



# HOW MANY UMPIRES DO WE NEED FOR ALPINE GRAZING?

**Alpine cattle grazing, and its effects on alpine ecosystems and fire mitigation, has probably been more thoroughly studied than most land management issues in Victoria. Umpires have consistently ruled against alpine grazing for more than 100 years.**

The Mountain Cattlemen's Association of Victoria is currently running the argument that if the Wonnangatta Valley grazing trial was allowed to continue in the Alpine National Park, they would 'abide by the umpire's decision'.

There are two problems with that claim:

1. Who is the 'umpire' for the Wonnangatta 'scientific trial'? No scientist has put his or her name to the study, and its design has been widely criticised by scientists.
2. The cattlemen have never abided by evidence-based conclusions in the past, choosing instead to denigrate a multitude of peer-reviewed, published scientific studies.

Decades of scientific studies, and more than 100 scientific papers, have shown how cattle grazing causes damage to the alpine region, threatens the survival of state and nationally-listed rare species, spreads weeds, causes erosion and damages important water catchments. They also show that cattle grazing has not reduced the fire risk in the alpine region of Victoria.

This is a selection of studies and reports on alpine grazing, and decisions to remove domestic stock from alpine regions, in chronological order over more than 100 years:

**1893:** Richard Helms was among the first to record the damage by NSW high country cattle grazing and the graziers' widespread practice of burning, which bared the soil, robbing it of humus and roots holding it together, and leading to greatly increased runoff and soil erosion as well as siltation of catchments.

*"That ignorance and greed should be allowed to interfere so drastically in the economy of nature is pernicious, and should not be tolerated."*

• Helms, Richard: Report on the Grazing Leases (1893)

**1920s:** Domestic stock grazing was initially removed from Victoria's Mount Buffalo National Park in the 1920s, because sheep were affecting the water

supply to the Mount Buffalo Chalet. Grazing was re-introduced for a time, but sheep and cattle were finally removed from the park in 1956.

**1931-2:** A report for the Commonwealth Forestry Bureau by forester Baldur Byles said that cattle grazing (and its associated burning practices) was causing erosion in the headwaters of the Murray River. He said that catchment efficiency was being reduced 'slowly but surely'.

• Byles B, A Reconnaissance of the Mountainous Part of the River Murray Catchment. New South Wales Commonwealth Forestry Bureau Bulletin No. 13 (1932)

**1940s & 50s:** Research in NSW and Victorian alpine regions by Alec Costin, Maisie Fawcett and other scientists produced clear evidence that cattle and sheep grazing caused significant erosion and siltation of waterways:

*"It is concluded, therefore, that present-day grazing in the Australian alps is not consistent with the preservation and improvement of catchment values."*

• Costin, A. B. The Grazing Factor and the Maintenance of Catchment Values in the Australian Alps. January 1958. (p.12)

**1946:** The Victorian Royal Commission to inquire into Forest Grazing said:

*"... the slopes were burnt... by the graziers themselves for the purpose of ensuring a fresh growth of forage for the cattle. With each burning, the growth of shrub was stimulated so that it successfully contended with the grass for possession of the mountainsides."*

*"...where grazing causes erosion it does so by the destruction of the humus and by the pulverising or impacting of the soil... the result is an increase in the speed of water run-off and a decrease in the volume of water absorption... [This causes] the failure of the seepages and springs which would have helped the parched earth through its summer travail by maintaining some sustaining moisture in the soil and some volume of river flow."*

• Report of the Royal Commission to inquire into Forest Grazing. Judge Stretton (1946)

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**1950s:** cattle removed from the summits of mounts Feathertop, Hotham and Bogong in Victoria.

**1957:** An Australian Academy of science report on the high country catchments of NSW and Victoria concluded:

*"In all the high mountain catchments of NSW and Victoria there is obvious and marked deterioration of the natural vegetative cover, and an associated loss of catchment efficiency... The major deterioration of the vegetation is due to a combination of grazing and burning."*

• A Report on the Condition of High Mountain Catchments of NSW and Victoria. Australian Academy of Science. Canberra. May 1957

**1950s & 60s:** Cattle were removed from Kosciuszko National Park in NSW during the 1950s and 60s because of their effects on water quality for the Snowy Mountains Scheme.

**1977:** Research continues:

*"The condition of the vegetation and soil in the Loch-Hotham area (now protected from grazing) has noticeably improved during the last 20 years. Most bogs and snowpatches are also recovering..."*

*"On the more extensive Bogong High Plains (where cattle grazing continues) the same upward trend is not apparent, except in the enclosures... Likewise the bog and snowpatch areas examined show no substantial recovery and, in many places, active deterioration and erosion continue."*

• Costin, A.B. Report on inspection of Plants of the Bogong High Plains Area. May 2-6, 1977

*"...it can be concluded that protection from grazing and absence of fire results in (a) the development of luxuriant vegetation which provides adequate cover for the soil surface, and (b) promotes an improvement in soil structure and presumably in the hydrological characteristics of the mossbeds and their catchments."*

• Carr, S.G.M. (Maisie Fawcett) Report on Inspection of the Bogong High Plains, 1977

**1979:** The Land Conservation Council's assessment of the Victorian Alpine Area concluded:

*"To attain the highest standards of catchment condition the long term phasing out of grazing in ... alpine and sub-alpine grasslands and herbfields would be required."*

• Alpine Area Review Final Recommendations. Land Conservation Council (1979)

**1980s:** Cattle removed from around Mount Howitt, then part of Victoria's Wonnangatta-Moroka National Park.

**1984:** An extensive report on alpine grazing for the Dep't of Conservation Forests and Lands said:

*"As most of the free-flowing water accessible to cattle is found in mossbeds, cattle by necessity used mossbeds for drinking." (p. 62)... "Overgrazing of rangeland by herbivores results in a loss of cover of preferred dietary species... "In the absence of grazing the composition of the grassland community changes rapidly with several of the preferred species making spectacular increases in cover." (p. 125)*

• van Rees, H. Behaviour and diet of Free-Ranging Cattle on the Bogong High Plains, Department of Conservation, Forests and Lands, Victoria, 1984

**1985-90:** Research continues:

*"...The contention that grazing is a primary (or even the primary) factor preventing the spread of shrubs on the High Plains is an inappropriate application of the ecological evidence... The continuation of grazing as a means of controlling the cover of shrubs cannot be recommended in the face of the evidence presented both in this thesis, and in the various publications of S.G.M. Carr, A.B. Costin and D.J. Wimbush."*

• Williams, R. J. Aspects of Shrub-Grass Dynamics on the Bogong High Plains (sub-alpine), PhD thesis, 1985

*"Overgrazing of rangeland by herbivores results in a loss of cover of preferred dietary species. This enables less preferred plants to increase in cover through reduced competition by the preferred plants ..."*

• Van Rees, H. and Holmes, J.H.G. The Botanical Composition of the Diet of Free-Ranging Cattle on the Alpine Range in Australia. Journal of Range Management 39 (5), Sept. 1986

*"On the basis of present evidence, continued grazing by cattle as a means of inhibiting shrub expansion on the Bogong High Plains cannot be recommended. ...the continued grazing of cattle within the Bogong National Park is not compatible with strict values of nature conservation."*

• Williams, R.J. and Ashton, D.H. Effects of Disturbance and Grazing by Cattle on the Dynamics of Heathland and Grassland Communities on the Bogong High Plains, Victoria. Australian Journal of Botany 1987, 35, pp. 413-31

*"The ungrazed mossbed appears to be better serving its role filtering water that is used for the production of hydro-electricity."*

• McDougall, K.L. The Effect of Excluding Cattle from a Mossbed on the Bogong High Plains, Victoria. Technical report series (Arthur Rylah Institute for Environmental Research) no. 95. Sept. 1989

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*“There is ample evidence indicating that the grazing of domestic livestock within the Australian high country is incompatible with nature conservation values... The continuation of grazing as a means of controlling the cover of shrubs on the Bogong High Plains, therefore, cannot be recommended as a management option, given the weight of the experimental evidence against the practice collected over four decades ...”*

• Williams, R.J. 'Cattle Grazing within Sub-alpine Heathland and Grassland Communities on the Bogong High Plains: Disturbances, Regeneration and the Shrub-Grass Balance.' *Proceedings of the Ecological Society of Australia*, 1990, 16, 2555-265

**1991:** Cattle removed from the northern Bogong High Plains, the Bluff and part of Davies Plains, all in the Alpine National Park.

**1994:** Research continues:

*“In the Pretty Valley ... improvement will occur in the absence of grazing... In the Rocky Valley ... there was no evidence that grazing has reduced shrub cover, and therefore potential fire risk, in open heathland... grazing by cattle has substantial impacts on the composition and structure of sub-alpine vegetation... In grassland... continued grazing ... will not reduce the risk of fire in such communities.*

*“These findings have significant management implications for the Alpine National Park and are consistent with those from other regions in the Australian alps.”*

• Wahren, C.H.A. Papst, W.A., Williams, R.J. Long-term Vegetation Change in Relation to Cattle Grazing in Sub-alpine Grassland and Heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994. *Australian Journal of Botany*, 1994

**1997/8:** Two reports to Victorian government agencies (DSE 1997 and Parks Victoria 1998) made it clear that cattle grazing should not continue in the Alpine National Park.

*“Continued grazing is an undoubted cost to national park values, and, indeed, compromises national park management. Any claims made with respect to the benefits of grazing to alpine ecosystems are not supported by scientific evidence.”*

• Williams, R. J. Papst, W. A. and Wahren, C-H The Impact of Cattle Grazing on Alpine and Sub-alpine Plant Communities of the Bogong High Plains. *Report to the Dept. of Natural Resources and Environment, Victoria* (1997) (p40)

*“The alpine and sub-alpine ecosystems and landscapes of south-eastern Australia are significant to all Australians because of their inherent value for nature conservation, water-yielding capacity, landscape and wilderness values and for recreation, as well as for*

*their cultural history of human usage...*

*“There is no scientific reason why grazing by non-native animals should not have been excluded from the Victorian high country as early as 40 years ago. That grazing under licence has persisted in Victoria to the present is an indictment of Victorian land management authorities, including Parks Victoria and its predecessors, who have failed to take into account the scientific evidence available and give it its due in the politics of making decisions on land management.”*

• Groves, R. H. (CSIRO 1998) Grazing in the Victorian High Country. Report to Parks Victoria (p3)

**2001/2:**

*“...the species composition of arthropods was significantly different between the grazed and ungrazed sites ... most probably related to differences in moisture content in the vegetation and top layer of soil and the species composition of the vegetation, which are influenced by cattle grazing.”*

• Kimpson, K. The Effects of Cattle Grazing on the Diversity and Abundance of Terrestrial Arthropods on *Poa hiemata* Grassland on the Bogong High Plains. B.Sc (Hons) thesis, La Trobe University, 2001

*“The present study demonstrated that exclusion of cattle has positive benefits for aquatic ecosystems ... removal of grazing from sub-alpine catchments may release short-term benefits to some features of the aquatic ecosystem, with continued improvement up to 40 years... However, (recovery of) large-scale features such as channel morphology may take much longer.”*

• Simpson, L. Assessment of the Effect of Cattle Exclusion on the Condition and Recovery of Sub-alpine Streams, B.App.Sci(Hons) thesis, University of Canberra, 2002

**2003:** After the 2002-3 alpine fire, Parks Victoria commissioned a study to assess any return of cattle to the park.

*“Earlier studies have shown that stock grazed in high country catchments cause degraded water quality and reductions in biodiversity in streams. Excluding cattle from streams and riparian environments will enable benthic macro-invertebrates populations to recover in both the short and long term... The safety of potable water supplies is at risk if cattle that carry microorganisms pathogenic for humans have access to streams... The combination of fire and stock grazing has been recognised as a clear threat to land condition in Australian high mountain environments for many decades.”*

• Report of the Scientific Advisory Panel on fire-affected grazing. Prof. Nancy Millis Chair. Report to Parks Victoria (Oct. 2003)

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**2003:** The 'Esplin Report' into the 2002-3 fires concluded:

*"...free-range cattle grazing, associated with firing in forests in the past, appears to have changed the fuel array in forests to one dominated by shrubs rather than grass, a change likely to have increased fire proneness and the chance of intense fires. As a result, grazing has moved to the more open higher-altitude country. There, cattle grazing has changed the composition of the vegetation in some places by reducing the quantity of succulent herbage in the form of Snow Daisy (*Celmisia* sp.) and increasing the grass component (Carr & Turner 1959b)..."*

*"Recommendation: That, according to available scientific evidence, a decision regarding cattle grazing in the High Country should not be based on the argument that 'grazing prevents blazing.'"*

• Report of the Inquiry into the 2002-2003 Victorian Bushfires. Bruce Esplin, Chairman. Department of Premier and Cabinet (2003)

**2004:** Gippsland Nationals MP Peter McGauran allocated \$3 million to the Bushfire Co-operative Research Centre to research the effect of fire and grazing on fuel loads. The research was abandoned after three years with no published or publicly available results because:

*"...the combined effects of fire and grazing may take decades to be fully apparent"*

• Bushfire CRC website for 'High Fire Project'

**2005:** The Victorian Government's Alpine Grazing Taskforce report made a number of findings on the relationship of cattle grazing to the environment and to fire.

**"Findings on the environmental benefits and impacts of cattle grazing in the Alpine National Park"**

1. Cattle damage water catchments, causing bare ground, soil disturbance and erosion, and trample mossbeds and watercourses.
2. At least at a localised level, grazing adversely affects water quality.
3. Grazing modifies and damages vegetation in the park, with the Taskforce finding the evidence of the damage caused by cattle to mossbeds and snowpatches to be compelling.
4. Cattle grazing is considered a significant threat to at least 25 flora species, 7 fauna species and 4 plant communities found in the park that are listed as rare, vulnerable or

threatened with extinction.

5. Cattle have contributed to the establishment and spread of several weed species.
6. On the evidence before it, the Taskforce concurs with the conclusions of the 1998 Groves report, that the scientific research is adequate and consistently reveals that grazing has a deleterious effect on biodiversity.
7. Rehabilitation and restoration necessary to repair modified and damaged areas is very difficult with the continued presence of cattle.
8. The Taskforce finds significant damaging impacts and no overall benefits for the environment from cattle grazing in the Alpine National Park.

**"Findings on the benefits and impacts of cattle grazing in the Alpine National Park in relation to fire"**

9. Both grazed and ungrazed areas were burnt and unburnt in the 2003 fires, with fire severity predominantly determined by the prevailing weather conditions, topography, fuel loads and fuel flammability types, not whether an area has been grazed.
10. The Taskforce concludes that cattle grazing does not make an effective contribution to fuel reduction and wildfire behaviour in the Alpine National Park."

• Report of the Investigation into the future of Cattle Grazing in the Alpine National Park. *Alpine Grazing Taskforce*, Department of Sustainability and Environment Vic (2005)

**2005:** Legislation passed to end licensed grazing in remaining licence areas of Victoria's Alpine National Park. This decision meant domestic stock were no longer grazing in any national park in the alpine regions of the ACT, NSW, Victoria and Tasmania.

**2006:** Research by leading scientists into the impact of alpine grazing on a real bushfire was carried out shortly after the 2002/2003 alpine fire swept across Victoria's Alpine National Park. The paper, published in a peer-reviewed scientific journal, concluded that grazing is not scientifically justified as a tool for fire abatement.

*"'Alpine grazing reduces blazing' is a widely and strongly held view concerning the effects of livestock grazing on fuels, and therefore fire behaviour and impact, in Australia's high country landscapes. As a test of this hypothesis, we examined the patterns of burning across the alpine (treeless) landscapes of the Bogong High Plains in Victoria, following the extensive fires of January 2003."*

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*"In total, there were 108km of transect lines, 419 survey points and 4050 twig measurements, with sample points equally distributed across grazed and ungrazed country.*

*"There was no statistically significant difference between grazed and ungrazed areas in the proportion of points burnt. Fire occurrence was determined primarily by vegetation type...*

*"In both closed-heath and open-heath, grazing did not significantly lower the severity of fire, as measured by the diameter of burnt twigs.*

*"Whatever effects livestock grazing may have on vegetation cover, and therefore fuels in alpine landscapes, they are likely to be highly localized, with such effects unlikely to translate into landscape-scale reduction of fire occurrence or severity. The use of livestock grazing in Australian alpine environments as a fire abatement practice is not justified on scientific grounds." (Emphasis added.)*

• Richard J Williams, Carl-Henrik Wahren, Ross A Bradstock and Warren J Muller, Does alpine grazing reduce blazing? A landscape test of a widely-held hypothesis, *Austral Ecology* (2006) 31, 925-936

**2006:** The Ecological Society of Australia summarised all of the research to date, concluding that:

*"There is no scientific evidence to support the claim that grazing in alpine and sub-alpine zones plays any role mitigating the effects of wildfire.*

*"Grazing by livestock in the sub-alpine and alpine zones represents a significant threat to water, soil, nature conservation and biodiversity values. The Ecological Society of Australia urges all levels of government to support and maintain the ban on livestock grazing in these areas."*

• Position Statement on Alpine Grazing. Ecological Society of Australia (2006)

**2006:** The well-documented impacts of domestic stock grazing were acknowledged in the most widely-used ecology textbook in Australia:

*"Within all alpine plant communities, [livestock] grazing reduces vegetation cover, especially of palatable tall herbs ... and increases the amount of bare ground, sometimes ten-fold. The effects on vegetation, soils and catchments are well-documented. Livestock grazing has been progressively removed from the Australian Alps since the 1940s, and by 2005 it had ceased in all alpine National Parks."*

• Williams et al in *Ecology: an Australian Perspective*. Ed. Peter Attiwill and Barbara Wilson. 2nd edition, Oxford University Press (2006)

**2009:** An assessment of mossbeds in the Victorian Alps concluded that their deterioration over many years was significantly caused by domestic stock grazing:

*"Grazing in particular has been singled out as a major contributor to long-term mossbed decline, and the relative recovery of an ungrazed versus grazed mossbed at Pretty Valley... tends to support this... [A study of peat beds on the Wellington Plain indicates] direct links between grazing activity, hydrological changes and physical loss of peat."*

• An Assessment of Mossbeds across the Victorian Alps, 2004-2009. Report to Parks Victoria. Arn Tolsma, Arthur Rylah Institute for Environmental Research (2009)

**2010:** The 2009 Victorian Bushfires Royal Commission's Final Report made no recommendations for alpine grazing as a useful fire mitigation tool, nor did it include grazing impacts in its many recommendations for bushfire management research.

**2011:** A technical report on the condition of the Australian Alps catchments was produced for the Commonwealth Dep't of Climate Change and Energy Efficiency:

*"During the history of grazing in the Alps, wetlands were particularly modified by burning and grazing activities. Many wetlands are still disturbed and need restoration (Costin et al, 2004 p66). Many streams are still non-naturally incising through the organic soils of wetlands and need urgent erosion control work. The restoration of wetland ecosystems of the subalpine and alpine areas is unfinished work in the Alps catchments."*

• Caring for our Australian Alps Catchments: A technical report prepared for the Australian Alps Liaison C'ttee and the Commonwealth Dep't of Climate Change and Energy Efficiency. Graeme L. Worboys, Roger B. Good, Andy Spate. 2011

**2013:** A peer-reviewed, published study by leading fire scientists used remote sensing satellite and other data from both the 2002/3 and 2006/7 alpine fires, across grazed and ungrazed areas, including woodland slopes at all elevations in Victoria's alpine region, found that:

*"... crown scorch was strongly related to vegetation type but there was no evidence that cattle grazing reduced fire severity. There was some evidence that grazing could increase fire severity by possibly changing fuel arrays. Such landscape analyses are a critical approach given that large-scale grazing x fire trials are prohibitively expensive and impractical to conduct."*

• Williamson GJ, Murphy BP, Bowman DMJS, Cattle grazing does

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not reduce fire severity in eucalypt forests and woodlands of the Australian Alps, Austral Ecology (2013)

**2013/14:** Several submissions to DEPI and the Federal Government by scientists and leading scientific organisations, in regard to the proposed grazing trial in the Wonnangatta Valley, highlighted inadequacies in the rationale and design of the trial. Their concerns have never been addressed, or indeed replied to.

*“This proposal is seriously flawed in its science, governance, rationale and design. It is poorly referenced and sound scientific evidence is ignored. The rationale is unrelated to important questions of land-use and fire in the Alpine National Park. Over 60 years of scientific research has documented the effects livestock grazing in the alps, including the risk of fire. This body of peer-reviewed science has helped resolve the legal, social and cultural issues of grazing in the Park, which ceased in 2005. As outlined below, poor science and poor governance are the inevitable result of these recurring proposals that aim to restore out-dated colonial views of landscape management. This most recent example has more characteristics of a “try on” rather than a scientific trial.*

*“The stated aim of the [Environmental management Plan for the trial] is to avoid and minimise the risks associated with the proposed trial. The plan clearly fails to do either of these because it includes no*

*quantitative assessment, no estimate of risk and the known detrimental effects of grazing are ignored.*

*“The design appears to have been developed in undue haste, without considering the likely effects on flora, fauna and National Park values. This project represents a gross misuse of public monies and a diversion from more important land and catchment concerns in the Alpine National Park.”*

• Comments on Department of Environment & Primary Industries “Wonnangatta grazing and burning research trial” second submission. *Research Centre for Applied Alpine Ecology*, La Trobe University (November 2013)

*“... we consider that the experimental design to ‘... determine whether strategic grazing of domestic livestock is an effective tool for bushfire management in the Wonnangatta Valley’, as a case study for the Victorian Alps, is fatally flawed.”*

• Submission to the Department of Environment and Primary Industries on the Wonnangatta Valley Research Trial. *Ecology Australia*, 2014

## MORE INFORMATION

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