose which browsing control measures to use without first identifying the browsing management objectives that they wish to achieve.

Landowners require an understanding of the animal abundance on and around their property, and specifically what browsing impact this is having. Research will be conducted to investigate the relationships between overall population abundance and browsing damage dynamics to ensure that the impact of any management controls on the ecology of the target species can be understood and monitored.

An improved understanding of animal populations will greatly assist landowners to predict potential browse damage. This will allow the landowner to implement the most effective combination of browsing animal control to mitigate against damage before crop establishment.

Research will also investigate the effectiveness of different management strategies to increase the understanding of the overall browsing damage occurring on properties and to ensure that perverse results do not occur. For example, research conducted at the CRC for Sustainable Production Forestry indicated that a shift in the population ratio between pademelons and Bennetts wallabies may affect the extent, severity and spatial distribution of damage to seedlings.

As Property-based game management planning provides an existing mechanism for the implementation of this program, and a readily available body of knowledge of the drivers, strategies and use of browsing management controls around the State. It is expected that properties covered by Game Management Plans will be the focus of research, demonstration and extension activities.

Research will also be directed towards quantifying the baseline costs, benefits and effectiveness of 1080 and its alternatives so that landowners considering how to manage native animal browsing can make informed decision on which alternatives to use. The extension and communication of this research to land managers will be an essential component of work in this area.

Focus areas will include:

- Investigation of the drivers and triggers that cause landowners to use or not use 1080, including case studies on how different landowners monitor and react to high levels of browsing damage.
- Review of existing information on game management planning to identify how existing information can be better utilised in game management planning.
- Development of a cost benefit effectiveness model for use at a property level to evaluate different alternatives and combinations of alternatives. This will also involve the quantification of the costs, benefits and effectiveness of current 1080 use in different circumstances as a baseline comparison.
- Quantify the relationship between density and damage of the three species, particularly for pasture areas, but also building off existing knowledge on plantations.
- Research to further understand how target animals browse and factors that affect browsing.
- Integration of knowledge into Property based Game Management Plans, whole farm planning and the training and protocols supporting the Code of Practice for 1080 usage.

This research area is in line with the Independent Reviewer's research recommendations 11c, 11e, 11g to 11l, 11n and 11p to 11r.

## **Areas considered out of scope**

This program aims to reduce the usage of 1080 on private land in Tasmania through the identification of commercially viable, humane alternatives that landowners can adopt. The projects selected for funding under this program fall within the terms of reference identified in the Alternatives to the Use of 1080 Operating Plan.

There are a number of potential focus areas that have not been considered further because they either fell outside the scope of the Alternatives to 1080 program or there were other, more appropriate funding opportunities. Areas not considered included:

- The introduction and ongoing funding of training as part of gaining a shooting licence;
- Legislative changes which may help to ensure the long term sustainability of shooting (eg. lowering of shooting age, establishment and ongoing funding for training to address animal welfare concerns) and;
- Specific industry development activities as other funding opportunities exist for these outside of this program.