The Links between Cattle Grazing and Fuel Reduction in the Grazing Zones of the High Country

caring since 1834 ™
THE MOUNTAIN CATTLEMEN'S ASSOCIATION OF VICTORIA

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Ever since European settlement, the Mountain Cattlemen who ran their cattle in the Victorian High Country have been strong advocates of grazing combined with cool burning to achieve fuel reduction as one vital management tool to reduce the impact of wildfire and encourage diversity and sustainability of native flora and fauna.

"The views of people with vast generational experience must be given due recognition."

MCAV submission to the 2009 Bushfire Royal Commission

The central theme of this paper is the poor management of Victoria's public land and the undue influence academic and scientific activism is having on government decision makers. It is worth noting that the management of the land is different from the management of visitors where most of the Parks Victoria budget appears to be allocated.

"This research is the only integrated effort to understand the impacts of land management policies, climate and fire on water yield from the high country," Professor Mark Adams quoted on the Bushfire CRC website commenting on the High Fire project. This project and several others with findings contrary to the views of the group of scientists identified in this paper has been virtually ignored by them.

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THE LINKS BETWEEN CATTLE GRAZING AND FUEL REDUCTION IN THE GRAZING ZONES OF THE HIGH COUNTRY

The well documented devastating environmental outcomes for the high country as a result of the 2003 Alpine fires and the 2007 Great Divide fires "will take decades, even centuries perhaps" before conservation values are restored.

Never in 170 years of continuous alpine grazing has low intensity grazing caused the level of negative i m p a c t to conservation values as that caused by poor public land management witnessed since the creation of the Alpine National Park.

"Fire management must be the cornerstone of public land management" (Stretton, 1939)[1]
In Victoria, the most fire-prone state in the world. Low intensity, controlled cattle grazing is one of the management tools available to public land managers.

Arbitrary exclusion of an important fire management tool that comes at no cost to the fire prevention budget is extraordinary folly when "fire management is the first priority"[2] of public land managers in Victoria.

Early Beneficial Management of the Environment

When the cattlemen first came to the High Plains after 1834, they followed on from the ancient fire practices of the Aborigines and lit cool fires in the autumn after mustering.

It is widely accepted that Aborigines lit regular fires when they left the High Country after the summer moth season. These fires, plus those created naturally from lightning strikes, meant the land experienced continual fires, but at low intensity, because the fuel was burned regularly. This meant that even on the sensitive snow grass plains and in the Mountain and Alpine Ash, where hot fires cause extreme damage, deleterious environmental impact rarely occurred.

History under fire[3] *- Extract from The Age opinion, November 4, 2012*

By Professor Bill Gammage (historian and author "The Greatest Estate on Earth, How Aborigines Made Australia")

> *THERE is a crucial difference in how Australians see landscape fire. Non-Aborigines see a threat, destroying people and property. Aborigines know an ally, a friend in the bush, as in the fireplace. One group makes fire docile; the other cannot imagine doing so.*
>
> *The difference means that the character of landscape fire changed after 1788: from being tame,*

[1] (ABC Radio 774, 2009) Comment by Judge Leonard Stretton at the 1939 Royal Commission

[2] Personal communication from Andrew Graystone, Parks Victoria Manager, Fire and Emergency Services November 17th 2009 to Max Rheese Victorian Lands Alliance

[3] The Age, November 4, 2012. *History under Fire*

it became wild. A central Australian elder said that "before the arrival of white people, Anangu did not know about really large bushfires, but now they do - the country had been properly looked after and it was not possible for such things as large-scale bushfires to occur".

Compare this with Black Saturday, Black Thursday, Ash Wednesday, and any other black day.

In 1788, fire was almost infinitely varied: big, little, hot, cool, patch burns, sheet burns, changes in extent, frequency, timing and thus intensity according to season, purpose and circumstance.

Across the variety of 1788 fire and no fire, one factor was constant: fire was controlled. As Ludwig Leichhardt put it in 1845, it was part of the "systematic management" of country. It was part of Law, universally understood and respected. Law united Australia philosophically, fire united it ecologically. The genius of 1788 fire was that no matter what the plant community, people everywhere used it successfully to make country useful, abundant and beautiful.

Note that "beautiful". After "bush", the most common word newcomers used to describe the land was "park", a word marking how Europe's gentry made land useful and beautiful. "The country looked very pleasant and fertile," Sydney Parkinson wrote in 1770, "and the trees, quite free from underwood, appeared like plantations in a gentleman's park". Hundreds of such remarks are on record, from every terrain and plant community. Fire worked its magic across Australia.

That the Australian landscape was originally parklike is confirmed by reports from the early explorers and settlers, writing, painting then later photographing the Australian bush. It is recorded in the ship's logs and officer's journals that they also observed fires were alight throughout the country, particularly in autumn but also in other seasons.

Extract from William Hovell's Journal - Lake George to Port Phillip 1824.

"The plain I before spoke of I think is of some extent but the grass has not been burned and appears brown and dry. In every direction the grass is on fire, and by what we can see by their signals one to the other, by their different fires, the trees which have been barked, and occasionally coming across their tracks, I think they (the blacks) must be very numerous."
(Hovell)

Over the early years the cattlemen continued with the Aboriginal fire regimes and kept the grass trimmed down on their selections and very importantly on their runs. Grazing cattle did this in the higher altitudes and the cattlemen concentrated their burning on the lower scrubbier sections of their runs. The grazed grass lands therefore remained short and green throughout the summer and the cool fires reduced fuel loads and kept the land as open as they had found it left by the Aborigines. This in turn reduced the intensity of inevitable wildfires which cattlemen knew had the potential to threaten the grasslands with hot damaging fire events if fuel loads were not well controlled.

Howitt (1891) observed the changes that occurred after European settlement of Gippsland: *The influence of settlement upon forests has not been confined to lands devoted to agriculture. From the day the first pioneers drove their herds down the mountains any cause which would lessen the force of annual fires would alter the balance of nature, and thus produce new and unexpected results. The annual crop of grass was burnt off by aborigines, this tended to keep forests open and prevent open country from being overgrown. Sheep and cattle lessened the*

annual crop, and settlers (protected) their improvements. The valley of the Snowy River and the mountains were in many parts clothed with grass and but a few large scattered trees. After some years of occupation whole tracts of country became overgrown by forest and arborescent shrubs. The Black Thursday fires of 1851 followed from and reinforced these changes, "open forest" that had been occupied by aboriginal people became "dense scrub", and red gum woodlands declined and died. (Howitt 1891) (Jurskis, 2006)

About 1920 'patch burning' was banned by the newly formed Forests Commission. This was ignored for some years by the cattlemen who knew the directive was not sound management. Eventually stronger application of the "no fires" rule meant cattlemen gradually ceased the practice. Many abandoned their runs as the land "scrubbed up" and became impractical, overgrown and dangerous.

Those who lived and worked in the High Country have always known that under 'modern' management (which began arguably in 1920), some areas became unsuited to even cool burning because they had increasing fuel loads. Hot fires in those areas would destroy the environment. In the absence of the Aborigines, the cattlemen knew the answer was grazing.

The areas not particularly suited to cool burning under modern management include most of the higher snow grass plains and the Mountain and Alpine Ash country. Where those areas were grazed however, they enjoyed reduced fuel loads in the event of a wildfire. As outlined earlier, before settlement, these higher sensitive areas were burnt regularly, but mostly only with cool fires.

Now that the lower areas do not have regular cool burns, (as the Aborigines carried out, or were done by nature) the higher areas need intervention management of fuel. It is needed because hot wild fire from the lower altitudes in the middle of summer will carry across the upper level grasslands that are not grazed, with disastrous environmental results.

After 1920, the build up of fuel began, especially in the non grazed areas of the High Country. The lack of patchwork burning and cattle grazing meant that vegetation grew unchecked and gradually choked the forests with scrubby understory which shaded out the grasses and changed the viable landscape and environment forever. Wildfires, which still occurred regularly, increased in intensity, causing increased environmental damage because they were too hot.

Grazing and Fuel Reduction

Some thousands of years ago, the mega fauna became extinct in Australia so altering the fauna/flora/fire balance. We are unable to return mega fauna but some eminent people in this field have raised the possibility that cattle could be a good surrogate.

Grassland that is not grazed by cattle quickly becomes long and rank. The grass forms mats of dead material which is highly inflammable. It has been observed that on many of the ungrazed parts of the High Plains, grass mats encourage erosion when there is rain which makes deep runnels under the dead grass canopy while it is draining away.

It is instructive that in late summer, on the forest roadsides, where the grass is short and green,

kangaroos, wallabies and wombats can be found; chancing their life against fast driven vehicles, rather than further back on the unpalatable grassland where it is safer for them.

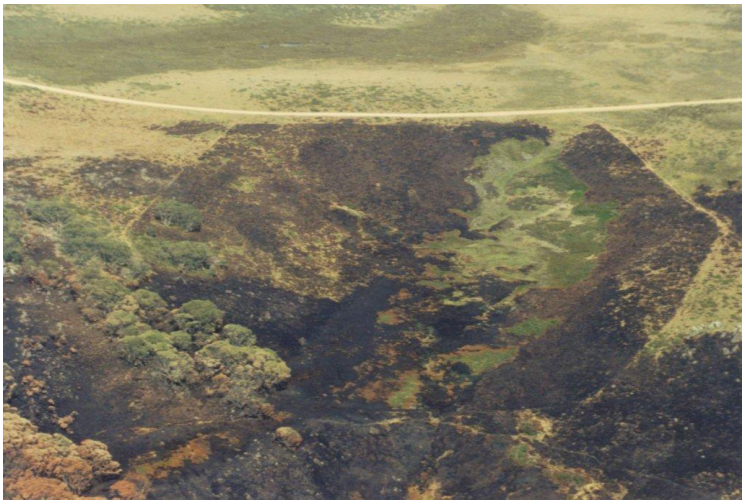
Caption: This photo was taken in Kosciusko national park where grazing had been prevented for more than 20 years at that time. The snow grass is long and matted and rotting. A wildfire would cause extreme environmental damage to the land. Grass mats of dead material are avoided by grazing animals because they know all the protein has leeched away.

Caption: The photos above were taken of Watch Bed Creek in the North Bogongs after the 2003 Alpine fires. The North Bogongs were closed to grazing in the early 1990s. Note the utter devastation of the area. Experienced cattlemen say that if the area had still been grazed, the effect on Watch Bed Creek would have been minimal.

Caption: Nunniong Plateau - Photo Commins family. The fenced plot (ungrazed) demonstrates that grazing reduces fuel loads. The visual evidence is indisputable. These plots are very important and different to the Bogong High Plains plots. The Nunniong plots are fenced with netting thus preventing grazing by rabbits and hares. The various trial plots on the Bogongs over the years have only been fenced with wire to exclude cattle but not other grazing animals. Therefore for many years, the MCAV has questioned the veracity of the Bogong trial work.

Areas in the High Country that were grazed by cattle over summers until 2005 remained short and green. It is documented and has been photographed, that Alpine wildfires in 2003, 2006 and 2009 were reduced in their intensity or actually went out when they reached grazed areas. Some scientists with a personal interest argued against these actual facts after the 2003 fires to achieve their aim which was to remove all grazing.

Caption: South Bogong High Plains - these 2 photos clearly demonstrate how the 2003 alpine fires went out when the fire reached the grazed Alpine grassland. (Simon Turner photo)



Caption: Alpine fires 2003. South Bogong - This photo clearly demonstrates how the fire only burned in the lower forest and in the fenced non grazed grassy area. The fenced plot which had excluded cattle for ten years is burned, the fire clearly stopped at the fence and the grazed area is not burned. (Simon Turner photo)

Caption: Cattle grazing on the right, no grazing on the left. Raspberry Hill, Bogong High Plains 2003

Caption: White Timber Fire – Dargo High Plains 2009. Observers at the time reported that the fire smouldered and went out when it reached the grazed areas of that forest run. (Photo Treasure family)

Now each summer, the areas of the grassy High Plains closed to cattle since 2005 have long dry matted grass which is building up year by year and will explode in an intense environmentally damaging fire. This situation has been exacerbated where recent fires have burnt, because there has been increased grass growth due to the reduction in the canopy.

Wildfire in this situation has an intensity that destroys certain trees especially the Mountain and Alpine Ash. These trees do not display epicormic growth and critically cannot produce seed stocks until maturity, when the re-growth trees are at least thirty years old.

After a high intensity wildfire, the crowns of the trees are destroyed and ash re-growth then becomes mixed with grass. Any subsequent grass fire will destroy the re-growth and that species of ash will be removed and lost, perhaps forever.

These types of hot fires also threaten sphagnum moss beds which formerly had the protection of short green grass, a result of regular grazing and before grazing, regular cool fires lit by the

Aborigines and regular lightning strikes. The Bogong High Plains mountain cattlemen observed and told subsequent inquiries how grazed snow grass on the South Bogongs protected the bogs from fire in 2003. This direct observational evidence was ignored.

Caption: This sphagnum moss bed is situated in the ungrazed North Bogongs (VIC) and was burned in the 2003 Alpine fires. It reverted to grass land as the right hand picture demonstrates. Mountain cattlemen point out that no bogs were burned in the grazed South Bogongs in the 2003 fires. (Photos Simon Turner)

The MCAV has never claimed that grazing *prevents* wildfire or reduces the incidence of fire. It rightly claims that grazing reduces fuel loads thus reducing the intensity of wildfire thus protecting the environment especially in the higher, hot fire sensitive zones.

Some concerned and independent scientists have commented that there appeared to be deliberate misquoting of the cattlemen's point of view by other scientific people during the Esplin enquiry into the 2003 Alpine fires.

The 2003 Bushfires

The 2003 fires were one of the Alpine areas largest environmental disasters since European settlement.

Jurkis states: *A study following the 2003 alpine fires in Victoria (Williams et al. 2006) purported to show that grazing had not reduced fire intensities or fire occurrence compared with ungrazed areas. However fire intensities were estimated only in heath where limited grazing has little impact on vegetation (Williams et al. 2006), whilst fire occurrence in grassland was generally low (15 out of 113 points). In any case, ignition depends on the presence of fuel not the quantity. Thus the design of the study did not allow a robust test of the hypothesis, and the conclusion that grazing to reduce fuel was not justified on scientific grounds (Williams et al. 2006) is questionable.*
Recent modelling (sic) within the Bushfires CRC has supported the well known facts that wildfire control is easier and safer where fuels have been reduced by prescribed burning. Obviously the area and location of burning are important, but burning a small proportion of the landscape can have a significant impact on wildfire control (King et al. 2007). There is a wealth of evidence that burning and/or grazing can prevent accumulation of fuels, and affect their arrangement and their seasonal flammability. It is a well established principle of physical science that these factors affect fire behaviour and intensity. The moderating effects of fuel reduction on fire behaviour

have been repeatedly demonstrated (e.g. Underwood et al 1985, McCaw et al. 2003,) therefore it is unproductive to continue to divert resources to research and modelling that tests these established facts. (Jurskis,2006)

Reducing the intensity of wildfire protects sensitive land, vegetation and native animals from destruction. The Aborigines knew this and we need to revert to their practices.

The Positive Scientific Views on the Value of Grazing to Fire Management

There are several eminent people with scientific backgrounds who have done extensive recent work and who have raised the possibility of utilizing grazing to reduce fuel loads in the High Country; these include Prof. Mark Adams, David Packham OAM and Prof. Peter Attiwill. It is noticeable that previous scientific work in this area undertaken by Harm Van Rees, Roger Oxley and Alan Wilson is never quoted by the opponents to alpine grazing.

Ongoing research by Prof Mark Adams, Dean of Agriculture Sydney University, suggests that the model of management to provide the best fuel reduction and water yield strategies for the High Country may be a combination of low intensity burning and controlled cattle grazing.

The Negative Scientific Views

There has been a high degree of scientific activism with the debate on Alpine grazing and fuel reduction.

A small number of scientists submitted negative views to the Victorian Parliamentary Inquiry, the Alpine Grazing taskforce and many other forums about the value of grazing. This small group of scientists constantly re-quote their previous work, and have built a collaborative body of anti-grazing research, which has been used to justify the removal of grazing in the Alpine National Park. This arguably coloured interpretation of the evidence has become the dominant view relied upon by some environment groups and politicians. Some of this work has been described by other scientists as “less than rigorous”

The MCAV urges independent readers to be mindful that there are several scientists and so called environmentalists, who have built their careers by criticizing grazing on public land and whose opinion and evidence may be tainted by dogmas and personal views.

That real possibility was raised by the independent panel established in 2000 by the Department of Natural Resources and Environment.

After hearing evidence from Dr Dick Williams, a writer of scientific papers and strident opponent of Alpine Grazing, the panel found that it needed to be careful of his evidence.

“Though we have accepted parts of Dr Williams evidence as is set out above and further we accept Dr Williams has impressive qualifications and has written widely in the field, nevertheless the panel does take a guarded view of his evidence bearing in mind his expressed opinion that the presence of domestic livestock is inconsistent with the basic objectives of National Park Management’ (T.58)

(Dept.N.R.E. *independent panel, Mr. Tony Graham QC, Mr. Neville Walsh, Mr. Jim McColl 2000)*

"A Book for Maisie" D J Carr 2005

Respected ecologist and botanist, Maisie Carr spent many years researching the vegetation on the Bogong High Plains. She died in 1988.

A section in the book records Maisie's reluctance to endorse the scientific procedures and findings promoted by a young Dick Williams at that time. It could be argued that a pattern was emerging even then.

(page 214) Letter from Ken Rowe, Acting Director, Department of Conservation, Forests and Lands. The Arthur Rylah Institute for Environmental Research. 31 May 1985

> Dear Maisie,
>
> The enclosed report by Dick Williams is for your information. I would be happy to receive any comments you may wish to make but dont feel obliged to if you dont want to.
>
> I havent had time to read it thoroughly yet but it appears on a quick scan to be reinforcing your earlier conclusions.
>
> I was sorry to hear that your health was not good. I hope things are improving for you.
>
> Kindest regards, Ken

(Page 215.) Maisie's draft notes to Ken Rowe, no date .(Circa 1985?)

> *Dear Ken,*
>
> *I have delayed writing to you because I have been dithering about what to say. I don't think that Williams has explained with any clarity:*
>
> *a) How the transects are to be identified in the future or*
> *b) Whether they are to be permanent or*
> *c) Whether the computer analysis allows any changes in species composition to be accurately located"*
> *d) Another query is will the CSIRO computer programs be available in say 10. 20, 50 years time?*
>
> *To continue, in my opinion Williams has been very naive to throw his lot in thoroughly with the Kosciusko lot. He should be using his eyes and thinking for himself. His discussions of what is alpine and sub-alpine and what is responsible for the tree line are fatuous. Lip service is paid to anyone anywhere in the world who has anything to say on these matters….."*

(Page 215)

> *"The author (Williams) has been assiduous in collecting references to alpine and sub alpine vegetation but has not been sufficiently critical of them. I would have liked to see only important references mentioned in the main text but the whole accompanied by a literature review. This would have cleared the main text of a jungle of references which interrupt the free flow of the prose (I mention a critical review because I know only too well that two of the papers he cites may look alright, but I suspect that inadequate data collection methods may be masked by statistical analysis.* ***I know the authors only too well."****(our emphasis)*

(Page 216)

> *"… I wish more independence of thought had been shown. (by Williams) The BHP presents problems of its own which differ in detail from Kosciusko and overseas. I have not seen Van Rees study on cattle grazing "*

Maisie Carr was well regarded by the cattlemen and they gave her respect, cooperation and assistance with her work.

Dick Williams, on the other hand, was regarded with deep suspicion by the cattlemen. After he commenced work on the Bogong High Plains where Maisie had been established for some years, the cattlemen clashed with him regularly at field days when his theories and claims were seen as highly inaccurate at best.

Dr William's has conducted a lifelong personal campaign against Alpine grazing in Victoria.

His assertion is the presence of domestic livestock is inconsistent with the basic objectives of national park management. The fact is ignored that that Parks Victoria license grazing by sheep in the Terrick Terrick National Park and controlled cattle grazing on Snake Island, part of Nooramunga Marine and Coastal Park, for ecological and fire benefits. Dr Williams conveniently ignores the fact that grazing is deliberately used a vital tool for management of Alpine country (including National Parks) in many countries in the world.

Dr Williams presently is a member of the National Parks Environment and Scientific Advisory panel along with several other people who have been linked to earlier recommendations and Government decisions against grazing. Some of this panel includes scientists who describe themselves as a collaborative group of scientists in a CSIRO fact sheet and who work together with other likeminded scientists. The State Government chose to take advice from scientists connected to this group prior to it deciding to remove grazing in the Alpine National Park in 2005. It ignored advice from any scientist with a contrary view.

The Science

There have been many claims by a section of the scientific community that "all the science has been done in the Alpine National Park and it has been proven that grazing does not reduce fuel or the intensity of bushfires".

It is a fact that there is little science available on the exact subject of grazing and fuel reduction

The little amount of scientific work that has been done, mostly on small areas in the Bogong High Plains, has been extrapolated out by opponents of grazing as applying to all the Alpine National Park. This approach does not stand scrutiny and is full of discrepancies. We note that Professor Mark Adams (one of Australia's most prominent scientists in the fields of fire and ecology) with others undertook a study as part of the Bushfire Cooperative Research Centre's High Fire research program in which he reviewed the scientific literature concerning the interaction between grazing and fire in the Australian Alps. He concluded that "***there remains insufficient information to provide any definitive scientific statement because all previous studies were inadequately designed, including lack of appropriate baseline data, spatial scale and replication"***.

The MCAV believes this applies to two questionable studies referred to below.

1. **One particular study by Williams R, Wahren C-H, Bradstock R. and Muller W (2006)** --- *Does alpine grazing reduce blazing? A landscape test of a widely-held hypothesis.* Austral Ecology (2006) 31, 925–936) is relied on heavily by opponents of Alpine Grazing . It appears that his study is one of the most flawed.

The study used field observation of burned and unburned points along transects in grazed and ungrazed areas of Bogong High Plain. It relied on a relatively small number of points given the very large area being studied.
Incredibly, no satellite images showing burnt and unburnt areas were used despite the scientists acknowledging in their report such images were available.

- A key conclusion of the study is that *"we found no evidence that grazing as a main effect reduced fire occurrence or severity"* and went on to say *"These findings lead us to reject the hypothesis that 'Alpine grazing reduces blazing'"*

- The statistical study conclusions conflict in a major way with the visible evidence from DEPI satellite images of the burnt areas on the Bogong High Plains. DEPI's satellite images of the burned area clearly show very big differences in the proportion of grazed area burnt and proportion of ungrazed area burnt (much lower in grazed areas).

This raises serious questions about the validity of the study findings:

- Why is the ground based statistical analysis different from the directly observable satellite image evidence?
- Why wasn't the satellite imagery used in the study when it was available?

These differences can clearly be seen in DEPI's referral documents containing the Mountain Cattlemen's model of grazing and burning in the high country (pages 35 and 36) prepared by GHD in 2011. This report highlights the deficiencies with the statistical study by Williams and others:

The GHD report on page 28 states in part:

> *"…… cattlemen consider that the researchers' key conclusion that 'the use of livestock grazing in Australian alpine environments as a fire abatement practice is not justified on scientific grounds' (a conclusion heavily relied upon by Victoria's Alpine Grazing Taskforce)* ***is tricky and misleading****. It is not clear whether it means that the body of scientific research is insufficient to justify a conclusion that grazing is an effective fire abatement practice, or whether it is meant that there is sufficient scientific evidence to justify a conclusion that grazing is not an effective fire mitigation practice in alpine environments.*
> *A more correctly stated finding would be that there is insufficient scientific evidence to form a reliable conclusion either way as to whether grazing reduces blazing. The study itself should only be entitled to claim scientific evidence for a lack of statistical difference in fire occurrence and intensity between ungrazed areas, and the ungrazed components of closed and open heath within grazed areas (which is hardly surprising since cattle largely avoid grazing those vegetation types).*

The full section of the GHD report (2011) relating to this issue can be found at the following link
http://www.depi.vic.gov.au/data/assets/pdf_file/0019/251542/Attach_2_Conceptual_Model_Appendix_B_Part_2_-_Mountain_Cattlemen-Part-D.pdf

This GHD report goes directly to the issues raised. (page 28 contains the main point)

> *A more recent study did produce maps of Satellite imagery and data in its report. However it could be said that this report and especially the interpretation of it by some environmental groups in the media recently is also "tricky and misleading" The MCAV submits that comments from these groups attempting to link either study to the Wonnangatta proposed trials in the valley grasslands should be treated with caution.*

2. **Cattle grazing does not reduce fire severity in eucalypt forests and woodlands of the Australian Alps,** GRANT J. WILLIAMSON,1* BRETT P. MURPHY2 AND DAVID M. J. S. BOWMAN1 Nov 2013, *NERP Landscapes and Policy Hub, School of Plant Science, University of Tasmania, Hobart, Tas.*

Some points worth noting from this study:

> *"The use of herbivores as a fire management tool is receiving increasing consideration globally, but this intervention has a limited evidence-base and is controversial because of potential deleterious ecological effects. These issues are well illustrated by the political and scientific debate about the capacity of cattle grazing to reduce fire hazard in the Victorian Alps of Australia; there have been remarkably few scientific studies to illuminate this issue".*

This quote from the study acknowledges that the science is far from all done, (contrary to the claims of grazing opponents), in fact hardly any has been done. The authors go on to state:

> *"We accept that in a perfect world, well designed experimental studies, such as a before–after control–impact (BACI) experiment should be established that are of appropriate spatial scale and duration".*

The research trial now proposed and which cattlemen have long called for is just such a study.

Unfortunately the Williamson et al study cannot shed any further light on the link between grazing and fire because it deliberately ignored any assessment of the Alpine grasslands where fuel reduction benefits are greatest. Why do a study into fire impacts in grazed and ungrazed areas and leave out the bits where most of the grazing happens? If they had studied the grazing effects on fire extent in the grassland areas they would have found much less area burnt in grazed areas relative to ungrazed areas as can clearly be seen in the satellite images shown in the GHD report. They most likely would have shown a contrary result

Ignoring the grasslands they concentrated instead totally on the forest and woodlands situated adjacent to the actual areas that were originally part of grazing runs up until 2005.

Cattlemen have never claimed that grazing can significantly assist fuel reduction in the forest and shrubby woodlands, but certainly grazing and the action of cattle activity does assist to some extent, if the cattle actually venture into such areas which they only do if there is sufficient grass

to eat and maintain their condition. If there is insufficient grass they move on to areas where there is sufficient grass – grasslands and open grassy woodlands.

Given that cattle have not grazed the areas studied in this report for many years the published results were unsurprising and predictable.

It is worth noting that the forest and woodland areas assessed in this report have been gradually shrubbing up since the cattlemen were banned from cool burning in the autumn many years ago. (Now, fires started by lightning are quickly put out regardless of the time of year or the fact some cool fires are actually doing a good job.)

When pioneer cattlemen first moved cattle into these woodland areas they were much grassier than they are now and were maintained that way by cattlemen (using grazing and deliberate careful burning). When the Forest Commission was formed about 1920, pressure gradually came on the Cattlemen to stop burning. This pressure gradually increased until most Cattlemen were eventually stopped by the authorities except for isolated instances where some families defied the authorities in order to correctly manage their leases. It is highly likely, and identified by Gammage, that much of this current shrub land around the edges of the Alpine grasslands was originally grass land and Aboriginal and natural fires kept the grassland in an open state.

The Esplin Report

Some scientists, involved with the Alpine grazing issue (including Dick Williams), gave advice in the preparation of the Esplin report into the 2003 Alpine fires.

The Esplin Report, following the advice of these scientists, found that the *incidence* (our emphasis) of fire was not reduced by High Country grazing. Cattlemen have never claimed this and it is a deliberate misquote of what the cattlemen have claimed for years which is "grazing *reduces* blazing" (by lowering fuel loads.) (Esplin, 2003)

This was followed up with an opinion piece in The Age, under the name of the Commissioner and broadly stating among other things that we should get used to Mega fires. It is understood that Williams and Bradstock were involved in this. It could be argued this was an inappropriate involvement by scientists in what was basically a political debate.

A CSIRO fact sheet prepared by a small group of scientists, including a photo by scientist, Henrik Wahren states "these findings support the findings of the Esplin report etc." This can be found on various websites including Mr Wahren's. (Wahren, Williams, Bradstock, & Müller, 2006)

The modus operandi appears that firstly some collaborative scientists give advice to enquiries such as the Esplin report and then later, to strengthen their case, claim that an independent report has come up with findings which they support!

David Packham AOM, (Honorary Senior Research Fellow, Monash University) writing in The Australian on February 10th, 2009 states:

> *"The decision to ignore the threat has been encouraged by some shocking pseudo-science from a few academics who use arguments that may have a place in political discourse but should have no place in managing our environment and protecting it and us*

from the bushfire threat.

The conclusion of these academics is that high intensity fires are good for the environment and that the resulting mud slides after rains are merely localized and serve to redistribute nutrients. The purpose of this failed policy is to secure and uninformed city votes.

Only a few expert retired fire managers, experienced bushies and some courageous politicians are prepared to buck the decision to lock up our bush and leave it to burn."

Mr Packham also recently stated on ABC rural radio news that:

> *"There is a need to consider grazing as one management tool to reduce fuel. Some of the science relating to this subject has at best been careless and questionable? There is no doubt that the Mountain Cattlemen have been* ***dudded."***

Another issue expressed by Mr Packham has raised the possibility that we may be in danger of creating Alpine deserts unless frequent mild fire is re integrated into *South Eastern Australia's forests. (per. Com. 2009)*

The Government's position

The Parks Victoria website states

> *".... The Environment and Scientific Advisory Group (**ESAG**) established in 2009 ... will provide independent environmental scientific advice to Parks Victoria regarding the preparation of the draft management plan for the Greater Alpine National Park."* (Rose)

Given the issues outlined in this paper It is clear that it will be difficult for Government to obtain truly independent scientific advice regarding any decision that grazing should now take a bigger role in reducing fuel loads.

The Parliamentary Inquiry

After the 2006/7 Alpine fires, the Parliament directed the Environment and Natural Resources all party Committee to enquire into the "Impact of Public Land Management Practices on Bushfires in Victoria".

The Committee took much evidence and received many submissions including the role of grazing as a tool to reduce fuel loads. It visited outlying places and spoke to experienced, practical on-ground people.

The Committee received a wealth of personal observations from people who lived and worked in the bush and knew the value of grazing. These people confirmed personally the earlier information detailed in this document. It is valuable to read the comments recorded in the report.

The Parliamentary Committee also took evidence from scientists including Dr. Williams. Addressing the role of grazing, the Committee report concludes by stating,

> *"The Committee notes the scientific evidence, that grazing may not be an effective or preferable bushfire mitigation strategy ALONE (our emphasis) but believes it can be used*

as a tool to complement other fuel reduction strategies on public land". (ENRC, June 2008)

So despite receiving some scientific evidence that may have been tainted with personal opinions, the Parliamentary Committee found grazing has a place in future fuel reduction strategies.

The Alpine Grazing taskforce 2004

This was a committee comprising Labor backbenchers who were assigned the task of finding the reasons to remove cattle from the Alpine National Park. This occurred in 2005.The committee relied heavily on information supplied by the small group of collaborative scientists referred to in this document.

The People's Review

The People's Review is an 82 page document initiated in 2007 following four years of extensive bushfire activity. Contributors included eminent fire experts David Packham AO and Prof. Peter Attiwill. The report was written before the Feb 7th 2009 fires. It concentrated on the important issues of fuel loads, prescribed burning and the management of public land.

Addressing the issue of grazing as one method of fuel reduction the report states:

> *"Grazing reduces fuel loads; grazing and low intensity fires are necessary for the High Country, as evidenced at Nuniong plateau…" (page 16)* (Peter Attiwill, 2009)

> *"Recommendation 13 , The peoples review recommends that the grazing of domestic livestock on public land be honestly and objectively reviewed, bearing in mind the extent to which grazing can be managed to reduce fuel loads" (page 5)* (Peter Attiwill, 2009)

The Hon David Evans, former MLC for North East Province 1976/1996.

David Evans spent his professional life studying the issues surrounding public land and fire management. His knowledge of these issues is extensive.

> *"It needs to be stated clearly that no matter what actions man may take, in the case of resource management, there will be an effect. Graze land with domestic stock, there will be an effect.*
> *Take out the stock, it will not return to its previous state, but will become something different.*
> *Remove the aboriginal "fire stick farming" and the land will change.*
> *Take away the compensating land management of the early cattlemen, and the land will change more.*
> *Allow uncontrolled access to ferals such as deer, goats, and particularly rabbits and great damage can be done – as has happened with camels in the Simpson Desert".(D.Evans per. com. to Graeme Stoney.15/10/09)*
>
> *"I believe you (the MCAV) needs to state strongly that much of the so called scientific evidence against cattle grazing is highly questionable, some ALMOST amounting to scientific fraud" (D. Evans per. com. 14/10/09).*

The Need for More Research about the link between grazing and fuel reduction

The MCAV has claimed for many years that not enough **independent** work has been done on the value of grazing in reducing fuel loads. Now, to the relief of the cattlemen, a most highly valued source of bushfire information has found that research on the subject has been "scant and inconclusive". An April 2009 "Fire Note" published jointly by the Bushfire Cooperative Research Centre and the Australasian Fire and Emergency Service Authorities Council states:

> *"The existing evidence about whether the combined effects of fire and grazing are effective in managing fuel loads and fire risk was scant and inconclusive."* (Bushfire Cooperative Research Centre, Issue 32 June 2009)

As well, Prof Mark Adams released a summary of progress of some current scientific work on the Victorian and Snowy (NSW) High Plains called 'High Fire'. (2009) Under the heading "Roles of prescribed fire and grazing in mitigating bushfire risk" Prof Adams states,

> *We began our work with a thorough review of previous research. That review highlighted two main points: (i) while there have been studies of grazing in the high country, there is a clear lack of research into the interaction of grazing with prescribed fire, and (ii) some of the research that is cited as being the 'evidence base' for major policy decisions, including decisions to remove or retain cattle grazing, could not be regarded as rigorous (i.e. well replicated at adequate scale) if judged by today's standards. That is not to say that all past research has been poor –some of it was clearly 'ground-breaking' and set a vital platform for others to follow. However standards improve continuously and there was a clear lack of replication in some of the grazing studies that are held to 'prove' the case that grazing is 'bad'. Our work includes replicated tests of the fire x grazing interaction on the Snowy Plains and on the Dargo High Plains, using large fenced plots.*

Given Prof Adams preliminary work, (which is continuing) it is important Governments revisit previous decisions as regards grazing, and grazing interaction with fire and fuel management.

Prof Adams concludes in the summary of the 'High Fire' document that:

> *"It will not be a surprise to many that some preconceived and city driven perceptions of fire and grazing in the High country are poorly based. The High Fire experiments need much longer periods of time before they can provide definitive evidence. That said, the early data are encouraging insofar as they have at least raised legitimate questions about many of the assertions of the past"* (Adams, 2009)

The Bushfire CRC website referring to the High Fire project states in part that

> *…."Furthermore, this project assessed the combined impacts of grazing and burning on fuel accumulation in sub-alpine grasslands and woodlands with a series of experimental plots. Over the three-years of research by Dr Maria Taranto and Dr Stephen Roxburgh, the impact of fire on the vegetation was able to be measured but the effects of grazing were much more gradual. Hence, the combined effects of fire and grazing may take decades to be fully apparent."*

This information was currently posted as at the publication of this paper.

The Challenge

Grazing is but one of a suite of options to reduce fuel loads on public land and all should be carefully considered. Grazing of public land is practical and very effective in areas where even cool fire is not the best option (given the doubtful track record and long term effect of modern management).

How grazing is implemented as a valuable management tool is a challenge for a future Governments. Given the situation identified above, The MCAV is left with no doubt that the "science", has been hijacked by small determined groups who have personal agendas to prevent Alpine grazing because it does not fit with their ideologies of national parks in Australia. Given this circumstance, this opportunity should be revisited by the Government.

It is worth remembering that many important National Parks throughout the World, including Australia, are grazed by domestic animals so the absence of grazing is not a World standard requirement for national parks. Thousands of deer graze the Alpine National Park with little comment from environmentalists.

The Opportunity Presented by Wonnangatta

The original Wonnangatta Station is an ideal place to hold grazing trials. It was grazed for 100 years until resumed by the Government in 1988. Since then it has reverted to an overgrown jungle and weed infested fire trap for visitors.

If the Wonnangatta flats were regularly grazed, as in the past, access would become much better for visitors. The amount of old vegetation would be far less and over time the grazed flats would remain green through most of the summer. This would then allow much better access for weed control, contractors and recreation and greatly reduce the fire risk.

The above two photos (1984 and 2012) that demonstrate those points. Both photos were taken in the summer from the same area. The 1984 photo (left) was taken while Wonnangatta was a working cattle station.

The Need to Make Early Decisions

The present situation is that if the Government now realizes that grazing is after all a valuable management tool, especially for fuel reduction and then wishes to reinstate grazing, they would

need to do so quickly for at least two reasons.

First and foremost is the need to reduce fuel loads in the High Plains grass land (those areas formally grazed). This is especially important in the Mountain and Alpine Ash where high thick grass is a threat to the Ash re-growth following several recent fires. Grass grows very strongly after a hot fire as the tree canopy and competition is reduced.

Secondly, should the decision to return grazing to assist management in the High Country be stalled or discarded, too much time will pass and the learned skills to achieve managed grazing will be lost. There will not be people left who know how to put cattle up and bring them back down again and maintain a stewardship over the High Country. Without the cattle there is no reason or focus for families to continue their association with the High Country

Conclusion

The management of public land including fire management has been a source of constant debate since European settlement in Australia.

Almost from the start, the views on land management of the people living and working in the country have differed from those of people living in urban environments.

Central to the debate is the effect of the inexorable changing of previous land management decisions and the creation of large areas of national parks. Currently 55 per cent of all public land in Victoria is managed under the national park estate. It is clear the actual management policies of land in these massive parks are influenced by ideology and are grossly under resourced. It is also clear that much of the valuable local management knowledge built up since settlement has been ignored and mostly lost.
***NB**: Management of the land is different from the management of visitors which is where most of the present Parks Victoria budget appears to be allocated.*

The MCAV argues that the important debate outlined in this paper has been clouded by ideology and extraordinary and unbalanced campaigning by some scientists and conservation groups. There have been comments from informed people that their case lacks rigour and substance.

The Mountain Cattlemen's heritage and culture developed over more than 170 years, and even more importantly the value contributed by their grazing cattle have been the victims of this ideologically driven campaign.

The documented successive failures of fire management on public land in Victoria's High Country requires a rigorous examination of all policies and management tools available to public land managers.

It is clear that public land should be managed on a Landscape scale and be tenure blind when it comes to decisions such as the best ways to achieve fuel reduction

Continuing implementation of current flawed management policies, in the view of the MCAV, will never result in good environmental outcomes. An enlightened approach, based on independent

research, would enable land managers to fulfil their statutory obligations under section 17(2) (aa) and (b) of the National Parks Act:

a) *Have regard to all classes of management action that may be implemented for the purpose of maintaining and improving the ecological function of the park;*

b) *Ensure that appropriate and sufficient measures are taken to protect each national and state park from injury by fire;*

Traditional Ecological Knowledge (TEK)

The Mountain Cattlemen's families have 180 years of cultural traditions in the Victorian High Country, this is known as traditional ecological knowledge or TEK. This term has been used since the 1980's and is used globally.

The definition of TEK according to natural resource use scholar Bikret Ferkes, Traditional Ecological Knowledge is defined as,

> *"…a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment." (National Geographic,* **Voices for Biodiversity** on April 5, 2012)
>
> *"Traditional Ecological Knowledge (TEK): An accumulated body of knowledge that is rooted in the spiritual health, culture, and experiences of those who are close to the lands. It is based on an intimate knowledge of the land, its physiographic and natural features, climate, and wildlife, and the relationships between all aspects of the environment. Although in many uses it refers to knowledge of Indigenous peoples, others with intimate knowledge and experience of the land also have developed traditional ecological knowledge. (FSC Canada 2004:144)*

Berkes then describes how TEK is useful as a co-management tool.

> *Traditional knowledge, as a way of knowing, is similar to Western science in that it is based on an accumulation of observations, but it is different from science in some fundamental ways. The anthropologist Claude Levi-Strauss (1962:269) argued that these two ways of knowing are two parallel modes of acquiring knowledge about the universe; the two sciences were fundamentally distinct in that "the physical world is approached from opposite ends in the two cases: one is supremely concrete, the other supremely abstract." (Berkes)*

TEK is used collaboratively in management practices of public land in many other countries. The Mountain Cattlemen have a great wealth of knowledge (TEK), and wish to be involved in assisting land managers make better management decisions for the Victorian High Country. If these very important and long ranging decisions,(that are yet to be made and implemented on a tenure blind scale,) involve the use of a combination of fire and grazing in some areas, then nothing should be off the table in this rapidly changing environmental situation.

Recommendation and Request

Given the imperative that fire management is the cornerstone of public land management in Victoria and the stated first priority of public land managers, a strong case exists for the State and Federal Government to commission a *truly independent* scientific study to establish an evidence based review of the link between grazing and fuel reduction on all types of public land in Victoria including National Parks.

MCAV, February 2010, revised 2015

Comments on this paper: Bill Gammage-- pers comm to Graeme Stoney, 25 December 2012

"The Links between Cattle Grazing and Fuel Reduction in the Grazing Zones of the High Country".
Mountain Cattleman's Association of Victoria, February 2010.

The management of Australia's national parks is a disgrace. Trees and scrub overrun grass and open forest, fuel builds up, fires ravage, species become endangered and extinct, people die.

There are four options for managing fuel in alpine country:

1. *Do nothing*
2. *Fire*
3. *Grazing*
4. *Combine 2 and 3.*

1. Though I've not seen it tested, a common belief is that the public mostly favours doing nothing, because this preserves what is there - a "natural balance", a harmony of plants and animals (including birds, reptiles and insects) as intended by nature.

This offends on three broad grounds. First, even without people there is no such thing as a "natural balance". The term implies a static condition, as if plants and animals stand frozen in time, but all life moves in cycles, competing, collaborating, responding variably to season and circumstance. Second, for at least 50,000 years until 1788, Aborigines actively managed the land. In places they deliberately did nothing, but not forever, and in most places they did a lot – it was their life work. They shaped Australia into a kaleidoscope of plant patterns, and by controlling fuel they eliminated or greatly reduced killer fires. Wilderness came after, in country Europeans couldn't use. Third, it was never the purpose of national parks to protect a "natural balance", even if managers could say what that was. The avowed purpose of national parks is active, not passive: to protect species diversity, so passing to the future the gifts of the past. Clearly this is not happening. "Do nothing" is not a policy; it is a neglect of heritage and a dereliction of duty, endangering our plants and animals and impoverishing our future. We must intervene; we must manage.

2. To reduce fuel and to protect species, fire is the best option. The people of 1788 gave the future a great gift, which even today many newcomers can't imagine: with proper management, killer fires can be averted, the impact of lightning strikes much reduced, and patterns of plant distribution maintained so as to ensure a habitat for every plant and animal. This is a gift to prize.

Today it would be very difficult to reduce the high country to 1788 fuel levels, and then to introduce and maintain a habitat for every plant and animal. We haven't anywhere near the fire and species skills of 1788, nor are we prepared to commit the time and resources those people did. But we could do better. We could "burn and learn": commit to fuel reduction by regular preventive burns, thereby averting killer fires and giving at least some species under threat a chance to survive. In the high country some local expertise survives to assist this, and elsewhere very considerable Aboriginal expertise is at hand.

3. As its title states, the paper advocates cattle grazing to reduce fuel in the high country.

This would come from grazing itself, and from the controlled fires cattlemen light to refresh grassland.

Cattle grazing is far superior to doing nothing, but far short of fire's capacity. No doubt marsupial grazing helped Aboriginal people maintain a mosaic of short grassy patches which were also fire breaks, and cattle too prefer young fresh grass which comes up after a well-timed fire.

But the people of 1788 did not rely on grazing. It was a welcome bonus rather than an essential tool. Except in desperate times kangaroos and cattle are selective feeders. They seek out the tastiest and most nutritious grasses. Over time this has the effect of promoting non-fodder grasses, and scrub. It is important to note that even in cattle times in the mountains, scrub was recapturing grassland that Aboriginal fire had made. This occurred too in low country now farming areas, where decades of stock grazing failed to prevent scrub and trees regenerating on less favoured hills and the like, while the most nutritious grasses were locally eradicated and replaced by weeds. So far as I can tell on limited knowledge, weeds have not significantly impacted on upland swards, though they may have in valleys.

Option 4. Essentially the paper advocates this. The fire skills generations of mountain cattlemen have accumulated are valuable, and too much ignored today, when what counts must be on paper. Given our ignorance compared to 1788, option 4 does seem the best available, or more exactly might become so if its problems can be resolved.

The key problem is that you can't burn and graze in the same place at the same time. In this situation cattlemen will either not burn, or burn for cattle. This is so today across northern Australia, with results better than doing nothing, but still not protecting species diversity. Burning for cattle is not the same as burning for diversity: it is more likely to be sheet- rather than patch-burning, and hot rather than cool. Northern cattlemen are increasingly realising the folly of such management, particularly in the face of persistent scrub regeneration (as has occurred in Gippsland too). Grazing must therefore take second place to properly managed fire. Cattlemen will argue that this is possible. I agree, if we learn more, and find ways to ensure compliance.

Another problem is a good balance between option 4 and summer recreational use in national parks, especially where admission charges give the latter some sort of priority. Controlled fire, cattle, campers, bushwalkers and 4WDs don't mix, but all are entitled to access. Controlled fire should remain the first priority; without it the rest is at risk anyway. Few will ever be happy with how the rest compromise, but above all it should not licence a "do nothing" or "no fire" policy.

Today experiments are trying to see how fire and grazing interact. These merit support, to test such broad assertions as made here, and to discover the myriad small details about species survival they overlook. Nonetheless, the lessons from 1788 need no experiment. The lesson is clear. Fire is the key ally in managing country. We must burn more, and learn how to do it well.

But the public needs persuasion. Perhaps three trials, each in several distinct areas, might be set up on blank ground after the next big fire (which under present practice will surely

happen some time). One trial would test fire management regimes, another (presumably recent cattle leases) fire + grazing, and for political reasons the third, despite overwhelming evidence of its failure, "do nothing". Apart from garnering expertise on high country management, each trial might entice its advocates to see that it gets the best test possible, and ultimately to accept which is the most effective option.

Bill Gammage

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