Senate Standing Committee on Environment and Communications
Legislation Committee
Answers to questions on notice
Sustainability, Environment, Water, Population and Communities portfolio
Additional Budget Estimates, February 2012

Program: Division or Agency:	5.2: EACD	**Question No:**	217
Topic:	Cattle grazing in the Alpine National Park		
Proof Hansard Page and Date	22		
or Written Question:	(14/2/12)		

Senator McKenzie asked:

Senator McKENZIE: What studies have been done—I would rather you answer this now rather than on notice—on the impact of cattle, given that this trial was only for 400 cattle, as you stated, in certain parts of the park?

Ms Murray: There is a range of scientific information that dates back, as I understand, from late in the 19th century to early in the 20th century that provides scientific evidence about the impact of grazing on heritage values and biodiversity in those alpine areas in the park. There is a range of information, so I can provide it all to you on notice.

Answer:

There is a broad and long-standing scientific consensus, based on numerous studies and investigations (including by land management agencies) that cattle grazing has an adverse effect on the natural heritage values of the Australian Alps National Parks and Reserves.

On 31 January 2012, the Minister for Sustainability, Environment, Water, Population and Communities determined that the Victorian Government's proposal to conduct a cattle grazing research trial in the Alpine National Park would have a clearly unacceptable impact on the National Heritage values of the Australian Alps National Parks and Reserves National Heritage Place, a matter protected by 15B and 15C of Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

The documentation on which the Minister based his decision is publicly available on the department's website at:

http://www.environment.gov.au/epbc/notices/assessments/victoria-alpine-national-park/index.html

This documentation includes (but is not limited to):

1. Supporting advice from the Department of Sustainability, Environment, Water, Population and Communities' Heritage and Wildlife Division; and the following studies and reports on the impacts of cattle grazing in the Australian Alps National Parks and Reserves National Heritage Place:

2. Wahren, C-H. A., Papst, W.A., Williams, R.J. (1994) *Long-term vegetation change in relation to cattle grazing in subalpine grassland and heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994.* Australian Journal of Botany, 42, 607-639.

3. Groves, R.H (1998) *Grazing in the Victorian High Country: an assessment of the scientific adequacy of grazing studies in the Victorian High Country 1945-1998, with some recommendations for future research.* CSIRO, Canberra.

4. Alpine Grazing Taskforce (2005) *Report of the Investigation into the future of cattle grazing in the Alpine National Park.* Published by the Victorian Government.

These four documents provide examples of the range of scientific information available on the impacts of cattle grazing in alpine areas. Copies of these documents are attached.

The Department of Sustainability, Environment, Water, Population and Communities has advised that it is able to provide further assistance with regards to accessing specific articles or reports that are referenced within these documents, upon request.

Attachments:

1. Supporting Advice from the Department of Sustainability, Environment, Water, Population and Communities' Heritage and Wildlife Division, including Attachment A: Statements of Unacceptability of Alpine Grazing.

2. Wahren, C-H. A., Papst, W.A., Williams, R.J. (1994) *Long-term vegetation change in relation to cattle grazing in subalpine grassland and heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994.* Australian Journal of Botany, 42, 607-639.

3. Groves, R.H (1998) *Grazing in the Victorian High Country: an assessment of the scientific adequacy of grazing studies in the Victorian High Country 1945-1998, with some recommendations for future research.* CSIRO, Canberra.

4. Alpine Grazing Taskforce (2005) *Report of the Investigation into the future of cattle grazing in the Alpine National Park.* Published by the Victorian Government.

HERITAGE SOUTH BRANCH ADVICE ON EPBC REFERRAL 2011/6219 'INVESTIGATION OF FUEL AND BUSHFIRE RISK MANAGEMENT USING STRATEGIC CATTLE GRAZING'

THE CLEAR UNACCEPTABILITY OF CATTLE GRAZING IN THE AUSTRALIAN ALPS NATIONAL PARKS AND RESERVES NATIONAL HERITAGE PLACE

Grazing of domestic stock in alpine and sub-alpine environments, and in national parks generally, has been considered as clearly unacceptable for a very long time by many sectors of society. The overwhelming weight of scientific and now community opinion is against the grazing of cattle in alpine and sub-alpine areas (see Attachment A).

Concern by scientists about the impacts of alpine grazing has been documented for more than a century. A large amount of scientific evidence accrued over more than sixty years has clearly established the negative impacts of grazing on alpine and sub-alpine environments, and the body of scientific opinion is now opposed to such grazing. Many highly esteemed scientists since then have expressed public opposition to the practice, including Dr AB Costin, Professor J Kirkpatrick, Dr David Ashton, Prof Sir Gustav Nossal, Prof Ralph Slatyer, Prof Geoff Hope, Prof Ralph Buckley, and Prof Frank Fenner, as well as the Australian Academy of Science.

Opposition to alpine grazing is recorded as early as 1896. Public land management agencies such as the Forests Commission of Victoria were very critical of the grazing and burning activities of graziers in the high country. A Royal Commission into Forest Grazing lead to the formation of the Soil Conservation Authority in 1950, resulting in progressively tighter controls on grazing and burning in the high country. The cessation of alpine grazing commenced in Victoria in 1955 (part of Mt Bogong) and continued with grazing being withdrawn from Mts Hotham, Loch and Feathertop in 1958. Similar controls were applied, and some grazing withdrawal initiated, in the Snowy Mountains in NSW after the declaration of the Kosciusko State Park in 1944.

The Australian Academy of Science recommended in 1957 that all grazing be stopped on land above 4,500 feet. Grazing ceased on all land above 4,500 feet in Kosciusko State Park in 1958 and was progressively withdrawn from other parts of the expanded park until all grazing in the park had ceased by 1972. The progressive removal of cattle grazing from the national parks and nature reserves that constitute the Australian Alps National Parks and Reserves National Heritage place continued until 2005/6 when the last alpine grazing licences expired in the Alpine National Park.

The Victorian Government's own public land-use planning body, the Land Conservation Council, has consistently recommended the removal of grazing from various lands in the Victorian Alps since the 1970s, with a view that in the long term, grazing should be removed from all alpine and sub-alpine grasslands and herbfields. The Alpine Grazing Taskforce, in an investigation into alpine grazing in 2004/5, echoed the concerns of scientists and ecologists and concluded that alpine grazing resulted in a range of significant environmental, aesthetic, and other impacts.

Alpine grazing has been opposed for many decades by conservation organisations such as the Victorian National Parks Association and the Australian Conservation Foundation. People visiting the Alpine National Park for recreation, in particular bushwalkers, have long objected to the presence of cattle there for a range of reasons, including aesthetics, conflict with the experience of natural and remote environments, spoilage of campsites and water sources, and the presence of large numbers of cowpats.

However in recent years this opposition has broadened to a wider range of people, based on community concerns about protection of the natural environment. Individuals as diverse as professional footballers, actors, mountaineers, television presenters, photographers and the CEO of the National Trust of Australia (Victoria) have also registered their public opposition to alpine grazing, especially to the 2011 reintroduction of cattle to the Alpine National Park. Articles, letters to the editor, advertisements and editorials in newspapers have been overwhelmingly critical of the decision to reintroduce alpine grazing. There has also been increasing criticism from primary production interests, such as graziers who have not held alpine grazing licences and who view them as a form of subsidy to those who did. They also view alpine grazing as having unacceptable environmental impacts, in contrast to the environment protection and landcare efforts made by farmers on their own properties.

In summary, the body of scientific and expert opinion and the broader Australian community, and an increasing part of the agricultural sector, regards alpine grazing as clearly unacceptable.

ATTACHMENT A

STATEMENTS OF UNACCEPTABILITY OF GRAZING IN THE AUSTRALIAN ALPS

1. HISTORIC SOURCES

Richard Helms, naturalist, writing about grazing in the NSW high country (1896)

'That ignorance and maybe greed should be allowed to interfere so drastically in the economy of nature is pernicious and should not be tolerated. Even from an aesthetic point of view, (grazing) ought not to be allowed, for what right has one section of the community to rob the other of a full enjoyment of an unsullied landscape ... the artist and tourist who seek the picturesque, the botanist and zoologist who come in pursuit of plants and animals, are all interfered with. And why? Because some inconsiderate people are allowed to do as they please.'

> Richard Helms, naturalist, 1896, quote drawn from the Royal Geographical Society of Australia and quoted in 'Grazing ban in alpine zone is overdue', The Canberra Times 1 June 2005, page 19.

Forests Commission of Victoria (1933)

'The chief danger (to catchment protection) lies in allowing a continued free rein to lease-holding cattlemen, who after all can only be regarded as a nomadic rural population, treating the soil and soil fertility as a wasting asset, a policy fatal in the long run to the prosperity of the country as a whole .'

> Forests Commission of Victoria, Australia, Fourteenth Annual Report. Financial year, 1932-33. FCV 1933, Melbourne, page 4, 'River Murray Watershed Survey' (report on the condition of the catchments of the Murray and Mitta Mitta Rivers).

Royal Commission into Forest Grazing (1946)

'It (the Forests Commission) has been ousted from national parks and similar reservations. That is probably why the Mount Buffalo area has been so badly treated and why Wilson's Promontory is the ghost of its former self. In passing, it is suggested with respect that all grazing and other harmful activities should be excluded from such areas, some of which are being ruined in the quest of miserable revenue won at the expense of their beauty and well-being.'

> Stretton, LEB 1946 Report of the Royal Commission to inquire into Forest Grazing together with Minutes of Evidence, Government Printer, Melbourne, 30pp, page 25.

2. CESSATION OF GRAZING IN ALPINE NATIONAL PARKS

Kosciuszko National Park

The phase-out of grazing in high-altitude areas commenced after the 1944 declaration of Kosciusko State Park. Grazing ceased in 1958 in all areas above 4,500 feet (1370 metres) as a result of the 1957 recommendation by the Australian Academy of Science to do so. Grazing in other parts of the park was then phased out, with the last grazing occurring in 1972.

Brindabella National Park

This national park was declared in 1996. Grazing no longer occurs there but the date of cessation of grazing is not available.

Namadgi National Park

Grazing was phased out in most of the Cotter catchment area soon after it was designated as a domestic water supply for Canberra in 1914, with no grazing since 1917, well before the park was declared in 1984. The last grazing to occur in the park was in the Gudgenby valley in 1990.

Baw Baw National Park

Grazing ceased in the early 1980s as a result of a recommendation made by the Land Conservation Council (LCC) in 1977.

Mount Buffalo National Park

Grazing ceased in the early 1980s as a result of a recommendation made by the LCC in 1977.

Snowy River National Park

Grazing ceased in the Snowy River National Park following a recommendation made by the LCC in 1987.

Avon Wilderness Park

Grazing ceased in 1991 as a result of a recommendation made by the LCC in 1979.

Alpine National Park

Grazing was excluded from some of the highest peaks and ridges, including part of Mt Bogong in 1955 and Mt Feathertop in 1958, well before the park was declared, for environment protection purposes. In 1989 and 1991 grazing ceased at Wonnangatta Station, (and the Howitt Plains), due to its purchase by the Victorian Government, and in other parts of the park as a result of LCC recommendations made in 1979 and 1983. These areas were the northern Snowy Range, Snowy Plains, the Bluff, Wabonga Plateau, northern Bogong High Plains and remaining upper part of Mt Bogong. Grazing ceased east of the Snowy River in the Tingaringy National Park, now part of the Alpine National Park, in late 1988 following a recommendation made by the LCC in 1987.

Cattle were also temporarily excluded from some areas to assist their recovery from the 1998 and 2003 fires. Remaining grazing licences expired in 2005 and were not renewed as a result of a decision by the Victorian Government following an inquiry conducted by the Alpine Grazing Taskforce.

Grazing recommenced in some parts of the park in January 2011 as part of a fuel reduction trial. The cattle were withdrawn in early April 2011. The Victorian Government proposes to recommence the fuel reduction trial, including the grazing of 400 cattle, in December 2012.

3. SCIENTISTS

Australian Academy of Science (1957)

'That the aim to be achieved as soon as possible is the complete exclusion of all grazing animals from these important catchments at heights above 4,500 feet, and the effective policing of that exclusion.'

> Australian Academy of Science 1957 A report on the condition of the high mountain catchments of New South Wales and Victoria, Canberra, 62pp, p. 28.
>
> Note: 4,500 feet equals about 1,370 metres. All alpine and most sub-alpine environments are above that height.

Australian Academy of Science (2004)

'The issues, in terms of ecology and economy, have not changed (since the Academy's 1957 report) ... '

'Over five decades of research has shown that grazing and nature conservation in alpine areas are essentially incompatible land uses. The continuation of grazing within any of the Victorian alpine and sub-alpine national parks is at variance with established concepts and values of nature conservation.'

'Current and continued grazing by cattle in the alpine vegetation, especially where burnt, is incompatible with the maintenance of nature conservation values and ecosystem services.'

> Australian Academy of Science 2004 Submission to the Alpine Grazing Taskforce, Victoria, June 2004, Canberra, pages 1, 4.

Report to Parks Victoria on the adequacy of scientific research of grazing studies in the Victorian High Country by RH Groves, Senior Principal Research Scientist, CSIRO Plant Industry (1998)

'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 1998 Grazing in the Victorian High Country – An Assessment of the scientific adequacy of grazing studies in the Victorian High Country 1945-1998, with some recommendations for future research – A Report to Parks Victoria, April 1998.

Professor JB Kirkpatrick (1994)

'The activity (stock grazing in the alpine and sub-alpine zones) is therefore completely incompatible with the maintenance of the natural alpine and subalpine biological diversity that supports World Heritage listing under criteria (ii) and (iv).' (page 42)

'There seems to be a strong case on the grounds of all four natural criteria for the listing of most of the MOU area under the World Heritage Convention. However, the area has a cultural legacy of disturbance of its natural integrity and some unacceptable (in terms of World Heritage) activities continue.

The impression has been gained by many people involved in the World Heritage listing process that the Australian Alps have major natural integrity problems. Thus, to be successful, a nomination would need to emphasise the manner in which World Heritage listing would lead to the rectification of continuing threats to natural integrity, and result in the amelioration of manifestations of past disturbances.

I suggest that the following commitments would be an appropriate minimum:

1. A rapid phase out of stock grazing in the area; ... ' (pages 64-65)

> Kirkpatrick, JB 1994 The International Significance of the Natural Values of the AustralianAlps, Australian Alps Liaison Committee, May 1994, pages 42, 64, 65.

Professor Jared Diamond, international best-selling science author (2005)

`There is so little alpine habitat in Australia that it is inexcusable to want to devote even one square inch of it to cattle grazing.'

> Jared Diamond, quoted in 'A look into grazing', The Canberra Times 20 June 2005 page 4.

Sir Gustav Nossal and Dr David Ashton (2005)

'As scientists, we believe the recent decision to exclude cattle from the Alpine National Park is based on sound science ... The Victorian Alpine National park deserves the highest standards of protection – like Kosciuszko, which had cattle grazing stopped by the New South Wales government in 1972 ... when we hear scientists say that cattle and the Alpine National Park don't go together, we can be confident that this is based on sound work undertaken over many years by generations of skilled and dedicated people. Stopping grazing is not the only important conservation measure ... '

Sir Gustav Nossal (Australian of the Year 2000 and then chief scientist at the Department of Sustainability and Environment) and Dr David Ashton (eminent plant ecologist), 'Cattle were killing our heritage', Herald Sun 5 July 2005, page 20.

Dr Alec Costin (2005)

'Grazing in the Victorian Alps has always been the sticking point for World Heritage listing. The damage it causes to soils, alpine herbfields, mossbeds and water quality is not compatible with national park values.'

Dr Alec Costin, eminent alpine ecologist and former CSIRO botanist, 'Heritage listing for Australian Alps sought', The Canberra Times, 4 July 2005, page 4.

The Carruthers Group of Alpine Ecologists and Scientists (2005)

'The Carruthers Group of alpine ecologists and scientists has for many years given support to the removal of domestic stock grazing from the Australian Alps National Parks ... The Group applauds the Victorian Government for making the decision not to renew grazing leases in the Victorian Alpine National Park ... It (the end of grazing) will also provide an opportunity and stimulus to pursue appropriate national and international natural heritage recognition and listing for the Australian Alps Parks, which to date has not been possible while grazing continued within them.'

The Carruthers Group of Alpine Ecologists and Scientists 2005 'A Statement on the Proposal to Seek Cultural Heritage Listing for the Victorian Alpine National Park' Dr Alec Costin, Prof Frank Fenner, Dane Wimbush, Roger Good, Prof Ralph Slatyer, Prof Jamie Kirkpatrick, Prof Geoff Hope, Dr Geoff Mosley, Graeme Worboys, Dr Jennie Whinam, Andy Spate, Dr Catherine Pickering, Dr John Harris, Prof Ralph Buckley.

Letter signed by 125 scientists to the Victorian Minister for Environment and Climate Change (2011)

'As concerned scientists, we write regarding the recently announced trial of strategic cattle grazing as a tool to reduce bushfire risk in Victoria's high country, including the Alpine National Park. We strongly believe that the ban on livestock grazing in alpine parks should be maintained ... The Alpine National Park requires sensitive management to maintain its environmental and National Heritage values and the negative impact of cattle on Australian native ecosystems is well documented. The reintroduction of cattle into this area is not consistent with the objectives of managing National Heritage areas ... '

Letter dated 27 January 2011 to the Hon Ryan Smith MP, Minister for Environment and Climate Change, and signed by 125 scientists.

4. PUBLIC LAND-USE PLANNING AGENCIES AND GRAZING INVESTIGATIONS

Land Conservation Council, Victoria (1979)

'Council recognises the very high conservation values of the alpine and sub-alpine grasslands and herbfields and believes that the long-term aim should be to remove grazing from these areas.'

> Land Conservation Council 1979 Final Recommendations – Alpine Area, page 73, Melbourne, June 1979.

Land Conservation Council, Victoria (1983)

'In some areas where grazing is a permitted use, a licence-holder may voluntarily decide not to renew his grazing licence. Where this occurs in areas of high conservation and recreation significance such as those high-altitude areas containing alpine and sub-alpine grasslands and herbfields, Council believes a new grazing licence should not be issued.'

> Land Conservation Council, Victoria 1983 Final recommendations – Alpine Area Special Investigation, page 83, Melbourne November 1983

Land Conservation Council, Victoria (1991)

'Council does not consider the grazing of domestic stock to be compatible with the land use objectives of wilderness areas. Council has resolved to recommend that grazing should be phased out of the wilderness areas within ten years.'

> Land Conservation Council, Victoria, 1991 Wilderness Special Investigation Final Recommendations, November 1991, 196pp, p. 35.
>
> Note: Seven of the twenty wilderness areas recommended by the LCC are within the Alpine National Park and two within the Snowy River National Park. The then Victorian Government accepted these recommendations and these areas are now gazetted wilderness zones. Three of the proposed trial areas are directly adjacent to wilderness zones.

Alpine Grazing Taskforce (2005)

Selected findings:

'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.
10. The Taskforce concludes that cattle grazing does not make an effective contribution to fuel reduction and wildfire behaviour in the Alpine National Park.
22. Cattle in the high country appeal to some visitors, but for many visitors their experience of the Alpine National Park is spoilt by the presence of cattle and their impacts. The experience is particularly negative for those expecting a pristine natural environment or seeking a wilderness experience.
23. The presence of free ranging cattle in areas used by family and other groups for camping and walking, and the sharing of drinking water sources, is a health and safety issue.
26. Despite grazing being specifically provided for in the National Parks Act, the Taskforce finds that cattle grazing in the Alpine National Park is inconsistent with the primary objects of the Act relating to national parks and wilderness areas.
27. Cattle grazing is not compatible with the national and international standards for a national park.
29. Grazing compromises the chances of the Australian Alps national parks being nominated for the World Heritage List based on their natural values.
30. Continuing grazing over all currently licensed areas (Option G1) offers both positive and negative economic and social outcomes, but would continue environmental impacts and degradation associated with grazing across some of the most significant and sensitive parts of Victoria.
31. Environmental outcomes and national park standards are clearly maximised if grazing were to cease across the park (Option G3). However, this would involve some economic and social costs, especially to current licensees.'

> Alpine Grazing Taskforce 2005 Report of the investigation into the future of cattle grazing in the Alpine National Park, Department of Sustainability and Environment, Melbourne, May 2005, pp 5-7.

5. HERITAGE ORGANISATIONS

Australian Heritage Council (2004)

'The continued presence of grazing and associated impacts such as use of low-intensity fire, has a severe impact on the natural heritage of the Australian Alps. '

> Australian Heritage Council 2004 Submission to the Alpine Grazing Taskforce, 31 May 2004

Australian Heritage Council (2005)

'Cattle and feral horse grazing represents a major threat to natural heritage values (of the Alpine National Park). Alpine soils are particularly fragile and easily disturbed by hard-hoofed animals, and injured ecosystems take many decades to regenerate in harsh alpine environments. The pre-European extent of alpine bog and fen is estimated at approximately 2000ha in Victoria. Since then at least half of these communities have been lost due to grazing impacts .....The Victorian Government recently chose to cease grazing in the Park and this will have a positive effect on natural heritage values. '

> Australian Heritage Council 2005 Assessment Report for the Alpine National Park, 1 August 2005, 29pp, page 22. Australian Heritage Database, Canberra.

Heritage Division, Department of the Environment and Heritage (2004)

'The grazing of cattle in the Alpine National Park falls significantly short of constituting world's best practice for national park and wilderness management and is considered to be a significantly inferior management regime compared to that in place in other reserves in the Australian Alps such as Namadgi and Kosciuszko National Parks.'

'Grazing in the Alpine National Park is highly inconsistent with the protection and proper management of the natural heritage values of the park and if continued into the future will result in the further deterioration of those values, particularly in relation to the alpine and sub-alpine areas of the park. As such, it is recommended that the Victorian Government does not continue the practice and that it implements a program to remediate the impacts of grazing activity on the alpine and sub-alpine environment.'

'The prospects of achieving a listing of the Australian Alps on either the National Heritage List or the World Heritage List, that relied partly or entirely on ecological and alpine and sub-alpine plant community values, would be very significantly enhanced if the necessary management actions were taken by the Victorian Government to ensure that cattle grazing no longer occurred within the Alpine National Park and that appropriate rehabilitation and restoration programs were implemented or being actively pursued.'

> Department of the Environment and Heritage 2004 Submission by the Heritage Division of the Department of the Environment and Heritage to the Alpine Grazing Taskforce, Canberra, 18 June 2004

6. BROADER COMMUNITY

Support for ban on cattle grazing in the Alpine National Park, advertisement in The Age (2005)

'The Victorian Government has made the right decision to cease cattle grazing in Victoria's Alpine National Park and to work with the ACT and NSW governments for World Heritage listing of the Australian Alps. The decision is backed by over 50 years of rigorous scientific

study, which comprehensively proves the damaging effects of alpine grazing on soils, plants, animals and water catchments ...'

'This decision is long overdue, and the opportunity it presents must not be missed. It opens the door to pursuing appropriate national and international heritage recognition and listing for the Australian Alps – not possible while grazing continued in Victoria – and foreshadows Victoria's first natural World Heritage site .... We urge the Commonwealth Government to support the move for World Heritage listing of the Australian alpine national parks.

> 'Support for ban on cattle grazing in the Alpine National Park,' advertisement in The Age 9 July 2005, page 12, signed by 48 individuals and organisations, including Ron Barassi AM, John Wood (actor), Rob Gell, Tim Macartney-Snape (mountaineer), Ian Kiernan AO (Chair, Clean-up Australia), Professor Sir Gustav Nossal, Dr John Stocker AO, Dr Malcolm Calder, (retired Professor of Botany, Melbourne University), Dr Jane Gilmour OAM (Exec Director, Earthwatch Institute).

Victorian National Parks Association (1974)

'We recommend ... that cattle grazing be phased out of the high country in the long term.'

> Johnson, D 1974 The Alps at the Crossroads, VNPA, Melbourne, December 1974, 208 pp, page 19.

Australian Conservation Foundation (1969)

'The process of grazing withdrawal, already complete in some areas, should be continued until grazing has been removed throughout the high country.'

> Australian Conservation 1969 The High Country, Viewpoint series No. 4, September 1969, Melbourne, 11 pp, page 11. (Introduction signed by Garfield Barwick, President of ACF).

Victorian National Parks Association, Australian Conservation Foundation, WWF-Australia, National Trust, The Wilderness Society, Birds Australia, Bird Observation & Conservation Australia (BOCA), Friends of the Earth, National Parks Australia Council, Humane Society International, Invasive Species Council, Environment Victoria, National Parks Association of NSW (2011)

'Sixty years of science shows cattle damage soils, trample moss beds and water courses, threaten rare native flora and fauna, spread weeds and reduce water quality in streams and rivers fed by alpine headwaters. Since grazing was removed in 2005 there has been a marked recovery of those areas ...

We believe reintroduction of cattle grazing into the Alpine National Park will have a significant **negative effect on the natural heritage values** of the national park ...

We call for an end to the grazing by domestic stock in the Alpine National Park ...'

Environment groups joint statement, 8 February 2011 Stop alpine grazing – it's a park not a paddock!

The Age Editorial (13 June 2005)

'Allowing grazing in the Alpine National Park, however, is unsustainable on both environmental and economic grounds.'

The Age 'A bull at the gate in support of alpine grazing' Editorial, 13 June 2005, page 20.

The Age Editorial (14 January 2011)

'Regrettably, the new government's first moves include some of its most regressive policies: restoration of cattle grazing in the Alpine National Park and the first full duck-hunting season in years. The Age has long objected to both practices because of the environmental harm ....'

'These delicate catchments, which feed the once-pristine headwaters of several major rivers through the seasons, and their unique flora and fauna have noticeably recovered since 2005 ... the issue of grazing should not have been revived once licences were cancelled and graziers compensated.'

The Age 'State takes two steps back on conservation' Editorial 14 January 2011, page 10.

7. GRAZIERS

Sam Hemmings, grazier (2005)

End the free ride

'Mr Bracks – you have my support to pull the cattle out of the Alpine National Park. It's for nature conservation, not primary production. I run my cattle on my own property, pay rates, improve the pastures, feed out hay in winter and check them daily for health problems or accidents. I've also got a horse and an oilskin coat but it doesn't give me the right to claim virtually free agistment on public land. The heritage argument doesn't wash. It's time to make these few graziers pay the true cost of their animal husbandry – back on their own farms.'

Letter from Sam Hemmings, via Bairnsdale, to the Weekly Times 16 March 2005 page 14.

Peter Walker (beef producer) (2005)

Cattlemen's free ride ends

'The free ride of mountain cattlemen grazing national parks is over, and not before time. Cattlemen cite traditions and heritage in arguing their case, but fail to mention the real benefit; virtually free grazing for up to six months of the year. If the leases were based on realistic, commercial values of agistment, cattlemen would have left the parks years ago without generous taxpayer compensation.'

Letter from Peter Walker (beef producer), Sale, to the Herald Sun, 9 June 2005, page 19.

Bill Bray, President, Cattle Council of Australia, former Victorian Farmers Federation pastoral group president (2005)

...told *The Weekly Times* that he supported the Government's decision not to renew (alpine) grazing leases ...'I just look at other environmental practices across Victoria and the way other producers are managing their environment, and that's where I believe the focus should be.'

Bill Bray, President, Cattle Council of Australia, former Victorian Farmers Federation pastoral group president, in 'Bray backs the ban', The Weekly Times, 1 June 2005, page 5.

Tom Guthrie, grazier (2005)

'It would be fair to say there is a very solid section of the farming community who opposes (alpine) grazing ... it was a commonly held view that mountain cattlemen were getting exclusive right to cheap agistment that was not available to other farmers.'

Tom Guthrie, grazier, Mafeking, in 'Bray backs the ban', The Weekly Times, 1 June 2005, p 5.

High country decision the right way to go

`.... stand at one of the more degraded bogs in Pretty Valley on the Bogong High Plains and you don't need to be a scientist to see what cattle can do to a sphagnum bog. Farmers all over the state have accepted their responsibility on environmental issues such as water quality, soil erosion and salinity and have embraced government schemes such as Landcare, Land for Wildlife, etc. They willingly fence off creeks, plant trees and rehabilitate the land. Unfortunately, the cattle on the high plains have been free to do the opposite as they trample alpine bogs and contaminate water streams.'

Letter from Tom Guthrie, grazier, to Stock and Land, 16 June 2005, page 8.

Aust. J. Bot., 1994, **42**, 607-639

Long-term Vegetation Change in Relation to Cattle Grazing in Subalpine Grassland and Heathland on the Bogong High Plains: An Analysis of Vegetation Records from 1945 to 1994

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Abstract

Changes in vegetation composition and structure are described for grassland and heathland communities on the Bogong High Plains, in the Victorian Alpine National Park. The data are based on long-term records collected from permanent reference plots over the period 1945 to 1994 from plots established in 1945, 1946 and 1979. In the Pretty Valley grassland plots, established in 1946, cattle grazing has prevented the large-scale regeneration of a number of tall, palatable forbs and short, palatable shrubs, while in the absence of grazing, the cover of these life forms increased substantially. The amount of bare ground and loose litter was significantly greater on the grazed compared with the ungrazed plot. Between 1979 and 1994, there was little or no identifiable trend in the cover of vegetation or bare ground at either the Pretty Valley grazed site, or two additional grazed grassland sites established nearby in 1979. The current condition of grazed grassland on the Bogong High Plains is interpreted as stable, yet degraded. Improvement in condition will occur in the absence of grazing. In the Rocky Valley open heathland plots, established in 1945, increases in shrub cover over the study period were due to growth of shrubs following the 1939 bushfires that burnt much of the Bogong High Plains. From 1945–1979 shorter-lived shrubs increased in cover; since 1979, these shrubs have senesced, and are being replaced mainly by grasses. On the grazed plot longer lived, taller shrubs have continued to increase in cover and are not senescing. Between 1979 and 1989, total shrub cover declined on the ungrazed plot, but increased on the grazed plot. There was no evidence that grazing has reduced shrub cover, and therefore potential fire risk, in open heathland. These findings have significant management implications for the Alpine National Park and are consistent with those from other regions in the Australian alps.

Introduction

Long term studies of the ecology of native plant communities in Australia have been relatively uncommon, but they are a feature of the scientific studies in the Australian alps. Permanent plots established in the 1940s constitute some of the oldest reference areas in the country (Costin 1954; Carr and Turner 1959*a*, 1959*b*). In addition, these studies are some of the earliest attempts to assess land degradation scientifically. Thus, along with long-term studies of vegetation at sites such as Koonamore, in semi-arid South Australia (Wood 1936; Noble and Crisp 1980), studies initiated in the alps half a century ago have provided a firm basis on which to assess ecological processes in native plant communities, and the impacts of human activities, especially the impacts of domestic stock, on those processes.

With increased public interest in the alps, and land use questions in general throughout the 1960s and 1970s, issues and hypotheses raised by these early studies formed the basis of the experimental and monitoring studies in the alpine region during the 1980s. With the declaration of an extensive Alpine National Park in Victoria in 1980, and the controversy surrounding the decision to allow grazing by cattle to continue within the Park, it is appropriate that the most recent data from these long-term studies be presented. The aim of this paper is to assess the trends in, and impacts of cattle grazing on, both vegetation

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composition and ground cover in two major subalpine plant communities—grassland and open heathland—within the permanent plots established in the 1940s on the Bogong High Plains, the most extensive of the alpine and subalpine areas in Victoria.

Historical and Scientific Background

The alpine grazing issue must be seen in the context of the history of science and land use in the Australian high country. Grazing by domestic livestock commenced in the 1830s in the Kosciusko region in New South Wales, and in the 1850s on the Bogong High Plains (Hancock 1972; Cabena 1980). Along with their stock, graziers also introduced regular burning-off to the alpine vegetation. Scientific investigations of the alpine environment commenced in the 1850s, with visits to the Australian high country by botanists such as von Mueller. Subsequent visits in the 1890s by Helms, von Lendenfeld, Maiden and Wragge represented pioneering studies (Hancock 1972; Good 1992). Such scientific activity in the Australian alps was primarily concerned with biological and geographical inventory, rather than the effects of land use, although concern about the effects of burning-off was raised by Helms (1896). By the 1860s, Hancock (1972) describes graziers as 'looking to the high country to save them from disaster in years of drought', and stock numbers increased progressively from the latter decades of the 19th century up to the 1930s. In the early 1900s, large numbers of stock were brought to the high country for drought relief. For example, in the summer of the severe 1902 and 1903 drought, an estimated 40 000 sheep, in addition to large mobs of cattle and horses, were on the Bogong High Plains. Many of the sheep came from as far away as the Riverina. This practice was repeated during other severe droughts, when stocking pressure was intense.

Such over-grazing, associated with regular burning-off and the occasional severe bushfire, caused extensive damage to parts of the alpine environment. In many places, the soils and vegetation were severely affected by selective grazing and trampling of fragile soils and plant communities. By the 1940s the condition of the Bogong High Plains and other high country catchments was cause for concern following degradation in previous decades and the disastrous bushfires of 1939, which burnt much of the high country in south-eastern Australia. Miss Maisie Fawcett (later Mrs Carr), an ecologist, was appointed by the newly formed Soil Conservation Board and Melbourne University in 1941 to assess the effects of cattle grazing on the soils and vegetation of the Bogong High Plains. In 1946, concern about soil erosion and the effects of siltation on the hydro-electricity scheme led government departments and graziers to modify the land management practices on the Bogong High Plains. Sheep, horses and burning-off were banned, the length of the grazing season limited and numbers held at the then current levels of some 8000 adult cattle plus calves. It was within this context that experimental plots were established on the Bogong high Plains in the mid-1940s by Miss Fawcett and Professor John Turner.

During the 1950s and 1960s, grazing was progressively withdrawn from the highest ridges and peaks, which were invariably the most degraded. Areas were also withdrawn from grazing to allow development of a hydro-electric scheme and ski resorts. Likewise, in NSW, grazing was removed progressively between 1946 and 1968 from what is now the Kosciusko National Park. Work by Costin (1954; Costin *et al.* 1959, 1960) and the campaign by the Australian Academy of Science (1957) was instrumental in achieving this.

Since the 1950s, on the Bogong High Plains, there has been an overall decline of about 60% in stock numbers and the area grazed. Over this period, the area occupied by shrubs has increased, especially in the montane forests and snowgum woodland (Carr and Turner 1959*a*; Williams and Ashton 1987*b*), further reducing the areas of grassland available for grazing. The reference plots have been maintained and regularly assessed. Investigations of ecological processes that were commenced by Carr and Turner (1959*a*, 1959*b*) subsequently formed the basis of experimental studies (Williams and Ashton 1987*b*) and studies of cattle behaviour (van Rees and Hutson 1983). The declaration of the Alpine National Park in 1980

was accompanied by an expansion of ecological studies to include the major ecosystems and geographical units on the Bogong High Plains and surrounding summits. The area grazed and the number of cattle were reduced further in 1991 so that, at present, a total of approximately 3100 head graze on the licence areas between December and April each year.

Methods

Site Selection

In 1944, a site of approximately 7 ha, which was part of a small first-order catchment containing representative areas of most subalpine plant communities on the Bogong High Plains, was selected by Maisie Fawcett and fenced. Within the exclosure, one plot, approximately 500 m^2 in area, was set up in each of three vegetation types: open heathland, closed heathland and a sedge and herbfield snow patch community. Similar plots were established outside the exclosure on similar slopes and aspects, thus providing one grazed and one ungrazed plot within each community (Turner and Fawcett 1948, 1951; Carr and Turner 1959*a*, 1959*b*). These became known as the 'Rocky Valley plots' (Fig. 1) and were first sampled in the summer of 1945. In 1946, another site of about 0.2 ha was selected in exposed grassland not adequately represented within the Rocky Valley exclosure. This was an important grassland to monitor because of its extensive distribution on the Bogong High Plains and the occurrence, within this community, of numerous plant species thought to be favoured by cattle. Two adjacent plots were established, 5 m apart, one fenced and one unfenced, and each approximately 400 m^2 (Figs 2 and 3). These became known as the 'Pretty Valley plots' and were sampled initially in January 1947 (Fig. 1).

In 1979, two additional grassland sites were selected in a region about 1 km from the Pretty Valley site, in the vicinity of Cope Hut and Cope Creek (Fig. 1). The Cope Hut and Cope Creek sites have been subject to grazing by cattle, and will continue to be so for the foreseeable future. The sites were originally selected with the aim of monitoring vegetation change at a number of grazed grassland sites within the fledgling Alpine National Park (van Rees *et al.* 1984). In this study, these reference sites serve as replicates of the grazed treatment at the Pretty Valley site for the period 1979–1994. A summary of the general geographic information pertaining to each site is given in Table 1.

Vegetation Sampling

Botanical composition of the vegetation at all sites was determined using point quadrats (Levy and Madden 1933; Kent and Coker 1992). Pins were 4 mm in diameter and at every point each species and the number of contacts each species made with the pin were recorded. From 1945–1951 at the Rocky Valley and Pretty Valley plots, the vegetation was sampled annually and then once or twice per decade until 1994. In 1989, structural data from the shrubs—height, canopy diameter and stem diameter—were collected from both within and adjacent to the reference plots. In 1990, estimates of the age of individual shrubs at the Rocky Valley Plots were made from ring counts of the dominant species, *Phebalium squamulosum* and *Prostanthera cuneata*. Approximately 30 shrubs of each species were collected from areas immediately adjacent to both the grazed and ungrazed plots at Rocky Valley.

Point quadrats were sampled initially (from 1945–1950) using a steel frame containing ten pins. The frame was positioned randomly within each plot, and in this way data were collected from 1000 and, when time permitted, 2000 point quadrats. Subsequent analyses by Goodall (1952) demonstrated that a uniform distribution of single point quadrats was a more efficient method of collecting cover data than was the random placement of groups of ten pins. Furthermore, a more accurate estimate of trends in vegetation cover could be obtained by sampling the same set of points along permanent transects (Goodall 1952). Thus, permanently marked transects located approximately 3 feet (0.9 m) apart, with points within transects also 0.9 m apart, were established at each experimental plot in 1951. Since then, point quadrat data have been collected from point quadrats distributed uniformly along these permanent transects. Depending on the length of each transect, the number of points per transect ranged from 18–30 at the Pretty Valley plots and from 19–38 at the Rocky Valley plots.

In this paper, we present the vegetation and soil cover data from the Pretty Valley grassland plots for the years 1947, 1951, 1957, 1958, 1966, 1979, 1982, 1989 and 1994, and from the Rocky Valley open heathland plots for the years 1945, 1947, 1951, 1958, 1960, 1966, 1979 and 1989. At the Cope Hut and Cope Creek grassland sites, cover data have been collected annually since 1979, using 10 m long permanent transects and sampling 50 point quadrats per transect. Details of the locations of these transects are given by van Rees *et al.* (1984); analyses of these data from 1979–1994 are included in this paper.

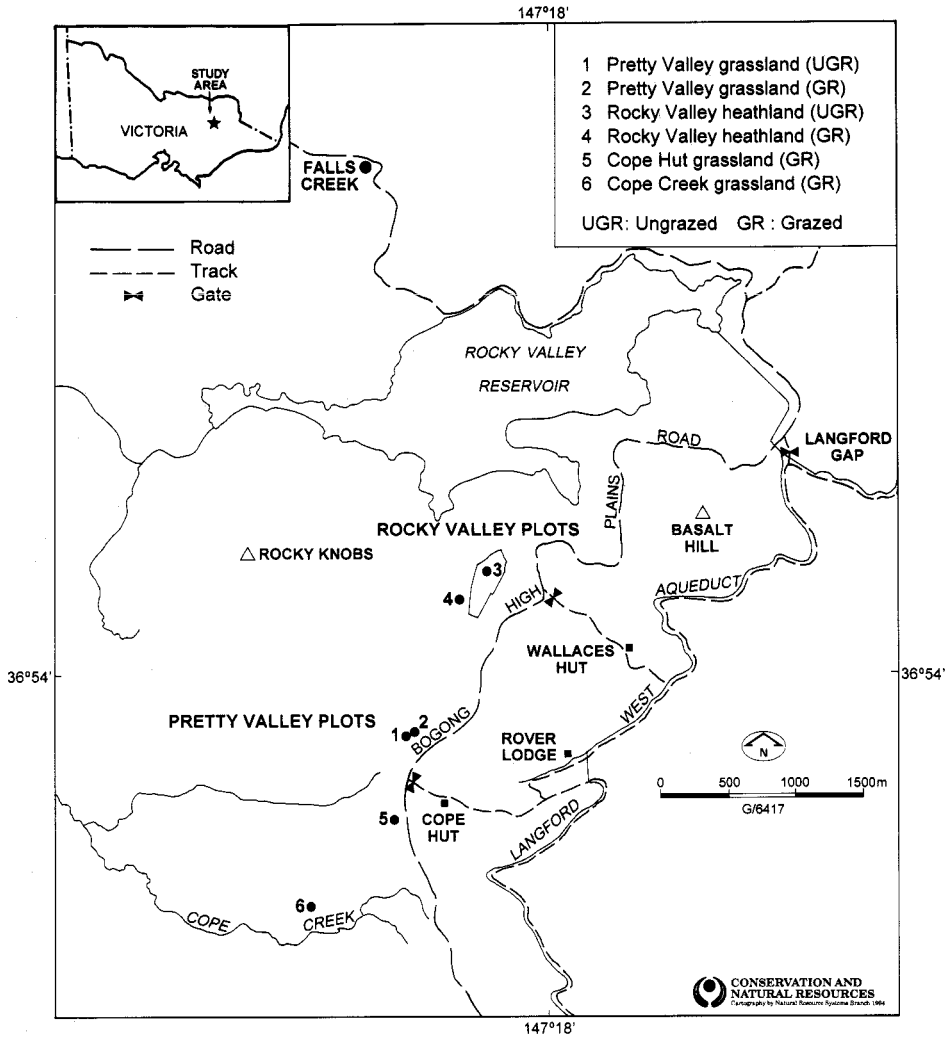

Fig. 1. Location map of plots.

Table 1. Summary of geographical information for reference plots on the Bogong High Plains

G: grassland, OH: open heathland; UGR: ungrazed, GR: grazed; number of transects in 1989 for the Rocky Valley plots and 1994 for all other sites. See Fig. 1 for site locations

Site	Pretty Valley		Cope Creek	Cope Hut	Rocky Valley	
Community	G	G	G	G	OH	OH
Grazing status	UGR	GR	GR	GR	UGR	GR
No. of transects	44.00	44.00	12.00	10.00	26.00	31.00
Altitude (m a.s.l.)	1700.00	1700.00	1690.00	1690.00	1680.00	1680.00
Approximate area (m^2)	900.00	900.00	1500.00	1500.00	450.00	570.00
Aspect	S	S	S	S	NW	NW
Slope (%)	< 1	< 1	< 1	< 1	5.00	5.00

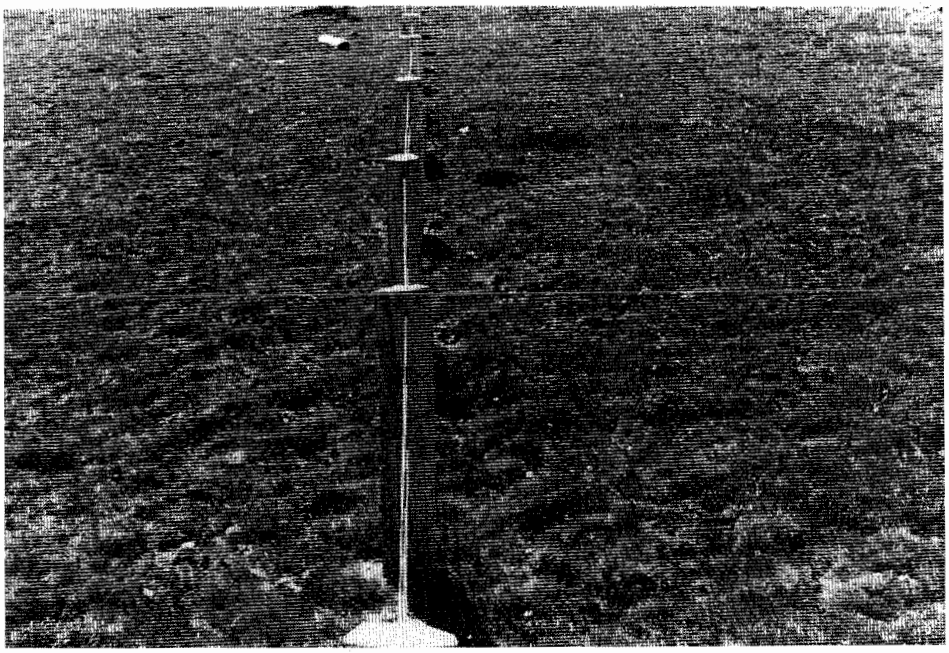

Fig. 2. The Pretty Valley plots in 1948. The grazed plot is on the left.

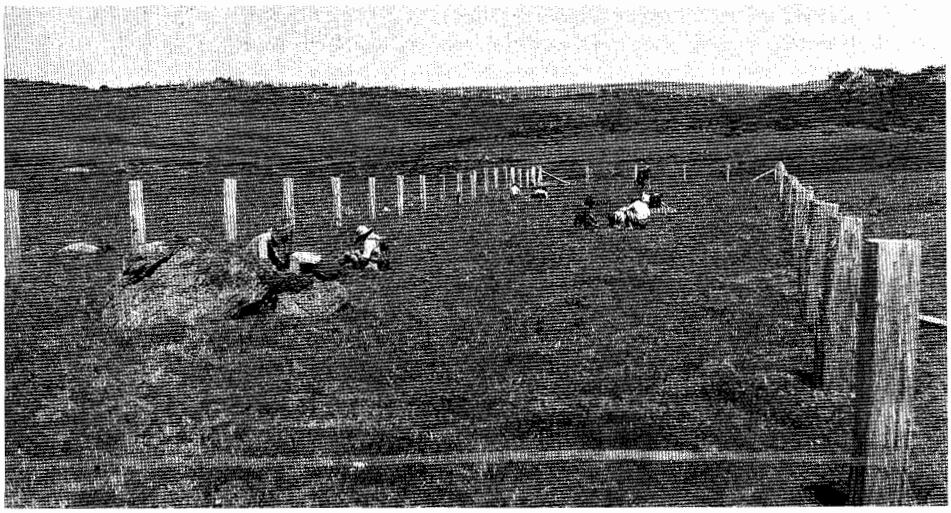

Fig. 3. The Pretty Valley plots in c. 1950. (*a*) View of the ungrazed plot.

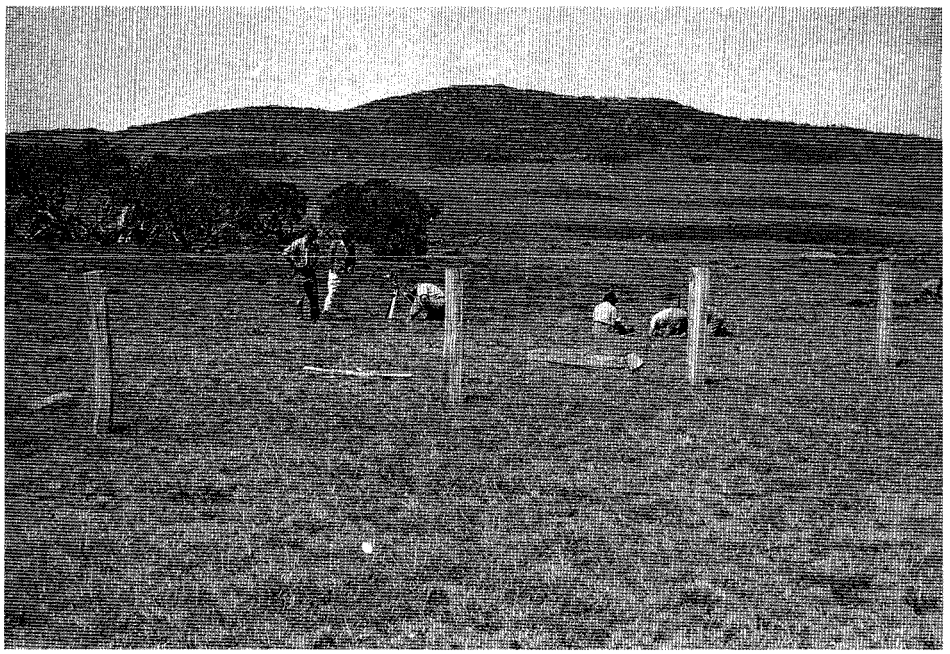

Fig. 3. cont
(*b*) Looking from the ungrazed plot to the grazed plot.

Data Manipulation

The percentage overlapping cover (% OC) of each species or cover class (e.g. shrub, grass, forb, litter, bare ground) was calculated by transect as follows:

% OC of species A = (No. points with species A/Total No. Points in transect) x 100.

In 1979, a more precise method of recording cover at the soil surface was developed because criteria used prior to this were considered too general. The new scheme was first used in 1979 at the Cope Creek and Cope Hut sites and from 1982 at the Pretty Valley and Rocky Valley plots.

The new criteria distinguished whether cover at a point was bare ground or litter. Where it was litter, this was divided into fixed (dead plant material still attached to the plant) and loose (easily dispersed by wind). The loose litter layer was further divided into thick (> 5 mm) and thin (< 5 mm). Finally, any vegetation covering the point was assessed as dense (> ten hits per point), medium (3–9 hits per point) or sparse (< three hits per point). In this way, cover at a point was placed in one of the three following cover classes (CC), the potential for soil erosion increasing from Cover Class 1 (CC1) to Cover Class 3 (CC3):

(*1*) CC1: point covered by fixed litter or thick, loose litter with a dense cover of live vegetation;
(*2*) CC2: point covered by thick, loose litter with a sparse to medium cover, or thin, loose litter with a medium to dense cover, or bare ground with medium to dense cover;
(*3*) CC3: point covered by thin, loose litter with a sparse cover or point consisting of bare ground with sparse or no cover.

Before statistical analyses were undertaken, the percentage overlapping cover data were transformed using the arcsine or angular transformation (Winer 1971; Underwood 1981). Probability plots and the Kolmogorov-Smirnov test (Sokal and Rohlf 1981) indicated that following transformations, the assumption of normality was satisfied in all cases.

Data Analysis

The initial design of this exclusion experiment resulted in two statistical difficulties: (1) the vegetation sampling comprised two methods; and (2) the grazing treatment was not replicated. The former problem resulted from point quadrats being distributed in random groups of ten until 1951 and then uniformly in a fixed grid. This affected tests for changes through time using repeated measures of analysis of variance (Winer 1971; Keppel 1982). The analysis requires the same replicates for each time (Tabachnick and Fidell 1989) and, because transect numbers were not always recorded, only data from the years when points along transects were recorded could be used in the analysis. These years were 1951, 1979, 1982, 1989 and 1994 for the Pretty Valley plots, and 1951, 1979 and 1989 for the Rocky Valley plots.

The original experimental design was pseudoreplicated (Hurlbert 1984), an inherent difficulty accompanying the data set that could not be corrected. Within grassland, it has been offset by using the two additional grassland sites established in 1979 (Cope Hut and Cope Creek), which serve as replicates for the grazing-present treatment between 1979 and 1994. No such data exist for grazed heathland sites that are comparable in site and disturbance history to the Rocky Valley plots, hence an analysis similar to that undertaken for the grasslands could not be done. Restrictions on statistical inferences do not necessarily prevent ecological interpretations; experiments involving unreplicated treatments can yield valuable ecological knowledge, especially where patterns and processes have been well documented (Hurlbert 1984; Collins and Barber 1985; Belsky 1986*a*, 1986*b*, 1992).

Single factor analysis of variance (ANOVA) was used to compare the mean percentage cover of individual species or ground classes between plots (Appendix 1). The effects of plot (grazed vs ungrazed) and time were analysed using both univariate and multivariate repeated measures analysis of variance (URANOVA and MRANOVA; Tabachnick and Fidell 1989). The Geisser-Greenhouse correction (Winer 1971) was used to adjust degrees of freedom prior to calculating F-ratios in URANOVA (Appendix 2). To test significance of main effects and interactions in MRANOVA, Pillai's criterion was used because of its robustness (Olson 1979). As analyses involved multiple dependent variables (e.g. taxa), the Bonferroni multiple comparison procedure was used to guard against type I errors (Keppel 1982; Kirk 1982). Subsequent to URANOVA and MRANOVA, linear and quadratic orthogonal polynomial functions were fitted to the temporal data. Regression analysis was used on the percentage cover versus time data for all major species and ground cover classes (Appendix 3). This tested the null hypothesis, that there was no trend in cover of a particular species or ground cover over time, and determined the proportion of the variation in cover over time explained by the regression line.

Results

Pretty Valley and Cope Grassland Sites

In 1947, when the Pretty Valley plots were first measured, there were few differences between plots in the cover provided by major life forms and species (Figs 2 and 3). Tussock snowgrass (mainly *Poa hiemata*) predominated on both the grazed and ungrazed plot, providing approximately 60% overlapping cover (OC), while forbs and shrubs contributed about 35 and 4% OC respectively. In 1994, however, the plots were quite distinct (Figs 4*a*–*d*), with respect to the cover of forbs and shrubs, and the quality of the ground cover (Figs 5–7; Table 2). Despite increases in the cover of these forbs and shrubs on both plots over the study period, the cover they provided was significantly greater on the ungrazed plot. In addition to differences between the Pretty Valley plots, vegetation structure and composition within the ungrazed plot at Pretty Valley was manifestly different from that of the vegetation at the other two grassland sites (Cope Hut and Cope Creek) for the period 1979–1994.

Changes in Major Life Forms and Species at Pretty Valley, 1947–1994

(*i*) *Graminoids*. The cover of *Poa* fluctuated on both plots between 1947 and 1994 (Fig. 5). The degree of fluctuation in the cover of *Poa*, however, was greater on the ungrazed plot than on the grazed plot, mainly as a consequence of the drop in 1982 and recovery in 1989. This contributed to a difference in trends for the two plots (Appendix 3).

Fig. 4. The Pretty Valley plots. (*a*) The Pretty Valley plots in January 1993; the ungrazed plot is on the left. (*b*) Aerial photograph of the Pretty Valley plots in January 1992; the ungrazed plot is clearly distinguishable from both the grazed plot and surrounding vegetation. (*c*) The ungrazed Pretty Valley plot from inside the exclusion plot in February 1993; the grazed plot can be seen in the upper right hand corner of the picture; some of the taller forbs (*Craspedia*, *Celmisia*) are shown in flower in the foreground. (*d*) The grazed Pretty Valley plot in February 1993; the ungrazed plot can be seen in the upper right hand corner of the picture.

The cover provided by *Carex* spp. (*C. hebes* and *C. breviculmis*) decreased on both plots between 1947 and 1994, although by a greater amount on the ungrazed plot (about 16% compared with 5%; Fig. 5). In 1947, the cover of *Carex* spp. was significantly higher on the ungrazed plot. Between 1947 and 1966, however, the % OC of *Carex* spp. was similar on both plots, despite an overall decrease of approximately 3% on the ungrazed plot, a trend that continued from 1966–1994 (Fig. 5). Consequently, the cover of *Carex* spp. was significantly greater on the grazed plot between 1966 and 1994 (Appendix 1).

(*ii*) *Forbs*. Over the study period, there were major differences between plots in the amount and composition of the forb component (Fig. 6). In 1947, there were some differences between plots in the abundance of common species. The cover of *Celmisia* spp. was initially 3% higher on the ungrazed plot, the cover of *Leptorhynchos squamatus* was 10% higher on the grazed plot, and the cover of *Craspedia* spp. was negligible on both plots. Since 1947, however, the cover of these major forbs has differed considerably between plots. The cover of *Celmisia* increased substantially on the ungrazed plot, from 5% in 1947 to 44% in 1994. By contrast, there was no increase in the cover of *Celmisia* on the grazed plot. Similarly, *Craspedia* increased on the ungrazed plot, from < 1% to 9%, but remained inconspicuous on the grazed plot (Fig. 6). *Podolepis robusta* did not occur on either plot in 1947; in 1994 there were no plants of this species on the grazed plot, but 55 plants were recorded on the ungrazed plot. *Leptorhynchos* increased in cover on both plots,

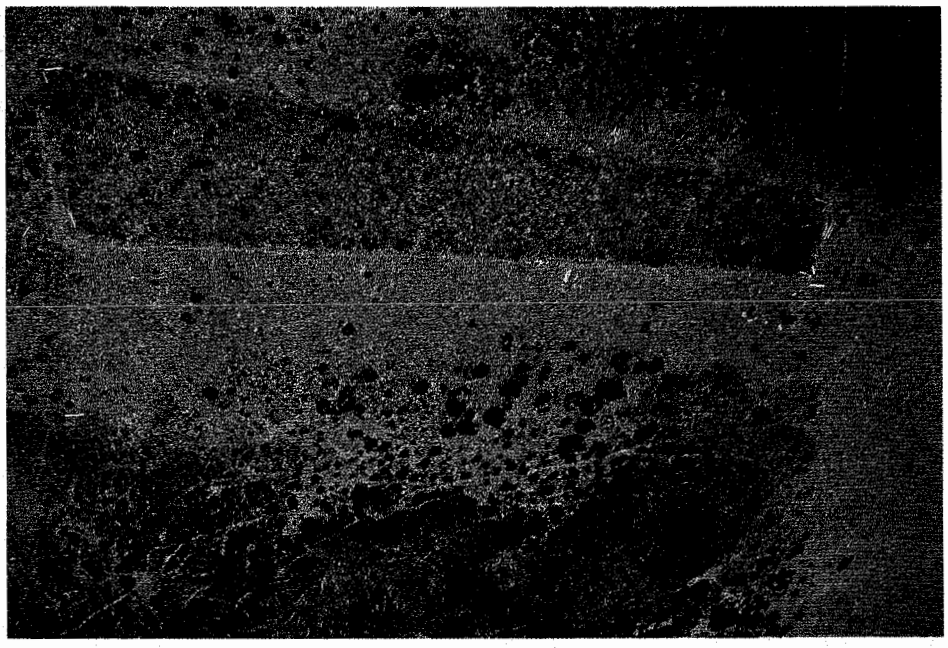

Fig. 4 *b*

Fig. 4 *c*

Fig. 4 *d*

and by 1994 was the only common forb on the grazed plot. Trends in the cover of this species differed between plots, however (Fig. 6). On the ungrazed plot, its cover rose markedly between 1947 and 1958, then fell sharply. By comparison, *Leptorhynchos* on the grazed plot did not increase in cover between 1947 and 1966, then increased substantially in cover, from 24 to 37%. As a consequence, between 1979 and 1994 the cover of *Leptorhynchos* was significantly higher on the grazed plot than on the ungrazed plot (Appendix 1).

(*iii*) *Shrubs*. The % OC of shrubs differed markedly on the two plots for all years after 1951 (Fig. 7, Appendix 1). Cover increased on both plots, but at a greater rate on the ungrazed plot. On the ungrazed plot, shrub cover reached a maximum of 47% in 1982, then decreased to 43% by 1994. On the grazed plot, shrubs increased in cover from 4% in 1947 to 13% in 1994. The most common shrubs on both plots were *Asterolasia trymalioides* and *Grevillea australis*; minor species included *Leucopogon hookeri, Kunzea ericifolia, Pimelea alpina* and *Hovea montana*. *Asterolasia* was by far the most common shrub on the ungrazed plot, increasing steadily in cover to a maximum of 38% in 1982 (Fig. 7). From 1982 to 1994, *Asterolasia* decreased significantly in cover on the ungrazed plot, but continued to provide considerably more cover than any other shrub on this plot. Moreover, in 1994, *Asterolasia* was more evenly distributed on the ungrazed plot, by contrast to its patchy distribution on the grazed plot (Fig. 8). The cover of *Asterolasia* on the grazed plot remained at about 1% over the entire study period. *Grevillea* increased in cover by 4 or 5% on both plots, showing little fluctuation between sampling periods. In 1994, there was no difference in the cover of *Grevillea* between plots (Appendix 1), but there were differences in both the size, vigour and distribution of individual shrubs (Fig. 8).

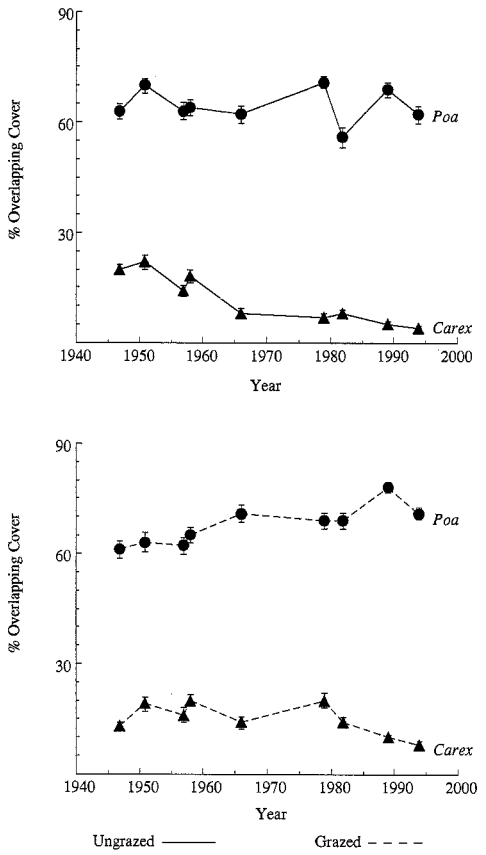

Fig. 5. Changes in percentage overlapping cover of *Poa* and *Carex* (± SE), 1947–1994, at the Pretty Valley grassland plots. Error bars that are within the dimensions of the symbols are not shown.

On the ungrazed plot, shrubs were taller than those on the grazed plot (mean height of 47 cm vs 30 cm). However, there was a greater number of smaller, more vigorously growing *Grevillea* shrubs on the grazed plot than on the ungrazed plot. Thus, the cover of *Grevillea* was very patchy on the ungrazed plot and more evenly distributed on the grazed plot (Fig. 8). Most *Grevillea* shrubs on the two plots (93% and 76% on the grazed and ungrazed plot respectively) contained canopy gaps, indicating senescence. These gaps were mostly occupied by snowgrass and other herbs.

Table 2. Mean percentage cover of each cover class (± SE) on the Pretty Valley grassland plots: 1982, 1989 and 1994

UGR: ungrazed plot, GR: grazed plot. Cover class 1: point covered by fixed litter or thick, loose litter (> 5 mm) with a dense cover of live vegetation (> ten hits per point); cover class 2: point covered by thick, loose litter with a sparse to medium cover (3–10 hits per point), or thin, loose litter (< 5 mm) with a sparse to dense cover, or bare ground with medium to dense cover; cover class 3: point covered by thin, loose litter with a sparse cover or point consisting of bare ground with sparse or no cover

Year	1982		1989		1994	
Cover Class	UGR	GR	UGR	GR	UGR	GR
1	76 ± 2.6	53 ± 2.2	71 ± 2.4	61 ± 2.3	66 ± 2.1	72 ± 1.8
2	21 ± 2.0	31 ± 2.7	24 ± 1.9	20 ± 2.1	31 ± 2.1	17 ± 1.5
3	3 ± 1.1	16 ± 1.3	5 ± 0.8	19 ± 1.5	3 ± 0.7	10 ± 1.1

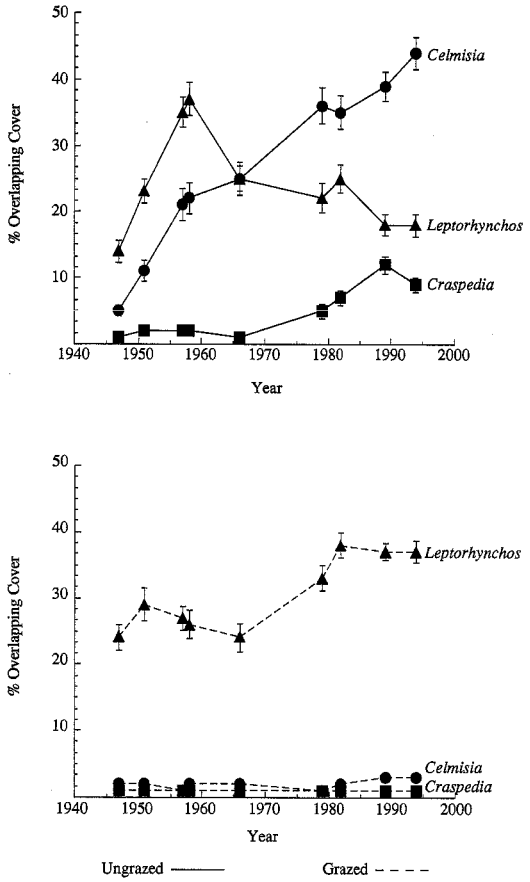

Fig. 6. Changes in percentage overlapping cover of the main forb species (± SE) —*Celmisia, Craspedia* and *Leptorhynchos* —from 1947 to 1994, at the Pretty Valley grassland plots.

Changes in Ground Condition at Pretty Valley, 1947-1994

The quality of ground cover over the study period was higher on the ungrazed plot than on the grazed plot. In 1947, the amount of poor quality cover (bare ground and loose litter, analogous to CC3) was 16% on the grazed plot; from then until 1958 this cover varied between 5 and 17%, depending on season (Fig. 9). On the ungrazed plot, this cover type declined from 10% in 1947 to between 2 and 6% in subsequent years. Between 1982 and 1994 the amount of CC3 (thin, loose litter with sparse or no cover, or bare ground with sparse or no cover) was 10–19% on the grazed plot, compared with 3–5% on the ungrazed plot (Table 2). Trends in ground cover between 1979 and 1994 were therefore similar to those described by Carr and Turner for the period 1947–1958 (Carr and Turner 1959*b*). The amount of high quality cover (CC1, fixed litter or thick, loose litter with a dense cover of live vegetation) fluctuated substantially over time, but was generally 10–15% higher on the ungrazed plot. Only in 1994 was the amount of CC1 higher on the grazed plot. The decline in CC1 on the ungrazed plot since 1982 was concomitant with an increase in CC2, rather than an increase in CC3.

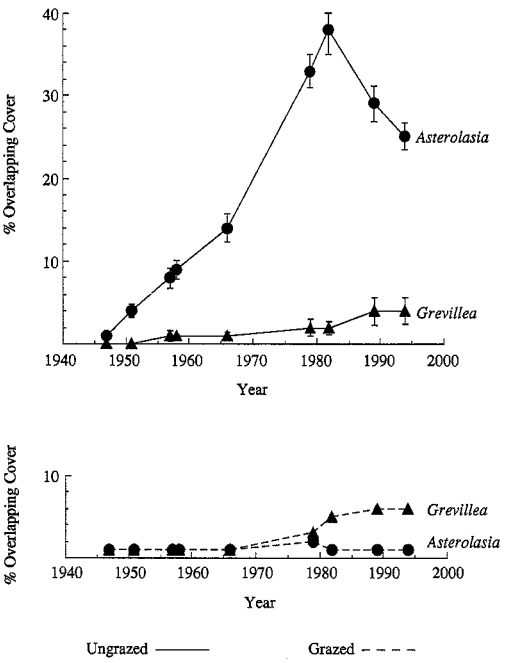

Fig. 7. Changes in percentage overlapping cover of the main shrub species (± SE) —*Asterolasia* and *Grevillea* —from 1947 to 1994, at the Pretty Valley grassland plots.

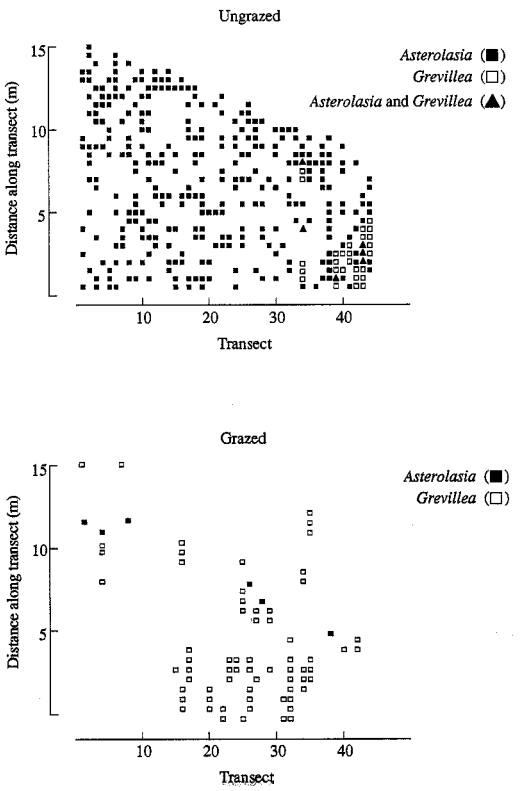

Fig. 8. Distribution of points with *Asterolasia, Grevillea* or points touching both species, at the Pretty Valley grassland plots, 1994.

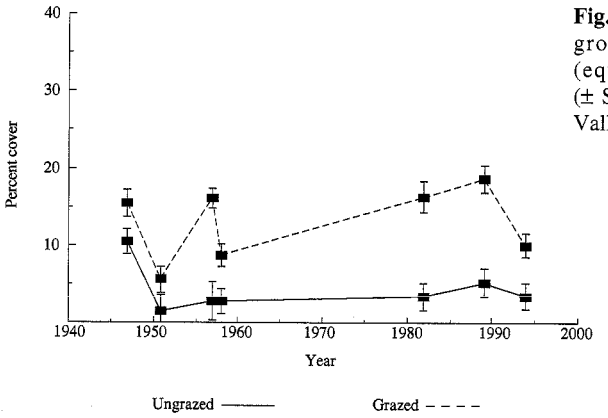

Fig. 9. Percentage cover of bare ground and/or loose litter (equivalent to cover class 3) (± SE), 1947–1994, at the Pretty Valley grassland plots.

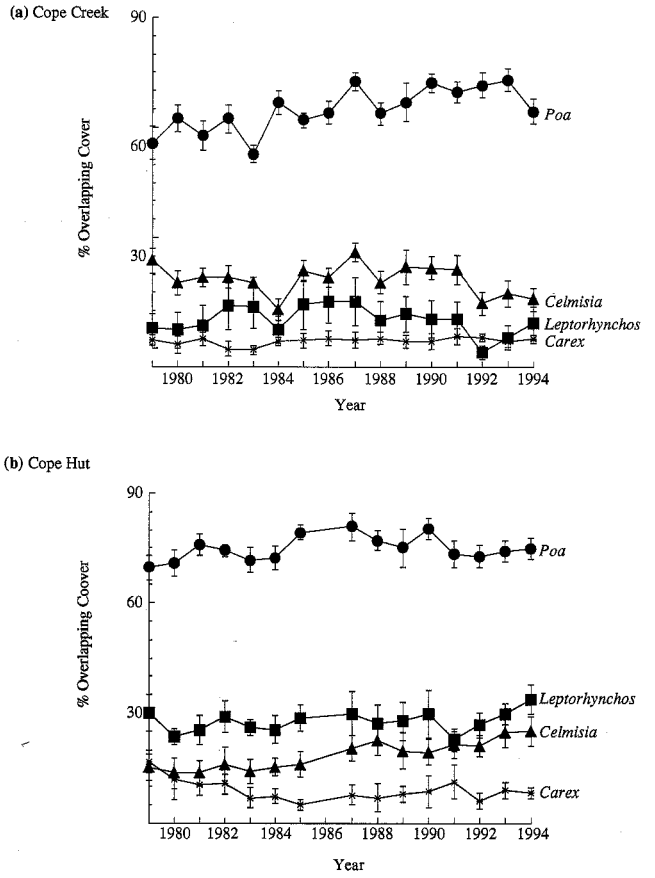

Fig. 10. Changes in percentage overlapping cover of the main herb species (± SE) —*Poa, Carex, Celmisia* and *Leptorhynchos*—from 1979 to 1994, at (*a*) the Cope Creek, and (*b*) Cope Hut transects.

Cope Hut and Cope Creek Grassland Sites, 1979–1994

The changes in cover of major species at the Cope Hut and Cope Creek grassland sites for 1979–1994 are given in Fig. 10. These two Cope sites served as replicates for the grazing treatment, permitting comparisons of cover data between the single ungrazed Pretty Valley plot and the three grazed sites (Pretty Valley plot, Cope Creek, and Cope Hut). The results of the MANOVA and regressions contrasting trends in the major species at these four sites are given in Tables 3 and 4. The data from the three grazed sites illustrate the spatial and temporal variability in cover of the constituent species within grassland. Spatial variability in the cover of *Celmisia* was especially evident, ranging from 3% at the Pretty Valley grazed site, to 25% at Cope Hut (Table 3). Most of the major grassland species at the two Cope sites—*Carex*, *Leptorhynchos*, *Craspedia* and *Asterolasia* —showed little trend in cover between 1979 and 1994, as shown by regression analysis (Table 4). The exceptions were *Poa*, which increased from 61% to 70% at the Cope Creek site, and *Celmisia*, which increased by 10% at Cope Hut. Over the sampling period there was little or no change in cover classes, CC1 and CC3, at the two sites (Tables 3 and 4). This lack of trend at Cope Hut and Cope Creek from 1979 to 1994 was similar to that observed at the grazed Pretty Valley plot from 1947–1994, indicating that all three grazed sites changed little in species composition during the study period. By comparison, on the ungrazed Pretty Valley plot there were substantial changes during the same period. For the years 1979, 1982, 1989 and 1994, the ungrazed plot at Pretty Valley was significantly different from all three grazed sites, both in the abundance of major species such as *Celmisia* and *Craspedia*, and the quality of the ground cover (Table 3).

Rocky Valley Open Heathland Plots

In 1945, the two open heathland plots at Rocky Valley were similar in structure and composition, and typical of this community (Figs 11–13). *Poa* (*P. hiemata*) predominated, with 43% and 53% cover on the grazed and ungrazed plots respectively; shrubs provided 14% and 21% cover respectively, and forb cover was generally less than 10%. In 1989, the cover of *Poa*, forbs and shrubs was similar on the two plots, although there was a considerable difference in species composition and structure between plots. On the ungrazed plot, *Grevillea australis* and *Phebalium squamulosum* predominated (Figs 11*a* and 13); on the grazed plot, *Grevillea* was uncommon, with *Phebalium* and *Prostanthera cuneata*, in association with *Bossiaea foliosa* and *Orites lancifolia* providing most of the cover (Figs 11*b* and 13).

Changes in Major Life Forms and Species, 1945–1989

The cover of *Poa* increased on both heathland plots from approximately 50% in 1947 to 80% in 1989. However, the cover fluctuated considerably between sampling periods on both plots (Fig. 12). Between 1947 and 1960 the magnitude of the fluctuations was greater on the grazed plot than on the ungrazed plot. From 1960 to 1989, however, trends in the cover of *Poa* were similar on both plots, with a decrease in cover between 1960 and 1979, followed by an increase between 1979 and 1989. Despite these contrasting trends in the cover of *Poa*, no significant difference in cover between plots was detected using univariate repeated measures analysis (Fig. 12, Appendices 2 and 3).

Forbs were a minor component of these plots over the entire sampling period, providing 6–8% cover on both plots. In 1979, however, there was a sharp increase in the cover of two minor forbs, *Asperula gunnii* and *Rumex acetosella,* on the ungrazed plot, which declined sharply after this time. At all other times, the cover of these and other forbs was less than 10% on both plots.

Total shrub cover did not differ significantly between ungrazed and grazed plots over the sampling period. Cover increased on both plots, from about 15–20% in 1945 to 70% in 1989.

Table 3. Mean cover values (%) for the main species and cover classes (1 and 3) at the four grassland sites in 1979, 1982, 1989 and 1994

Repeated measures analysis of variance, contrasting ungrazed and grazed sites; analysis of cover classes used data from 1982, 1989 and 1994. * = $0.01 < P < 0.05$, ** = $0.001 < P < 0.01$, *** = $P < 0.001$; NS: not significant; UGR: ungrazed plot, GR: grazed plot; NA: not available. *Poa* (*P. hiemata*), *Carex* (*C. breviculmis, C. hebes*), *Cel* (*Celmisia* spp.), *Lep* (*Letorhynchos squamatus*), *Cras* (*Craspedia* spp.), *Ast* (*Asterolasia trymalioides*)

Year	Site	Treatment	CC1	CC3	*Poa*	*Carex*	*Cel*	*Lep*	*Cras*	*Ast*
1979	Cope Creek	GR	62.00	25.00	61.00	7.00	29.00	10.00	2.00	13.00
	Cope Hut	GR	85.00	6.00	70.00	17.00	15.00	30.00	< 1	2.00
	Pretty Valley	GR	NA	NA	69.00	20.00	1.00	33.00	1.00	2.00
	Pretty Valley	UGR	NA	NA	71.00	7.00	36.00	22.00	5.00	33.00
1982	Cope Creek	GR	45.00	21.00	67.00	5.00	24.00	17.00	2.00	12.00
	Cope Hut	GR	71.00	7.00	74.00	11.00	16.00	29.00	< 1	3.00
	Pretty Valley	GR	53.00	16.00	69.00	14.00	2.00	38.00	< 1	1.00
	Pretty Valley	UGR	76.00	3.00	56.00	8.00	35.00	25.00	7.00	38.00
1989	Cope Creek	GR	51.00	18.00	72.00	7.00	27.00	14.00	2.00	5.00
	Cope Hut	GR	62.00	13.00	75.00	8.00	20.00	28.00	< 1	2.00
	Pretty Valley	GR	61.00	19.00	78.00	10.00	3.00	37.00	< 1	1.00
	Pretty Valley	UGR	71.00	5.00	69.00	5.00	39.00	18.00	12.00	29.00
1994	Cope Creek	GR	56.00	16.00	70.00	8.00	18.00	12.00	2.00	10.00
	Cope Hut	GR	66.00	11.00	75.00	8.00	25.00	34.00	1.00	2.00
	Pretty Valley	GR	72.00	10.00	71.00	8.00	3.00	38.00	6.00	< 1
	Pretty Valley	UGR	66.00	3.00	62.00	4.00	45.00	19.00	9.00	25.00
	Plot (UGR vs GR)		***	***	***	***	***	NS	***	***
	Year		***	*	*	**	NS	NS	NS	NS
	Year x Plot		**	***	**	NS	NS	NS	NS	NS

Table 4. Regression analysis of cover data from the Cope Creek and Cope Hut sites, 1979-1994

H0 (null hypothesis): the slope of the regression line equals zero; NS: slope not significantly different from zero; significance levels: * = $0.01 < P < 0.05$, ** = $0.001 < P < 0.01$, *** = $P < 0.001$. R^2 (coefficient of determination): proportion of the total variation in pecentage cover explained by the regression line. *Poa* (*P. hiemata*), *Carex* (*C. breviculmis, C. hebes*), *Cel* (*Celmisia* spp.), *Lep* (*Letorhynchos squamatus*), *Cras* (*Craspedia* spp.), *Ast* (*Asterolasia trymalioides*)

Site	Regression	CC1	CC3	*Poa*	*Carex*	*Cel*	*Lep*	*Cras*	*Ast*
Cope Creek	R^2	0.03	0.14	0.53	0.22	0.08	0.06	0.03	0.33
	H0: slope = 0	NS	NS	**	NS	NS	NS	NS	*
Cope Hut	R^2	0.32	0.01	0.10	0.21	0.85	0.10	0.00	0.04
	H0: slope = 0	*	NS	NS	NS	***	NS	NS	NS

Rates of change differed during this period, however (Fig. 12). On the grazed plot, shrub cover increased monotonically, while the rate of increase on the ungrazed plot varied with time. From 1945 to 1960, the rate was approximately twice that on the grazed plot. Between 1960 and 1979, however, the rate of increase was lower on the ungrazed plot. Shrub cover then continued increasing on the grazed plot, while decreasing significantly on the ungrazed plot. Despite an overall similarity in total shrub cover on the plots over time, by 1989 there were major differences in both composition and distribution of the constituent shrub species.

Fig. 11. The Rocky Valley open heathland plots. (*a*) The ungrazed plot in February 1989; (*b*) the grazed plot in January 1990.

Fig. 11 *b*

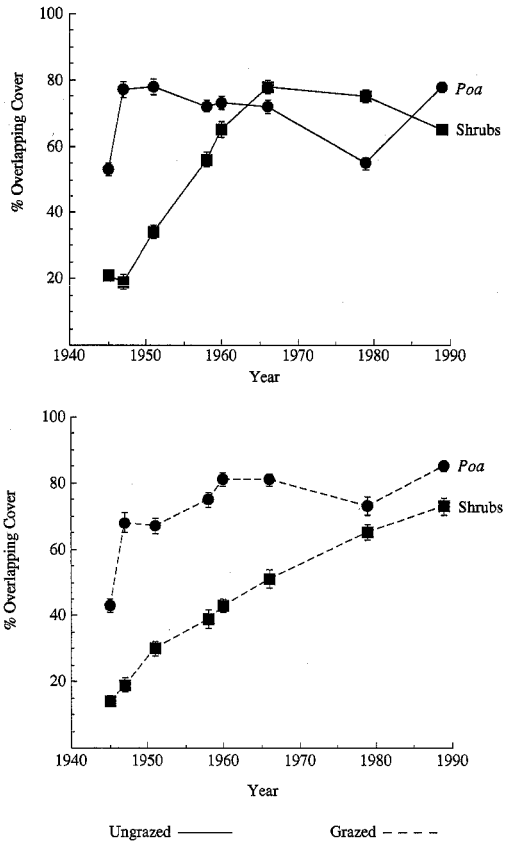

Fig. 12. Changes in percentage overlapping cover of *Poa* and shrubs (± SE), 1945–1989, at the Rocky Valley heathland plots.

At that time, the main shrubs on the ungrazed plot were *Phebalium*, *Grevillea* and *Hovea*; on the grazed plot *Phebalium*, *Prostanthera* and *Hovea* predominated. In 1947, the cover of each of these shrubs was low (< 10%), with few differences in cover between plots (Fig. 13). *Phebalium* increased in cover on the grazed plot, from 5 to 30% between 1947 and 1966, thereafter declining to 23% in 1989. On the ungrazed plot, *Phebalium* continued to increase in cover until 1979, then decreased sharply in cover. In 1989, there was no significant difference in the cover of this species between plots. *Grevillea* differed significantly in cover between plots after 1951, both in trend and amount (Fig. 13). The cover of *Grevillea* was initially similar (< 2%) on both plots. On the grazed plot, the cover of *Grevillea* remained at less than 2% cover over the entire study period. By contrast, *Grevillea* on the ungrazed plot increased in cover from 1% in 1945 to 25% in 1979, declining to 15% in 1989. This was similar to the behaviour of *Phebalium* on this plot. Over the study period, however, the cover of *Grevillea* was considerably less than that of *Phebalium* (Fig. 13). The cover of *Prostanthera*, a common shrub in closed heathland, was initially low (< 2%) on both plots and by 1989 did not occur on the ungrazed plot. On the grazed plot, however, the cover of *Prostanthera* increased from 2–24% during the sampling period, with a noticeable increase in the rate of expansion after 1966 (Fig. 13). By 1989, *Prostanthera* contributed approximately 35% of the cover provided by all shrubs on this

plot and, unlike *Grevillea* and *Phebalium*, did not decrease in cover between 1979 and 1989, but continued to increase. The cover of two other closed heathland species, *Orites* and *Bossiaea,* remained low (< 3%). Furthermore, the three closed heathland species, *Prostanthera*, *Orites* and *Bossiaea,* were concentrated in two-thirds of the plot (Fig. 14). Total shrub cover in the other third was low; the vegetation there was clearly grass-dominated (Figs 11*b* and 14). *Hovea* increased in cover on both plots between 1947 and 1989. Trends in cover over time, however, differed significantly between plots. From 1946–1966 the cover of *Hovea* was significantly greater on the ungrazed plot than the grazed plot. Subsequent to 1966, however, the cover of *Hovea* declined significantly on the ungrazed plot and, as a consequence, its cover from 1979–1989 was markedly lower on the ungrazed plot. Thus, by 1989 the ungrazed plot was an open heathland of *Phebalium* and *Grevillea* in a senescent condition. By contrast, two-thirds of the grazed plot consisted of closed heathland and one-third was grassland.

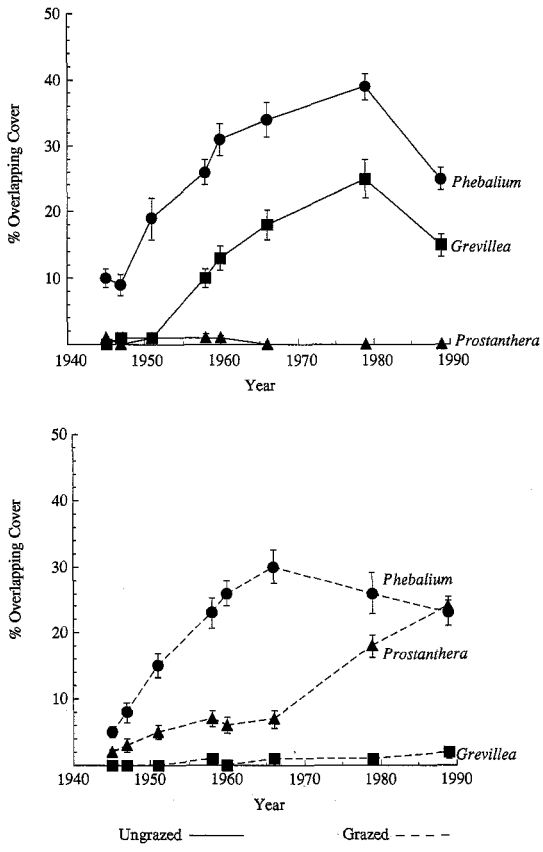

Fig. 13. Changes in percentage overlapping cover of the main shrubs (± SE) —*Grevillea, Orites, Phebalium* and *Prostanthera*—from 1945 to 1989, at the Rocky Valley heathland plots.

In 1989, the quality of the ground cover differed between plots, particularly that of CC1, which was 10% higher on the grazed plot (92%) than on the ungrazed plot (82%). The cover of CC3 was 5 and 4% on the ungrazed and grazed plots respectively. These results differ from those at the Pretty Valley plots, where the amount of CC1 was higher on the ungrazed plot, and the amount of CC3 higher on the grazed plot.

Table 5. Morphological measurements of the heathland shrub *Phebalium squamulosum* at Rocky Valley

Measurements taken from ten randomly located 2 x 3 m quadrats within the grazed and ungrazed open heathland plots

Plot		Stem diameter (mm)	Shrub height (cm)	Canopy width (cm)
	Min	4.0	20.0	5.0
Ungrazed	Max	64.0	66.0	216.0
($N = 50$)	Mean ± SE	21 ± 0.4	40 ± 1.5	105 ± 6.4
	Min	5.0	28.0	26.0
Grazed	Max	47.0	63.0	234.0
($N = 56$)	Mean ± SE	19 ± 0.4	45 ± 1.2	105 ± 5.7

Heathland Structure, 1989–1990

Shrub height varied from < 0.5 m to 2 m. The smallest *Phebalium* shrubs were about 20–30 cm high with stem diameters of approximately 0.5 cm (Table 5). Only three *Phebalium* shrubs of this size were found and they are likely to be at least 10 years old (C-H. W. unpublished data). Most *Phebalium* shrubs were about 65 cm high and 1.5–2 m in diameter and in a senescent growth phase (Table 5). Most *Prostanthera* shrubs were about 90 cm high and 2 m in diameter, 1–2 m tall, and in a mature growth phase, with no canopy gaps.

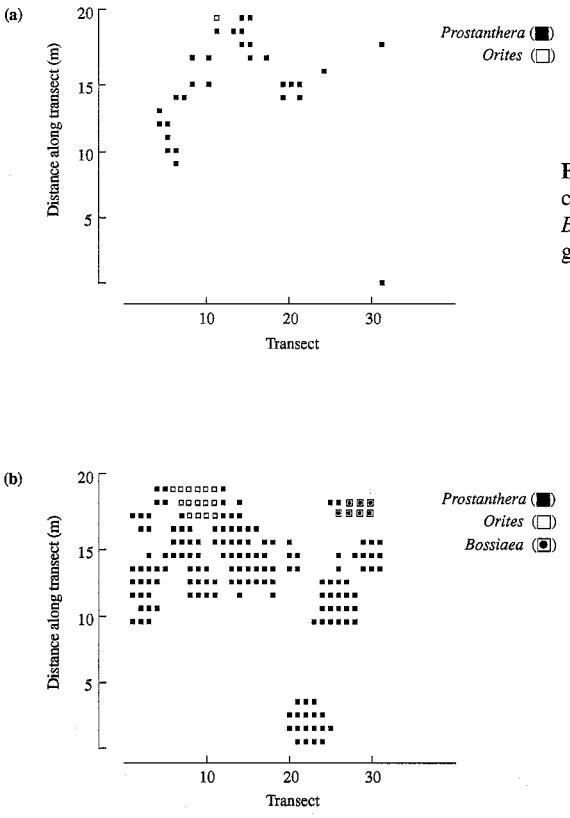

Fig. 14. Distribution of point quadrats contacting *Prostanthera*, *Orites* or *Bossiaea*; (*a*) 1951, (*b*) 1989, at the grazed Rocky Valley plot.

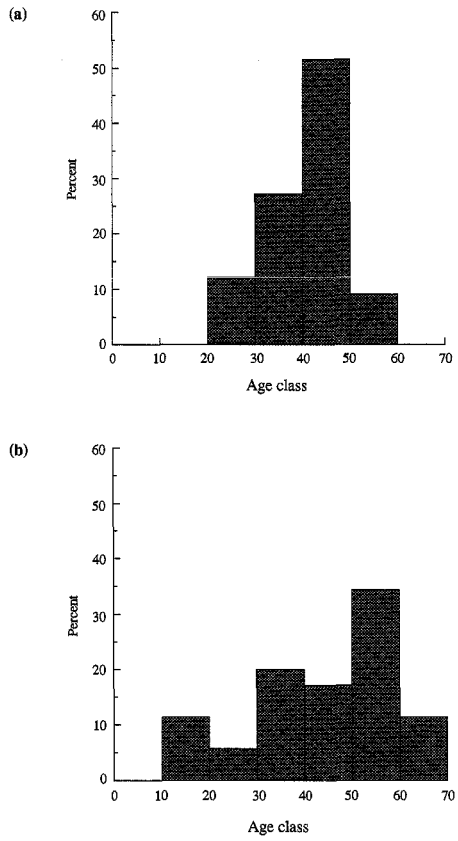

Fig. 15. Age structure of (*a*) *Phebalium* and (*b*) *Prostanthera* shrubs, at the Rocky Valley heathland plots.

The age-structure of the shrubs adjacent to the Rocky Valley site is given in Fig. 15. In 1990, the minimum age of *Phebalium* was 23 years; the oldest, a senescent shrub with a prominent canopy gap and numerous dead stems, was 55 years. Most of these shrubs were 40–55 years old. By comparison, the youngest *Prostanthera* shrub was 14 years and the maximum age was 67 years. There were no *Phebalium* or *Grevillea* seedlings found in any of the quadrats within the Rocky Valley plots.

Discussion

The dynamics of grasslands and heathlands, including patterns of regeneration, have received considerable attention in alpine and subalpine areas of Australia (Carr and Turner 1959*a*, 1959*b*; Costin *et al.* 1959; Carr 1962, 1977; Costin 1962; Wimbush and Costin 1979*a*, 1979*b*, 1979*c*; Leigh *et al.* 1987; Williams 1987*a*, 1987*b*, 1990*a*, 1990*b*; Williams and Ashton 1987*a*, 1987*b*, 1988; Gibson and Kirkpatrick 1989; Good 1989). These authors have stressed the dynamic nature of alpine and subalpine vegetation, in particular the changes that may occur in both the woody and herbaceous components of the vegetation. Such changes depend upon interactions between life history, site and disturbances. Trends in vegetation over the past half century have shown that recovery following disturbance has been slow. Changes in the herb-woody plant balance have been substantial in response to disturbance, particularly disturbances by domestic livestock. In this respect, diet selection

has been of key importance, with species palatable to stock decreasing in cover and less palatable species little affected or increasing in cover. Results from this study clearly support the patterns and processes described above: vegetation change has been slow and domestic cattle have had substantial and lasting impact on both the structure and composition of subalpine grassland and heathland vegetation.

The data presented in this paper represent some of the oldest long-term studies of vegetation change in Australia. The experimental design, however, was limited by the lack of replication of treatments when the original plots were established by Turner and Fawcett (1948). Consequently, there were restrictions on statistical inferences dealing with the effects of grazing. Unreplicated treatments are often unavoidable in ecological research and there are alternative designs and statistical methods to deal with this (Carpenter 1990; Jassby and Powell 1990; Reckhow 1990; Stewart-Oaten *et al.* 1992).

In the present study, the difficulty of unreplicated treatments has been partly off-set by the long-term nature of the data, collected at permanent reference plots. These data show that large differences have emerged between the grazed and ungrazed plots. Furthermore, the grazing treatment in grassland has been effectively replicated over the past decade by the inclusion of two sites in similar adjacent grassland areas to the grazed Pretty Valley plot. These mitigating factors increase the strength of inferences we draw with respect to the effect of grazing by cattle on the structure and composition of the vegetation. Moreover, in recent years there have been many replicated experimental studies on the Bogong High Plains, examining both the responses of vegetation to grazing as well as the diet and behaviour of cattle, which permit strong inferences to be drawn concerning the impact of grazing on vegetation between the 1940s and the 1990s.

Vegetation Change in Grassland

There were clear differences between the Pretty Valley plots in both the status of the vegetation and the trends in vegetation cover between 1947 and 1994. On the ungrazed plot, there was a substantial and sustained increase in the cover of major forbs, such as *Celmisia* and *Craspedia*; on the grazed plot there was no change in the sparse cover of these species. The only forb providing substantial cover on the grazed plot was *Leptorhynchos*. At present, there are also significant differences between plots in the cover of the low shrub *Asterolasia*, and in the quality of the ground cover offered by the vegetation. There was little difference between plots in the amount of *Poa*, which fluctuated in cover on both plots over the years. Such seasonal fluctuation occurred elsewhere on the Bogong High Plains (Carr and Turner 1959*b*; van Rees *et al.* 1984) and in grassland at higher elevations in the Kosciusko region (Wimbush and Costin 1979*a*, 1979*b*, 1979*c*).

Grazing clearly affected the abundance of the major herbaceous species in grassland. The contrasting trends in the cover of *Celmisia* and *Leptorhynchos* are probably due to differences in competitive and colonising ability, both of which are affected by differential palatability (Carr and Turner 1959*b*; van Rees 1982, 1984). Carr and Turner (1959*b*) argued that *Leptorhynchos* was a more vigorous colonist of the bare, inter-tussock spaces that result from cattle grazing. In the absence of grazing, however, they suggest that *Celmisia* will eventually displace *Leptorhynchos*. These hypotheses predict that, under grazing, the capacity of *Leptorhynchos* to persist in the long term is greater than that of *Celmisia*. The data presented here strongly support these hypotheses. Both species form substantial proportions of the diet of cattle. *Celmisia*, however, is preferred to *Leptorhynchos* (van Rees 1984, table 8), and the amount of *Celmisia* in the diet is approximately twice that of *Leptorhynchos* over the entire growing season (van Rees 1984, table 5). *Craspedia*, another perennial forb that will also colonise bare ground, is both palatable (van Rees 1982) and sensitive to grazing (Wimbush and Costin 1979*a*); hence, it is a useful indicator of grazing

pressure (Wimbush and Costin 1979*a*). On the grazed plot, *Craspedia* remained below 1% over the 47 year sampling period. In the absence of grazing, *Craspedia* contributed about 9% OC on the ungrazed plot by 1994. *Podolepis*, also a palatable forb (van Rees 1984), is relatively uncommon on the High Plains (McDougall 1982) and has been since heavy stocking in the severe droughts of the early 1900s (Carr and Turner 1959*b*). The spread of this plant across the ungrazed plot was a clear consequence of release from grazing pressure. *Carex* spp. are rhizomatous, palatable sedges (van Rees 1984) that will colonise disturbed sites from seed stored in the soil (Williams and Ashton 1987*b*). On the grazed plot, there was little change in the cover of *Carex* spp. over the years, despite fluctuations between sampling periods. Within the fenced plot, however, *Carex* spp. decreased significantly over time, suggesting a reduction in inter-tussock spaces. Similar trends have been found for these species on exclusion plots in the Kosciusko region by Wimbush and Costin (1979*a*). The clear implication is that, on the grazed plot at Pretty Valley, continued disturbance is providing suitable microsites for *Carex* spp. to colonise; these disturbances are likely to persist as a consequence of cattle activity.

Changes in shrub cover in grassland over time, and the effects of grazing, can be interpreted also in terms of interactions between palatability to cattle and life history patterns. *Asterolasia*, which increased considerably in cover within the fenced plot, is highly palatable to cattle (van Rees 1984), particularly sensitive to trampling (Carr and Turner 1959*b*; Carr 1962, 1977; Williams and Ashton 1987*b*) and will regenerate only from seed (Williams and Ashton 1987*b*). Thus, its low cover on the grazed plot was a result of both browsing and trampling. The decrease in cover of *Asterolasia* between 1982 and 1994 within the fenced plot was due to senescence of individual shrubs. Gaps may form in the canopy of this and other shrubs, and these gaps are then subject to eventual colonisation by grasses, forbs and other shrubs (Carr and Turner 1959*a,* 1959*b*; Williams and Ashton 1988). In this study, *Poa* and *Celmisia* were the main species to invade canopy gaps of *Asterolasia* and the current processes of canopy decline and invasion are likely to continue. Furthermore, as *Asterolasia* is an obligate seeder (Williams and Ashton 1988), and there are no seedlings at present within the ungrazed plot, it is unlikely that new generations of this shrub will establish and grow. The growth phases of *Asterolasia* may be estimated from our data, even though the demography of this species has not been followed on these plots. If the largest current individuals were seedlings in 1946, when the plot was fenced, then they are now at least 48 years old. It would therefore appear that the active period of shrub growth occurs over the first 20–30 years, after which senescence begins. *Asterolasia* is likely to decrease in cover over the coming decades within the fenced plot, but trends in the rates of decline in cover of *Asterolasia* are difficult to predict.

Grevillea, like *Asterolasia*, is palatable to cattle (van Rees and Hutson 1983) and an obligate seeder (Williams and Ashton 1987*b*, 1988). Unlike *Asterolasia*, however, the cover of *Grevillea* increased only slightly on the plots, and by 1994 provided similar cover values on both plots. On the grazed plot, the cover of *Grevillea* was ten times that of *Asterolasia*. This is probably due to a greater inherent growth potential in *Grevillea* compared with *Asterolasia*, because there is little difference in either the indices of palatability or the amount of these shrubs consumed by cattle in grassland communities on the Bogong High Plains (van Rees 1984). The greater number of individual shrubs at the grazed site is likely to reflect a greater number of bare ground patches, which shrub seedlings depend on for successful establishment (Williams and Ashton 1987*b*). Canopy gaps in the senescent shrubs will probably expand and the expansion of herbs and grasses within these gaps (Williams and Ashton 1988) is likely to continue. The life span of *Grevillea* is difficult to estimate because of numerous medullary rays that obscure the growth rings (Williams and Ashton 1988). No comparison of the age structure of these shrubs on the two plots was therefore possible. The cover of *Hovea* on the grazed plot was about 3% in 1994 and did not

occur on the ungrazed plot. This leguminous shrub tends to occupy inter-tussock spaces and, on disturbed grassland, is often one of the first shrubs to colonise, followed by other shrubs like *Grevillea* (Wimbush and Costin 1979*b*).

Trends in Land Condition

Ground cover conditions were noticeably different on the two Pretty Valley plots over the study period. On the grazed plot, there was no sustained improvement in the quality of ground cover between 1947 and 1958. By comparison, bare ground and loose litter on the ungrazed plot diminished markedly between 1947 and 1958, after which time there was little change. Hence, by 1982–1994 the amount of poor quality ground cover (CC3) was three to five times greater on the grazed plot than on the ungrazed plot. These results are significant in terms of soil conservation, as bare ground or loose litter, with little vegetation cover, are both susceptible to the erosive forces of wind, rain and frost action (Costin *et al.* 1960; Costin 1977). Ground cover condition of the ungrazed plot was also superior to that of the grazed sites at Cope Hut and Cope Creek. Hence, the vegetation on the ungrazed plot provides more adequate protection for the soil surface than at any of the three grazed grassland sites studied.

Within grazed grassland, there was substantial spatial and temporal variability in ground cover conditions and the abundance of main species. In 1994, the cover of *Celmisia* ranged from 3% on the grazed Pretty Valley plot to 25% at Cope Hut. Such spatial variability in the cover of *Celmisia*, however, is not unusual in small (1 ha) areas of the Bogong High Plains. These data and data from other grassland sites (Papst, unpublished data) show that, under the present grazing regime, there is substantial patchiness in the cover of *Celmisia*. Grassland areas where *Celmisia* provides < 5% cover can occur within several hundred metres of areas where the cover may be 20%. Cover Class 1 appears to be especially dynamic at all sites, which reflects the continual conversion of fixed litter to loose litter. Despite this variability between and within grazed sites, the composition of the ungrazed plot at Pretty Valley, both in terms of species abundance and quality of ground cover, has remained markedly different from each of the three grazed plots between 1979 and 1994.

The patchiness in the cover of *Celmisia* within grassland described above implies that there are areas where *Celmisia* is relatively common under present stocking levels. We cannot say whether the cover of *Celmisia* will increase in such patches were grazing to be removed. Trends revealed by the Pretty Valley data, however, suggest that in those areas where the cover of *Celmisia* is low (< 5%), removal of grazing will result in substantial increases in the cover of *Celmisia*, and indeed other tall, prominent forbs such as *Craspedia* and *Podolepis*. In addition, the cover of *Asterolasia*, if present as seedlings, could be expected to increase and the amount of bare ground decrease. The increase in *Asterolasia*, however, would be temporary until individuals begin to senesce and are replaced by forbs and snowgrass.

As a result of the variability within grazed grassland, there was little or no trend in either species abundance or ground cover condition on the three grazed grassland sites between 1979 and 1994. Such an absence of trend has been interpreted to mean that the grassland vegetation is in a stable state, that this state is acceptable, and therefore that cattle have had little or no impact within grassland (Parry 1978; Commins 1988). Such arguments confuse trend with state. Recent trends do not necessarily reveal anything about current condition. Grazing impacts can be determined only by comparative studies of grazed and ungrazed areas, preferably over long periods of time. Although there was little change in the nature of grazed grassland between 1979 and 1994, the condition of these grasslands, in terms of soil and nature conservation values, is inferior to that of the ungrazed plot at Pretty Valley. We therefore conclude that the grazed grassland on the Bogong High Plains is stable but degraded.

Vegetation Change in Open Heathland

In 1945, both plots were similar in composition and structure, and representative of subalpine open heathland. Since 1945, the most significant change has been the expansion of the taller shrubs on both the grazed and the ungrazed plots. The vegetation on both plots at the Rocky Valley site was burned in 1939 and the expansion of shrubs on both plots over the study period is part of the post-fire regeneration process. The age-structure of both *Phebalium* and *Prostanthera* showed that most individuals of both species were between 40 and 50 years old in 1990, indicating that they established in the decade following this major fire. Virtually all the *Phebalium* shrubs established subsequent to the 1939 fire; some 15% of the *Prostanthera* population had established prior to the fire and subsequently resprouted. Unlike the Pretty Valley grassland plots, forb cover on both plots at this heathland site was relatively low for the entire study period; forbs are in general a minor component of heathlands on the Bogong High Plains (McDougall 1982; Williams and Ashton 1987*a*).

Changes in Shrub and Ground Cover

Shrub cover increased on both plots until 1979. From 1979 to 1989, however, the shrub cover declined on the ungrazed plot, while continuing to increase on the grazed plot. The decrease in shrub cover on the ungrazed plot resulted from senescence of both *Grevillea* and *Phebalium*, and is analogous to the senescence of *Asterolasia* on the ungrazed plot at Pretty Valley. The continued increase in shrub cover on the grazed plot reflects the expansion of both *Prostanthera* and *Hovea*. Differences in patterns of shrub behaviour on these two plots, like those at the Pretty Valley site, are also interpretable in terms of differences in life-history characteristics and palatability to cattle.

On the ungrazed plot, the significant decrease in shrub cover of both *Grevillea* and *Phebalium* between 1979 and 1989 was due to senescence of the majority of larger (> 1 m diameter) individual shrubs. The canopy gaps of these shrubs were colonised primarily by *Poa*. The increase in cover of *Poa* is likely to continue, as these shrubs senesce. The cover of both *Grevillea* and *Phebalium* is likely to decrease in the coming decades, as there has been virtually no seedling recruitment of either species over the past 20–25 years and, at 40–50 years old, most extant shrubs are approaching their age limit. Replacement of mature (20–40 year old) individuals of *Grevillea* and *Phebalium* by *Poa*, as canopy gaps expand, is a common phenomenon in open heathland, as shown by a broad survey of these two shrubs in other stands of open heathland both on the Bogong High Plains (Williams and Ashton 1988) and in the Kosciusko region (Park 1975)

On the grazed plot, the shrubs that continued to expand over the entire study period were *Prostanthera*, *Hovea*, *Orites* and *Bossiaea*, all of which are non-palatable to cattle (van Rees 1984). The lack of *Phebalium* seedlings, and decreasing cover of this species on the grazed plot between 1979 and 1989, reflects both the shorter life span of *Phebalium* and its less vigorous colonising ability compared with *Prostanthera*. Closed heathland species, such as *Prostanthera*, are relatively fast-growing (Williams 1990*b*) and may form dense heaths 1 or 2 m tall; such closed heaths are avoided by cattle (van Rees and Hutson 1983). In addition, these shrubs have little grass in the understorey (McDougall 1982; Williams and Ashton 1987*a*) and may resprout vigorously at senescence; any canopy gaps that develop are primarily recolonised by shrubs, not snowgrass (Williams and Ashton 1988; Williams 1992). Thus, due to interactions between life-history characteristics and palatability, *Prostanthera* can persist in the face of cattle grazing. By contrast to these unpalatable shrubs, *Grevillea* did not increase in cover on the grazed plot, probably as a result of selective browsing.

There was little difference in ground cover conditions between the grazed and ungrazed plots over the sampling period. Poor quality cover was similar between plots and high quality cover was higher on the grazed plot, probably a consequence of the high cover of tall, dense shrubs, such as *Prostanthera*, which have thick, relatively stable litter beneath their

dense canopies. Although the amount of shrub cover is currently similar on both plots, distribution patterns of shrub and grass cover show that the plots are structurally distinct. The ungrazed plot consists of uniformly distributed shrubs and snowgrass; it is structurally an open heathland. By contrast, the grazed plot is one-third tussock grassland, with few shrubs, and two-thirds closed heathland, with little grass. Moreover, shrubs on the grazed plot have expanded into the grassy section of the plot since sampling commenced in 1945.

Does Alpine Grazing Reduce Blazing?

Evidence presented here does not support claims that shrub cover in general, and thus the risk of fire, is reduced by cattle (Parry 1978; Holth 1980; Commins 1988; Anon 1992). Few shrubs were unequivocally reduced in cover as a result of grazing; the impact of cattle on the cover of shrubs depended strongly on site and species. In this study, the only shrubs to have lower cover values on a grazed plot compared with an ungrazed plot were *Asterolasia* at Pretty Valley and *Grevillea* at Rocky Valley. For all other species-site combinations there were no differences between grazed and ungrazed areas. Indeed, on the grazed Rocky Valley heathland plot, the cover of persistent, non-palatable shrubs has continued to increase since 1966. The only evident reduction in total shrub cover, which has clearly occurred as a result of browsing, is that of *Asterolasia* at the grazed Pretty Valley grassland site. This shrub rarely exceeds 20 cm in height, and is unlikely to be as flammable as the taller, more productive shrubs, such as *Prostanthera* (Good 1982). The inherent fire risk of *Asterolasia* is therefore low, with little scope for 'reduction' of risk due to browsing. In the taller, denser heaths, which were extensively burnt in the 1939 wildfires, and are the most flammable components of the subalpine vegetation (Good 1982), grazing has not reduced total shrub cover.

Conclusions

The data presented in this paper represent some of the oldest long-term studies of vegetation change in Australia. Although the initial design set up in the 1940s lacked replication with respect to grazing, recent experimental and monitoring studies have provided additional evidence with which to assess the impacts of cattle grazing.

Our data clearly show that grazing by cattle has substantial impacts on the composition and structure of subalpine vegetation. In grassland, grazing alters species composition by selective grazing of the taller forbs and short, palatable shrubs. Grazing in grassland also results in persistently greater areas of bare ground that are susceptible to soil erosion by such action as frost heave and wind winnowing. The processes involved have been extensively described by other workers for areas across the Australian high country.

The expansion of shrubs over the past 50 years appears to be primarily the result of post-fire regeneration following periods of high grazing pressure in previous decades. Ecological processes and selective grazing of shrubs have interacted to produce changes in species composition, some transitory and some permanent. In the prolonged absence of grazing, shorter-lived shrubs such as *Asterolasia*, *Phebalium* and *Grevillea* expanded initially, but are now senescing and being replaced by tussock grasses and forbs. Longer-lived shrubs, such as *Prostanthera*, have continued to expand. We found no evidence that grazing reduced total shrub cover in open heathland.

There was little or no significant trend in vegetation cover, litter or bare ground at the three grazed grassland sites from 1979 to 1994. This, however, does not imply that cattle grazing is having no impact within grassland. Grazed grasslands on the Bogong High Plains may be described as stable, but in terms of soil and nature conservation values they are degraded.

These data have numerous implications for effective management of the high country. Alpine and subalpine vegetation is slow to recover from disturbance, and the rate of recovery is unquestionably slower in areas grazed by cattle. In grassland, continued grazing will reduce the abundance of taller forbs and dwarf, palatable shrubs; some shrubs, such as

Grevillea, may continue to expand. Significantly higher amounts of bare ground increases the risk of soil erosion and will provide suitable sites for further shrub establishment. Continued grazing in open heathland is unlikely to reduce overall shrub cover and may lead to an expansion of taller, more persistent, non-palatable shrubs. It will therefore not reduce the risk of fire in such communities.

Vegetation change will continue in the coming decades and monitoring of permanent reference plots is the only effective way of accurately detailing such changes. Therefore, if management of alpine and subalpine vegetation is to be based on sound scientific data, it is essential that the plots on the Bogong High Plains are maintained and reassessed at least once every decade, and that long-term ecological studies are adequately supported.

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Appendix 1

Probability values from single factor ANOVA testing for treatment (grazing) effect; (*a*) Pretty Valley plots, (*b*) Rocky Valley plots. Per comparison significance levels were adjusted using the Bonferroni method; they were 0.006 and 0.008 for the Pretty Valley and Rocky Valley plots respectively. *Poa* (*P. hiemata*), *Carex* (*C. breviculmis*), *Cel* (*Celmisia* spp.), *Lep* (*Leptorhynchos squamatus*), *Cras* (*Craspedia* spp.), *Grev* (*Grevillea australis*), *Ast* (*Asterolasia trymalioides*), *Hovea* (*H. montana*), *Pheb* (*Phebalium squamulosum*), *Prost* (*Prostanthera cuneata*)

(*a*) Pretty Valley grassland plots

Year	*Poa*	Forbs	Shrubs	*Carex*	*Cel*	*Lep*	*Cras*	*Grev*	*Ast*
1947	0.632	0.067	0.558	< 0.001	0.004	< 0.001	0.236	0.051	0.239
1951	0.048	0.002	0.103	0.505	< 0.001	0.141	0.087	0.009	< 0.001
1957	0.477	< 0.001	< 0.001	0.750	< 0.001	0.012	0.004	0.291	< 0.001
1958	0.881	< 0.001	< 0.001	0.323	< 0.001	0.005	0.154	0.323	< 0.001
1966	0.011	< 0.001	< 0.001	0.005	< 0.001	0.913	0.340	0.706	< 0.001
1979	0.582	0.012	< 0.001	< 0.001	< 0.001	< 0.001	< .001	0.062	< 0.001
1982	0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001
1989	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.111	< 0.001
1994	0.003	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	0.235	< 0.001

(*b*) Rocky Valley Plots

Year	*Poa*	Shrubs	*Pheb*	*Grev*	*Prost*	*Hovea*
1945	0.001	< 0.001	0.002	< 0.001	< 0.001	0.143
1947	0.085	0.990	0.688	0.090	< 0.001	0.742
1951	0.001	0.159	0.357	0.003	< 0.001	0.107
1958	0.218	< 0.001	0.267	< 0.001	< 0.001	< 0.001
1960	0.002	< 0.001	0.100	< 0.001	< 0.001	< 0.001
1966	< 0.001	< 0.001	0.181	< 0.001	< 0.001	< 0.001
1979	< 0.001	0.005	< 0.001	< 0.001	< 0.001	0.120
1989	0.002	0.016	0.527	< 0.001	< 0.001	0.002

Appendix 2

Probability values from univariate and multivariate repeated measures analysis of variance (URANOVA and MRANOVA), and linear and quadratic polynomial contrasts; (*a*) Pretty Valley plots, (*b*) Rocky Valley plots. Data from the following years could be used in the analyses: 1951, 1979, 1982, 1989 and 1994 (Pretty Valley plots), and 1951, 1979 and 1989 (Rocky Valley plots). Per comparison significance levels were adjusted using the Geisser-Greenhouse method; they were 0.006 and 0.008 for the Pretty Valley and Rocky Valley plots respectively. UGR: ungrazed plot; GR: grazed plot. ** = $0.001 < P < 0.01$, *** = $P < 0.001$

(*a*) Pretty Valley plots
URANOVA and MRANOVA

Species	Test for main effects			Test for interaction between Plot (GR/UG) and year	
	UGR v GR URANOVA	Difference between years URANOVA	MRANOVA	URANOVA	MRANOVA
Tussock grasses	NS	***	***	***	**
Forbs	***	**	***	NS	NS
Shrubs	***	**	***	**	***
Carex	***	NS	***	***	**
Celmisia	***	**	***	**	***
Leptorhynchos	***	NS	NS	**	**
Craspedia	***	***	***	**	***
Asterolasia	***	***	***	***	***
Grevillea	**	***	***	NS	NS

Polynomial contrasts

Effect	Year Function		Year v Plot Function	
Species	Linear	Quadratic	Linear	Quadratic
Tussock grasses	NS	NS	**	**
Forbs	***	NS	NS	NS
Shrubs	***	***	***	***
Carex	***	NS	NS	***
Celmisia	***	***	***	***
Leptorhynchos	NS	NS	***	NS
Craspedia	***	NS	***	NS
Asterolasia	***	***	***	***
Grevillea	***	NS	NS	NS

(*b*) Rocky Valley plots
URANOVA and MRANOVA

Test for main effects Species	UGR v GR URANOVA	Difference between years URANOVA	 MRANOVA	Test for interaction between Plot (GR/UG) and year URANOVA	 MRANOVA
Tussock grasses	NS	***	***	***	***
Shrubs	NS	***	***	***	***
Phebalium	NS	***	***	**	**
Grevillea	***	***	***	***	***
Prostanthera	***	***	***	***	***
Hovea	NS	***	***	**	**

Polynomial contrasts

Effect Species	Year Function Linear	 Quadratic	Year v Plot Function Linear	 Quadratic
Tussock grasses	**	***	***	***
Shrubs	***	***	**	***
Phebalium	***	***	NS	**
Grevillea	***	***	***	***
Prostanthera	***	**	***	***
Hovea	***	NS	**	NS

Appendix 3

Pretty Valley grassland and Rocky Valley open heathland plots: results from regression analysis, testing the null hypothesis (H0), that the slope of the regression line equals zero; NS: Slope not significantly different from zero; significance levels: * = $0.01 < P < 0.05$, * = $0.001 < P < 0.01$, *** = $P < 0.001$; R^2 (coefficient of determination): proportion of the total variation in pecentage cover explained by the regression line. *Poa* (*P. hiemata*), *Carex* (*C. breviculmis, C. hebes*), *Cel* (*Celmisia* spp.), *Cras* (*Craspedia* spp.), *Lep* (*Leptorhynchos squamatus*), *Grev* (*Grevillea australis*), *Ast* (*Asterolasia trymalioides*). UGR: ungrazed plot; GR: grazed plot

Pretty Valley plots

Plot		*Poa*	Forbs	Shrubs	*Carex*	*Cel*	*Cras*	*Lep*	*Grev*	*Ast*
UGR	R^2:	0.00	0.55	0.92	0.87	0.95	0.80	0.08	0.83	0.79
	H0:	NS	*	***	***	***	**	NS	**	**

Rocky Valley plots

Plot		*Poa*	Forbs	Shrubs	*Grev*	*Pheb*	*Prost*	*Orites*	*Hovea*
UGR	R^2:	0.00	0.19	0.66	0.70	0.49	0.09		0.32
	H0:	NS	NS	*	**	NS	NS		NS

Grazing in the Victorian High Country

An Assessment of the scientific adequacy of grazing studies in the Victorian High Country 1945 – 1998, with some recommendations for future research

A Report to Parks Victoria

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EXCUTIVE SUMMARY

1. The alpine and sub-alpine ecosystems and landscapes of southeastern 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. The 'high country' of southeastern Australia has multiple uses and conflicts in land management arise, and will continue to arise- when some of these different uses are incompatible.

2. Clashes between the combined use of land for nature conservation and water yield and use of the same land for grazing by non-native animals have occurred previously.

3. Results of scientific research assessed in this study on the effects of excluding grazing on vegetation composition in the high country of both New South Wales and Victoria, without exception, reveal the deleterious effect of grazing on native plant biodiversity and, to a lesser extent, on water yield. The constancy of the message from previous research conducted by different research scientists in different regions is unquestionable in my opinion and forms an adequate basis on which to make management decisions.

4. Parks Victoria's objectives for the land should identify the supremacy of nature conservation values and water yield considerations in management of the Victorian high country. Given these priorities, it would be inappropriate to renew licences to graze non-native animals on this land.

5. Some suggestions for future research in the high country are made, of which the opportunity provided by the recent Victorian wildfires to study the interaction between fire and exclusion of grazing on the regeneration of hydric plant communities is urgent and timely. The further development of appropriate plant materials for use in revegetation of areas made bare as a result of previous grazing or of roads and tracks associated with the Kiewa hydroelectricity scheme is an important area for future research. I submit that no more research need be initiated on the effects of exclusion of grazing on vegetation condition, with the exception of the 'grazing by fire interaction' study referred to above. Continued

monitoring of all areas from which non-native animal grazing is excluded should remain an essential priority for research for the next 20 years at least.

1. INTRODUCTION

The Australian high country consists of alpine and sub-alpine vegetation occurring above an altitude of about 1500m in New South Wales, Victoria, and Tasmania. Alpine vegetation is really a complex of treeless shrubland and grassland types over which a cover of snow persists for at least several months of the winter. Partly because of their treeless character and presumably partly also because of a declining pasture resource in lower regions, the alpine communities were attractive to early graziers and grazing by sheep and cattle began quite early in the history of settlement of southeastern Australia. For some graziers, the movement of non-native animals to the alps in late spring and their removal in autumn was an annual rite that followed a European pattern of transhumance that still persists in parts of Europe to the present day. The Australian pattern probably lasted for 100 years in New South Wales until it was stopped in the 1950's; it persists still in the high country of Victoria.

Cessation of summer grazing in the alpine and sub-alpine areas of New South Wales occurred because of a threat to native conservation values perceived by a small number of soil conservationists, plant ecologists and bushwalkers as early as the 1930's, who saw signs of land degradation associated with certain heavily grazed or trampled sites in the alpine region. Construction of the Snowy Mountain Scheme widened the composition of this group to include engineers who eventually combined to lobby for removal of all grazing to protect the engineering scheme from sedimentation, as well as to protect nature conservation, wilderness and hydrologic values. Cessation of grazing in what had then become Kosciuszko National Park led to a recovery in vegetation condition, the reappearance of some previously rare plants and animals, and to improvement in water-yielding characteristics. These changes, especially those in botanical and hydrologic conditions, were monitored by scientists and have been reported in the scientific literature (see relevant references in Section 5). They are widely accepted by the scientific community.

In view of the persistent of grazing under licence in the Victorian high country to the present time, it seems ironic that the first attempts to document the effects of grazing by non-native animals were commenced in Victoria in 1945 (see Carr & Turner 1959a,b). Several sites were fenced against cattle grazing and their botanical composition and ground-cover values determined; these plots have been monitored periodically ever since and that monitoring continues (see e.g. Williams *et al,*. 1997).

In this report, I wish to briefly summarise the history of ecological research in the Australian high country and assess the adequacy of that previous research for making decisions about optimal land use in alpine Victoria. I shall conclude by making some recommendations for future research in the Victoria high country. I do this as a Research Scientist employed by CSIRO for the last 30 years as a plant ecologist with no particular research experience in high country ecology. My report assessing the present situation is directed to Parks Victoria as a basis for their continuing discussion with graziers and the wider scientific community and their formulation of future recommendations to the Victorian Minister for Natural Resources and Environment

who has in 1998 the power to continue or revoke the previous licenses to graze the Victorian high country.

2. **Assessment of the adequacy of previous research on which to make a management decision.**

Results of scientific monitoring of cover values of high country vegetation excluded from non-native animal grazing show either an increase in vegetative cover or, in some special cases, no change. Never do the results show a decrease in cover. Whether the plots are replicated or not, or whether they are in Kosciuszko National Park or on the Bogong High Plains, this generality holds. Such unequivocal results have been obtained by a range of senior plant ecologists over a period of 50+ years, including some like D. Goodall (then at University of Melbourne Botany School) with an international reputation in the statistical analyses of composition of plant communities. So conclusive were these early results that the peak scientific body in Australia – the Australian Academy of Science – recommended as early as 1957:

"That the aim to be achieved as soon as possible is the complete exclusion of all grazing animals from these important catchments at heights above 4,500 feet, and the effective policing of that exclusion." (their point 3, though my italics, p. 28).

The results of subsequent research in both Victoria and New South Wales (see References) do not contradict this conclusion; in fact, they confirm the farsightedness and wisdom of the above recommendations. 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.

More than 10% of Victoria's flora has been recorded in treeless high mountain plains and almost 60% of this component (250 species) are restricted to high country vegetation. Continuation of grazing of these plant communities puts at risk a significant proportion of the Victorian flora. Some previously rare plants (e.g. *Ranunculus anemonifolius*) have become relatively common in Kosciuszko National Park with the cessation of grazing, and the same is likely to happen in Victoria. Some plant communities are increasingly threatened by weedy species, especially the introduced grasses and Broom (*Cytisus scoparius*), as a result of continued grazing. For nature conservation values alone, renewal of grazing licenses in the Victorian high country is untenable and contrary to the scientific evidence.

I find the previous evidence of Carr (1977), Costin (1977), Wahren *et al.*(1994) and Wimbush (1997) scientifically convincing and more than adequate on which to make a management decision. That such evidence concurs with the overwhelming evidence from the similar ecological situation in Kosciuszko National Park (see Costin *et al.* 1959, 1960, 1961 a,b) provides an even sounder scientific basis in my opinion for recommending the non-renewal of licences to graze the Victorian high country. Nature conservation values and wise land management in the long term for water

quality and quantity should predominate over narrow economic gain in the short term to a tiny minority of Victorian landholders.

3. Some recommendations for future research

Whilst I find that previous research results are adequate on which to base a case for non-renewal of licences allowing legal grazing of the Victorian high country, there remains some research still to be done. I raise some topics of high priority below.

a. A study of the interaction between fire and recovery from grazing

Given the fires of high intensity that razed much of the alpine and sub-alpine vegetation of Victoria (but not the Bogong High Plains) over the 1998 summer period, opportunity should be taken to initiate a study of the exclusion of grazing on these burnt but regenerating communities that have been subject to previous grazing. That some grazing has occurred immediately after these wildfires is potentially disastrous. One aspect of the deleterious effects of past grazing on the vegetation at Kosciuszko is most likely to have been the highly selective effects of grazing on the vegetation regenerating in the spring following the regular autumn fires in the region when grazing was allowed. In many plant communities regenerating after fire, it is the highly selective effects of grazing by certain species soon after fire that can lead to species extinction and long-term change in floristic composition. But in the recent case in Victoria, the grazing by cattle occurred immediately after the fire. Such unwise land management may have already lead to serious and permanent effects on the plant composition of the hydric communities. At the very least the recovery (or non-recovery) of the vegetation after fire should be followed in a series of replicated plots located in a range of plant communities. Such a proposal is urgent and should be received the highest priority for funding over the next 5 years at least.

b. Revegetation of degraded land in the Victorian high country

Much degraded land exists currently in the Victorian high country, not all of which is due to past and present cattle grazing. Some land has been degraded by the extensive network of roads occasioned by the Kiewa Hydro-electric scheme; other areas by the increased pressure from ski facilities and other such uses. Highly relevant to the diversity of land uses to which the high country has been put, and will continue to experience, is the need to further develop appropriate plant materials (e.g. native grasses and forbs) for use in revegetating degraded areas. Such research has been in progress now for some 15 years but the urgency for application of results from such research is now more urgent should receive some increased funding and priority from the Victorian land management agencies.

c. Monitoring

An essential part of any land management program is the need to monitor vegetative and floristic change in reponses to various management options, such as grazing or fire or human usage or whatever. Whilst I submit that no more research need be initiated on the effects of exclusion of grazing on vegetation condition (except for (a) above), continued monitoring of all areas from which non-native animals grazing is excluded should remain an essential priority for research over the next 20 years at

least. Given that vegetation changes slowly in such climatically harsh environments and that the pattern of change in similar plant communities at Kosciuszko is slow and still being monitored (G. Enders, pers. comm.), a further monitoring of Victorian plots over three 7-year intervals should provide an adequate basis for modifying future management plans.

4. **Acknowledgements**

I wish to thank Mr Geoff Vincent and Mr Bob Jones of Parks Victoria for their time and support, Dr R.J. Williams and Mr W Papst for providing me with as-yet unpublished material and Dr A.B. Costin, a leader in scientific research on Australian alpine vegetation, for sharing his knowledge and experience with me.

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Wimbush, D.J. (1997). Report to Parks Victoria on high plains research. 14pp.

6. **Postscript (added June 1998)**

Subsequent to submitting the above report in draft form, I was asked by Parks Victoria to comment on several reports, in manuscript form, provided by the Mountain Cattlemen's Association of Victoria. These additional reports were:

1. MCAV Reference Library List
2. Oxley, R. (1990-1991). Cattle grazing in alpine areas. A series of reports prepared for the Mountain Cattlemen's Association of Victoria Inc. (mss. Published between November 1990 and June 1991).
3. Silvers, L. (1993). The effects of grazing on fuel loads and vegetation in the Barmah Forest, Victoria. B. Appl. Sci. (Hons) Thesis, Charles Sturt University.
4. Condon, R.W. (1989a). Report on the condition of the Kosiuszko National Park and the management implications for the alpine areas of Victoria. (ms). 22pp.
5. Condon, R.W. (1989b). Conservation or chaos. A commentary on "The effects of alpine grazing on conservation values – the research behind the

debate" by Jenny Barnett, June 1987 for the Victorian National Parks Association. (ms). 22pp.

6. Barnett, J. (nd). Comments on the reports done by Rodger Oxley for the MCAV; papers on Effects of Grazing. (ms). 6pp.

7. Williams, R.J. (nd). A critique of reports prepared by Rodger Oxley for the Mountain Cattleman's Association of Victoria. (1990-1991). (ms). 10pp.

I did not read the Hons thesis by Silvers (1993), other than the summary, because a study of grazing effects in lowland riverine forest seemed to me to be to have little or no relevance to grazing effects of cattle in alpine and sub-alpine plant communities of Victoria.

I found the Oxley papers deficient in many respects, as clearly and explicitly indicated in the comprehensive and detailed reports by Barnett and Williams. In summary, to draw conclusions about trends in vegetation composition from measurements made at one point in time on plots that were never monitored when they were established 10 years prior, is to me very poor methodology. I agree that the results and the conclusions would never be accepted for publication in the international scientific literature. **Such poor science is in my opinion a totally inadequate basis on which to make decision about land management in the Victorian high country, or indeed, for any region of land anywhere.**

The two papers by Condon represent valid personal opinions of someone with a history of visits to Kosciuszko National Park and wide experience in soils conservation in semi-arid and arid regions of New South Wales. But they are no more than that, in my opinion. They ignore completely the long-term experimental plots established by Costin and Wimbush that have been monitored over a long time period and show clear trends in vegetation change and land condition with cessation of sheep grazing. Condon's views confuse the effects by cattle grazing (the subject of the present debate) with the combined grazing effects by cattle and native animals and their interactions with presumed past fire regimes. His observations are mainly along fence lines across land that is probably frost-hollow areas and not alpine *sens. strict.* Condon's comments are only marginally relevant to the present assessment in my opinion.

I re-iterate my previous conclusion that:

1. **the results of ecological research of Carr & Turner and Williams *et al.* in Victoria forms a more-than-adequate basis for recommending non-renewal of cattle grazing leases in the alpine region of Victoria;**

2. **the scientific validity of these Victorian results is further enhanced by the trends in vegetation recovery from grazing as described by Costin & Wimbush's research results in ecologically similar and nearby Kosciuszko National Park.**

The detractors of such previous and continuing research have failed to produce any research results of similar quality. Accordingly, I recommend that the

contents of these MCAV-sponsored reports not to be accepted as an adequate scientific basis for influencing a land management decision.

Report of the investigation into the future of cattle grazing in the Alpine National Park

Alpine Grazing Taskforce

Victoria
The Place To Be

Published by the Victorian Government
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30 March 2005

The Hon. John Thwaites MP
Minister for Environment
1 Treasury Place
EAST MELBOURNE VIC 3002

Dear Minister

The Alpine Grazing Taskforce is pleased to present its report on its investigation into options relating to the future of cattle grazing in the Alpine National Park.

We were greatly assisted in our task by the willingness of many people to share their knowledge and experience with us: through making submissions, providing specific information, meeting with us, and showing us different parts of the national park. We would like also to acknowledge those licensees and others who contributed to the socio-economic survey and to the focus groups.

The lengthened reporting period enabled us to carry out an inspection of the Bogong High Plains after winter with representatives of the Mountain Cattlemen's Association of Victoria and the Victorian National Parks Association. This was very helpful in contrasting the different views.

There were clearly two distinct views on the future of grazing in the Alpine National Park. Nonetheless, it is important to note that there seemed to be common ground in a shared love of the high country. It clearly is a special place.

The decision on the future of grazing is now for the government to make. We hope that our report will assist that decision and lead to an outcome that is in the long-term interests of the park, the community and future generations.

Ian Maxfield MP
Chair

Jenny Lindell MP

Tony Lupton MP

Robert Mitchell MLC

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TASKFORCE FINDINGS

The following are the consolidated findings of the Taskforce drawn from Chapters 3–13 in Parts Two, Three and Four of the report.

PART TWO – BENEFITS AND IMPACTS OF GRAZING IN THE ALPINE NATIONAL PARK

Findings on the environmental benefits and impacts of cattle grazing in the Alpine National Park (excluding the issue of fire) (Chapter 3)

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 (Chapter 4)

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.

Findings on the cultural heritage benefits and impacts of cattle grazing in the Alpine National Park (Chapter 5)

11. Seasonal high country grazing is a long and ongoing tradition both within the park and in areas of the high country outside the park.
12. Ongoing grazing in the park maintains traditional associations with specific areas of the park and related skills and knowledge.
13. Historic huts and other structures associated with grazing are important elements of the cultural heritage values of the park. Their significance and protection does not depend on ongoing grazing in the park.
14. The mountain cattlemen's tradition is maintained and celebrated in a variety of ways outside the park, including through books, poetry, films and festivals.
15. The Taskforce concludes that the cultural heritage related to the grazing of livestock in the high country does not depend on ongoing grazing in the national park.

Findings on the economic and social benefits and impacts of cattle grazing in the Alpine National Park (Chapter 6)

16. Grazing licences provide important financial benefits to a number of individual licensees, with the extent of the benefit varying between grazing businesses. Small family farm operations generally depend to a much greater extent on access to park grazing licences than the larger operations.
17. The economic contribution of grazing in the park is not significant at a regional or State level, but there are some local benefits, particularly in the Omeo district.
18. There are unavoidable costs to managing grazing in the national park. These costs are exacerbated whenever natural disasters, such as fire, occur.
19. Current licence fees do not reflect a 'market rate'. Returns to the State are below expenditures and there is an implicit subsidy, affecting the ability of park managers to allocate resources to other management activities.
20. The current allocation method does not involve competition and gives exclusive benefits to a particular group of individuals.
21. A sense of 'mountain cattleman identity' is important to individual licensees and employees, especially where a number of generations of a family have held licences.

Findings on the recreation and tourism benefits and impacts of cattle grazing in the Alpine National Park (Chapter 7)

22. Cattle in the high country appeal to some visitors, but for many visitors their experience of the Alpine National Park is spoilt by the presence of cattle and their impacts. The experience is particularly negative for those expecting a pristine natural environment or seeking a wilderness experience.
23. The presence of free ranging cattle in areas used by family and other groups for camping and walking, and the sharing of drinking water sources, is a health and safety issue.
24. The traditions of the mountain cattlemen are being capitalised on by many businesses, with the tourist economic values generally derived from the history of grazing rather than its ongoing practice.
25. While cultural heritage associated with the cattlemen's story is a tourism asset, the ongoing presence of cattle in the national park is reducing the potential growth of nature-based tourism.

Findings in relation to benefits and impacts on national park standards from cattle grazing in the Alpine National Park (Chapter 8)

26. Despite grazing being specifically provided for in the National Parks Act, the Taskforce finds that cattle grazing in the Alpine National Park is inconsistent with the primary objects of the Act relating to national parks and wilderness areas.
27. Cattle grazing is not compatible with the national and international standards for a national park.

PART THREE – OTHER MATTERS

Findings in relation to other matters (Chapter 9)

28. The current exclusion of grazing from much of the park due to fire, and the Scientific Advisory Panel recommendation to exclude grazing from many licence areas for at least ten years, have significant implications for the decision on whether licences should be renewed in those areas.

29. Grazing compromises the chances of the Australian Alps national parks being nominated for the World Heritage List based on their natural values.

PART FOUR – OPTIONS FOR FUTURE GRAZING

Findings in relation to geographic options (Chapter 10)

30. Continuing grazing over all currently licensed areas (Option G1) offers both positive and negative economic and social outcomes, but would continue environmental impacts and degradation associated with grazing across some of the most significant and sensitive parts of Victoria.

31. Environmental outcomes and national park standards are clearly maximised if grazing were to cease across the park (Option G3). However, this would involve some economic and social costs, especially to current licensees.

32. The continuation of grazing in reduced areas of the park (Option G2) could mitigate some of the socio-economic impacts while still offering improved environmental outcomes.

33. Cultural heritage values will be maintained under all geographic options. However, those options allowing at least some grazing would enable traditional associations with specific areas and related skills and knowledge to be maintained in the park.

Findings in relation to administrative options (Chapter 11)

Licence allocation

34. The most cost effective and simplest licence allocation option is to offer licences to existing licence holders (Option A3). However, it restricts the opportunity for new entrants.

35. Allocating licences competitively (Option A1 and to a lesser extent Option A2) is more equitable and would increase gross returns to the government and the community, provided that there is a functioning market.

Licence fee

36. The best way to determine the true market value of grazing in the national park is to conduct an auction process (Option F1). This could increase financial returns to government. However, administration costs could exceed any increased revenue.

37. A fixed fee based on assumed market valuation (Option F2) or cost recovery (Option F3) will better reflect the real costs and benefits of grazing, and increase the return to government.

38. Full cost recovery is unlikely to be obtained by auction or market valuation methods (Option F1 or F2) and, if sought as a fixed fee (Option F3), will most likely be uneconomic for most graziers.

Licence term

39. Shorter terms will increase the flexibility of the government to make changes to the licence conditions and boundaries and respond to poor performance, but reduce the incentive for licensees to commit additional resources to their licensed area.

Findings in relation to maximising values (Chapter 12)

40. A number of actions will increase values irrespective of whether grazing continues or not. Actions to improve a particular value may, however, adversely affect other values.

Maximising natural values

41. In areas where grazing continued, natural values could be improved by more on-ground management (e.g. fencing or full-time droving) by licensees. However, the extensive fencing which would be required to protect sensitive areas such as streams and mossbeds, together with the provision of alternative watering points, would be very costly and have considerable impacts on the landscape and other values of the park.

42. In areas where grazing ceased, on-ground works to rehabilitate and restore damaged areas, and integrated weed and feral animal control programs, would help to maximise natural values.

Maximising economic values

43. A major way to maximise economic values is to increase the level of tourism to the high country through targeted promotion and improved visitor facilities on strategic routes and locations.

Maximising social values

44. Maximising social values is most relevant to the situation if all or most grazing does not continue. Providing some form of assistance, providing support to individuals and local communities through various programs and encouraging employment opportunities in the park for those affected could assist in maximising social values.

Maximising cultural values

45. Regardless of whether grazing continues or not, a range of measures have been identified which could maximise the cultural heritage values in the park (e.g. better interpretation), recognising that the activity continues outside the park.

Findings in relation to licence conditions (Chapter 13)

46. Licence conditions could be improved to enhance environmental outcomes and gain more value from licensee presence and experience. They could also be improved by including an appropriate penalty system.

47. Licence boundaries could be improved by ensuring that they more closely match natural boundaries and the areas actually grazed.

PART ONE – INTRODUCTION

The first chapter of this report introduces the Taskforce, its terms of reference and its processes. The second chapter provides background to the grazing issue, including a brief overview of the Alpine National Park, grazing in the high country generally, and grazing in the Alpine National Park (which forms part of the high country) in particular.

CHAPTER 1 – THE TASKFORCE

THE ALPINE NATIONAL PARK GRAZING ISSUE

1.1 The Alpine National Park is located in Victoria's high country in eastern and north-eastern Victoria (Figure 1). It is the State's largest and one of its most significant national parks. It has very high nature conservation and water production values, a rich cultural heritage and outstanding recreation and tourism opportunities.

1.2 The national park also contains areas that have long been used for cattle grazing. Special provision was made for grazing to continue in parts of the park under seven-year licences when it was legislated in 1989. This followed recommendations by the former Land Conservation Council (LCC) in 1983[1], and negotiations and decisions connected with the legislation.[2]

1.3 There are strongly held views on whether or not cattle grazing should continue in the national park. On the one hand, the activity is seen as a significant part of the cultural heritage of the high country, and important to the livelihoods of licensees. On the other, it is seen to be damaging important catchment and biodiversity values, heavily subsidised and an inappropriate use of a national park.

1.4 Most of the seven-year licences that permit cattle to graze in the park expire in August 2005, providing a timely opportunity to review the future of this activity in the park.

THE ALPINE GRAZING TASKFORCE

1.5 On 11 May 2004 the Minister for Environment, John Thwaites MP, announced the establishment of the Alpine Grazing Taskforce (the Taskforce) comprising the following four members of Parliament:

- Ian Maxfield MP, Member for Narracan (Chair)
- Jenny Lindell MP, Member for Carrum
- Tony Lupton MP, Member for Prahran
- Robert Mitchell MLC, Member for Central Highlands Province.

1.6 The purpose of the Taskforce was to investigate and report on options relating to the future of cattle grazing in the Alpine National Park. Its terms of reference were as follows:

The Taskforce is required to undertake an investigation into the following areas:

1) *Investigate the current and potential benefits and impacts of cattle grazing in the Alpine National Park.*

2) *Consider the implications of renewal or non-renewal of cattle grazing licences for local communities and their economic and social viability; for the cost of management services for the Alpine National Park; for the security of natural resource values; and for the viability of the park.*

3) *Based on these considerations, examine possible options for the future of cattle grazing in the Alpine National Park.*

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1 Land Conservation Council, *Alpine area special investigation final recommendations*, LCC, 1983. The LCC made recommendations to the government on the use of public land in the Victorian Alps.

2 *National Parks (Alpine National Parks) Act 1989*.

4) *Within each viable option, identify opportunities for maximising natural, economic, social and cultural values.*

5) *Identify any further available evidence that will be useful to the Minister in making his decision on whether to renew licences that expire in August 2005, and in determining what conditions may be required in relation to any renewed licences.*

1.7 The Taskforce's role related only to investigating the future of grazing in the Alpine National Park. It did not examine grazing in State forest in the high country outside the Alpine National Park.[3] It was also not required to re-examine decisions relating to the return of cattle to areas affected by the 1998 and 2003 fires, as these are handled through a different process.

1.8 The Taskforce was supported in the investigation by the Department of Sustainability and Environment.

CONSULTATION

1.9 The Taskforce was keen to consult with the community and to hear its views on the issue. It was particularly concerned to hear from those whose livelihoods would be directly affected by any changes to licences. There were several opportunities for such input, as described below.

Initial information about the Taskforce

1.10 On 14 May 2004, letters were sent to the nominated representatives of the 61 Alpine National Park licences advising them of the establishment of the Taskforce, inviting submissions and welcoming their participation. Similar letters were sent to many stakeholder and other organisations.

1.11 Advertisements were placed in the *Herald-Sun*, *Stock and Land*, *The Age*, *Weekly Times* and seven regional newspapers announcing the formation of the Taskforce and inviting submissions. A media release was also widely circulated and was used by the media.

Written submissions

1.12 The Taskforce received approximately 3600 written submissions over a five-week submission period in May and June 2004. These included some 1200 original letters and emails and 2400 standard form letters. Submissions were received from individuals and businesses as well as a wide range of organisations and agencies.

1.13 Appendix B summarises the main points raised in the submissions. Some submissions were brief, while others were very detailed and contained substantial information. The Taskforce has taken all submissions into account, and several are specifically referred to in this report.

Regional visits and oral submissions

1.14 To provide opportunities for interested individuals and representatives of various organisations in the regions to meet the Taskforce, it visited Bairnsdale, Omeo, Bright

[3] The Victorian high country includes the Alpine National Park and substantial areas of State forest, as well as areas of freehold land. The term is used in this report to refer broadly to the Victorian Alps.

and Mansfield over a four-day period in June 2004. It met approximately 85 individuals over the course of 49 meetings. These included many of those involved in grazing cattle in the national park, and representatives of five of the six local governments whose municipalities contain part of the park.

1.15 The personal presentations reinforced many of the general points made in submissions. However, the additional points of detail provided and the personal experiences conveyed helped the Taskforce to gain a better appreciation of the issues and concerns.

Presentations by key stakeholders and experts

1.16 To enable the Taskforce to gain a more detailed understanding of key issues and matters to be considered, it heard presentations from the two main stakeholder groups, the park managers and several experts and consultants, as follows:

- representatives of the Mountain Cattlemen's Association of Victoria (MCAV)
- representatives of the Victorian National Parks Association (VNPA)
- senior managers of Parks Victoria, who presented on a range of matters relating to managing grazing in the national park
- scientists who have worked on the catchments, vegetation and soils of the high country over many years (Dr Ruth Lawrence, Dr Dick Williams and Dr Ken Rowe)
- the socio-economic consultants (URS Australia) (see below).

SITE VISITS

1.17 To see the issues first-hand, various Taskforce members visited the following locations in the national park:

- 15 April (prior to the formation of the Taskforce) – Bogong High Plains – on a trip organised by the VNPA
- 19 May – Bogong High Plains – on a trip organised by Dr Bill Sykes MP (Member for Benalla) and the Alpine Conservation and Access Group
- 24 May – Bennison and Wellington plains (in the south-west of the park) – with Parks Victoria staff
- 21 June – Buenba Flat, north-east of Benambra – with representatives of the MCAV, and Mr Craig Ingram MP (Member for East Gippsland) and Mr Ken Norris (Chair, East Gippsland Catchment Management Authority)
- 23 June – Wonnangatta Valley – with a Parks Victoria staff member
- 25 November – Bogong High Plains – with representatives of the MCAV
- 26 November – Buckety Plain and the Bogong High Plains – in a joint inspection with representatives of the MCAV and the VNPA.

ADDITIONAL WORK COMMISSIONED

1.18 To obtain additional information on particular matters relating to the investigation, the following two studies were commissioned through the Department of Sustainability and Environment.

Socio-economic study

1.19 URS Australia was commissioned to carry out a socio-economic assessment of aspects of cattle grazing in the Alpine National Park, including its contribution to the local economy and possible impacts if grazing in the national park became unavailable. The consultants surveyed 14 licensees and held two focus groups, in Omeo and Bright. The focus groups involved members of the local communities, including several licensees and local government representatives.

1.20 The interviews and focus groups provided an additional opportunity for the views of licensees and others to be heard. The results of the consultancy are referred to in the report (particularly Chapter 6), and the executive summary is included in Appendix C.

Bogong High Plains mossbed condition assessment

1.21 The Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, in collaboration with the Centre for Applied Alpine Ecology, La Trobe University, was commissioned to prepare a report on the condition of mossbeds on the licensed area of the Bogong High Plains. The Bogong High Plains contains the highest concentration of mossbeds in the park. The purpose of the consultancy was to provide a current and independent assessment of their condition. The results are referred to in Chapter 3 of the report, and the summary is included in Appendix D.

STRUCTURE OF THE REPORT

1.22 This report is organised into four main parts, as follows.

Part One – Introduction

Chapters 1 and 2 provide an outline of the Taskforce investigation and an overview of the Alpine National Park, grazing in the high country and grazing in the park.

Part Two – Benefits and impacts of grazing in the Alpine National Park

Chapters 3–8 address the first term of reference and discuss benefits and impacts of grazing in relation to the natural environment, fire, cultural heritage, socio-economic matters, recreation and tourism, and national park standards.

Part Three – Other matters

Chapter 9 raises other matters relevant to a decision on the future of cattle grazing in the park (the first half of the fifth term of reference). These are the implications of the 1998 and 2003 fires on future grazing, and the issue of potential heritage listings.

Part Four – Options

In Chapters 10–12, a range of grazing and administrative options are described (responding to the third term of reference), the implications of these options are discussed (the second term of reference), and ways to maximise particular values are proposed (the fourth term of reference). Chapter 13 discusses licence conditions that could be applied if some or all grazing continues (the second half of the fifth term of reference).

1.22 The figures referred to in the text are located at the back of the report. Figure 2 shows the locality of places referred to in the text.

CHAPTER 2 – BACKGROUND

2.1 This chapter provides an overview of the Alpine National Park and cattle grazing in the Victorian high country generally and the park more particularly. Additional details are provided in Part Two of the report in relation to environmental, cultural heritage and socio-economic issues and other matters.

THE ALPINE NATIONAL PARK

2.2 The Alpine National Park, covering 660 550 hectares, is Victoria's largest national park. It is located in the high country in eastern and north-eastern Victoria, extending from near Licola and Mount Buller in the west to the Murray and Snowy rivers and beyond in the east (Figure 2). The park is mostly surrounded by State forest but abuts the Snowy River National Park and Avon Wilderness Park in Victoria and Kosciuszko National Park in New South Wales.

2.3 The national park comprises a series of high plains, tablelands, ridges and mountain peaks surrounded by mountainous terrain and deep river valleys. It contains most of Victoria's highest peaks, including the highest, Mount Bogong (1986 metres). As shown in Figure 3, most of the park lies above 800 metres, with a considerable area above 1220 metres (approximately the snowline).[4]

2.4 As also shown in Figure 3, the park contains the headwaters and upper catchments of several of Victoria's major streams, including the Jamieson, Howqua, King, Ovens, Kiewa, Mitta Mitta, Mitchell and Macalister rivers, as well as tributaries of the Snowy River and the upper Murray River. Land above 1200 metres has the highest water yield in Victoria.[5] Consequently, the catchments in the park are a vital source of high quality, reliable water for downstream uses such as agricultural and domestic water supply, hydro-electric power, recreation and tourism, and river health. The park contributes nearly 10% of Victoria's streamflows.[6] Most of the catchments in the park form part of declared water supply catchments under the *Catchment and Land Protection Act 1994*.[7]

2.5 Many of the natural values of the Alpine National Park are considered to be of national significance.[8] In addition, the park is part of the broader Australian Alps, which are considered to be of international significance and to have world heritage potential because of their outstanding natural values.[9]

2.6 A feature of the national park is its diverse range of vegetation communities, including riverine forests, rainshadow woodlands, dry forests, montane forests, snow gum woodlands and, in high elevation treeless areas, heathlands, herbfields, grasslands,

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4 The snowline is the level above which snow lies for at least one month of the year. Although this varies from year to year, it has been regarded in Victoria as being about 4000 feet (approximately 1220 metres).

5 Land Conservation Council, *Final recommendations – Alpine area*, LCC, Melbourne, 1979.

6 SKM, *Run-off from the Victorian Alpine National Park*, Technical report, 2005.

7 http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/landuse-water-supply-catchments

8 J Busby, *The national and international scientific significance of national parks in Eastern Victoria*, National Parks and Public Land occasional paper series no. 8, Department of Conservation and Environment, 1992.
The Australian Heritage Council is currently assessing the Alpine National Park for possible inclusion on the National Heritage List (see Chapter 9).

9 R Good (ed.), *The scientific significance of the Australian Alps*, The proceedings of the first Fenner conference on the environment, Canberra, September 1988, The Australian Alps National Parks Liaison Committee, 1989.
J Kirkpatrick, *The international significance of the natural values of the Australian Alps*, a report to the Australian Alps Liaison Committee, 1994.

mossbeds and snowpatch communities. Of particular note is that most of Victoria's alpine and treeless subalpine vegetation is located within the park. Figure 4 shows the distribution of alpine and sub-alpine treeless vegetation and sub-alpine woodlands in and near the park, and the location of the mossbeds in the park that have been mapped. It also shows the location of the rainshadow woodlands of the Snowy River.

2.7 The park supports about one third of Victoria's native plant species, more than half of the State's terrestrial bird species and 40 per cent of its mammal species. A total of 1189 plant and 339 animal species have been recorded, including 298 rare and threatened species (243 flora and 55 fauna).[10] There are 47 species listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act) and 32 species listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).[11] Several species found in the park are endemic, that is, not found anywhere else in the world.

2.8 The significance of the park is also highlighted by the additional statutory protection given to several areas with particular values. There are 6 wilderness zones and 8 remote and natural areas under the *National Parks Act 1975*, part or all of 6 heritage rivers and 6 natural catchment areas under the *Heritage Rivers Act 1992*, and 16 reference areas under the *Reference Areas Act 1978*. Figure 5 shows the location of the wilderness zones, heritage rivers, natural catchment areas and reference areas.

2.9 The park has a rich cultural heritage, both Indigenous and non-Indigenous. Many Aboriginal sites have been found in the park. There is also the legacy of a range of activities that have occurred since European settlement, including gold mining, livestock grazing, hydro-electric scheme development, timber harvesting, recreation, conservation and scientific research.[12]

2.10 The park provides outstanding recreation and tourism opportunities for visitors against a backdrop of magnificent mountain and alpine scenery. Visitors enjoy a variety of recreational activities, including vehicle touring (both 2WD and 4WD), picnicking, camping, walking, cycling, horse riding, fishing, deer stalking and cross-country skiing. Falls Creek and Mount Hotham alpine resorts, which are surrounded by the park, provide a base for both winter and summer activities in the park.

2.11 Parks Victoria manages the Alpine National Park in accordance with Victoria's *National Parks Act 1975* and other legislation, the park management plan and park management policies. Victoria is a signatory to the Memorandum of Understanding for the Cooperative Management of the Australian Alps National Parks, which encourages the Commonwealth, ACT, New South Wales and Victorian governments to develop complementary policies to protect the scenery, water catchments, plants, animals and cultural heritage of the Australian Alps national parks.

GRAZING IN VICTORIA'S HIGH COUNTRY

2.12 The earliest record of cattle entering Victoria's high country, which today includes both the Alpine National Park and adjacent State forest, dates back to 1834 when cattle

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[10] Parks Victoria, *State of the Parks 2000: the parks system*, Parks Victoria, Melbourne, 2000. Data in that publication are based on records for the 30 years before 1998.

[11] Parks Victoria data, 2005.

[12] Australian Alps Liaison Committee, *Cultural Heritage of the Australian Alps*, Proceedings of the symposium held at Jindabyne, New South Wales, 16–18 October 1991, Australian Alps Liaison Committee, Canberra, 1992. The Australian Heritage Council is currently assessing the Alpine National Park for possible inclusion on the National Heritage List.

were brought across from the Monaro to the Omeo area. Some of the original pastoral runs included high country areas.

2.13 In the 1860s and 1870s, when squatters' runs were broken up and opened up for selection, grazing in the higher areas of the Alps was sought to supplement smaller home property pastures. By the late 1870s, most suitable areas of the high country had been seasonally occupied for livestock grazing. Annual licences over defined grazing blocks were formally made available to applicants from 1887. Since then, licences have been issued under various Crown land Acts (Land, Forests and National Parks Acts) depending on the land status at the time.

2.14 The number and type of livestock that could be carried under early grazing licences were unrestricted. Cattle, sheep and horses were all grazed at different times, and stock numbers were much higher in the past than they are today, particularly in drought years. For example, it is reported that in the drought year of 1902 more than 40 000 sheep as well as large numbers of cattle and horses grazed the Bogong High Plains area.

2.15 Due to concerns over damage to the soils and vegetation of important water catchments, increasing controls on grazing in the high country were progressively introduced from the 1940s. In consultation with the graziers, the grazing of horses and sheep and burning-off by graziers were banned on the Bogong High Plains in 1946. Restrictions on the length of the grazing season were also introduced. In the 1950s cattle were excluded from several of the highest peaks and ridges, including Mounts Bogong, Feathertop, Loch and Hotham. In 1960, supervisory control for all grazing above 4000 feet (approximately 1220 metres) – the snowline – was given to the Soil Conservation Authority.

2.16 Grazing was excluded from additional areas of the high country in 1989 and 1991 as a result of the State's purchase of Wonnangatta Station and implementation of the former LCC's recommendations for public land use in the Victorian Alps.[13] These areas included, in the west, the Wonnangatta Valley, northern Snowy Range, Howitt Plains, the Bluff and Wabonga Plateau and, in the Bogong area, the northern Bogong High Plains and the remaining upper slopes of Mount Bogong (all within what is now the Alpine National Park). Grazing also ceased east of the Snowy River as a result of LCC recommendations for the East Gippsland area.[14]

2.17 More recently, cattle have been temporarily excluded from various areas to help in their recovery from the effects of the 1998 and 2003 fires (see later section).

2.18 Grazing occurs in the high country in both the Alpine National Park and the adjoining State forest, as well as on areas of freehold land. Extensive areas of State forest are licensed – for example, near Mounts Buller and Stirling, south of Mount Buffalo, in the Dargo High Plains and Dinner Plain areas, west of Limestone Creek and on the Nunniong Plain (Figure 6). Many of the State forest grazing licence areas are contiguous with licence areas in the national park, having been a single licence area before the park was created.

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[13] Land Conservation Council, *Alpine area final recommendations*, LCC, Melbourne, 1979.
Land Conservation Council, *Alpine area special investigation final recommendations*, LCC, Melbourne, 1983.

[14] Land Conservation Council, *East Gippsland area review final recommendations*, LCC, Melbourne, 1987.

2.19 A maximum of 7914 adult equivalent (AE) cattle[15] are licensed to graze in the Alpine National Park. Licences issued for State forest in the high country in the general vicinity of the park allow about 10 000 cattle to graze, including about 4000 cattle under licences which include areas above 1220 metres. National park licensees also hold licences to graze about 6000 (of the 10 000) cattle in State forest.[16]

2.20 Most of the grazing in the high country occurs over the summer months. Cattle are taken up from their home properties in the lowlands in early summer to graze at the higher elevations, particularly the favoured grasslands and herbfields of the various high plains. They are taken down again in autumn before the winter snowfalls. This practice allows the farming operation to maintain a higher overall stocking rate by resting the home paddocks. Grazing also occurs in some lower elevation areas of the high country throughout the year.

GRAZING IN THE ALPINE NATIONAL PARK

2.21 Cattle are licensed to graze in the Alpine National Park under specific sections of the National Parks Act. Section 32AD, the main section dealing with grazing in the park, specifies the areas over which seven-year grazing licences may be granted, the persons initially entitled to be granted licences in the park, and the basis for licence conditions. An 'Agreement on provisions for grazing licences in the Alpine National Park' sets out the conditions that must be included in the licences.[17]

2.22 There are 61 licences which permit grazing in the park. Fifty-nine are seven-year licences granted under section 32AD of the National Parks Act. Of the 59 licences, 55 expire on 12 August 2005 and 4 on 30 June 2006. There are also two annual licences which, in accordance with sections 57 and 58 of the National Parks Act, are administered under the *Land Act 1958* and *Forests Act 1958*. Seven-year licences were issued in 1991 and renewed in 1998.

2.23 The licensed areas of the park total approximately 310 000 ha (47% of the park). However, as the MCAV pointed out to the Taskforce, not all of this area is actually grazed. Cattle favour certain areas, in particular the open grasslands and herbfields of the high plains and the grassy river flats at the lower elevations. Much of the licensed steeper and heavily forested country is not grazed. The MCAV has estimated that grazing actually occurs over about 100 000 hectares or 15% of the park.

2.24 The main grazing areas in the park are the headwaters of the King, Howqua and Jamieson rivers, the Bennison, Holmes and Wellington plains, the Dargo High Plains area, Bogong High Plains, Davies Plain and the Limestone Creek–Buchan River headwaters–Snowy River area south of the State border (Figure 2).

2.25 The maximum number of adult equivalent (AE) cattle allowed to graze in the park is 7914. The maximum number allowed to graze under each licence ranges from 3 to 867 AE cattle. Most licences provide seasonal grazing from early summer to mid-autumn. However, 13 licences, with a total allocation of 182 AE cattle, allow grazing to occur throughout the year in some of the lower elevation areas.

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[15] For the purposes of stocking rates in the Alpine National Park, two calves less than 12 months old or one cow more than 12 months old are counted as one 'adult equivalent' (AE).

[16] Grazing is currently suspended from many licence areas in the park and State forest because of the 1998 and 2003 fires.

[17] The Agreement was agreed to by representatives of the three political parties when the legislation to create the park was before Parliament.

2.26 Section 32AD of the National Parks Act entitled those who held a licence over specified parts of the park immediately prior to 2 December 1989 (when the park was created) – and who applied within a specified time – to be granted a seven-year licence. Licences may be transferred with the approval of the Minister, after consultation with the Alpine Advisory Committee, to a member of a family of mountain cattlemen or any other approved person.[18]

2.27 The individual licence arrangements are varied. The 61 licences are held variously in the name of individuals (some deceased), groups of individuals (from the same household, from extended families or unrelated, with some operating independently of each other and others operating together), companies, estates and various combinations thereof. Several licensees hold two or more licences each (up to five).

2.28 When licences were renewed in 1998, licensees were requested to indicate those who were the 'parties' to the licences. There are 81 parties (74 individuals and 7 companies) recorded for the 61 licences. Several individuals and companies are parties to two or more (up to five) licences.

2.29 For the purposes of licence administration, each licence has a nominated contact person responsible for licence management (usually a licensee). There are 45 different contact persons for the 61 licences (some individuals are contacts for up to five licences). The 45 licence contacts indicate the number of single licences or groups of licences under which grazing occurs in the park (recognising that the arrangements under each licence or set of licences vary, as explained above).

2.30 About two-thirds of the maximum number of stock licensed to graze in the park and about two-thirds of the licence contacts are connected to farms in Gippsland (from Licola to Dargo) and East Gippsland (particularly around Omeo, Benambra and Wulgulmerang). The remaining third is connected with north-east Victoria (particularly around Mansfield and the Kiewa Valley). Figure 7 shows the licence areas of the park according to the local government area of the relevant licence contacts.

2.31 Each licence includes a range of standard conditions relating to livestock management and licence administration. Appendix F contains a sample licence document. The licence fee is $5.50 per AE per season (including GST), or $5 excluding GST. Further details and analysis of grazing in the park are included in Chapter 6.

Current grazing in the Alpine National Park

2.32 Two major fires have occurred recently in the Alpine National Park. The 1998 Caledonia Fire, north-east of Licola, burnt 22 000 hectares (3%) of the park (and another 13 000 hectares of State forest). The 2003 Victorian Alpine Fires affected nearly 1 million hectares of public land, including 396 000 hectares (60%) of the Alpine National Park.

2.33 Together, the two fires burnt about 63% of the national park, including more than 80% of the area licensed for grazing. Figure 8 shows the boundaries of the two fires in relation to the national park and the licensed areas of the park.

2.34 The fires have significantly affected what grazing is currently able to take place in the park. Grazing under 34 of the 61 park licences is suspended until at least the end of the current licence period to assist recovery from the fires (scientific advice is that

[18] The Alpine Advisory Committee is established under section 32AE of the National Parks Act. Where a licence is held by a company, the current arrangements do not require approval of the Minister for changes in directors, only notification.

cattle will need to be excluded for at least a decade in many areas). Grazing under another 16 licences is permitted subject to special conditions (including reduced allocations for some). Only 11 licences, in the west of the park, have not been recently affected by fire.

2.35 In terms of the number of cattle currently permitted to graze in the park, the fires have meant that only 1759 (22%) of the 7914 AE cattle normally permitted to graze were allowed to do so in the 2003–04 and 2004–05 grazing seasons. However, in each of those seasons, the number recorded as potentially grazing was considerably less: 866 AE cattle (11% of the normal maximum allocation) in 2003–04, and 739 AE cattle (9%) in 2004–05 (see also Table 7 in Chapter 9). The impact of the fires on grazing is further discussed in Chapter 9.

PART TWO – BENEFITS AND IMPACTS OF CATTLE GRAZING IN THE ALPINE NATIONAL PARK

Chapters 3 to 8 primarily address the first term of reference of the Taskforce:

> *Investigate the current and potential benefits and impacts of cattle grazing in the Alpine National Park*.

The various topics covered in the following chapters reflect those consistently raised in submissions. They have been grouped under the following headings: the natural environment, fire, cultural heritage, socio-economic issues, recreation and tourism, and national park standards. For each topic, the respective benefits and impacts are discussed, followed by the findings of the Taskforce.

Many submissions to the Taskforce considered that non-native animals other than cattle (e.g. feral horses, pigs, deer), weeds and other causes of disturbance were a significant concern. While the Taskforce believes that control of these impacts should have a high priority, this investigation is necessarily focused on cattle grazing.

CHAPTER 3 – THE NATURAL ENVIRONMENT

3.1 Many submissions made some comment relating to cattle grazing and the environment. There were matters raised relating to water catchments (including mossbeds, streams and water quality), vegetation, flora and fauna (including threatened species), weeds and the general condition of the park. In considering the environmental issues, the Taskforce was also able to draw on the results of many years of scientific study of alpine and sub-alpine environments. Fire is discussed in Chapter 4, and the appropriateness or otherwise of cattle grazing in a national park in Chapter 8.

3.2 Cattle are grazed in a variety of environments across the Alpine National Park. However, the majority are grazed above the snowline during the summer months, particularly on various high plains. The higher areas are characterised by snow gum woodlands and the distinctive treeless alpine and sub-alpine grassland, heathland and mossbed communities. Snowpatch communities also occur on the Bogong High Plains. At lower elevations, grazing is concentrated in the river valleys.

3.3 The soils and vegetation above the snowline, particularly those of the treeless areas, are sensitive to physical disturbance by a variety of agents. The moist soils of the streambanks, mossbeds, soaks and snowpatches, and soils on steep slopes, are particularly vulnerable. Conditions at the higher elevations are harsh. There are frequent and often severe frosts, strong winds and intense storms. The growing season for plants is short, and the soils are low in nutrients. Consequently, once disturbed, soils and vegetation can take a long time to recover.

3.4 In considering the environmental effects of grazing, the Taskforce notes that the park's vegetation has not evolved with hard hooved, heavy herbivores such as cattle. It also recognises that, although cattle are free ranging, their activities are not evenly distributed across the landscape.[19] Cattle generally graze in groups, and prefer particular vegetation communities (such as grasslands) where they selectively eat the more palatable species.[20] In the absence of dams, cattle obtain water directly from streams or mossbed areas. In addition, some vegetation communities (particularly mossbeds and snowpatch areas) and areas with particular physical attributes (such as steep slopes, highly erodible soils or streambanks) are more susceptible to disturbance than others. As a result of these factors, the effects of cattle will not be evenly spread across the landscape but will be concentrated in particular parts of it.

WATER CATCHMENTS

3.5 A significant issue raised in both submissions and presentations to the Taskforce was the importance of protecting high mountain water catchment values. This is topical given the increasing community awareness of the importance of water generally.

3.6 As noted in Chapter 2, the Alpine National Park contains the headwaters of several of Victoria's major streams, the water from which is of critical importance to many downstream users. The high mountain catchments, compared to Australian catchments generally, are important for the large amounts of water they produce reliably, the slow release of the water, and water quality. In a dry continent, these are important features.

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[19] This means that the stocking rate for a licence area may not reflect the actual grazing pressure for any given area. It may be higher in some parts of the licence area and lower in others.

[20] H Van Rees, *The behaviour and diet of free-ranging cattle on the Bogong High Plains, Victoria*, Department of Conservation, Forests and Lands, 1984.

3.7 The Taskforce learnt how protection of the high mountain catchments in both Victoria and New South Wales (Kosciuszko) has been an important consideration in decisions on livestock grazing in those areas since the 1940s, when controls were first introduced to reduce the adverse impacts of grazing on the catchments (see Chapter 2). It was also concern over the high mountain catchments in Victoria and New South Wales that led to two definitive reports in 1957 by the Soil Conservation Authority and the Australian Academy of Science, both of which found serious vegetation disturbance and soil erosion caused by livestock grazing and by fire.[21]

Catchment protection

3.8 There was concern that cattle create bare ground and damage mossbeds and streambanks, thereby affecting the condition of the catchments. A range of views was put to the Taskforce about the current condition of the higher licence areas of the Alpine National Park, particularly the high plains.

3.9 Leaving aside the effect of the fires, submissions from licensees and others considered that the high country was generally in good condition, and that any damage seen today pre-dates the introduction of controls on grazing. At worst, any damage was considered to be only localised. Some pointed out that the grazed areas were in good enough condition for them to be included in the national park (or, in the case of part of Davies Plain, a wilderness zone) despite many years of grazing.[22]

3.10 Because the effects of cattle varies across the landscape, some parts of the landscape will be in better condition than others. A 1991 rangeland assessment of the southern Bogong High Plains documented variations in condition within and between vegetation communities across the high plains.[23] Similarly, the 1957 report on the condition of Victoria's high mountain catchments identified a range of conditions across and within different parts of the Alps.[24]

3.11 The Taskforce learnt that, in the natural state, the soil in most alpine and sub-alpine treeless vegetation communities has close to 100% vegetation cover. There is little exposed bare ground.[25] Compared to ground that is well covered by vegetation, bare ground is more prone to soil erosion by frost heave (needle ice), wind and water.[26] This leads to a loss of nutrients and an increase in run-off. The best way to protect high mountain catchments is to minimise bare ground and disturbance to soils and vegetation.

3.12 Grazing and trampling in grasslands creates bare ground between the snowgrass tussocks, where cattle selectively graze palatable species. Following the action of needle ice, the loose, fine soil material between the tussocks may be lost though wind erosion. It was pointed out that such soil loss is mostly diffuse and inconspicuous.

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21 A B Costin, *High mountain catchments in Victoria in relation to land use*, Soil Conservation Authority of Victoria, 1957. Australian Academy of Science, *A report on the condition of the high mountain catchments of New South Wales and Victoria*, AAS, 1957.

22 This issue is discussed in Chapter 8 but it is worth noting here that it is not possible to establish a representative parks system based only on pristine areas.

23 P W Farrell & L R Jeremiah, *Assessment of rangeland condition on the Bogong High Plains*, unpublished report, Department of Conservation and Environment North East Region, 1991.

24 A B Costin, 1957 – see note 21.

25 R Williams, I Mansergh, C-H Wahren, N Rosengren & W Papst, 'Alpine landscapes', pp. 296-310, in P Attiwill & B Wilson (eds), *Ecology: an Australian perspective*, Oxford University Press, Melbourne, 2003.

26 As stated in the reference in note 25 (p. 356), needle ice is particularly prevalent during autumn and spring when the soils are moist but there is no snow to protect them. The needles of ice grow beneath the soil and lift up soil particles and any unanchored seedlings. As the ice melts, the soil particles are left on the surface where they may dry out and are very susceptible to movement by wind.

Urine from cattle in some instances burns vegetation, killing it. This also may eventually result in bare ground.[27]

3.13 Research on the hydrology of two catchments on the Bogong High Plains showed that stream run-off in the grazed catchment was faster and more prone to flash flows (and therefore had more erosive power) than in the ungrazed one. This reflected differences in the condition of the two catchments.[28]

3.14 Submissions referred to the long-term research on the Bogong High Plains and, in particular, to the cattle exclusion plots established by Mrs Maisie Carr (nee Fawcett) and Professor John Turner in the mid 1940s, which members of the Taskforce visited. The results of this research consistently show that there is significantly more bare ground in grazed grassland than in ungrazed grassland.[29] The amount of bare ground in grazed areas (often more than 10%) has remained well above the levels required for optimal catchment protection (as close to zero as possible).

3.15 The detailed analysis published in 1994 of vegetation records collected over a period of 50 years at the exclusion plots on the Bogong High Plains concluded that the grazed grasslands there may be described as "stable, but in terms of soil and nature conservation values they are degraded".[30]

3.16 In 1979, the LCC, in commenting on the trend in catchment condition of the alpine and sub-alpine grasslands and herbfields in the Victorian Alps, stated that:

> *to attain the highest standards of catchment condition, the long-term phasing out of grazing in many of these areas [alpine and sub-alpine grasslands and herbfields] would be required*.[31]

3.17 Importantly, the Taskforce was informed that when stock have been removed from various areas, such as has occurred on parts of the Bogong High Plains and some of the adjacent peaks (e.g. Mount Loch), there has been a marked improvement in both their catchment and nature conservation values.[32] This has been observed in small fenced exclosures as well as larger areas, and has also been extensively documented in Kosciuszko National Park.[33]

3.18 The submissions contained a range of views about the significance of cattle tracks across the landscape. There was considerable photographic evidence provided of tracks on the Bogong High Plains (e.g. on Mount Fainter). One submission observed that cattle tracks in parts of the park are stable and not eroding. The Taskforce was told that on slopes, cattle generally follow contour lines, and water erosion is therefore less significant. It was pointed out that horses and bushwalkers, as well as cattle, create tracks.

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27 H Van Rees, *The behaviour and diet of free-ranging cattle on the Bogong High Plains, Victoria*, Department of Conservation, Forests and Lands, 1984.

28 Dr Ruth Lawrence, La Trobe University. Presentation to the Taskforce, 18 June 2004.

29 C-H Wahren, W A Papst & R J Williams, 'Long-term vegetation change in relation to cattle grazing in subalpine grassland and heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994', *Australian Journal of Botany*, vol. 42**,** 1994, pp. 607–639.

30 C-H Wahren, W A Papst & R J Williams, 1994 – see note 29.

31 Land Conservation Council, *Alpine Area final recommendations*, LCC, Melbourne, 1979.

32 For example, see: A B Costin, *Report on inspections of parts of the Bogong High Plains area May 2–6, 1977*, Soil Conservation Authority, Melbourne, 1977; C-H Wahren, W A Papst & R J Williams, 1994 – see note 29.

33 For example, see bibliography in R B Good*, Kosciusko heritage. The conservation significance of Kosciusko National Park*, National Parks and Wildlife Service of New South Wales, 1992.

3.19 On the other hand, another submission stated that cattle tracks can act to channel water flow on slopes, whereas in unmodified communities dense tussock grasses disperse water flows. A report on Victoria's alpine vegetation noted that damage on repeatedly used tracks may be severe and commented that the degree of slope was a qualifying factor, with areas with substantial slope suffering the greatest disturbance.[34]

3.20 In contrast to the higher areas, the Taskforce observed when visiting Buenba Flat (at about 800 metres elevation) that areas at the lower elevations appeared more robust and less susceptible to erosion due to the less harsh conditions. Although this might generally be the case, the Taskforce understands that some of the lower areas are also vulnerable to disturbance. For example, in the rainshadow woodlands of the Snowy River, where plant growth is very slow, the soils are particularly erosion-prone.[35] Streambanks and associated riparian vegetation are also areas that are susceptible to trampling and erosion, as discussed below.

3.21 The Taskforce notes that the 1998 and 2003 fires that affected a large area of the park have added an extra factor to any consideration of the effects of cattle on the catchment condition of the park. This is further discussed in Chapter 9.

Streams and streambanks

3.22 A variety of submissions commented specifically on the impact of cattle on streams and water quality. Several referred to their own experience of seeing cattle trampling the banks of streams. Others considered that cattle have no serious impact on alpine streams and rivers because of the low stocking rates and the short grazing season.

3.23 Several submissions cited the potentially threatening process listed under the FFG Act: 'Increase in sediment input to rivers and streams due to human activities'. The listing statement for this process includes the grazing of cattle, and refers to the control of direct stock access to waterway areas as a means of minimising sediment production. An increase in sediment can increase turbidity and adversely affect aquatic animals by smothering gills or eggs or their habitat.

3.24 A report on Victoria's alpine (treeless) vegetation commented on how plant communities fringing watercourses are very susceptible to damage by trampling. It indicated how, once exposed, the embankment can rapidly become dissected or, in flatter situations, a "denuded miry area may replace the fringing vegetation".[36]

3.25 More broadly, the importance of protecting vegetation along streams and the impact of stock on such vegetation, regardless of elevation, has been widely recognised. 'Degradation of native riparian vegetation along Victorian rivers and streams' has been listed as a potentially threatening process under the FFG Act and recognises uncontrolled stock access as a threat. In some parts of the Alps, springs and soaks provide a source of water, and these may also be trampled.

3.26 A number of submissions commented that the situation in the Alpine National Park, where cattle have unimpeded access to streams, is inconsistent with other parts of the State where farmers are being encouraged through Landcare and other initiatives to fence off streambanks to exclude livestock. Some suggested that, if grazing continues, watering points should be provided away from sensitive areas, such as mossbeds and

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[34] N G Walsh, R H Barley & P K Gullan, *The alpine vegetation of Victoria (excluding the Bogong High Plains region)*, Department of Conservation, Forests and Lands, 1986.

[35] Department of Conservation and Environment, *Alpine National Park Cobberas-Tingaringy Unit management plan*, 1992.

[36] N G Walsh, R H Barley & P K Gullan, 1986 – see note 34.

streams (although they also pointed out the impact this would have on other park values).

3.27 In relation to water quality, bushwalkers and others raised the issue of cattle defecating and urinating close to or in streams. They expressed significant concern about the effect on water quality at water sources (see also Chapter 7). Defecation in or near water can lead to an increase in nutrients and a reduction in water quality. Algal growth may occur.

3.28 An assessment of the health of streams in the Australian Alps assessed the biological condition of two sites on the Bogong High Plains. The results suggested that the presence of stock at those sites had an adverse effect on the biological communities of the streams. The study also indicates that the adverse impacts may depend on the proximity of cattle to the streams and the number of cattle.[37]

3.29 Another study examined the recovery of streams following the removal of grazing. It found that there were clear differences in the quality of instream habitat between grazed and ungrazed areas. It also noted that most of the sites sampled in grazed areas had degraded populations of macroinvertebrates compared with what would have been expected.[38]

3.30 The Scientific Advisory Panel established to advise on grazing following the 2003 fires noted that several pathogens known to occur in cattle are considered to be of public health significance because they may affect people or other animals drinking contaminated water. These include *Giardia*, *Cryptospiridium*, *Salmonella*, *Campylobacter* and strains of *E. coli*.[39]

3.31 The Taskforce notes that while management bodies such as Parks Victoria and the alpine resort management boards go to considerable lengths and costs to manage human waste to prevent contamination of water supplies, there are no controls on contamination from cattle in the park.

3.32 Nearly all of the licence areas are within declared water supply catchments. Under the relevant State Environment Protection Policy (SEPP), the waters of the national park are required to meet the highest objective for water quality (that is, there is "no variation to background conditions").[40]

Mossbeds

3.33 The effect of cattle on mossbeds was one of the main environmental issues raised with the Taskforce, in both submissions and on its field visits. The Taskforce spent considerable time examining the issue with the MCAV, VNPA, scientists and others. It inspected mossbeds in both grazed and ungrazed areas of the Bogong High Plains and also on Buckety Plain and Wellington Plain.

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37 N Davies & R Norris, *Australian Alps stream health monitoring project final report*, Cooperative Research Centre for Freshwater Ecology, report prepared for the Australian Alps Liaison Committee, 2000.

38 L Simpson, 'Assessment of the effect of cattle exclusion on the condition and recovery of sub-alpine streams', BAppSci (Hons) thesis, University of Canberra, 2002.

39 G Harris & N Millis, 'Effect of grazing on the catchments and on the water quality and aquatic ecosystems of fire-affected areas of Victorian Alpine National Park', Paper one in *Report of the Scientific Advisory Panel on fire-affected grazing*, report prepared for Parks Victoria, 2003.

40 The Alpine National Park is included within the 'aquatic reserves' segment of the *State Environment Protection Policy (Waters of Victoria)* declared under the *Environment Protection Act 1970* (*Victoria Government Gazette*, 4 June 2003).

3.34 Alpine mossbeds (also referred to as bogs) are considered a significant feature of the Victorian Alps. Most of the mossbeds in the Alps occur in the Alpine National Park. They are scattered across the park but the greatest concentration is on the Bogong High Plains, where they cover approximately 10% of the treeless vegetation. Other concentrations are found on the Wellington Plains, Snowy Range (including Holmes Plain), Dargo High Plains and Davies Plain and in the Cobberas area. The distribution of the main mossbeds in the park which have been mapped are shown in Figure 4.

3.35 The Taskforce learnt that alpine mossbeds are a rare and specialised community occurring mostly on the high plains, occupying permanently wet sites along drainage lines and valley floors or surrounding seepage areas on hillsides. They generally cover about 1 to 10 hectares but are widely scattered. Peat, which comprises decomposed plant matter, develops very slowly under the sphagnum moss. Deep beds of peat are commonly dated at 3–4000 years old, one recently being dated at 8000 years.[41]

3.36 The Taskforce heard how mossbeds in good condition contain large amounts of peat and are able to absorb and hold large amounts of water.[42] They help to maintain stream flows in winter and early spring, and slowly release the water into streams over the summer months. This regulating role is critical in areas where water would otherwise be in short supply by the end of summer.[43] Mossbeds also filter suspended sediment from the water that passes through them.

3.37 The regulating and filtering functions of mossbeds are important in reducing erosion and producing clean water in the upper parts of those catchments where they occur. These functions make them highly significant despite the relatively small area they occupy.

3.38 Scientists consider that the area covered by mossbeds today is significantly reduced compared to earlier times. Early accounts of the Bogong High Plains and adjacent areas describe far more extensive and deeper bogs.[44] Whatever the cause of the mossbeds contracting in area, their reduced extent only makes the remaining ones even more important.

3.39 Many submissions argued that cattle cause significant damage to mossbeds. Others, however, pointed to the relatively small area of mossbeds overall and suggested that their importance is overstated. The MCAV stated that most mossbeds are flourishing and in excellent condition (acknowledging that remedial actions may be necessary in some areas). Some argued that much of the damage was historic and that any damage occurring today is at an acceptably low level or a result of natural processes.

3.40 The Taskforce accepts that significant damage to mossbeds occurred in the past (e.g. from fire, larger numbers of livestock, road construction and hydro-electric scheme works). It is also aware that mossbeds are damaged by deer and feral horses. Several submissions mentioned weed invasions by species such as grey willow and soft rush as emerging threats to alpine mossbeds.

3.41 Studies have shown that, because mossbeds often provide the most accessible water in an area, cattle use them as the major source of drinking water. While there, they

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41 Dr Ken Rowe, Presentation to the Taskforce, 18 June 2004.

42 About 90% of the volume of intact peat is water.

43 For example, see A B Costin, *High mountain catchments in Victoria in relation to land use*, Soil Conservation Authority of Victoria, 1957.

44 R Lawrence, 'Environmental changes on the Bogong High Plains, 1850s to 1990s', in S Dovers (ed.), *Australian environmental history: essays and cases*, Oxford University Press, Melbourne, 1994.

may graze preferred species such as Tufted Sedge (*Carex gaudichaudiana*). At hotter times of the day, cattle have been observed using mossbeds as resting places.[45]

3.42 A number of submissions pointed out that cattle spend only a small proportion of their time in mossbeds (approximately 5%[46]), because the boggy ground provides uncertain footing. This means that, over a 20-week grazing season, a cow could spend the equivalent of a full week in a mossbed. The impacts from these visits can be significant, as explained below.

3.43 Alpine ecologists explained how mossbeds and the associated peat are highly susceptible to physical disturbance because of their structure and the soft nature of the vegetation. Cattle cause damage to the mossbeds through trampling and grazing. They create tracks and pugging in the soft moss and peat with their hard hooves, which can lead to the natural hollows becoming connected, and to incision and erosion of the underlying peat. Entrenched drainage lines may develop, further increasing the rate and extent of surface run-off and the erosive power of the streams. The watertable is lowered and the moss dries out, reducing the mossbed's water-holding capacity. The entrenched drainage lines are consolidated and in severe cases, as the Taskforce observed, large areas of the rock pavement at the base of the bog are exposed.

3.44 The replacement of interconnected bogs with a permanent stream and entrenchment in the upper parts of a catchment may promote erosion downstream. Importantly, the filtering and regulating functions of the mossbeds and their ability to supply water through the summer months is greatly diminished or lost.

3.45 The Taskforce was told that mossbeds are very slow to recover from disturbance. Recovery can take decades or more. For example, there was little change in the condition of the mossbed inside the exclusion plot at Rocky Valley on the Bogong High Plains for the first 15–20 years after cattle were excluded in 1944. Over the following 20 years, there was vigorous growth of sphagnum hummocks, streams were blocked off resulting in ponding, and the mossbed increased in size.[47]

3.46 In some cases, rehabilitation works may be required to restore the more badly damaged mossbed areas. The Taskforce saw such works being undertaken on a mossbed on the Bogong High Plains and noted the substantial effort involved in restoring only a small area. Such rehabilitation cannot effectively be carried out in the presence of cattle (without fencing).[48]

3.47 The Taskforce was shown mossbeds in a variety of conditions and locations. It was shown mossbeds in grazed areas of the Bogong High Plains which appeared in good condition but it also saw examples on the Bogong High Plains, Buckety Plain and Wellington Plain where mossbeds had clearly been trampled by cattle. The Taskforce also learnt of healthy mossbeds on private land at lower elevations that had been grazed for extended periods.

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45 H Van Rees, *The behaviour and diet of free-ranging cattle on the Bogong High Plains, Victoria*, Department of Conservation, Forests and Lands, 1984.

46 H Van Rees, 1984 – see note 45.

47 D H Ashton & R J Williams, 'Dynamics of the sub-alpine vegetation in the Victorian region', in R Good (ed.), *The scientific significance of the Australian Alps*, The proceedings of the first Fenner conference on the environment, Canberra, September 1988, The Australian Alps National Parks Liaison Committee, 1989, pp. 143–168.

48 For example, see C-H A Wahren, R J Williams and W A Papst, 'Vegetation change and ecological processes in alpine and subalpine Sphagnum bogs of the Bogong High Plains, Victoria, Australia', *Arctic, Antarctic and Alpine Research*, vol. 33, no. 3, 2001, pp.357–368.

3.48 Given the conflicting views of the condition of the mossbeds and the prominence of the issue in the grazing debate, a study was commissioned to assess the condition of a sample of mossbeds on the area of Bogong High Plains currently licensed for grazing.[49] The executive summary of the assessment is included in Appendix D of this report.

3.49 Seventy-three sites were surveyed, with the condition of each placed into one of six condition classes. Most of the mossbed units (71% by number, 75% by area) were in the three lowest condition classes. Only the mossbed at Rocky Valley previously referred to, which has been protected by fencing from livestock since 1944, was in the highest condition class.

3.50 The survey was able to determine the condition of the mossbeds before the 2003 fires. It found that the vast majority of mossbeds sampled were in a degraded state prior to these fires. Extensive exposure of peat following the fires has meant that the condition of all burnt mossbeds assessed was poorer after the fire than before. The survey also concluded that the condition of some mossbeds was such that active rehabilitation and restoration would be required to stabilise their condition and to promote recovery of wetland vegetation.

3.51 An earlier survey of mossbeds in eastern Victoria, carried out prior to the 2003 fires, found that most of 22 mossbeds assessed in the Alpine National Park were damaged to some extent.[50]

3.52 The role of grazing in helping to protect mossbeds from fire by reducing fuel around them, which was raised in several submissions, is discussed in Chapter 4.

FLORA AND FAUNA

3.53 The impact of grazing on the flora and fauna of the park, and in particular on the rare and threatened plant communities and species, was raised in many submissions.

Biodiversity values

3.54 The park has very high biodiversity values, as described in Chapter 2. In relation to grazing, the vegetation of the alpine and sub-alpine areas is especially relevant because these areas, particularly the treeless areas, are where much of the grazing activity in the park occurs. Much of the following discussion deals with the treeless areas.

3.55 The significance of these areas is highlighted by the fact that alpine and sub-alpine environments are very rare in Australia and in Victoria. They cover less than 0.1% of the Australian mainland[51] and contain many plant communities and species that are very restricted in their distribution. Consequently, they have very high value for nature conservation. The distribution of the alpine (treeless) and sub-alpine woodland vegetation in the park is shown on Figure 4. The Taskforce notes that the former LCC commented on the very high nature conservation values of the alpine and sub-alpine

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[49] A Tolsma, J Shannon, W Papst, K Rowe & N Rosengren, *An assessment of the condition of mossbeds on the Bogong High Plains*, report to the Department of Sustainability and Environment, Arthur Rylah Institute for Environmental Science and Research Centre for Applied Alpine Ecology, La Trobe University, 2005.

[50] J Whinam, N M Chilcott & J W Morgan, 'Floristic composition and environmental relationships of *Sphagnum*-dominated communities in Victoria', *Cunninghamia*, vol. 8, no. 2, 2003, pp. 162–174.

[51] R J Williams & A B Costin, 'Alpine and subalpine vegetation', in R H Groves (ed.), *Australian vegetation*, Cambridge University Press, Cambridge, 1994, 2nd edn, pp. 467–500.

grasslands and herbfields and the LCC's view was that the long-term aim should be to remove grazing from these areas.[52]

3.56 Grazing was suggested by the MCAV as a necessary disturbance to rejuvenate grasslands and restore nutrient cycling and productivity. In the absence of grazing or fire, grass tussocks are said to crowd out the spaces required for herbs, while the dead thatch locks up scarce nutrients.[53]

3.57 On the other hand, alpine plant communities, which like all plant communities in the park have evolved without cattle, are subject to small-scale natural disturbances, particularly from insect attack and the extremes of climate. Studies of areas where grazing has been excluded for up to 60 years show that there has been a significant *increase* in the taller herbs. The litter from the snowgrass tussocks performs an important role by protecting the soil from erosion.[54]

3.58 Some submissions considered that the grazed areas of the park had retained their diversity. For example, one paper was quoted which concluded that "while there are observable changes [as a result of cattle grazing] … the vegetation is still largely natural and its diversity intact".[55]

3.59 Other submissions, however, pointed to the long-term research in the treeless areas that has shown that selective grazing modifies the structure and composition of plant communities.[56] For example, bare ground created through grazing of grasslands and open heathlands is preferentially colonised by some shrub species. If undisturbed, they are eventually replaced (after several decades or more) by grasses.[57] The Taskforce was shown grass colonising bare ground beside a track on Mount Fainter.

3.60 In grassland communities, the results from the long-term cattle exclusion plots at Pretty Valley on the Bogong High Plains show that the cover of the large palatable herbs (which grow between the snowgrass tussocks) and the short palatable shrubs is higher in the ungrazed plot than the grazed plot.[58]

3.61 The large palatable herbs, such as Silver Snow Daisy and Billy-buttons, contribute significantly to the profuse wildflower displays that are a feature of the alpine and sub-alpine areas. However, they are much less common in grazed country than in ungrazed country. Several submissions described the contrast in wildflower displays between ungrazed and grazed areas. The abundant wildflower displays at Kosciuszko National Park, the northern Bogong High Plains, Mount Hotham and Mount Buller (all ungrazed) were favourably compared with the poorer displays on the grazed areas of the southern Bogong High Plains and at Mount Stirling. The Taskforce saw

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52 Land Conservation Council, *Alpine area final recommendations*, LCC, Melbourne, 1979.

53 MCAV submission to the Taskforce, 7 December 2004. This can be viewed at http://www.mcav.com.au/

54 R Williams, I Mansergh, C-H Wahren, N Rosengren & W Papst, 'Alpine landscapes', pp. 296–310, in P Attiwill & B Wilson (eds), *Ecology: an Australian perspective*, Oxford University Press, Melbourne, 2003.

55 A D Wilson, *An overview of the impact of grazing on the alpine and subalpine lands of Victoria: with emphasis on future research needs*, Centre for Farm Planning and Land Management, University of Melbourne – as quoted by MCAV in submission to the Taskforce, 26 June 2004. The submission can be viewed at http://www.mcav.com.au/

56 For example, see C-H Wahren, W A Papst & R J Williams, 'Long-term vegetation change in relation to cattle grazing in subalpine grassland and heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994', *Australian Journal of Botany*, vol. 42**,** 1994, pp. 607–639.

57 S G M Carr, 'The role of shrubs in some plant communities of the Bogong High Plains', *Proceedings of the Royal Society of Victoria*, 1962. pp. 301–310.

58 For example, the cover of Silver Snow Daisy in both the grazed and ungrazed plots in 1947 was 5% or less. In 2000 it was still less than 5% in the grazed plot but had increased to about 40% in the ungrazed plot. Source: Centre for Applied Alpine Ecology, La Trobe University, *Bogong High Plains natural history – Maisie's Pretty Valley plots*, brochure, 2001.

photographs of impressive displays of wildflowers in ungrazed areas compared to grazed areas.

3.62 A few submissions stated that cattle actually promote wildflower displays. Another submission, however, explained that wildflower species that are good colonisers of bare ground are commonly found around cattle and horse enclosures, but there are few such species.

3.63 There was less evidence provided to the Taskforce about the specific impacts of cattle on biodiversity in the forested lower elevations of the park, which lack the detailed research of the higher areas. Grazing can affect species such as Alpine Ash and cypress-pine (which is found in the Snowy River rainshadow woodlands) that regenerate from seed if seedlings and young plants are trampled or eaten before they reach maturity.[59] The importance of riparian vegetation in protecting streams has been mentioned earlier.

3.64 Cattle grazing at the lower elevations has been suggested as a means of retaining open ground to help to maintain particular species, although it was also noted that other factors such as native – and feral – herbivores can also create bare patches.[60] Disturbances from natural causes would have occurred before cattle were introduced.

Rare and threatened flora

3.65 The Alpine National Park contains many rare and threatened plant species that are listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act[61]) or Victoria's FFG Act[62], or are included on Victoria's *Advisory list of rare and threatened plants – 2005*. Many of these species are found at the higher elevations of the park.

3.66 Many submissions referred to the threat posed by cattle to threatened species and communities. However, others considered that such views were overstated, claiming that no species has become extinct due to cattle grazing. Because there is no comprehensive baseline data from before grazing commenced, the Taskforce notes this assertion cannot be proved or disproved. However, the Carpet Willow-herb (*Epilobium willisii*), which was previously found in a licence area and is known to be adversely affected by grazing (Table 1), has not been recorded for many years, despite searches, and is now presumed extinct.[63]

3.67 Evidence was also provided that the Bogong Eyebright (*Euphrasia eichleri*) was rarely observed in the Mount Nelse area in the late 1970s but, following the cessation of grazing in 1991, is now commonly seen there. A similar recovery was observed with several species following the removal of stock grazing from the Kosciuszko area.

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[59] J B Kirkpatrick, 'Nature conservation values in montane and lowland areas, fire-stock grazing interactions and options for their management in areas licenced for stock grazing', Paper two in *Report of the Scientific Advisory Panel on fire-affected grazing*, report prepared for Parks Victoria, 2003.

[60] J B Kirkpatrick, 2003 – see note 59.
D Kemp, 'Grazing management for the Victorian Alpine National Park', Paper four in *Report of the Scientific Advisory Panel on fire-affected grazing*, report prepared for Parks Victoria, 2003.

[61] http://www.deh.gov.au/biodiversity/threatened/index.html

[62] The FFG Act (section 11) states that a species may be listed as threatened "if it is in a demonstrable state of decline which is likely to result in extinction or they are significantly prone to future threats which are likely to result in extinction". A species is listed by the responsible Minister on the recommendation of an independent Scientific Advisory Committee which assesses nominations against defined scientific criteria. See http://www.dms.dpc.vic.gov.au/

[63] Scientific Advisory Committee, *Final recommendation on a nomination for listing: Carpet Willow-herb* Epilobium willisii *(Nomination No. 171),* SAC, Flora and Fauna Guarantee, Department of Sustainability and Environment. National Herbarium of Victoria.

3.68 The Taskforce received advice from the National Herbarium of Victoria which indicated that there are at least 25 rare and threatened plant species in the alpine and sub-alpine areas of the park subject to grazing licences for which cattle grazing is a significant threat. Table 1 lists these species and whether they are listed under the EPBC Act or the FFG Act or on the Victorian advisory list. They include 10 species listed under the FFG Act as being threatened with extinction (a further 2 species have been recommended for listing).

Table 1: Rare and threatened flora for which cattle grazing is a significant threat

		Status		
Scientific name	**Common name**	**EPBC[+]**	**FFG[++]**	**Vic[+++]**
Barbarea grayi	Native Wintercress			v
Bartramia bogongia	Bogong Apple-moss		L	e
Cardamine astoniae	Spreading Bitter-cress			v
Cardamine franklinensis	Franklin Bitter-cress		L	e
Craspedia alba	White Billy-buttons			v
Craspedia lamicola	Bog Billy-buttons			v
Deyeuxia affinis	Allied Bent-grass		L	e
Deyeuxia talariata	Skirted Bent-grass			v
Epilobium willisii	Carpet Willow-herb		L	x
Euphrasia caudata	Tailed Eyebright			r
Euphrasia eichleri	Bogong Eyebright	V	R	v
Euphrasia lasianthera	Hairy Eyebright			r
Euphrasia scabra	Rough Eyebright		L	e
Gingidia harveyana	Slender Gingidia			v
Juncus antarcticus	Cushion Rush		L	v
Juncus thompsonianus	Snowfield Rush			k
Kelleria laxa	Snow Daphne	V	L	e
Luzula atrata	Slender Woodrush			v
Orthotrichum hortense	Gardener's Bristle-moss		R	
Oschatzia cuneifolia	Wedge Oschatzia			r
Poa saxicola	Rock Poa		L	v
Prasophyllum niphopedium	Marsh Leek-orchid		L	e
Pterostylis oreophila	Blue-tongue Greenhood			e
Rytidosperma australe	Southern Sheep-grass			e
Thesium australe	Austral Toad-flax	V	L	v

Source: National Herbarium of Victoria.

[+] Listed under the EPBC Act (Cth): V = vulnerable in Australia.

[++] Listed under the FFG Act (Vic.): L = listed; R = listing recommended by Scientific Advisory Committee (as at March 2005).

[+++] Status in Victoria: x = presumed extinct in Victoria; e = endangered in Victoria; v = vulnerable in Victoria; r = rare in Victoria; k = poorly known but suspected of belonging to one of the previous categories (Source: Department of Sustainability and Environment, *Advisory list of rare or threatened plants in Victoria – 2005*, DSE, Melbourne, 2005).

3.69 Based on known records, these species occur at various sites across the park, with concentrations on Wellington Plain, Dargo High Plains and Bogong High Plains and in the Cobberas area of the park. Some species are known only from a few localities and/or from very small populations. Figure 9 shows the known location in the park of these species (together with those of threatened fauna – see later section). The Taskforce notes that there are currently no controls on cattle access to those species within grazing areas.

Threatened communities

3.70 There are four vegetation communities in the Alpine National Park that have been listed under the FFG Act as threatened communities, with cattle grazing identified as one of the threats.[64] The four communities are:

- Alpine Bog Community (mossbeds)
- Fen (Bog Pool) Community
- Alpine Snowpatch Community
- *Caltha introloba* Herbland Community (associated with wetlands and snowpatch communities).

3.71 The impacts associated with grazing include disturbance, browsing and trampling. The first two communities have been discussed previously (see 'Mossbeds'). In relation to snowpatch communities, several submissions pointed to the significantly increased deterioration caused by cattle. Snowpatch communities are short herbfields that occur on steep leeward slopes where snow remains well into spring or summer.[65] They are very rare and specialised and occur mainly on the Bogong High Plains and adjacent peaks. They are particularly sensitive to cattle activity because of the concentration of palatable species and the steep slopes on which they occur, and because the soils stay moist until well into the growing season (making them both attractive to cattle and more erosion prone).[66]

3.72 The Taskforce was shown photos of badly damaged snowpatch areas, and it visited a snowpatch on the Bogong High Plains. One submission from several scientists referred to numerous examples on the Bogong High Plains of the visible impacts of cattle damage, with large bare eroding areas apparent. A 1991 assessment of the southern Bogong High Plains identified these communities as being in poor condition[67], while a survey in 1995–96 showed that most of 35 snowpatch areas located across the Bogong High Plains were in a degraded condition with large amounts of bare ground.[68]

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64 The FFG Act (section 11) states that a community may be listed as threatened "if it is in a demonstrable state of decline which is likely to result in extinction or they are significantly prone to future threats which are likely to result in extinction". A community is listed by the responsible Minister on the recommendation of an independent Scientific Advisory Committee which assesses nominations against defined scientific criteria.

65 R Williams, I Mansergh, C-H Wahren, N Rosengren & W Papst, 'Alpine landscapes', pp. 296–310, in P Attiwill & B Wilson (eds), *Ecology: an Australian perspective*, Oxford University Press, Melbourne, 2003.

66 R J Williams, W A Papst & C-H Wahren, *The impact of cattle grazing on the alpine and sub-alpine plant communities of the Bogong High Plains*, report to the Victorian Department of Natural Resources and Environment, 1997.

67 P W Farrell & L R Jeremiah, *Assessment of rangeland condition on the Bogong High Plains*, unpublished report, Department of Conservation and Environment North East Region,1991.

68 R J Williams, W A Papst & C-H Wahren, 1997 – see note 66.

Rare or threatened fauna

3.73 Several rare and threatened fauna species occur in the park. Table 2 shows those species listed as threatened under the FFG Act for which cattle grazing has been identified as a threat.[69] These species also appear on the *Advisory list of threatened vertebrate fauna in Victoria – 2005*, and one is listed as vulnerable under the EPBC Act.

Table 2: Fauna potentially threatened by cattle grazing

		Status		
Scientific name	**Common name**	**EPBC[+]**	**FFG[++]**	**Vic[+++]**
Cyclodomorphus praealtus	Alpine She-oak Skink		L	e
Egernia guthega	Alpine Egernia		L	ce
Euastacus crassus	Alpine Spiny Cray		L	r
Eulamprus kosciuskoi	Alpine Water Skink		L	ce
Pseudemoia cryodroma	Alpine Bog Skink		L	e
Litoria verreauxii alpina	Alpine Tree Frog	V	L	ce
Thaumatoperla alpina	Alpine Stonefly		L	v

[+] Listed under the EPBC Act (Cth): V = vulnerable in Australia.

[++] Listed under the FFG Act (Vic.): L = listed as threatened.

[+++] Victorian threatened species: ce = critically endangered in Victoria; e = endangered in Victoria; v = vulnerable in Victoria; r = rare in Victoria (Source: Department of Sustainability and Environment, *Advisory list of threatened vertebrate fauna in Victoria - 2005*, DSE, Melbourne, 2005).

3.74 Many of these species are only found at high elevations. For example, the Alpine Water Skink, Alpine Bog Skink and Alpine Egernia are found only within alpine wetlands such as mossbeds. Ninety per cent of the records for the Alpine Water Skink are within areas licensed for grazing in the national park.[70]

3.75 All of these species are threatened by changes to their ecosystems. While cattle do not eat or necessarily trample these species, it is the damage they cause to the habitat of each of these species that is considered significant. As noted previously, mossbeds are particularly susceptible to damage by cattle.

Potentially threatening processes

3.76 The Taskforce notes that 'Soil erosion and vegetation damage and disturbance in the Alpine regions of Victoria caused by cattle grazing' has been listed as a potentially threatening process under the FFG Act.[71] This means that cattle grazing "in the absence of appropriate management, poses or has the potential to pose a significant threat to the survival or evolutionary development of a range of flora or fauna".[72]

3.77 The Scientific Advisory Committee, which recommended the listing, considered that there was clear evidence that cattle grazing leads to deterioration of Sphagnum bogs

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[69] See note 62.

[70] Parks Victoria data, 2005.

[71] Scientific Advisory Committee, *Final recommendation on a nomination for listing: Soil erosion and vegetation damage and disturbance in the Alpine regions of Victoria caused by cattle grazing*' (nomination no. 211), SAC, 1992.

[72] FFG Act (section 11).

and bog pools; soil compaction, erosion and an increase in areas of bare ground; loss of species and diversity; and changes in vegetation structure.

3.78 This assessment relates specifically to grazing in alpine areas, unlike the other listed potentially threatening processes mentioned earlier relating to sediment input and riparian vegetation, which apply across Victoria, including the park.

Weeds

3.79 Weeds are considered a major threat to the natural environment of the Alpine National Park and are acknowledged as a serious problem by the park managers and the community. Many who spoke to the Taskforce expressed their concerns over the occurrence of weeds in the national park.

3.80 The Taskforce notes that there are a number of vectors responsible for weeds in the park, including cattle, horses, vehicles and walkers. In addition, there is the legacy of past works such as the deliberate sowing of exotic species to stabilise the banks of earthworks on parts of the Bogong High Plains.

3.81 In relation to cattle, the Taskforce was provided with evidence that many weeds in the park are associated with cattle, either through their original introduction or ongoing dispersal. One study indicates that 25% of weeds in alpine and sub-alpine areas of the Australian Alps are associated with grazing.[73]

3.82 Surveys show clear evidence of greater weed infestation in grazed areas than ungrazed areas.[74] Weeds are largely associated with disturbance, such as the bare ground created by cattle. In this context, Orange Hawkweed was raised as a newly emerged threat to alpine vegetation that requires close monitoring. Although not introduced by cattle, it colonises bare ground and requires disturbance to spread. While licensees may provide additional observation and some control, cattle are likely to help spread the weed.

3.83 Introduced pasture species were seen at several sites on one of the Taskforce's visits to the Bogong High Plains. Such species occur in localised areas throughout the park but appear to be highly correlated with the presence of cattle because they mostly occur near cattle yards and areas where cattle congregate.

3.84 The Taskforce was told that cattle have been clearly implicated in the spread of the major weed English Broom in parts of the park, this being particularly obvious along certain droving tracks. Although cattle browse on broom and reduce plant vigour, they also contribute to its further spread and are not considered a long-term answer to its control.[75]

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[73] F M Johnston & C M Pickering, 'Alien plants in the Australian Alps', *Mountain Research and Development*, vol. 21, 2001, pp. 254–291.

[74] N G Walsh, R H Barley & P K Gullan, *The alpine vegetation of Victoria (excluding the Bogong High Plains Region)*, Department of Conservation, Forests and Lands, 1986.

[75] E Fallavollita & K Norris, *The occurrence of broom,* Cytisus scoparius*, in the Australian Alps national parks*, report to Department of Conservation and Environment, 1992.

3.85 Some submissions pointed to the grazing of palatable weeds by cattle as an effective control, suppressing some weed species with non-persistent seeds. On the other hand, cattle dung can introduce and spread palatable weed species in alpine vegetation.[76]

3.86 The Taskforce was told that the infestation of extensive areas of St John's Wort, a declared noxious weed, in the formerly grazed area at Wonnangatta Station was evidence of the need for ongoing grazing. However, it understands that this species established before the park, and that a well established control program of burning and spraying is containing and starting to reduce the infestation, with the aim of encouraging native grasses. Also, St John's Wort is toxic to stock and is not preferentially eaten.[77]

3.87 The role of licensees in weed control is discussed in Chapter 6.

Global climate change

3.88 A number of submissions mentioned the additional pressure that alpine environments are facing due to climate change. Under climate change, species that are already vulnerable will be most at risk.[78] The Australian Alps are considered to be one of the three most vulnerable ecosystems in Australia to potential climatic warming because of their restricted range and cold climate. Some specialised alpine communities (such as snowpatch communities) will come under severe threat, while herbaceous communities will be more susceptible to invasion by woody species.[79] The preferred and most practical option to minimise the impacts of climate change is to retain, restore and protect existing habitat, so that the whole ecosystem becomes more resilient.[80]

ECOLOGICAL RESEARCH

3.89 The Taskforce notes the MCAV's call for a further seven-year study of the relative impacts of cattle grazing, with a comparison between grazed and ungrazed areas and with particular reference to the effects of the 2003 fires. The MCAV has also claimed that the long-term research based on the exclusion plots on the Bogong High Plains has little or no relevance, because it has been carried out in the absence of fire. For reasons explained below and in Chapter 4, the Taskforce does not accept these views

3.90 In considering the environmental effects of grazing in the park, the Taskforce was aware of the extensive research that many different research organisations and individuals have carried out into the ecology of the alpine and sub-alpine areas of Victoria and New South Wales over a period of more than sixty years. Much of this research forms the basis of an extensive scientific literature that has been published nationally and internationally.

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[76] H Van Rees, *The behaviour and diet of free-ranging cattle on the Bogong High Plains, Victoria*, Department of Conservation, Forests and Lands 1984.

[77] http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/invasive_st_johns_wort

[78] Natural Resource Management Ministerial Council, *National biodiversity and climate change action plan 2004–2007*, 2004.

[79] R J Williams & A B Costin, 'Alpine and subalpine vegetation', in R H Groves (ed.), *Australian vegetation*, Cambridge University Press, Cambridge, 1994, 2nd edn, pp. 467–500.
R Brereton, S Bennett & I Mansergh, 'Enhanced Greenhouse climate change and its potential effect on selected fauna of SE Australia: a trend analysis', *Biology and Conservation*, vol. 72, 1995, pp. 39–354.

[80] Natural Resource Management Ministerial Council, 2004 – see note 78.

3.91 The Taskforce also notes the 1998 report by one of Australia's most eminent plant ecologists, Dr Richard Groves, which assessed the scientific adequacy of the grazing studies in the Victorian high country from 1945 to 1998, including several references provided by the MCAV.[81] Of particular note, the report included the following conclusions:

> *Results of scientific research assessed in the study on the effects of excluding grazing on vegetation composition in the high country of both New South Wales and Victoria, without exception, reveal the deleterious effect of grazing on native plant biodiversity, and to a lesser extent, water yield.*
>
> *The constancy of the message from previous research conducted by different scientists in different regions is unquestionable in my opinion and forms an adequate basis on which to make management decisions.*
>
> *The results of ecological research … in Victoria forms a more-than-adequate basis for recommending non-renewal of cattle grazing leases [sic] in the alpine region of Victoria.*

3.92 The Taskforce notes that the overwhelming conclusion of the research is that cattle have a detrimental impact on the soils, catchment values and nature conservation values of these areas.

Findings on the environmental benefits and impacts of cattle grazing in the Alpine National Park (excluding the issue of fire)

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.

[81] R Groves, *Grazing in the Victorian high country. An assessment of the scientific adequacy of grazing studies in the Victorian high country 1945-1998, with some recommendations for future research*, report to Parks Victoria, 1998. Dr Groves was then Senior Principal Research Scientist, Division of Plant Industry, CSIRO.

CHAPTER 4 – FIRE

4.1 The two major fires in the Alpine National Park in recent times - the 1998 Caledonia fire in the south-west of the park and the 2003 Victoria Alpine Fires (see Chapter 2) – together affected more than 60% of the Alpine National Park and 80% of the area licensed for grazing, as well as a large area of State forest, other parks and private land (see Figure 8). Of particular note was the extent of the alpine and sub-alpine vegetation burnt. Landscape scale fires are uncommon in those environments.

4.2 The management of fire is clearly a topical and important issue after the 2003 Victorian Alpine Fires. Many submissions commented on the relationship between cattle grazing and wildfire. There was a range of detailed arguments about the effects of grazing on fire. The contribution that licensees make to firefighting is discussed in Chapter 6.

4.3 The Taskforce appreciates the impact of the fires on the region and is sympathetic to the concerns of all those who have been affected by them. Indeed, the Chair of the Taskforce is a CFA volunteer who helped fight the 2003 fires.

FUEL REDUCTION

4.4 It is frequently claimed by supporters of cattle grazing that “grazing reduces blazing”. Many who argued that grazing had benefits for fire prevention and control referred to the role that cattle had in reducing fuel loads by eating grass. It was strongly put by mountain cattlemen and others that because cattle reduce the amount of fuel available, grazing contributes to reducing fire intensity.

4.5 Some submissions acknowledged the environmental impact of grazing but considered that the fire prevention benefits provided by cattle outweigh any such damage, especially since they considered that the damage caused by fires to be worse than the damage caused by grazing. However, other submissions queried the contribution of grazing to effective fire control in the Alps.

4.6 At the landscape scale, the Taskforce notes that the 2003 fires burnt large areas of the park and State forest licensed for grazing. In the park, 35 licence areas covering more than 200 000 hectares were more than 80% burnt. In State forest nearly 100 licence areas covering more than 180 000 hectares were more than 80% burnt. The major bushfires in 1926 and 1939 also burnt large areas of the high country during a period when grazing was far more extensive and intensive than it currently is.

4.7 Experienced fire managers and scientists consider that the burning pattern of the 2003 fires reflected variables such as vegetation type, inherent fuel flammability, fuel moisture, terrain, weather conditions or wind direction at the time, rather than grazing.

4.8 Importantly, the Taskforce was advised that the most flammable fuel types in the park, which contribute virtually the entire available fuel load to wildfires, are branches, twigs, bark, eucalyptus leaves and shrubs. With the exception of some shrubs, cattle do not eat these fuels.

4.9 At the lower elevations, grass generally occurs in open areas, such as on river flats. On the forested slopes the non-palatable but flammable shrubs are not eaten by cattle. These areas are not preferentially grazed. The Taskforce notes that although cattle, by eating grass, will help to reduce some of the fine fuels, the number of cattle in these lower areas is generally low, and any contribution to fire control at the landscape scale

will be minimal. It was also pointed out that cattle eat the new green shoots and not the dead, dry grass that constitutes the more flammable component of the fine fuel.

4.10 There was considerable debate about the effect of grazing on fire behaviour on the high plains. The Taskforce learnt that snowgrass in alpine grasslands traps moisture and, except in extreme conditions, is not particularly flammable. A firefighter in the 2003 fires told of how he was unable to sustain a backburn in ungrazed snowgrass near Mount Hotham. Another noted that fire jumped from shrub to shrub across grassland patches tens to hundreds of metres wide, regardless of whether the area had been grazed or not.

4.11 In support of the view that grazing has an effect on fire, various submissions highlighted areas that were grazed but did not burn, and areas that were not grazed that did burn. Licensees told how the 2003 fires burned at a much lower intensity and more patchily in grazed areas (such as in Pretty Valley on the Bogong High Plains) compared to ungrazed areas (such as on Mounts Bogong, Nelse and Feathertop).[82] The Taskforce visited several areas on the Bogong High Plains where fire behaviour was discussed.

4.12 In relation to Pretty Valley, cattlemen and others, including those who were on the Bogong High Plains at the time, were strongly of the view that it did not burn because it was grazed. One licensee stated that "when the 2003 bushfires got to their run it just went out, the cattle were safe on the green grazed grasslands".

4.13 On the other hand, several firefighters with experience of the conditions at the time argued that it was the vegetation's inherent non-flammability, the prevailing weather conditions and the terrain that primarily determined the fire's severity and spread, not that it had been grazed.

4.14 Thus, just as there were areas of unburnt grazed grasslands and burnt ungrazed grasslands, there were also areas of burnt grazed grasslands and unburnt ungrazed grasslands (e.g. on the northern Bogong High Plains around Spion Kopje). Similarly, the long ungrazed grasslands on the Main Range in Kosciusko National Park were relatively unaffected by the 2003 fires.

4.15 In relation to the 1998 Caledonia Fire, a group of licensees considered that the fire burnt a lot cooler and with less intensity across grazed areas, with one pointing out that heavily grazed high country freehold land on Bennison Plains was not burnt. On the other hand, it was also pointed out that Wellington Plain, which was grazed and which the Taskforce also visited, did burn.

4.16 There has been only one broad-scale, systematic and statistically-based investigation of patterns of burning across treeless areas of the Bogong High Plains following the 2003 fires. This study concluded that there was no statistically significant lowering of fire incidence or severity at a landscape scale as a consequence of grazing. The study noted that while localised effects of grazing on fuels are possible, any effects of grazing on fire are unlikely to translate into modifications of fire behaviour at the

[82] Mount Buffalo, which is outside the Alpine National Park and has not been grazed since 1958, was also mentioned in submissions.

landscape scale. Fire occurrence was determined primarily by vegetation type and pre-fire shrub cover.[83]

4.17 This study found that closed heath was highly flammable compared to both open heath and grassland, irrespective of grazing. The closed heaths of the Bogong High Plains were extensively burnt in both the 1939 and the 2003 fires. They are the most flammable component of the treeless sub-alpine vegetation.[84] Long-term monitoring has shown that cattle grazing has not reduced the cover of the major shrubs in closed heath, as they are unpalatable.[85]

4.18 Several submissions claimed that, not only does grazing not reduce fire, but it actually increases the risk of fire. This was because, as noted in Chapter 3, shrubs tend to colonise the bare ground created by cattle in grasslands and open heathlands, and it is the shrubs that are the most flammable vegetation type.

4.19 Several submissions argued that grazing assists in protecting mossbeds by keeping flammable materials, including long grass and shrubs, from their edge. On the other hand, the shrubs in the closed heathlands that occur around mossbeds are not eaten by cattle and actually help to protect the mossbeds by deterring cattle from entering them.

4.20 One submission reported that a survey carried out after the 2003 fires of 18 mossbeds on the Bogong High Plains that had previously been assessed[86] found that the extent of burning of mossbed sites was similar in both grazed and ungrazed areas.

4.21 There will no doubt be ongoing debate on the fire issue. However, in looking at the evidence before it and in seeking to understand the links which may exist between grazing and fire behaviour, the Taskforce notes one of the conclusions of the Victorian Bushfire Inquiry (which involved one of Australia's most eminent fire ecologists). After reviewing the effect of cattle grazing on fire, the Inquiry concluded that "there is currently no scientific support for the view that 'grazing prevents blazing' in the High Country".[87]

4.22 It is important to stress that the Taskforce strongly supports effective fire prevention and fuel reduction, and the Government's increased focus on managing fuel loads across public land. In particular, it notes the Premier's announcement in May 2004 of $168 million of additional funding towards greatly enhanced fire prevention and fuel reduction programs.

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83 R J Williams, C-H Wahren, R Bradstock & W J Muller, 'Does alpine grazing reduce blazing?: a landscape test of a widely held hypothesis', paper in review, 2005. Based on paper by R J Williams, C-H Wahren & R Bradstock presented at the Ecological Society of Australia conference, Adelaide, December 2004.

84 C-H Wahren, W A Papst & R J Williams, 'Long-term vegetation change in relation to cattle grazing in subalpine grassland and heathland on the Bogong High Plains: an analysis of vegetation records from 1945 to 1994', *Australian Journal of Botany*, vol. 42**,** 1994, pp. 607–639.

85 R J Williams, W A Papst & C-H Wahren, *The impact of cattle grazing on the alpine and sub-alpine plant communities of the Bogong High Plains*, report to the Victorian Department of Natural Resources and Environment, 1997.

86 J Whinam, N M Chilcott & J W Morgan, 'Floristic composition and environmental relationships of Sphagnum-dominated communities in Victoria', *Cunninghamia*, vol. 8, 2003, pp. 162–174.

87 B Esplin, M Gill & N Enright, *Report on the inquiry into the 2002/2003 Victorian bushfires*, Victorian Government, 2003. 'High Country' in that report refers mainly to the alpine and sub-alpine high plains.

PRE-EUROPEAN HIGH PLAINS BURNING

4.23 The role of Aboriginal burning in the high country was raised during the investigation. The MCAV and others have referred to how the 2003 Victorian Alpine Fires exposed evidence of extensive Aboriginal occupation of the high country. It has stated that:

> *After the 2003 fires, abundant evidence was found on burnt land of the use of fire by aborigines prior to white settlement. Fire has clearly been a factor in the high plains landscape and any trial [such as the long-term ecological research based on the exclusion plots on the Bogong High Plains] that excludes burning has little relevance*.[88]

4.24 In considering this issue, the Taskforce understands that the archaeological surveys after the 2003 fires located large numbers of artefacts across the high country and that this clearly indicates the presence of Aboriginal people. However, it also understands that the surveys did not produce any evidence concerning the use of fire. A claim that the finding of large number of artefacts supports the conclusion that there was regular burning of the high plains is therefore speculation.

4.25 The Taskforce notes that Aboriginal people in many different parts of Australia used fire to encourage habitat for game or other food species or as a tool to hunt game. Historical records of game species on the Victorian high plains, such as kangaroos and emus, are very rare, and no large native animals inhabit the high plains today. This suggests that there was almost nothing significant to hunt and raises the question why would the high plains have been deliberately burnt on a regular basis, particularly when, as noted in the previous section, high elevation grasslands are generally difficult to burn. The rationale for the use of broadcast (or deliberately spread) fire by Aboriginal people in the alpine and sub-alpine zones was also questioned in a recent review of fire in those environments.[89]

4.26 That fire has not been a regular occurrence on the high plains is suggested by several lines of evidence. Physiologically and ecologically, alpine plants do not require fire to regenerate, although a number of the sub-alpine plants resprout vigorously after fire. There are no especially fire-adapted species in alpine environments, as is common in many other Australian landscapes. Some specialist alpine fauna, such as the Mountain Pygmy-possum, are highly sensitive to fire.[90]

4.27 Studies of fire scars on snow gums, which indicate that fires were significantly less frequent prior to European settlement, also suggests a lack of widespread burning of the alpine environment by Aboriginals or natural ignition. Scientists generally consider that fires in the treeless areas of the Alps were infrequent.[91]

4.28 The Taskforce also notes that a recent comprehensive review of fire in Australia's alpine and sub-alpine environments found that "there is no unequivocal evidence as to how Aboriginal people used fire in alpine and sub-alpine communities but most commentators speculate that they did not use broadcast fire". This review noted that it

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88 MCAV submission to the Taskforce, 7 December 2004.

89 S D Mooney, *Looking back as a way forward… Pre-historic fire in the high altitude ecosystems of mainland south-eastern Australia*, a report prepared for the NSW National Parks and Wildlife Service, Department of Environment and Conservation (NSW), 2004.

90 L S Broome & I Mansergh, 'The Mountain Pygmy Possum: an alpine endemic', in R Good (ed.), *The scientific significance of the Australian Alps*, The proceedings of the first Fenner conference on the environment, Canberra, September 1988, The Australian Alps National Parks Liaison Committee, 1989, pp. 241–264.

91 S D Mooney, 2004 – see note 89.

is unlikely that Aboriginal people influenced the fire regimes of the alpine and sub-alpine zones at the landscape scale.[92]

4.29 The Taskforce concludes, on the basis of current evidence, that the assertion that Aboriginal people regularly burnt the high plains is speculative and provides no grounds for rejecting the long-term ecological research on the Bogong High Plains.

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.

[92] S D Mooney, *Looking back as a way forward… Pre-historic fire in the high altitude ecosystems of mainland south-eastern Australia*, a report prepared for the NSW National Parks and Wildlife Service, Department of Environment and Conservation (NSW), 2004.

CHAPTER 5 – CULTURAL HERITAGE

5.1 The cultural heritage associated with grazing in the high country is an essential issue in the debate over the future of grazing in the park. As indicated in Chapter 2, grazing in the area that is now the Alpine National Park has a long history.[93]

5.2 Almost all of the submissions arguing for the retention of grazing raised the cultural heritage of the cattlemen. Submissions argued that high country grazing is a vital and accessible link to Australia's pioneering history, and that this grazing tradition is an iconic feature of the Australian story.

5.3 Other submissions recognised the cultural heritage values associated with the history of high country grazing but believed that cattle grazing in the Alpine National Park is not required to maintain that heritage.

5.4 There are several distinct elements of the cultural heritage of cattle grazing in the park that can be identified: the activity of grazing (both past and present); the associated skills and knowledge; and the visible reminders of grazing (such as huts, yards and place names). Some of these have historic value, others are of social or aesthetic value.

GRAZING – PAST AND PRESENT

5.5 The history of grazing in the park is part of the broader history of the Victorian Alps. It intersects with the history of other users of the high country, including Aboriginals, miners, timber cutters, hydro scheme workers, bushwalkers, scientists and skiers. For example, many of the early graziers were miners while cattlemen reportedly used aboriginal trails to access the high plains.

5.6 The Federal Department of the Environment and Heritage commented on the historic value of high country grazing:

> *Past grazing in the Victorian Alps has a cultural heritage value by virtue of it being an activity that is one of the major historical themes of the high country and being an activity that has resulted in a multitude of cultural heritage places.*[94]

5.7 A number of cattlemen families maintain links to the beginnings of stock grazing in various parts of the high country from about the mid-nineteenth century, with several original families still holding grazing licences. By European Australian standards, this is a long tradition, and one of our few ongoing links with our pioneering past.

5.8 It was often expressed to the Taskforce that cattlemen are proud representatives of their forebears' legacy. While historically licences regularly changed hands and, more recently, many of the cattle now grazed are owned by modern incorporated pastoral businesses, the Taskforce recognises that many families with park licences have been long involved in grazing in the high country. Indeed some families involved in high country grazing have been running cattle for up to five generations.[95] Maintaining the 'living history' – or the tradition of high country grazing – is a key argument used to justify the continuation of grazing in the park.

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93 H Stephenson, *Cattlemen & huts of the high plains*, Graphic Books, Melbourne, 1980.
T Holth, *Cattlemen of the high country*, Rigby, Adelaide, 1980.

94 Emphasis in the submission.

95 The average length of time that respondents to the URS survey, or their families, had been involved in a cattle business using high country licences was 91 years.

5.9 Licensees are strongly aware of their heritage links. Some submissions suggested that the ongoing links of mountain cattlemen families with licensed areas are important heritage values themselves. On the other hand, the Taskforce notes the comment in the Federal Department of the Environment and Heritage's submission that:

> *Perceptions of exclusive hereditary property rights to alpine grazing leases held by some families engaged in cattle grazing in the Alpine National Park are not considered to be cultural or heritage values themselves.*

5.10 The current patterns of grazing appear to maintain many essential features of the original practice. The taking of cattle up onto high plain pastures in summer, the free-ranging grazing, and the muster and return of the cattle to the home properties before winter snowfalls are part of a pattern of use that extends back more than a hundred years. The annual muster on the Bogong High Plains, where the individual licensees' cattle are separated out before returning to the home properties, is a special feature.

5.11 As an ongoing practice, grazing was said to contribute to the unique Australian cultural identity. One submission said that:

> *The continuation of the grazing tradition in the high country is a source of comfort for many Australians, as it indicates to them that the work ethic, skills base and spirit of adventure of those who built the nation is still kept alive in the Victorian high country.*

5.12 Aspects associated with the general activity of grazing in the high country have been romanticised by Australian writers such as 'Banjo' Patterson, successfully adapted into films such as *The Man from Snowy River* and celebrated in cultural events. Several books and recordings have attempted to capture the cattlemen's history and stories, reflecting a strong public interest. They have now entered our national folklore.

5.13 The Taskforce notes that the stories and imagery of the mountain cattlemen appear to have gained a life of their own beyond grazing, merging with the imagery of horsemanship and Australian icons such as brumby running, the ANZAC legend and the struggles of early pioneer settlers to survive in the bush.

5.14 Some submitters were keen to make the distinction between the history of grazing and how it currently operates as a primary production enterprise. They considered that the modern practice of grazing, which includes trucking cattle to runs and the use of 4WD vehicles, does not have any inherent cultural heritage value.

5.15 Licensees who spoke to the Taskforce were keen to emphasise their maintenance of many traditional grazing practices. Some told of how they use packhorses and traditional droving routes. Most walk their stock up to their licence areas. Of the 14 licensees surveyed by URS, the majority (89%) walk cattle to and from their licence areas. Horses are also used by most (86%) of the surveyed licensees to supervise their stock while on the mountain.

5.16 Nonetheless, it is clear that licensees run their farming operations, not as living museums, but rather as commercial businesses. Modern technology and practices are widely used. For example, the URS survey of licensees also indicates that, in addition to droving and using horses, 33% use trucks to transport cattle and 36% use four-wheel drive vehicles and 7% use motorbikes to monitor stock.[96] Because the licensed

[96] Because some licensees use both horses and vehicles for droving and supervising livestock, the total figures referred to in paras 5.15 and 5.16 exceed 100%.

areas are run as part of commercial cattle enterprises, the actual practice of grazing has and will continue to evolve in response to changing circumstances.

5.17 The activity as well as the images and themes transcend administrative boundaries associated with the national park. In this regard, the Taskforce notes that the Alpine National Park is only one part of Victoria's high country. Seasonal high country grazing occurs also in State forest and freehold areas elsewhere in the high country. It also notes that the majority of park licensees graze cattle on State forest as well as the park, and that not all mountain cattlemen hold a licence to graze cattle in the park. At the same time, it notes that many of the areas grazed in the park are ones that have been traditionally used.

SKILLS AND KNOWLEDGE

5.18 Submissions highlighted the maintenance of skills and knowledge associated with cattle grazing in the high country as being important benefits of grazing. Early mountain cattlemen required an array of skills to run their cattle grazing operation effectively. Horsemanship is probably the most celebrated, but their skills also included bush cooking, bush carpentry (including the cutting of shingles, hewing of timber with cross cut saws, and barking of huts), plaiting of stock whips, track cutting, the training of cattle dogs and so forth. While some of the traditional bushcraft skills are no longer relevant, much would be familiar to the original participants.

5.19 The collective knowledge of the mountain cattlemen has been handed down from generation to generation as well as learnt on the job. Several licensees presented the Taskforce with examples of such knowledge, demonstrating how their successful pastoral operations relied on detailed knowledge of weather patterns of the mountains, the locations of first snowmelt, behaviour of their cattle and the like. Because these skills can only be obtained by experience and not from books or the spoken word, it was claimed that ceasing grazing in the park would "sound the death knell" of the mountain cattlemen tradition.

5.20 However, other submissions and some academic studies have made the point that active cattle grazing is only one part of the cultural heritage story, and "it is not obvious that cattle need to be grazed in the [park] for the many practices and traditions associated with grazing to continue".[97]

5.21 While particular knowledge of a geographic area does require an intimate association with the place, on the other hand the more general skills have been shown to continue following the cessation of grazing elsewhere. For example, the recent Snowy River Festival at Delegate in NSW celebrated traditional skills, even though most grazing ceased in the nearby Kosciuszko National Park nearly fifty years ago, and totally by the early 1970s.

5.22 The MCAV's annual get-together provides a major opportunity for the celebration of many of the cattlemen's skills. In addition, 'The Man from Snowy River Bush Festival' is held annually at Corryong, with participants from across Australia taking part in 'Jack Riley's Ride' through the Alpine National Park. These types of events help to ensure a cohesive and ongoing identity for the cattlemen.

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[97] A Chisholm & I Fraser, 'Cattle Grazing in the Alpine National Park: preserving natural or cultural heritage', in Australian Heritage Commission, *Heritage Economics: Challenges for heritage conservation and sustainable development*, conference proceedings, 2001.

HUTS AND OTHER FEATURES

5.23 As previously noted, the legacy of the cattlemen's activities in the high country is an important part of the record of European activity in the Alps over a period of 170 years. The cattlemen's huts, stock yards, salting points, stock routes and place names all contribute to the rich heritage of the high country. Some of these structures have been recognised as having high historic and cultural heritage value and are an important part of the history of the park. The huts in particular often display interesting bush architecture.

5.24 For example, Wallace's Hut, originally a cattleman's hut, is the oldest standing hut on the Bogong High Plains, having been built and rebuilt over the years since 1889. It is a popular and easily accessible destination, recently featured in a Qantas advertisement. Its significance is recognised by its inclusion on the Victorian Heritage Register and consequent protection under Victoria's *Heritage Act 1995.* It and other structures within the park, such as Weston Hut, are also listed on the Register of the National Estate.[98]

5.25 The Taskforce notes that many of the huts, such as Wallace's, while originally built by cattlemen for use as part of the grazing operation, have been adapted for other purposes, and are now used and maintained by others. Nonetheless they still retain their historic interest and character. The National Trust noted that:

> *The conservation of the traditional stockmen's huts is not necessarily linked to usage by cattlemen, as these are now a valuable recreational and historical resource for hikers and others.*

5.26 The ongoing protection and maintenance of heritage structures by Parks Victoria, with the assistance of volunteer groups, is provided for in the park management plan. There are many visible reminders of the history of grazing in Kosciuszko and Namadgi National Parks, which are still actively managed and appreciated, despite grazing having ceased decades ago.

5.27 More recent structures in the park, built by cattlemen with modern methods and materials (for both grazing and other purposes) have limited historic value, with new fences and yards replicating what may be observed on any farm.

GRAZING RELATED CULTURAL HERITAGE AND TOURISM

5.28 The Taskforce heard how the cultural heritage of high country grazing has been successfully used as the basis of several business operations. For example, several cattlemen and their families (and others) operate trail rides, maintaining links to droving and horsemanship that extend beyond the national park. Craig's Hut in State forest on the shoulder of Mount Stirling, provides an iconic and popular *Man from Snowy River* destination, attracting visitors to the Mansfield area.[99] The relationship between grazing and tourism is further discussed in Chapter 7.

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[98] The Victorian Heritage Register is available at http://www.heritage.vic.gov.au/

[99] Craig's Hut was built as a movie set in 1983 and renovated in 1993.

Findings on the cultural heritage benefits and impacts of cattle grazing in the Alpine National Park

11. Seasonal high country grazing is a long and ongoing tradition both within the park and in areas of the high country outside the park.
12. Ongoing grazing in the park maintains traditional associations with specific areas of the park and related skills and knowledge.
13. Historic huts and other structures associated with grazing are important elements of the cultural heritage values of the park. Their significance and protection does not depend on ongoing grazing in the park.
14. The mountain cattlemen's tradition is maintained and celebrated in a variety of ways outside the park, including through books, poetry, films and festivals.
15. The Taskforce concludes that the cultural heritage related to the grazing of livestock in the high country does not depend on ongoing grazing in the national park.

CHAPTER 6 – SOCIO-ECONOMIC ISSUES

6.1 The foremost purpose of grazing in what is now the Alpine National Park has been to provide a financial return to participants. It is important to assess the financial and economic costs and benefits obtained from grazing for individuals and the communities in which they live and work, as well as for the State as a whole. There are other intangible economic costs and benefits from grazing that are difficult to measure in dollars. These costs and benefits are discussed in this chapter.

FARM OPERATIONS

6.2 As explained in Chapter 1, URS Australia Pty Ltd (URS) was commissioned to survey cattlemen and to quantify the financial and economic values of grazing. The consultant undertook an analysis of the contribution of cattle grazing in the park to farm profitability, and the value of Alpine National Park cattle production to the local, regional and Victorian communities. Fourteen of the 45 licence contacts for the 61 licences were interviewed. The following text draws particularly from the information collected and provided by URS. Appendix C contains the executive summary of the URS report.[100]

6.3 It is important to note that the information presented represents the situation prior to any financial impacts from the 2003 fires (for those licensees who were affected).

Cattle production systems

6.4 The Taskforce understands that virtually all of the licensees run their licences as part of larger cattle farm operations and are specialist beef producers. The production systems in use vary according to the size and location of the farming operation. A few lower elevation licence areas are suitable for grazing throughout the year, and thus subject to different production systems to those suitable only for summer grazing. Some licence areas are used mainly as drought relief and may not be regularly grazed.

6.5 As the URS study noted, the primary value of a grazing licence in the park is that the farm property can carry a higher stocking rate over the whole year if it can move stock to the higher elevation grazing licence areas over summer.

6.6 The URS study reported that most surveyed licensees operate under either of two main production systems. The most common production system is a steer and heifer system where most yearling stock are sold at autumn high country calf sales (e.g. at Omeo), with others (about 20%) retained as replacement heifers. The other system involves retaining steers for longer than one year and turning them off at a live weight that allows them to be sold directly to feedlots. This latter system is particularly reliant on improved pastures in the home properties and is used mainly in north-east Victoria.

6.7 Both of the main systems involve cattle being taken up from the home property into high country licence areas in December and being brought back down in late March or early April.[101] Licence holders generally visit their licence areas before taking cattle up to assess the availability and quality of feed. Licensees told the Taskforce that they

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[100] URS, *Socio-economic assessment of cattle grazing in the Alpine National Park*, report prepared for the Department of Sustainability and Environment on behalf of the Alpine Grazing Taskforce, 2005. All figures cited in this chapter are based on this work, which necessarily uses averages and extrapolations. Individual circumstances cannot be derived from the general analysis.

[101] The grazing season varies across the park depending on the area and the season.

make several visits to the licence areas through the summer season to monitor the cattle, set salt licks and undertake any necessary maintenance tasks. At the end of the season the cattle are mustered and returned to the home property to be retained or sold.

6.8 The cattle graze in the park on unimproved pastures of generally low nutrition that decline in value through the season.[102] Unlike most pastoral operations in Victoria, the licence areas are unfenced and watering points are not provided, nor is any supplementary feeding undertaken. There is little ability to manage grazing pressure. One beef producer (not a licensee) said that cattle will preferentially graze areas with the more palatable and beneficial species until they are eaten out. Some licensees told the Taskforce that they used strategically placed salt licks to help redirect cattle. One submission from a farmer in another area commented that such production systems are out of step with industry best practice.

6.9 While the main financial value of the licences is the additional feed resource, there is also some scientific evidence that offers a basis for the premium often associated with 'high country cattle'. Running cattle on the low nutritive pastures of the licensed areas in summer is thought to cause livestock to develop highly efficient rumens. Once transferred to improved pastures, or put under feedlot conditions, the animal's more efficient rumen allows them to achieve higher than normal weight gains.[103]

6.10 Licensees can use public land in summer while keeping or building a fodder reserve on the home property. While the overall nutritional value of the high plains pastures is not high in most years[104], the ability to conserve fodder offers more flexibility for farm management and reduced feed costs when adverse conditions occur.

6.11 Some indicated that access to park licences was integral to the viability of their business, while others indicated that park grazing was a minor proportion of their operation. Some licensees also commented that State forest grazing was important to them.

Business arrangements

6.12 In discussion with individual licensees, the Taskforce heard of a variety of business arrangements. Most operated as small family businesses, while a few were larger farm operations involving larger numbers of people and managed by a company employee rather than the owner. Of those surveyed by URS, the most common business entity is a partnership (50%), usually a husband and wife. The other business entities are a company (36%) and sole operator (14%).

6.13 Licensees' operations are generally part of family farms, employing little or no labour, and then only for part of the year. Unpaid adult children, who supported themselves with off-farm income, also worked on the family farm. The larger operations surveyed offered seasonal contract work for up to 30 people, each employing the equivalent of an average 8 full-time employees – although only a proportion of these should be directly attributed to grazing operations within the park.

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[102] MCAV comment recorded in letter from Valuer-General to Parks Victoria, 25 March 1998.

[103] J S Drouillard & G L Kuhl, 'Effects of previous grazing nutrition and management on feedlot performance of cattle', *Journal of Animal Science*, vol. 77, Supplement 2/J, *Dairy Science*, vol. 82, 1999, as cited in the URS report.

[104] H Van Rees, *The behaviour and diet of free-ranging cattle on the Bogong High Plains, Victoria*, Department of Conservation, Forests and Lands, 1984.

Stock allocations

6.14 There is significant variability between the stock allocations of individual licensees (see Figure 7). The smallest licence allocation is 3 AE cattle, although two licences with this allocation are used in conjunction with several others. The largest single licence allocation is 867 AE. The largest combined allocation – for four licences that are used by several joint licensees – is 1030 AE. The breakdown of the overall allocation by the individual licensees in such circumstances is not known.

6.15 Table 3 shows that 4 operations[105] using 10 of the 61 licences account for 3078 AE cattle (or 39% of the maximum stock allocation for the park) while 22 operations using 24 licences account for 1116 AE (or 14% of the maximum).

Table 3: Licence operations

Total allocation (AE)	No. operations with specified total allocation	No. licences comprising the operations	Total number of stock (AE)
1–10	5	5	35
11–50	7	7	225
51–100	10	12	856
101–300	15	20	2 391
301–500	4	7	1 329
501–700	2	5	1 181
701–900	1	1	867
> 900	1	4	1 030
Total	**45**	**61**	**7 914**

Use of licence areas

6.16 There is considerable diversity in the scale and nature of the beef cattle businesses and the reliance on grazing in the national park.

6.17 On average, the family farm operations surveyed grazed slightly less than half of their total cattle in the park, and they could obtain approximately 40% higher stocking rates due to park access. Licences may be more important in poor seasonal years through providing greater drought security.

6.18 Three of the larger company farms surveyed carried more stock on their park licence areas (average allocation of 323 AE) than those of the individual family farms (average allocation of 180 AE). However, in terms of their overall operations, they rely to a much lesser extent on their park grazing licences, with 13.6% (323 AE) of their total livestock (2375 AE) using grazing licences in the national park.

6.19 While the maximum allocation for the park is 7914 AE, Parks Victoria estimates that prior to the 1998 and 2003 fires about 4500–5000 AE entered the park in most years. Not all licensees utilise their full allocations each year, several reserving them for drought years or to take advantage of market conditions.

[105] *Operation* is used to refer to the grazing occurring under a single licence or set of licences for which there is a common group of licensees with the one licence contact person (see Chapter 2, para 2.29 for further explanation).

6.20 As previously noted, most recently, cattle numbers have been significantly restricted because of the 1998 and 2003 fires, such that the maximum allocation for each of the 2003–04 and 2004–05 grazing seasons was 1759 AE (instead of 7914 AE). In those two seasons, a maximum of 866 AE and 739 AE have been recorded as having grazed in the park. The Taskforce understands that the current maximum stock allocations in much of the park are unlikely to change until after the areas recover from the fire. This issue is further discussed in Chapter 9. Several licensees reported that they had also been affected by other changes in licensing arrangements (e.g. in the early 1990s) which had led to reductions in herd size.

6.21 Many of the licensees hold licences in both the Alpine National Park and the adjoining State forest, and operate them in an integrated manner (see also Chapter 12). Prior to the 2003 fires, park licensees had allocations in State forest of nearly 6000 cattle.

Financial performance

6.22 Several licensees discussed with the Taskforce the financial value of grazing licences to their businesses. Some indicated that access to park grazing was an integral part of their business. Others identified potential for restructuring their operations, or indicated that the licences were not essential to their livelihood.

6.23 The URS survey assessed the financial performance of farm operations as reported as an average over the past 3 to 4 years.[106] Note that the survey is based on the 'pre-fire' situation and does not take into account any adjustments that licensees may have made in response to the controls arising from the fires. Also, the Victorian averages cited occurred during an extended drought.

6.24 The results show the average annual overall net farm income was $61 400. Of that, an average $27 800 of net income was generated each year from cattle grazing. That is, income from cattle contributed 45.3% of farm net income. This cattle income was the return from nearly $1.8 million in cattle assets (a net return of 1.6%).[107]

6.25 From material supplied by surveyed licensees, URS also estimated cattle income if the farm operation did not have access to licence areas in the national park. These data indicate that the average annual gross income generated from these licences was about $40 800, with the net being approximately $31 200. As this represents 52% of overall net farm income, the licensed grazing areas have clearly been important to the financial health of the existing farm operations with licences.

6.26 Table 4 shows that those cattle businesses with park grazing licences were more profitable than the average Victorian cattle business without a park grazing licence. Without the park grazing licences, the cattle businesses would be slightly smaller than average and would, like the recent Victorian average, be unprofitable.[108]

6.27 Based on its survey results, URS calculated the removal of all grazing from the park would reduce net farm incomes (pre-2003 fires) by approximately $1.4 million.[109] These are the estimated total financial benefits accruing to the entire licensee community from grazing throughout the park.

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[106] URS did not attempt to measure financial impacts that may have arisen from the reduction in access to park grazing licences since the 2003 fires.

[107] These average figures omit one of the larger surveyed farms, which in the consultant's opinion was atypical as it was undertaking a major redevelopment program.

[108] 1999–2001 three-year average.

[109] This figure is the pre-fire average over 3–4 years.

Table 4: Financial performance of cattle businesses

Income type per year	Study area – current pre-fire average[+]	Victoria – 3-year average (1999–2001)	Australia 3-year average (1999–2001)
Gross income ($'000)	158 300	79 800	185 800
Gross cattle income ($'000)	124 700	67 500	157 100
Gross cattle income attributed to ANP ($'000)	40 800	N/A	N/A
Total net income ($'000)	61 400	14 200	55 400
Net cattle income ($'000)	27 800	1 900	26 700
Net cattle income attributed to ANP ($'000)	31 200[++]	N/A	N/A

Source: From data in URS report (rounded to nearest $100).

[+] Figures derived from survey of a representative sample of 13 licensees (excludes one interviewee who represented an abnormal situation).

[++] URS calculated that the reduction in net income from cattle if park licences were not renewed would be $31 200, resulting in a negative net cattle income of about $3400.

6.28 Equivalent agistment to provide the feed obtained from the park would cost approximately $1 million per year (including transport costs).[110] Supplementary feeding to maintain stocking levels on farm would cost about $1.6 million per year.

6.29 Fluctuations regularly occur in the beef industry due to a variety of external forces (e.g. international competition, drought, changing market preferences). For example, cattlemen reported that cattle businesses in some areas, like those of other farmers, were suffering significant financial hardship as a result of a succession of floods, drought and fire in recent years. On the other hand, the current record profitability of the Victorian beef industry would both increase the value of park grazed cattle, as well as non-park cattle.

6.30 The Taskforce received comments from agricultural experts and heard from licensees of significant opportunities for improved pasture and herd management, as well as diversification and marketing opportunities, which would be applicable for some licensees. The Taskforce appreciates that awareness and access to capital may limit the take up of these alternatives, as well as the physical geographic limitations of some home properties.

LOCAL, REGIONAL AND STATE CONTEXT

6.31 A range of opinions was offered about the economic benefits of grazing in the national park to local and regional communities, with many submissions commenting on this issue believing that grazing activities were vital to the economic well-being of their local communities.

6.32 Table 5 shows the number of licence operations[111], licences and associated stock allocations in relation to the local government areas (LGAs) where the licence contacts are located. It also shows the proportion of the park licence stock allocations compared with the total beef cattle in each LGA. Figure 7 shows the relationship of the licence areas and the 'home property' of the licence contact.

[110] As estimated by URS on a per head basis, and including 800 km of transport each way.
[111] See note 105.

Table 5: Licence allocations by Local Government Area[+]

Local Govt Area	No. licence operations in park	No. park licences	Total stock allocation (AE) for park	Total stock (AE) in LGA[112]	Park AE/ LGA AE (%)
Mansfield Shire	5	6	358	30 947	1.16
Rural City of Wangaratta	4	4	460	80 017	0.57
Alpine Shire	7	9	1 159	26 976	4.30
Towong Shire	1	3	630	88 735	0.71
Total – North East LGAs	**17**	**22**	**2 607**	**226 675**	**1.15**
Wellington Shire	12	13	1 673	109 941	1.52
East Gippsland Shire	16	26	3 634	126 519	2.87
Total – Gippsland LGAs	**28**	**39**	**5 307**	**236 460**	**2.15**
Overall total – Alpine NP / North East and Gippsland LGAs	**45**	**61**	**7 914**	**463 135**	**1.71**
Overall total – Alpine NP / State	**-**	**-**	**7 914**	**2 065 000**	**0.38**

[+] The table shows the number of operations and corresponding number of licences in the Alpine National Park according to the local government area of the licence contact's home property.

6.33 From this table, it can be seen that both the number of grazing operations, licences and the total maximum stock allocations vary considerably across the local government areas encompassing the park. About two-thirds of the licences, operations and maximum stock allocation for the park are connected with farms in Gippsland and East Gippsland (particularly around Omeo, Benambra and Wulgulmerang). The remainder are connected with farms located across north-east Victoria (particularly in the Mansfield area and the Kiewa Valley), with only one operation in the Towong Shire.

6.34 The maximum number of cattle licensed to graze in the Alpine National Park (7914 AE) represents less than half of one per cent (0.38%) of the State's beef cattle herd.

6.35 The total maximum allocations for licences held by licensees in north-east Victoria (Mansfield, Rural City of Wangaratta, Alpine and Towong local government areas) represents 1.15% of the cattle in those areas. For the Wellington and East Gippsland local government areas, the park allocations represent 2.15% of the cattle in those areas. For the six North East and Gippsland LGAs, the proportion is 1.71%.[113]

6.36 Economic benefits of grazing extend to local communities through on-farm and off-farm expenditure, creating a multiplier effect from both production and consumption. Licence holders provided information about such flow-on effects of park grazing from business-to-business sale of goods and services in the local economy. Tourism benefits from grazing were also raised, and these are discussed in Chapter 7.

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[112] State and LGA beef cattle converted to AE, based on Australian Bureau of Statistics Livestock and Meat Statistics, 2001.

[113] At a finer level of resolution, the proportion of park allocations associated with the following sub-statistical districts within the LGAs are: Alpine East SSD (Kiewa Valley) 6.55%; Maffra SSD 4.15%; Avon SSD 2.87%; Balance SSD (Omeo-Benambra area) 5.87%; Orbost SSD (Wulgulmerang area) 2.28%. Also see note 112.

6.37 Cattle from the high country have a reputation for quality, with a niche market preference expressed by some buyers. The annual Omeo calf sale has a strong reputation, attracting many interstate buyers, and was commented on particularly in submissions and presentations to the Taskforce. The Taskforce was told that the sale generates income into local areas from which all businesses benefit, as well as renewing important community and business links. The success of this sale is stated to be in large part due to high country cattle. Licence holders said that the autumn calf sales in eastern Victoria would be severely affected if grazing licences in the national park became unavailable. However, with the number of calves sold at the annual Omeo sales alone reported to be about 10 000, it would appear that national park reared calves could only be a small proportion of the total offered for sale.[114]

6.38 Flow-on employment effects from cattle grazing are also evident. As previously noted, the larger farm operations with park licences are employers of casual labour for up to 30 people during short periods.

6.39 The socio-economic assessment undertaken by URS estimated that across the region about 20 full-time equivalent jobs related to cattle production would be lost if grazing ceased in the Alpine National Park. This is equivalent to 0.07% of those employed in the study area. URS also commented that, unlike other forms of economic activity in the alpine region, employment related to cattle production is likely to remain relatively constant over time. Again, it should be noted that these figures do not take into account the changes that may have occurred since the fires.

6.40 Cattle from Gippsland generally, and those grazed in the park specifically, are claimed to provide a drought reserve, for restocking the State herd in recovery after several years of reduced stocking. The persistent bloodlines are also claimed to improve the quality of the State herd. The Taskforce notes this claim, but understands that the primary beneficiaries of this effect are the individual licensees, and that the relative proportion of the state herd grazed in the national park is insignificant, as indicated in Table 5.

COSTS OF GRAZING

6.41 There are costs to the broader community arising from grazing in the national park. Parks Victoria has advised the Taskforce that the general cost of administering and managing grazing in the park ranged from $200 000 to $250 000 per year over the five years 1999–2000 to 2003–04. The majority of costs are incurred in staff time, transport and managing licence infringements. There have also been some fencing costs.

6.42 Significant additional costs are incurred by park management after major fires:

- 1998 Caledonia Fire – more than $600 000 (including 2004–05) has been spent managing grazing following this fire (in relation to seven licences), including the costs associated with an independent panel to resolve a dispute over Parks Victoria's decision to exclude cattle from the burnt areas and payments to licensees
- 2003 Victorian Alpine Fires – more than $400 000 has been spent managing the issue of grazing in fire affected areas. A Scientific Advisory Panel advised Parks Victoria in 2003 that a post-fire monitoring program for the return of grazing would cost in the order of $250–500 000 per year for several years.[115] It has more

[114] See also note 113.

[115] Scientific Advisory Panel, *Report of the Scientific Advisory Panel on fire-affected grazing*, report prepared for Parks Victoria, 2003.

recently confirmed the need for post-fire monitoring to assess when and where recovery is sufficient to permit previous activities.[116]

6.43 In total, Parks Victoria has spent more than $2 million on the management of grazing over the five years 1999–2000 to 2003–04 (including fire related grazing costs). The Taskforce was told that this money comes from the total park budget. There is no special allocation to cover grazing related management costs and it would otherwise be spent on other park services. The following table (Table 6) indicates annual expenditures and receipts for Parks Victoria in relation to managing grazing.

Table 6: Parks Victoria grazing related expenditures and receipts 1999–2004

Expense type	Amount ($)					
	1999–00	2000–01	2001–02	2002–03	2003–04	Total
General licence management and administration[+]	207 000	225 000	235 000	247 000	200 000	1 114 000
1998 Caledonia fire[++]	221 000	191 000	89 000	67 000	23 000	591 000
2003 Alpine fire[+++]	-	-	-	206 000	234 000	440 000
Total expenditures	**428 000**	**416 000**	**324 000**	**520 000**	**457 000**	**2 145 000**
Annual licence fee receipts (excl. GST)	**18 047**	**19 228**	**21 749**	**24 450**	**4 331**	**87 805**

Source: Parks Victoria. Does not include any DSE expenses except for some costs related to the Caledonia Fire independent panel. All figures (except receipts) are rounded to the nearest $1000.

[+] Includes labour, overheads, vehicles, fencing and restoration, mapping, licensees' public liability insurance related costs.

[++] Includes vegetation monitoring, fencing and restoration, independent panel, assistance to licensees, additional labour.

[+++] Includes mapping and analysis, Scientific Advisory Panel, vehicles, additional labour.

6.44 The MCAV considers that the indicated expenditures are excessive and that its members have been overly monitored with an unnecessary level of supervision. In one case following the fires, it was claimed that cattle were so harassed that they left their licensed grazing area and returned to their home property.

6.45 To help reduce costs, the Association proposes a higher level of self-regulation, collecting licence fees and providing regional liaison officers to deal with infringement issues. In discussion with the Taskforce, Parks Victoria indicated that many of their tasks could not be appropriately or legally delegated, and while any savings are welcome, fee administration costs are only a small proportion of the total expenditure.

Licence fees

6.46 The licence fee is $5 (excluding GST) per AE for a season (18–20 weeks) of grazing. In 1991, the licence fee was $4.

[116] Scientific Advisory Panel, *Monitoring the recovery of areas burnt by the wildfires of 2003 in NE Victoria*, report of the Scientific Advisory Panel on fire-affected grazing prepared for Parks Victoria, 2005.

6.47 The maximum annual return to the State from licence fees for grazing in the national park is almost $40 000.[117] The actual amount received depends on the numbers of cattle notified to Parks Victoria each year as having grazed, but it has historically been less than the maximum.[118] Typically it is $20–25 000 per year, although this depends on factors such as the influence of the fires. About $4000 will be received this season. In total, about $88 000 (excluding GST) was received for the five-year period 1999–2003.

6.48 Notwithstanding the other expenses involved[119], it seems to the Taskforce that the approximately $1.4 million of value obtained by licensees from the public land pastures in the park is an excellent return for a maximum $40 000 outlay on licence fees. Comparing the costs of managing grazing (over $2 million in the past five years) with the returns to the State ($88 000) further highlights the implicit subsidy.

6.49 Some submissions argued that licensees should pay full commercial rates, and that anything less provides licensees with an unfair market advantage. One farmer considered that the low licence fees were “a particular annoyance” to those like himself, who had to pay commercial agistment rates. Another farmer noted that the annual licence fee was comparable to what he had to pay for a single bale of hay.

6.50 Agistment costs on private land vary, but are approximately $4–5 per head per week.[120] The Taskforce notes the argument put by licensees that grazing in the park is not directly comparable with private agistment and accepts that private agistment may provide livestock supervision and security, and represents capital investments in infrastructure such as stock handling facilities and improved pastures.

6.51 A 1998 assessment by the Valuer-General determined that $18 per AE per season, based on a discounted agistment rate, would be an appropriate fee.[121] This valuation was developed from comparable agistment rates on freehold and public land in Victoria, NSW and Queensland, and the special circumstances of alpine grazing.[122]

6.52 Several submissions claimed that the cattlemen are the beneficiaries of a ‘perverse subsidy’[123], and that full cost recovery should be the minimum standard for fee collection. On the basis of the pre-fire management costs, as outlined in the previous section, full cost recovery in a normal year would require fees of at least $25 per AE (based on maximum pre-fire licence allocations).[124]

6.53 The Taskforce does not consider current fees to be a fair reflection of the value gained from grazing. Based on comments licensees made to it and to URS, the Taskforce believes that there is acceptance within the cattlemen community of the need for a substantial increase.

Other offsets

6.54 The MCAV and others told the Taskforce that licensees undertake a range of management services, such as monitoring and controlling pest plants and animals,

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117 Based on maximum permitted park allocation of 7914 AE at $5 per AE per season (excluding GST).
118 If the number is not notified, the maximum allocation is used as the basis for charging.
119 For example: mustering, cartage, checking stock, salting.
120 URS provided figures of $3.50 and $4 for Gippsland. Costs in North East Victoria are generally higher.
121 1998 dollars. Calculation based on $1.50 per AE per week ($24 per 16 week season) with a 50% discount for the second half due to diminishing feed value.
122 Valuer-General determination from 1998, reconfirmed in 2002.
123 A perverse subsidy is one that has a negative effect on both the economy and the environment.
124 $200 000 management costs / 7914 AE ≅ $25 per AE.

monitoring human behaviour and fire fuel conditions (as well as assisting with emergencies and fire fighting). While some licensees provided information provided about the extent of such activities, the Taskforce was not able to estimate the monetary value of such activities.

6.55 With respect to the control of weeds, the MCAV stated that, in addition to controlling weeds on licence areas, because cattlemen are 'on the spot' they are able to immediately control new outbreaks of weeds and prevent them from becoming major infestations. The Taskforce spoke to several licensees who had undertaken weed control on their licensed areas, either through arrangement with Parks Victoria as contractors or on their own initiative (with permission from Parks Victoria). However, the overall extent of such contribution appears to be low and, as observed by the Taskforce, weeds occur in many grazed areas.

OTHER ECONOMIC VALUES

6.56 The Taskforce was told of both benefits and impacts for the tourism industry arising from cattle grazing in the national park. These are discussed in Chapter 7.

6.57 Other sectors raised with the Taskforce included the film industry (e.g. *The Man from Snowy River*), the use of mountain cattlemen imagery by the local food industry and the clothing industry. For example, the MCAV told of the development of a range of clothing associated with mountain cattlemen. The benefit of continued grazing, as opposed to the heritage imagery, towards these industries has not been quantified.

Non-use values

6.58 Grazing provides a quantifiable benefit to licensees through beef production, as identified above, and contributes to economic values derived from tourism, as discussed elsewhere in this report. Other socio-economic values are difficult to quantify, but are nonetheless important. As described by URS in its socio-economic assessment, environmental values and cultural heritage values have economic value just like any other good or service, even though they are not priced in markets. Such economic values arise from either human use or because humans value their existence even if they do not use them.

6.59 The economic concept of 'willingness to pay' attempts to place a dollar value on these intangible goods, such as the value of the environmental and cultural heritage values of the park and cattle grazing. These values are not bought and sold in markets, so other valuation techniques are required to determine the amount that individuals are willing to pay hypothetically for non-market goods.[125]

6.60 A 1992 survey of 1110 Victorian households derived the 'willingness to pay' for cultural heritage values associated with cattle grazing continuing in the Bogong High Plains at $30–40 million per year, while the environmental benefits from stopping cattle grazing to preserve the flora and fauna on the Bogong High Plains were calculated at $14 million per year.[126] The Taskforce has difficulty in accepting these figures without important qualifications, including that the data are 13 years old and, as noted by the

[125] The reliability of estimates of non-market values determined from willingness to pay surveys will depend on the survey design, the economic context of the survey period, the knowledge of survey participants, individual responses and data analysis. It is important to interpret the results of non-market valuation studies with caution.

[126] M Lockwood & P Tracey, 'Assessment of non-market conservation and heritage values relating to cattle grazing on the Bogong High Plains, Victoria', *Proceedings of the 37th annual conference of the Australian Agricultural Economics Society*, Sydney, 1993.

authors, the results do not say to what extent the cultural heritage values depend on the ongoing presence of cattle.[127]

6.61 Another estimate, of $35 million, was provided by URS for the non-use or preservation of environmental values associated with the Alpine National Park. This was based on recent biodiversity restoration and forest protection studies for Victoria.

6.62 The Taskforce notes that, as found by both the URS study and the 'willingness to pay' survey above, regardless of the precise amount, the estimated non-use economic values of cultural heritage and of the environment of the Alpine National Park are orders of magnitude greater than the financial value of beef production.

6.63 The Taskforce was interested in the following comment made in the URS report as part of its benefit-cost analysis:

> *One of the important reasons for people placing value on the conservation of biodiversity is that there are often no substitutes for the environmental values in question. There may be substitutes for the recreation values offered by national parks, or for the grazing and other products they yield.*

Ecosystem services

6.64 Ecosystem services are those goods that the environment provides at 'no cost', where the alternative may be a costly technical solution. Examples include clean air, fresh water, nutrient recycling and gene banks, as well as aesthetic and cultural benefits provided by natural ecosystems such as scenic views and recreational opportunities.

6.65 The economic analysis did not attempt to value ecosystem services. However, the Taskforce notes in particular the vitally important contribution water from the park makes to Victoria's agricultural production. Given the importance of the high mountain catchments, the provision of reliable, clean water from the park is a particularly important ecosystem service.

6.66 The major source of streamflows for Victoria is from rain and snowfalls in the Victorian Alps.[128] The Alpine National Park, which covers 3% of the State, contributes almost 10% of the run-off in Victoria.[129] Most of the park is within declared water supply catchment areas, which provide water to several towns and contribute greatly to the Murray-Darling irrigation systems. The value of the water that runs off from the park has been estimated at $110 million per year, taking into account both irrigation and other uses (but excluding hydro-electric power generation).[130]

6.67 Non-market costs arising from grazing in the park include environmental damage and threats to biodiversity (especially to rare and threatened species) (see Chapter 3).

6.68 The Taskforce notes that the costs of rehabilitating and repairing areas damaged by grazing, if this were to be undertaken across the park, would be considerable.

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[127] Further details on this survey are included in the Executive Summary of the URS Socio-economic Assessment (ES-6) – see Appendix C of the Taskforce report.

[128] http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/water-vics-river-basins

[129] SKM, *Run-off from the Victorian Alpine National Park*, technical report, 2005.

[130] URS, *The value of water from the Alpine National Park*, report prepared for the Department of Sustainability and Environment, 2005.

OTHER SOCIAL BENEFITS AND IMPACTS

Community links

6.69 The URS summary of ABS statistics demonstrated variations between the licensees' communities. Generally, the north-eastern and Mansfield areas had lower unemployment and higher population growth, while the Omeo and Dargo statistical areas, had declining populations and higher unemployment than the Victorian average.

6.70 URS concluded that the capacity of local communities to adjust to change appears to be relatively low in the Corryong, Dargo and Omeo areas and relatively high in the Mansfield and Bright areas. Licensees reflect the demographics of the wider farming community, with an average age of 55.

6.71 Licensees are part of their respective communities, and contribute to community well-being by helping to maintain the viability of community services and organisations. Some licensees, noting the small and isolated nature of the communities of which they are part, particularly in East Gippsland, believe that their contribution could not be readily replaced.

Identity and associations

6.72 The Taskforce was conscious of the genuine pride that licensees feel about their heritage and their operations. Many cattlemen feel they have been custodians of a way of life, and that a fundamental part of their existence is being attacked. It is considered important by many cattlemen that they have the opportunity to pass their traditions on to their children. As noted in Chapter 5, some families have been involved in high country cattle farming for up to five generations.

6.73 The cattlemen's sense of belonging to the land and their shared identity is thought to be undervalued or undermined by outsiders who have not shared their experiences and knowledge of the high country. High country grazing is said to be important for more than just financial reasons because it maintains a sense of place and a continuous identity and relationship with the land. Some expressed this as a spiritual connection.

6.74 Many residents of high country communities, as evidenced by submissions by local councils and others, also strongly identify with the mountain cattlemen.

6.75 However, some primary producers from other areas expressed concerns that their reputation as sound land managers was undermined by the manner in which alpine grazing is undertaken. Almost 50% of farmers in the north-east are Landcare members, many of whom are actively undertaking biodiversity and water quality improvement measures such as fencing water frontages, while cattle in the park are trampling river banks.[131]

6.76 The Taskforce is very aware of the long connection with the high country by cattlemen. However, it notes that this is not an exclusive association. Groups such as walkers, tourists, naturalists and skiers also have long associations with the high country and what is now the park.[132] The Taskforce was told of the value they placed on their visits

[131] http://northeast.landcare.net.au/

[132] For example, walkers, tourists and naturalists have been recorded as visiting the high country since the 1850s, and skiers since the 1920s.

to the area and their concern for what they saw as negative impacts of grazing on the park. The benefits and impacts arising from cattle grazing directly related to recreational values are further discussed in the next chapter.

EQUITY

Allocation of licences

6.77 Several submissions mentioned that park grazing gives rise to a number of equity issues, particularly in relation to licence allocation. Licensees enjoy exclusive access to the grazing resource of the park (for which others cannot openly compete) and enjoy low cost pastures that are below market rates of equivalent feed.

6.78 With two exceptions, the current grazing licences were issued under the National Parks Act to those who held a licence in the park immediately prior to 2 December 1989. Subsequent transfers have taken place within the provisions of the Act (see Chapter 2).

6.79 Many submissions, including a few from primary producers, told the Taskforce that they believed this method of licence allocation was not equitable. Having a grazing licence provides private financial benefits gained from public resources, yet there is no opportunity for others to gain this benefit. There is no method of competing for access to a grazing licence. It was put to the Taskforce that the current situation maintains an hereditary privilege based on being born into certain families, that is anachronistic and unfair.

6.80 The MCAV pointed out that the holding of some licences by non-traditional enterprises shows that new entrants are in fact able to obtain licences. Indeed, the MCAV stated that "the cattlemen welcome new entrants to alpine grazing".[133] The Taskforce notes that some of the new entries have occurred through changes to company directorships or the sale of properties.

6.81 Cattlemen also argued to the Taskforce that their historic access rights should continue because they possess unique skills and experience, have historic links to particular areas, and their cows are familiar with local areas. They told the Taskforce that their long-term relationship with particular areas ensures appropriate management and stocking rates and provides security for their farm business, and that short-term licensees would seek to maximise their profits with negative consequences for the condition of the licence areas.

6.82 The Taskforce notes that, while not all licensees are 'traditional mountain cattlemen', where the licensee is not such a person, they employ managers and others with the relevant skills and knowledge.

6.83 One matter brought to the Taskforce's attention was the Victorian Government's agreement with the Federal Government in 1995 to implement National Competition Policy.[134] In relation to Alpine National Park grazing licences, the National Competition Policy review of the National Parks Act recommended that:

> *If alpine grazing is to continue then section 32AD should be amended to specify that licences should be offered through a competitive process to those parties who*

[133] MCAV submission to the Taskforce, 26 June 2004.

[134] The 1995 National Competition Policy Agreement commits the Victorian Government to review any legislation that may be anti-competitive.

can demonstrate the requisite skills. Where the number of applicants is limited, a reserve price should be established that equates to the estimated market value of the licence.[135]

6.84 This National Competition Policy recommendation reflects the general competition policy principle that legislation should not restrict competition unless it can be demonstrated that the benefits of the restriction to the community as a whole outweigh the costs, and the objectives of the legislation can only be achieved by restricting competition.

Other issues

6.85 It was raised that visitors to the park who pick wildflowers face prosecution, while cattle grazing under licence may graze freely. The use of wilderness areas for grazing also raised similar issues (see Chapter 7).

Findings on the economic and social benefits and impacts of cattle grazing in the Alpine National Park

16. Grazing licences provide important financial benefits to a number of individual licensees, with the extent of the benefit varying between grazing businesses. Small family farm operations generally depend to a much greater extent on access to park grazing licences than the larger operations.
17. The economic contribution of grazing in the park is not significant at a regional or State level, but there are some local benefits, particularly in the Omeo district.
18. There are unavoidable costs to managing grazing in the national park. These costs are exacerbated whenever natural disasters, such as fire, occur.
19. Current licence fees do not reflect a 'market rate'. Returns to the State are below expenditures and there is an implicit subsidy, affecting the ability of park managers to allocate resources to other management activities.
20. The current allocation method does not involve competition and gives exclusive benefits to a particular group of individuals.
21. A sense of 'mountain cattleman identity' is important to individual licensees and employees, especially where a number of generations of a family have held licences.

[135] The Allen Consulting Group, *The regulation of commercial activities in Victoria's national parks and Melbourne's waterways. A national competition policy review*, 2001.

CHAPTER 7 – RECREATION AND TOURISM

7.1 Recreation and tourism are important uses of the Alpine National Park. There is a wide range of activities enjoyed by visitors, including scenic driving (2WD and 4WD), walking, picnicking, camping, nature study, bicycle riding, horse riding, fishing, deer hunting and cross-country skiing. Cattle grazing has a range of benefits and impacts for recreation and tourism in the national park.

RECREATIONAL EXPERIENCE

7.2 For some visitors, cattle in the high country are considered to be part of the natural scenery and beauty of the high country. The droving of cattle to and from the higher elevations is a special experience for a number of visitors, as is the autumn muster on the Bogong High Plains.

7.3 Licensees told the Taskforce of warm welcomes from visitors and curiosity about their activities as they herded their cattle to the licence areas or inspected them. Visitors considered that the cattlemen's activities, together with the associated historic huts and the cattlemen themselves, added colour and interest to the high country. The Taskforce heard from many individuals, including those opposed to the presence of cattle in the park, who expressed respect for the cattlemen as individuals and appreciation of their stories and the cattlemen's huts.

7.4 For many visitors, a key attraction of national parks is that they are places where one can experience a largely natural environment, with native plants protected and free of introduced animals. Many park visitors considered that the presence of free ranging farm animals detracted from the enjoyment of visiting the national park. Modern infrastructure associated with grazing, such as fences and yards, was an impact on the landscape and quite inappropriate in a national park.

7.5 One particular issue raised by park visitors was the presence of many cowpats along walking tracks and around campsites. These impacts are aggravated where both humans and cows seek sheltered campsites. One submission claimed it was hard to find a place to pitch a tent among the cowpats. The Taskforce itself noted large numbers of cowpats at locations it visited, such as at Buckety Plain.

7.6 A recent survey has estimated conservatively that there are more than one million cowpats in the grazed area of Pretty Valley on the Bogong High Plains.[136] Cowpats last for several years. The same study reported that a number of types of fly it had recorded had few suitable hosts at this elevation other than the cowpats. It is inferred from this that these flies would not occur at current levels if it were not for the presence of cattle.

7.7 For some, the declared wilderness zones within the Alpine National Park offer the increasingly rare opportunity to traverse little-modified areas for self-reliant recreational use and to seek solitude, inspiration and challenge. As noted previously, five of the six wilderness zones in the park are licensed for grazing. The presence of cattle and related infrastructure and activities in these areas has particular impact on those seeking a self-reliant wilderness experience without coming across cattle and associated vehicles, dogs and horses.

[136] D Meagher, 'A count of cattle droppings in Pretty Valley, Bogong High Plains', paper in preparation; also pers. comm., 2005.

7.8 Other impacts which were brought to the Taskforce's attention included damage attributed to cattle, such as soil pugging and erosion, and the presence of cattle tracks. On the other hand, the MCAV claimed that cattle tracks are used by visitors and that this helps spread visitor impacts, and that much damage attributed to cattle is caused by other factors.

Health and safety

7.9 Many park visitors expect to be able to drink directly from the headwaters of the State's major rivers while in the park. Submissions provided evidence of how cattle droppings and pugging at water sources adversely affected visitors' enjoyment of the national park. Several bushwalking clubs and education groups told the Taskforce that they considered the presence of cattle to be a risk to human health. In particular, they expressed concern about the impact cattle had on water quality, with the fouling of water sources at popular camping areas. As indicated in Chapter 3, the Taskforce is aware that cattle may transmit some pathogens of direct concern to human health.

7.10 The physical presence of cattle was also considered by some to be a safety hazard. The Hereford cattle most commonly grazed in the park are large heavy horned animals that are often unused to humans. For visitors who are not used to cattle, their physical presence can be intimidating. The Taskforce was told that visitors found it disturbing to have to pass through a herd of grazing cattle when following designated walking tracks. The safety of student parties was also raised as a concern by some education groups.[137]

7.11 The broader issue of safety in the high country was identified in many submissions. A number of cattlemen pointed to a long history of their participation in search and rescue operations, where their local knowledge had been invaluable. The presence of cattlemen in the high country was also said to reassure visitors, while their huts provide valuable refuge in bad weather. The Taskforce appreciates that cattlemen have provided emergency assistance in the past. However, it notes that they are not the only group that provides such assistance.

TOURISM

7.12 A wide variety of activities is undertaken in the park, with large numbers of visitors attracted to the park each year (although the exact numbers are difficult to ascertain). Tourism is a rapidly growing part of the economy of regional Victoria and provides a range of employment opportunities.

7.13 It was estimated in 2001 that the high country region was attracting more than 2.1 million summer visitor days a year. The Taskforce notes that encouraging tourism across all four seasons is a major thrust of the *Alpine Resorts 2020 Strategy*. The average annual increase in summer tourist visitor days in the high country for 1991–2000 was over 10%.[138]

7.14 A 1997 estimate of 'consumer surplus' found a conservative lower boundary to the Alpine National Park's recreation and tourism value of $6M per year. The value of the

[137] Complaints of damage to visitors vehicles from cattle in the park have also been made, but these appear to be sporadic.

[138] URS, *Socio-economic assessment of cattle grazing in the Alpine National Park*, report prepared for the Department of Sustainability and Environment on behalf of the Alpine Grazing Taskforce, 2005.

Alpine National Park as a tourism asset is very high, with an estimate of 962 jobs and $33 million of expenditure generated through summer visitation.[139]

Grazing and tourism

7.15 Films such as *The Man from Snowy River* have popularised the high country image. The Taskforce heard of the extensive use of mountain cattlemen imagery in tourism advertising within Victoria, across Australia and in overseas campaigns (for example, horsemen at Wallace's Hut are currently being used in Qantas advertisements). Some submissions argued that such imagery relies on maintaining traditional high country grazing.

7.16 While there were conflicting claims put regarding the relationship between grazing and tourist numbers and no verifiable data were available on this issue, many submissions identified the mountain cattlemen heritage as a tourism asset. Some submissions stated that cattle grazing is a tourist attraction in itself and that visitors came to the Alps specifically to see cattle grazing.

7.17 Mansfield Shire Council indicated that the integrity of their tourism product was developed in part from the heritage and imagery of the cattlemen. The Alpine Shire Council supported managed cattle grazing in selected areas to support regional tourism.

7.18 The Mansfield-Mount Buller tourism industry uses 'The High Country' as a marketing slogan. A variety of festivals outside the park incorporate elements of the traditions of mountain cattlemen. The 'Mansfield High Country Festival' has operated for many years featuring "the story of horse and high country", while the annual 'The Man from Snowy River Bush Festival' at Corryong, is based on traditional high country and bush culture, and is attracting increasing numbers of visitors.

7.19 The Mansfield Branch of the MCAV also referred to the role of mountain cattlemen in a range of tourism advertising and promotions, and spoke of the annual MCAV's 'Cattlemen's Get-Together', which it said generated tens of thousands of dollars in revenue into the local community.

7.20 The Taskforce was told that horse riding is the largest single contributor to summer tourism in the Mansfield area and this activity largely depends on the continuing presence of cattle. It heard that some of the first entrants into this industry were cattlemen, and notes that there is currently a small number of park licensees who hold tour operator permits to run trail rides in the park.

7.21 Two operators stated:

> *horse-riding needs the alpine cattle to continue to attract the tourists, as this is an intrinsic part of the desire to ride the high country* [and]
>
> *a major part of our operation is the history and heritage related to the tourists coming into contact with the cattle in the high country.*
>
> *Don't kill the goose that lays the tourist dollar by ending the culture that attracts them.*

[139] URS, *Socio-economic assessment of cattle grazing in the Alpine National Park*, report prepared for the Department of Sustainability and Environment on behalf of the Alpine Grazing Taskforce, 2005.

7.22 While the Taskforce agrees that the cultural heritage associated with grazing is clearly an important tourism driver, it does not necessarily follow that it is the presence of cattle that attracts tourists. The Taskforce notes that it is horse riders and cattlemen that feature most often in local tourist brochures, not cattle.

7.23 It was also pointed out that other cultural heritage images used in tourism advertising elsewhere, such as 'Ned Kelly Country', the 'Golden Triangle' and 'Eureka', are very successful, despite the traditions on which they are based having long since gone.

Nature-based tourism

7.24 An alternative view on cattle grazing and tourism in the park was that it reduced the opportunities to capitalise fully on the park's nature-based tourism potential. For many, the natural values of the national park were seen as the key tourist attraction and cattle grazing in the park was seen to be affecting those values.

7.25 One operator said: "if visitors want to see cattle they will go on a farm visit, not a national park tour". Another stated that "tourists think cattle are a pretty sight but are horrified when they see the damage they do".

7.26 Nature-based tourism is a rapidly growing sector. For a number in the local tourist industry, protecting the nature conservation values of the national park was considered to be vitally important to the future of their businesses. "Alpine Region Tourism" heavily promotes the natural values of the region, using a variety of photos of alpine scenery and wildflowers.[140]

7.27 The Taskforce was told that enhancing the wildflower displays could become a significant attraction within the park, were cattle to be removed. The Taskforce notes that wildflowers are a major tourist attraction in a number of key destinations elsewhere, such as the Grampians National Park and south-west Western Australia. Alpine wildflowers are a feature of Kosciuszko National Park.

7.28 However, as described in Chapter 3, several unfavourable comparisons were made between visitors' experiences in Kosciuszko National Park and other ungrazed areas in Victoria with their abundant wildflower displays, and the diminished displays in grazed areas of the Alpine National Park.

7.29 Another view, which referred to the importance of both natural and cultural heritage to local tourism, was put by the operator of one tourist business who told the Taskforce that:

> *the viability of our business and the growing (summer) tourist market hinges on a strong commitment to preserve natural and cultural heritage values*
>
> *the integrity of the natural resources of the national park shouldn't be compromised.*

7.30 The Alpine National Park is one of the most significant national parks in Victoria. It clearly has growth potential for nature-based tourism.

[140] http://www.visitalpine.com/

Findings on the recreation and tourism benefits and impacts of cattle grazing in the Alpine National Park

22. Cattle in the high country appeal to some visitors, but for many visitors their experience of the Alpine National Park is spoilt by the presence of cattle and their impacts. The experience is particularly negative for those expecting a pristine natural environment or seeking a wilderness experience.

23. The presence of free ranging cattle in areas used by family and other groups for camping and walking, and the sharing of drinking water sources, is a health and safety issue.

24. The traditions of the mountain cattlemen are being capitalised on by many businesses, with the tourist economic values generally derived from the history of grazing rather than its ongoing practice.

25. While cultural heritage associated with the cattlemen's story is a tourism asset, the ongoing presence of cattle in the national park is reducing the potential growth of nature-based tourism.

CHAPTER 8 – NATIONAL PARK STANDARDS

8.1 Many submissions raised the issue of the acceptability or otherwise of cattle grazing in a national park. Several also referred to the compatibility of grazing with the wilderness zones in the park.

NATIONAL PARKS

8.2 Many strongly believed that grazing is an incompatible use of a national park and pointed to the objects of the National Parks Act, the primary legislation under which national parks are established, protected and managed. Others considered that grazing was an accepted use in the park when it was created and that it can coexist with the park.

8.3 The Taskforce noted that the objectives for national parks are specified in the National Parks Act. These are listed below.

Extracts from the National Parks Act[141]

The objects of this Act are –

(a) to make provision, in respect of national parks … –

(i) for the preservation and protection of the natural environment including wilderness areas and remote and natural areas in those parks;

(ii) for the protection and preservation of indigenous flora and fauna and of features of scenic or archaeological, ecological, geological, historic or other scientific interest in those parks: and

(iii) for the study of ecology, geology, botany, zoology and other sciences relating to the conservation of the natural environment in those parks; and

(iv) for the responsible management of the land in those parks;

(c) to make provision in accordance with the foregoing for the use of parks by the public for the purposes of enjoyment, recreation or education and for the encouragement and control of that use.

8.4 The Taskforce was informed of the definition of a national park adopted at the national level by the former Council of Nature Conservation Ministers in 1974[142]:

> *A national park is a relatively large area, set aside for its features of predominantly unspoilt landscape, flora and fauna, permanently dedicated for public enjoyment, education and inspiration and protected from all interferences other than essential management practices so that its natural attributes are preserved*.

8.5 The Taskforce was also informed of the international definition of a national park as adopted by the World Conservation Union (IUCN):

> [a] *natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and*

[141] http://www.dms.dpc.vic.gov.au/

[142] The Council of Nature Conservation Ministers comprised the conservation ministers of all state and territory governments as well as the federal government.

(c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.[143]

8.6 The Taskforce was informed that the Alpine National Park is the only national park in Victoria where ongoing licensed grazing is permitted.[144] Various submissions pointed out that licensed livestock grazing is not permitted in any Australian high country national park other than the Alpine National Park.[145]

8.7 The Federal Department of the Environment and Heritage in its submission noted:

The grazing of cattle in the Alpine National Park falls significantly short of constituting world's best practice for national park and wilderness management and is considered to be a significantly inferior management regime compared to that in place in other reserves in the Australian Alps such as Namadgi and Kosciuszko National Parks.

8.8 Various submissions argued that the main purpose of a national park is to protect its natural environments and its native plants and animals. Some pointed out that the park manager is obliged to protect all species, not only rare and threatened species.

8.9 The National Parks Act provides that, subject to protection of the natural environment and other features, the primary use of a national park is for enjoyment, recreation or education. Submissions pointed out the impact which cattle have on the ability for visitors to enjoy a national park experience based on appreciating and enjoying the natural environment. An agricultural activity was seen as incompatible with the proper protection and management of parks according to widely accepted standards. It was also seen as anomalous that it is illegal for a visitor to pick wildflowers but not for a cow to eat them.

8.10 On the other hand, some submissions pointed out that grazing was specifically provided for when the park was created in 1989, and that the area was suitable to be proclaimed a national park even though there was ongoing cattle grazing. The Taskforce acknowledges that, while the park was created first and foremost to protect a representative example of the natural environment of the Victorian Alps in one continuous national park, along with special values and features, grazing is accommodated within the legislation governing this particular park as a special case.[146]

8.11 The Taskforce was told of grazing occurring in other national parks in Australia. Two specific examples were the grazing of a small herd of buffalo in Kakadu National Park and the use of sheep as a management tool in part of Terrick Terrick National Park.

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[143] World Conservation Union, *Guidelines for protected area management categories*, http://www.iucn.org/themes/wcpa/pubs/other.htm

[144] Grazing will be phased out of three national parks in the box-ironbark region by 30 October 2005 as a part of a transitional arrangement to implement recommendations of the former Environment Conservation Council.

[145] Licensed grazing ceased in Kosciuszko National Park in the early 1970s (except for some stock routes). This followed the initial removal of grazing from the Mount Kosciuszko summit area in 1944 (because of concerns, in particular, over the condition of the catchments that were to supply the Snowy Mountains Scheme) and from above 4500 feet in the late 1950s. Grazing also does not occur in Namadgi National Park (ACT) or in Tasmania's high country national parks. In areas in Victoria that are now national parks and which contain alpine or sub-alpine vegetation, licensed grazing ceased for various reasons in Mount Buffalo National Park in 1958, at Lake Mountain (now part of Yarra Ranges National Park) in the 1960s, and on the Baw Baw Plateau (Baw Baw National Park) in 1975. See also Chapter 2 in relation to the Alpine National Park.

[146] National Parks (Alpine National Park) Bill second reading speech, Legislative Council, 9 May 1989.

8.12 The Taskforce investigated these examples and found them to be clear exceptions, quite different to the situation in the Alpine National Park where grazing occurs as a licensed primary production activity. In relation to Kakadu National Park, it understands that the traditional owners keep a small herd of domesticated buffalo for food.[147] In Terrick Terrick National Park, on Victoria's northern plains, light grazing of the lowland native grasslands is being maintained strictly as part of an ecological management regime, pending future research outcomes into alternative management (e.g. the use of fire).

WILDERNESS ZONES

8.13 A further matter relating to national park standards raised in several submissions was the fact that there was licensed grazing in five of the six wilderness zones of the Alpine National Park. These areas were designated under the National Parks Act in 1992 following a statewide wilderness investigation by the former LCC.[148]

8.14 The main objective for wilderness areas, as set out in the National Parks Act, is to maximise the extent to which they are undisturbed by impacts resulting from the European settlement of Australia. They provide outstanding opportunities for self-reliant recreation and solitude. The objectives for these areas are included in the National Parks Act.

Extracts from the National Parks Act[149]

The objects of the Act are:

(ab) to make provision in respect of wilderness parks[150] *–*

- *(i) for the protection, enhancement and management of those parks as wilderness so as to maximise the extent to which those parks are undisturbed by the influences of the European settlement of Australia; and*
- *(ii) for the protection, preservation and evolution of the natural environment including indigenous flora and fauna and of features of ecological, geological, scenic, archaeological and other scientific significance; and*
- *(iii) for the use and enjoyment of those parks by the public for inspiration, solitude and appropriate self-reliant recreation; and*
- *(iv) for the study of ecology, geology, botany, zoology archaeology and other sciences relating to the environment in those parks;*

(c) to make provision in accordance with the foregoing for the use of parks by the public for the purposes of enjoyment, recreation or education and for the encouragement and control of that use.

8.15 Most of the grazing in the five wilderness zones (pre-fire) occurs in the Davies Plain, Cobberas and Buchan Headwaters wilderness zones. The Taskforce notes that the LCC recommended these wilderness zones because, in the context of the State and the Victorian Alps, they had high wilderness value, even though their wilderness quality was reduced because of past or current grazing.

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147 Traditional owners keep a small herd of domesticated buffalo in a fenced area within the park for food. They are subject to ongoing environmental and exotic disease monitoring. Information from the Kakadu Board of Management and Parks Australia, *Kakadu National Park plan of management*, Parks Australia, 1999.

148 Land Conservation Council, *Wilderness special investigation final recommendations*, LCC, Melbourne, 1991.

149 http://www.dms.dpc.vic.gov.au/

150 The National Parks Act uses the term *wilderness park* to refer to both wilderness parks and wilderness zones within national parks.

8.16 The LCC considered grazing by introduced herbivores, such as cattle, to be incompatible with the concept and land use objectives of wilderness, and it recommended that grazing be phased out where it occurred. Although this was accepted by the government of the day, the legislation to achieve it was not supported by the Parliament. Instead, the National Parks Act was amended to include special provisions to allow cattle grazing to continue in the five wilderness zones where grazing was then licensed.

Findings in relation to benefits and impacts on national park standards from cattle grazing in the Alpine National Park

26. Despite grazing being specifically provided for in the National Parks Act, the Taskforce finds that cattle grazing in the Alpine National Park is inconsistent with the primary objects of the Act relating to national parks and wilderness areas.

27. Cattle grazing is not compatible with the national and international standards for a national park.

PART THREE – OTHER MATTERS

Part Three of the report responds to the first part of the fifth term of reference, which requests the Taskforce to:

> *Identify any further available evidence that will be useful to the Minister in making his decision on whether to renew licences that expire in August 2005 …*

CHAPTER 9 – RECENT FIRES AND POTENTIAL HERITAGE LISTINGS

9.1 There are two other issues, in particular, which the Taskforce considers important for the Minister to consider. These are grazing management following the recent bushfires, and the possibility of world and national heritage listings involving the Alpine National Park.

GRAZING FOLLOWING THE 1998 AND 2003 FIRES

9.2 The Taskforce is very aware of the significant impacts of two recent major fires (the 1998 Caledonia Fire and the 2003 Victorian Alpine Fires) on the national park, as outlined in Chapter 2. The Taskforce saw considerable evidence of these fires and it observed widespread patches of bare ground in burnt areas of the Bogong High Plains, which have significantly increased the vulnerability of the soils to erosion from a range of causes.

9.3 While the Taskforce is not re-examining decisions relating to when cattle could return to areas affected by the recent fires (as this is specifically excluded from the terms of reference), the fires have added a significant extra dimension to the broader issue of the future of grazing in the park.

9.4 Together, the two fires burnt about 63% of the park, including more than 80% of the area licensed for grazing. The fires have significantly affected grazing in the park. In the case of the Caledonia Fire, the activity is currently suspended from four licence areas to assist recovery from the effects of the fire. For the same reason, grazing has been excluded from 30 of the 43 licensed areas that were affected by the 2003 fires until at least the end of the current licence period (August 2005), although it could be excluded for much longer.

9.5 As shown in Table 7, of the 7914 AE cattle normally permitted to graze in the park, a maximum of 1759 AE (22% of the 7914 AE) were allowed to graze in the 2003–04 and 2004–05 grazing seasons. For various reasons, less than half of that number (866 AE and 739 AE respectively) has been recorded as potentially grazing in the park in those two seasons. These figures represent about 10% of the normal maximum allocation. As with the situation pre-fire, the maximum available allocations have not been used.

Table 7: Current stock allocations – Alpine National Park

Area of park	Maximum allocation (AE)		No. licence areas able to be grazed	
	Pre-1998 fire (normal year)	Post-2003 fire	Pre-1998 fire (normal year)	Post-2003 fire
Area affected by 1998 Caledonia fire	572	250	7	[+] 3
Area affected by 2003 Victorian Alpine fires	6 641	808	43	[+] 13
Area unaffected by fires	701	701	11	11
Total	**7 914**	**1 759**	**61**	**27**

[+] Grazing permitted subject to special conditions.

Scientific Advisory Panel advice on the return of grazing following the 2003 fires

9.6 The Taskforce notes that the Scientific Advisory Panel (the Panel), which was established by Parks Victoria to advise on the return of grazing following the 2003 fires, concluded in August 2003 that regeneration of the affected ecosystems will take years to decades, depending on the ecosystem. The Panel noted that there are risks of landscape degradation, including a reduction in catchment condition and an exacerbation of erosion, associated with a premature return of cattle.[151]

9.7 The Taskforce notes that this conclusion is reinforced by the evidence of the damage to catchments across the Alps caused by grazing following the 1939 fires.[152] The recommendation of the 1946 Royal Commission into Forest Grazing that "wherever the forest has been materially injured by fires, it be closed to all possibly injurious activities pending its regeneration" also highlights the long-standing awareness of the need for a cautious approach as the area recovers following the fires.[153]

9.8 In February 2005, the Panel reviewed the results of some 30 reports prepared since the fires, as well as supplementary information, relating to an extensive range of issues, including impacts of the fires on catchment processes and water quality, threatened flora, fauna and communities, weeds and fire patterns.[154] A copy of the report is included in Appendix E.

9.9 The Panel found that:

> *The data dealing with catchments, soil, water quality, fauna and flora in burnt and unburnt areas are voluminous, scientifically based, and credible.*
>
> *[The Panel] is agreed that the information currently available allows it to say directly that there is sufficient information for it to make recommendations to Parks Victoria on the high alpine and sub-alpine areas as well as soil and catchment processes and some vegetation types in lower elevation areas*.

9.10 The Panel made five recommendations:

1. *Grazing should not be returned to the high elevation areas (i.e. above 1200 metres) of the Alpine National Park for at least 10 years (i.e. at least until the summer of 2014–15).*
2. *Grazing should not be returned to the severely burnt montane and other lower elevation areas (i.e. below 1200 metres) of the Alpine National Park for at least 10 years (i.e. at least until the summer of 2014–15).*
3. *In lightly burnt or unburnt areas at lower elevations (i.e. below 1200 metres) of the Alpine National Park grazing may be permitted but only with very clearly defined conditions.*
4. *These conditions must ensure that cattle are strictly contained to the agreed unburnt portions of the licensed area and that Parks Victoria develops an adaptive management protocol to monitor the effects of grazing.*
5. *Weed control post fire must be a very high priority*.

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[151] Scientific Advisory Panel, *Report of the Scientific Advisory Panel on fire-affected grazing,* report prepared for Parks Victoria, 2003.

[152] A B Costin, *High mountain catchments in Victoria in relation to land use*, Soil Conservation Authority of Victoria, 1957.

[153] L E B Stretton, *Report of the Royal Commission to inquire into forest grazing together with minutes of evidence*, Victoria, 1946.

[154] Scientific Advisory Panel, *Monitoring the recovery of areas burnt by the wildfires of 2003 in NE Victoria*, report of the Scientific Advisory Panel on fire-affected grazing prepared for Parks Victoria, 2005.

9.11 In coming to its conclusions, the protection of catchments, soils and water was a significant consideration of the Panel. It pointed out that the data show that the large amounts of bare ground and degraded streamside zones and mossbeds still exist in burnt areas and continue to threaten water quality. These areas recover very slowly and further damage by trampling is inevitable if cattle return to burnt areas. The likelihood of erosion is heightened, with consequent adverse impacts on streams and aquatic habitat. The Panel also pointed out how the steep terrain and significant amounts of bare ground make the severely burnt areas between 800 and 1200 metres highly susceptible to erosion and consequently to degraded water quality.

9.12 The Panel indicated how regrowth and regeneration in the burnt higher elevation areas (above 1200 metres) and in the severely burnt montane and lower elevation areas is inherently slow. It indicated that it may take at least a decade to re-establish the proper functioning and structure of the mossbeds and closed heath communities and the appropriate ecological relationships in the montane and lower areas (e.g. the severely burnt cypress pine areas of the Snowy River). It was also concerned that cattle returning to severely burnt montane and low elevation areas would graze young tree and shrub growth and that this would severely retard recovery.

9.13 In the alpine and sub-alpine areas, the Panel noted that recovery is inherently slow, with heath communities taking at least 10 years and mossbeds more than 20 years. It also pointed out that the amount of bare ground remains significant, particularly on the steeper slopes. As the Taskforce observed in Chapter 3, bare ground in the higher elevation areas is particularly prone to erosion. The Panel noted that fauna species listed under the FFG Act have been affected, and their habitats require protection.

9.14 The Panel recognised that there are practical difficulties in managing cattle following the fires and how it is difficult to guarantee that cattle will not seek “green pick” in the regenerating burnt areas. Cattle returned to some unburnt areas of the Bogong High Plains after the fires were difficult to contain in the unburnt areas and were removed shortly afterwards.

9.15 As the Taskforce noted in Chapter 3 of this report, cattle, while free-ranging, concentrate their activities in particular parts of the landscape. Water sources, including mossbeds, are particularly vulnerable. Consequently, even if some vegetation communities, such as grasslands in flatter areas, recover from the fires earlier than others, it is difficult to stop cattle straying into the more vulnerable areas such as mossbeds or streamsides, where recovery may take much longer.

9.16 The Panel also indicated that undertaking the detailed assessments of the grazing resource available in different areas would be a massive, long-term exercise. However, it notes that observations in several locations to date indicate that the biomass remains below the recommended minimum level for biodiversity protection.

9.17 The Taskforce recognises that the Panel’s recommendations have significant implications for grazing in the national park in the immediate to medium term. For many of the licensed areas in the park, the Panel’s recommendations would mean that, regardless of any general policy decision by the Government on the future of grazing, a significant amount of grazing in the park would be unable to return for at least a decade. This is beyond the end of the next licence period.

RECOGNISING HERITAGE VALUES

World Heritage List

9.18 The impact or otherwise that grazing may have on the potential for the Australian Alps national parks to be nominated for world heritage listing was raised in a number of submissions. A place may be listed on the World Heritage List on the basis of values, which may be natural or cultural, assessed against criteria set out in the Operational Guidelines under the World Heritage Convention.

9.19 It is understood that for more than two decades, the Australian Alps, including the area covered by the Alpine National Park, have been promoted as a possible candidate for world heritage listing under the World Heritage Convention because of their intrinsic natural values. The Australian Academy of Science advocated their listing in the 1970s, and listing has been promoted by various conservation groups for many years. The 1988 Fenner Conference on the scientific significance of the Australian Alps resolved that collectively the scientific values of the Australian Alps warrant the area being identified as part of the world heritage and it being nominated for the world heritage list. No formal application for listing has been sought, although considerable preliminary assessments have been done by various governments.

9.20 Cattle grazing has been raised as a significant impediment to a successful nomination. In 1988, the lead assessor of natural areas for the World Heritage Committee saw grazing as a significant problem for any Alps nomination. In 1993, a review of the international significance of the natural values of the Australian Alps concluded that there seemed to be a strong case for their inclusion on the World Heritage List but that a government commitment to a rapid phase-out of stock grazing would be important.[155]

9.21 On the other hand, the MCAV argues that the need to remove cattle grazing from the Alpine National Park to gain world heritage listing “seems to be a nonsense”. It notes that Kakadu National Park is a world heritage property but includes grazing (although as noted in Chapter 8, there are significant differences between the grazing regimes of Kakadu and the Alpine national parks). It argues that the traditions of mountain cattlemen and grazing could support a world heritage nomination based on the living tradition and the involvement of local populations.

9.22 The Taskforce notes that a place can be included in the world heritage list only if it has outstanding universal value as assessed against at least one of several criteria. No detailed assessment was presented to the Taskforce to indicate that the traditions of cattle grazing in the Alpine National Park would meet such exacting criteria.

National Heritage List

9.23 A National Heritage List was recently established under the Commonwealth’s EPBC Act.[156] In December 2004 the MCAV made an application for the cultural, historic and heritage values of alpine grazing by successive generations of mountain cattlemen for listing on the National Heritage List. In January 2005 the MCAV requested an emergency listing of the Alpine National Park including the alpine grazing licences on the National Heritage List.

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[155] J B Kirkpatrick, *The international significance of the natural values of the Australian Alps*, a report to the Australian Alps Liaison Committee, 1994.

[156] http://www.deh.gov.au/epbc/publicnotices/heritage/national-list/index.html

9.24 On 27 January 2005 the Federal Minister for the Environment and Heritage refused the emergency listing application.[157] The statement of reasons for his decision indicated that the Alpine National Park may have both natural and cultural heritage values which meet several of the criteria for listing. He also indicated that these values could, at some stage, be threatened by a cessation of grazing or a continuance of grazing in its current form. The Australian Heritage Council will now assess the nomination through the standard assessment process.

Findings in relation to other matters

28. The current exclusion of grazing from much of the park due to fire, and the Scientific Advisory Panel recommendation to exclude grazing from many licence areas for at least ten years, have significant implications for the decision on whether licences should be renewed in those areas.

29. Grazing compromises the chances of the Australian Alps national parks being nominated for the World Heritage List based on their natural values.

[157] The statement of reasons can be viewed at http://www.deh.gov.au/heritage/laws/publicdocuments/pubs/105811.doc

PART FOUR – OPTIONS

Part Four presents the main options relating to the future of grazing in the Alpine National Park, drawing on the issues and findings contained in Parts 2 and 3. It describes the implications of each option and suggests ways to maximise particular values within each option.

Part Four addresses the following terms of reference:

Chapters 10 and 11

- the third term of reference –

  Examine possible options for the future of cattle grazing in the Alpine National Park.

- the second term of reference (in conjunction with the options covered by the third term of reference) –

  Consider the implications of renewal or non-renewal of cattle grazing licences for local communities and their economic and social viability; for the cost of management services for the Alpine National Park; for the security of natural resource values; and for the viability of the park.

Chapter 12

- the fourth term of reference –

  Within each viable option, identify opportunities for maximising natural, economic, social and cultural values.

Chapter 13

- part of the fifth term of reference –

  Identify any further available evidence that will be useful to the Minister … in determining what conditions may be required in relation to any renewed licences.

CHAPTER 10 – GEOGRAPHIC OPTIONS AND IMPLICATIONS

10.1 This chapter examines three geographic options describing where grazing might or might not be permitted in the Alpine National Park. It also considers the implications of each option, including those matters listed in the second term of reference. Chapter 11 deals with administrative options.

10.2 The three geographic options are:

- Option G1 – continue grazing in all currently licensed areas
- Option G2 – continue grazing in some of the currently licensed areas
- Option G3 – remove all grazing from the park.

10.3 Options G1 and G2 assume that the licence areas affected by the fires have recovered adequately to enable a return of grazing.

10.4 In developing the options, the Taskforce recognised that there are two strongly held sets of views about whether grazing should continue in the Alpine National Park. Most submissions advocated either continuing grazing in all current licensed areas or ceasing all grazing, with few references to any intermediate approach. However, the MCAV put to the Taskforce that some individual licence areas could be reduced in size to better reflect where cattle actually grazed.

10.5 Nonetheless, the Taskforce considered it useful to examine an intermediate option, especially in the light of matters raised in Part Two of this report and in an endeavour to respond to the wide range of concerns and views of those who made submissions.

10.6 Each of the three options places a different emphasis on social, economic, environmental and cultural heritage considerations. Consequently, each has different implications. Chapter 12 proposes ways to maximise particular values within each geographic option.

OPTION G1 – CONTINUE GRAZING IN ALL CURRENTLY LICENSED AREAS

10.7 Option G1 would allow grazing to continue in the currently licensed areas of the park, taking into account the area reductions proposed by the MCAV. This option would maintain the current licence allocations (7914 AE cattle), subject to recovery of affected licence areas after the fires (the majority of licences).[158]

10.8 Continuing grazing in currently licensed areas would have no impacts on existing licensees and their local communities (depending on licence allocation methods – see Chapter 11). It would maintain the full range of cultural heritage values in the park, including those that directly involve continued grazing. Future opportunities to develop tourism based on the presence of cattle in the national park would be kept open.

10.9 On the other hand, the significant environmental impacts detailed in Chapter 3 would continue. These would include continuing impacts on water catchment values, and ongoing threats to rare and threatened species and communities. The MCAV proposal to reduce the size of some licence areas does nothing to ease the environmental impacts, as the same number of cattle would graze essentially the same area. National park and wilderness standards and legislative obligations (e.g. under the FFG

[158] As previously noted, the Scientific Advisory Panel has recommended that grazing should not be returned to the high elevation areas (above 1200 metres) or to the severely burnt montane and lower elevation areas for at least ten years.

Act) would continue to be compromised, and there would be significant ongoing grazing management costs for the park manager (including in assessing when grazing can return after fire). For many visitors the recreational experience would continue to be adversely affected, while the potential for nature-based tourism would not be fully realised.

10.10 A summary of the implications is included in Table 8.

OPTION G2 – CONTINUE GRAZING IN SOME OF THE CURRENTLY LICENSED AREAS

10.11 Option G2 would allow grazing to continue in some of the currently licensed areas while removing the impacts of grazing from other areas. There are several ways in which this option could be implemented, depending on the relative emphasis placed on environmental protection against maintaining stock allocations. Again, as for Option G1, in the case of areas affected by the fires (the majority of licences), grazing would resume when the areas had been assessed as having recovered from the fires.

10.12 Four examples are described below. The general areas where grazing would be permitted under each shown on Figures 10A–D. Grazing licence boundaries would be determined taking into account the topography and other local circumstances.

(a) Continue grazing in all currently licensed areas other than the Bogong High Plains

Option G2(a) would allow grazing to continue in most of the park where it is currently licensed but would remove it from the Bogong High Plains area (including Buckety Plain and the area adjacent to Dinner Plain).[159] It is estimated that about 4900 AE cattle could be accommodated in the park under this scenario.

This approach would mean that the largest area of treeless alpine and sub-alpine vegetation in Victoria, which is highly significant for nature conservation, is protected from grazing. The Bogong High Plains contain the largest concentration of mossbeds in the Victorian Alps, as well as most of the snowpatch communities and many threatened species. The area also has very high recreation value and nature-based tourism potential because of its proximity to Falls Creek and Mount Hotham alpine resorts.

(b) Continue grazing in currently licensed areas below the snowline (1220 metres)[160]

Option G2(b) would continue grazing in those currently licensed areas of the park below the snowline. It is estimated that approximately 1500 AE cattle could be accommodated under this scenario.

This approach would give additional protection to the high mountain catchments above the snowline that are susceptible to disturbance. It would protect the sensitive and significant treeless sub-alpine vegetation communities (including the highly vulnerable mossbeds and snowpatch communities) and rare and threatened species.

(c) Continue grazing in currently licensed areas below the snowline, other than in wilderness zones and the rainshadow woodlands of the Snowy River[161]

In addition to protecting the areas above the snowline (Option G2(b)), Option G2(c) would protect some additional areas below that level: all wilderness zones[162] and

[159] Licensed grazing ceased on the northern Bogong High Plains in 1991.
[160] The intention is that grazing would be excluded from all sub-alpine treeless areas, some of which extend marginally below 1220 metres.
[161] The intention is as per note 160.

the significant rainshadow woodlands of the Snowy River (which include nationally endangered grassy woodlands). It is estimated that approximately 1300 AE cattle could be accommodated under this scenario. Compared to Option G2(b), there would be additional protection of important values with little further reduction in stock numbers.

(d) Continue grazing in currently licensed areas on the lower river valleys (generally below 800 metres)

Option G2(d) would allow grazing to continue in currently licensed areas below about 800 metres. This elevation, which approximates where the topography changes from lower river valley flats to steeper slopes, was used to distinguish between low and high elevation grazing licences for the purposes of making decisions on grazing after the 2003 Victorian Alpine Fires.

Grazing would continue in a limited number of areas, essentially in the lower river valleys, while being excluded from the steeper slopes and all sub-alpine and alpine areas. It is estimated that approximately 750 AE cattle could be accommodated under this scenario.

10.13 In summary, Option G2 would give added protection to some of the State's most important conservation areas from grazing impacts while allowing some grazing to continue in parts of the park. However, in all cases, national park standards would continue to be compromised and, in the case of Option G2(a) in particular, there are significant areas of high conservation value which would continue to be affected by grazing. Many of the grazing areas at the lower elevations would be contiguous with licensed areas of State forest.

10.14 Economic and social impacts would vary, depending on the extent of grazing permitted. Removal of grazing from the Bogong High Plains (Option G2(a)) would particularly affect some graziers in the Omeo district and Kiewa and Ovens valleys. Options G2(b) and (c) would reduce the allocations for most licensees, but would allow most to retain some grazing in the park. Option G2(d) would have the greatest impact, but some licensees would still be able to graze in the park. Where there was ongoing grazing in the park, traditional associations with specific areas and related skills and knowledge would be maintained (noting that grazing will continue in extensive areas of the high country outside the park).

10.15 The Taskforce acknowledges that for Options G2(b)-G2(d), which restrict grazing to the lower elevations, these areas are generally not the favoured areas for grazing compared to the higher elevation areas of the park, particularly the high plains.

10.16 In summary, depending on where grazing was permitted, it is estimated that between 750 and 4900 AE could graze in the park under Option G2. A summary of the implications of Option G2 is set out in Table 8, recognising that they would vary depending on where grazing was permitted.

OPTION G3 – REMOVE ALL GRAZING FROM THE PARK

10.17 Option G3 would remove all licensed grazing from the park. This option places the greatest emphasis on achieving the highest level of environmental protection and fully meeting national park and wilderness standards and other statutory obligations.

[162] Extensive parts of several wilderness zones lie above 1220 metres. Option G2(c) would protect the wilderness zones in the park both above and below the snow line, as originally recommended by the LCC in 1991.

10.18 This option would significantly improve the environmental protection of one of Victoria's most significant national parks, including its important high mountain water catchments, streams, rare and threatened plants and animals, and wilderness areas, and would help to ensure that the park is managed to the highest national park standards.

10.19 The recreation experience for many park visitors would be improved and the opportunities for high country nature-based tourism in the summer season would be enhanced. The removal of all grazing from the park would enhance nature-based recreation and tourism in the park to the greatest extent.

10.20 Opportunities to improve the condition of the park would be significantly enhanced. Rehabilitation of badly damaged wetland areas could be undertaken without the presence of cattle, and the effectiveness of weed and pest control programs in the park would be increased. The need to erect extensive fencing to protect vulnerable areas of the park from cattle would be avoided. It would also allow funds to be directed towards other management priorities. Costs associated with the ongoing management of grazing in the park, including assessing when cattle can return to the fire affected areas, would be avoided.

10.21 Of the options considered, Option G3 would have the greatest financial, economic and social impact on licensees and local communities. A number of farm operations could become unviable. Those cultural heritage values that are directly related to the activity of cattle grazing within the park would be lost, but no huts or other heritage places would be affected.

10.22 Grazing by mountain cattlemen, including many with park licences, would continue in areas of State forest in the high country outside the park. Because the boundary of the park does not necessarily follow practical containment lines where it abuts licensed areas of State forest, the Taskforce notes that a period of adjustment would be required in implementing this option. It would be expected that licensees would work cooperatively with DSE and Parks Victoria in managing their cattle so that they remain in State forest. In some areas, boundary fencing may be required. Some licensees put to the Taskforce that excluding grazing from the park would make their State forest grazing licences unmanageable.

10.23 More detailed implications of this option are included in Table 8.

Findings in relation to geographic options

30. Continuing grazing over all currently licensed areas (Option G1) offers both positive and negative economic and social outcomes, but would continue environmental impacts and degradation associated with grazing across some of the most significant and sensitive parts of Victoria.

31. Environmental outcomes and national park standards are clearly maximised if grazing were to cease across the park (Option G3). However, this would involve some economic and social costs, especially to current licensees.

32. The continuation of grazing in reduced areas of the park (Option G2) could mitigate some of the socio-economic impacts while still offering improved environmental outcomes.

33. Cultural heritage values will be maintained under all geographic options. However, those options allowing at least some grazing would enable traditional associations with specific areas and related skills and knowledge to be maintained in the park.

Table 8: Implications of geographic options

OPTION/ IMPLICATIONS	OPTION G1 – CONTINUE GRAZING IN ALL CURRENTLY LICENSED AREAS	OPTION G2 – CONTINUE GRAZING IN SOME CURRENTLY LICENSED AREAS	OPTION G3 – REMOVE ALL GRAZING
SOCIAL (including for local communities)	• Is likely to minimise disruption to existing licensees (depending on the method of licence allocation – see Chapter 11), and thus maintains links of existing licensees to local communities and the sense of 'mountain cattleman identity'. • Continues to diminish the experience of the park for visitors where this is affected by the presence of cattle.	• Reduces association of park grazing with some local communities, depending on which grazing licences were not renewed. • Reduces the overall impact on visitor enjoyment for those visitors affected by the presence of cattle and offers areas where visitor experience can be enhanced.	• May lead to a loss of 'mountain cattleman identity' for some individuals and add to other recent stresses (fires, drought etc). • Reduces existing links with local communities where an existing licensee finds their business no longer economic and moves elsewhere. • Enhances the experience of the park for many visitors affected by the presence of cattle but reduces the experience for those who want to see cattle.
ECONOMIC (including for local communities and management services)	• Continues to provide financial benefits to licensees and economic benefits to local communities. • Continues tourism benefits related to grazing activities in the park. • Restricts potential growth in nature-based tourism (an opportunity cost). • Continues grazing management costs by government ($0.20–0.25M per year). • Requires additional expenditure by government to assess the condition of burnt licensed areas to determine when grazing could resume..	• Retains some of the economic benefits of grazing, but at a reduced level, and may make some licensees' pastoral businesses unviable. • Reduces tourism benefits derived from grazing activities in the park. • Provides opportunities for growth of nature-based tourism (compared to Option G1) (e.g. on the Bogong High Plains). • Continues to require the government to manage grazing in the park with associated costs. • Reduces costs (compared to Option G1) relating to assessing the condition of areas for a return to grazing post-fire.	• Directly affects licensees (potentially reducing total farm income by approximately $1.4M per year), and may make some licensees' pastoral businesses unviable. • Will have some adverse affect on some local economies. • Reduces tourism benefits derived from grazing activities in the park. • Increases opportunities for nature-based tourism. • Enables the redirection of grazing management costs currently incurred by government to other management activities. • Avoids costs relating to assessing the condition of burnt areas for a return to grazing. • Avoids costs related to environmental management associated with grazing.

Table 8 (continued)

OPTION/ IMPLICATIONS	OPTION G1 – CONTINUE GRAZING IN ALL CURRENTLY LICENSED AREAS	OPTION G2 – CONTINUE GRAZING IN SOME CURRENTLY LICENSED AREAS	OPTION G3 – REMOVE ALL GRAZING
ENVIRONMENTAL (including for security of natural values and park viability)	• Continues to adversely affect water catchment values, including mossbeds and streams. • Continues to threaten significant flora, fauna and plant communities. • Continues to contribute to the establishment and spread of weeds. • Prevents effective rehabilitation of damaged areas. • Continues to compromise national park standards and the ability to meet legislated objects for the park.	• Removes adverse impacts of grazing on water catchments, soils, plants and animals and the spread of weeds in particular areas of the park. • May give additional protection to wilderness areas. • Continues adverse impacts of grazing elsewhere in the park. • Continues to compromise national park standards and ability to fully meet legislated objects for the park.	• Removes adverse impacts of grazing on water catchments, streams, soils, flora and fauna, and spread of weeds. • Gives additional protection to wilderness areas. • Enables recovery of damaged areas, including rehabilitation works, in the absence of cattle. • Helps ensure the park is managed to the highest national park standards and to meet legislated obligations. • Removes an impediment to possible world heritage listing for Australian Alps national parks.
CULTURAL HERITAGE	• Retains all existing heritage associations.	• Reduces cultural heritage values relying on direct associations with particular areas of the park, particularly at the higher elevations. • Does not affect historic huts and other structures.	• Removes cultural heritage values relying on direct associations of cattlemen with particular areas of the park. • Does not affect historic huts and other structures.

CHAPTER 11 – ADMINISTRATIVE OPTIONS AND IMPLICATIONS

11.1 This chapter presents a number of options relating to the administration of the licences should grazing continue in the park. Licence allocation, licence fees and licence term are all covered. The implications of each option are described below and in the accompanying tables.

11.2 The suggested options respond to some of the concerns and suggestions that were made in submissions about current and possible ways of administering licensed grazing. In developing the administrative options, the Taskforce was also mindful of the recommendation of the National Competition Policy review of the National Parks Act, as set out in Chapter 6.

LICENCE ALLOCATION

11.3 As discussed in Chapter 6 in relation to equity, the issue of who should be allowed to be a licensee was raised in submissions. Matters raised included the inequitable allocation of current licences as well as the benefits of retaining long-standing practices.

11.4 The Taskforce has considered three main licence allocation methods as the most viable options:

- Option A1 – allocate licences using a competitive market open to all
- Option A2 – allocate licences using a competitive market restricted to current park licensees
- Option A3 – allocate licences to current licensees.

Option A1 – Allocation using a competitive market open to all

11.5 Option A1 would allow anyone who met a minimum set of standards to bid for a grazing licence, with licences allocated through a competitive process, such as an auction or tender. This is a common approach for allocating a limited resource, offering all persons the same opportunity to participate. The Taskforce notes that the MCAV has stated that it "welcomes new entrants to alpine grazing".

11.6 The setting of a required minimum standard would ensure that only *bona fide* applicants are considered. Required standards could be met either by the applicant personally or as part of their proposed management arrangements (e.g. through a manager). The required standards would be over and above normal probity checks and requirements for third party insurance and so forth, and could include, for example:

- demonstrated skills and experience in managing cattle in the high country
- an ability to provide a minimum level of management services (e.g. pest plant and animal control, maintenance of basic infrastructure, stock supervision)
- knowledge of alpine ecological processes.

11.7 The allocation process could be based on an assessment of one or more of the following factors:

(a) The level of additional management services

Applicants would be asked to specify the management services that they would provide above those specified as the required minimum standards. Such

additional services would not be prescriptive but could cover enhanced basic services (such as additional pest plant and animal control) or other additional services (such as monitoring of survey plots, maintaining huts or other visitor facilities).

(b) The level of fee

This would involve selecting the preferred applicant based on the fee offered. A reserve price, which could be disclosed or undisclosed, would be set (see next section for details).

(c) The level of skills

Another approach would to be to assess the level of relevant skills, expertise and experience the applicant would bring to the management of the licensed area.

11.8 This option would maximise the competitive allocation of the licences. However, it assumes that there is a functioning market (i.e. a reasonable number of participants). This may not be the case, particularly for licence areas in remote areas in close proximity to home properties or adjoining areas of State forest already licensed. Additional administrative costs may arise from operating a competitive process. A summary of the implications of this option is included in Table 9.

Option A2 – Allocate licences using a competitive market restricted to current park licensees

11.9 Option A2 is similar to the first option except that potential licensees would be restricted to those who currently hold licences in the park. It involves competition but also recognises the special skills, experience and associations of current licensees.

11.10 It would be most applicable where grazing continued in only some of the currently licensed areas of the park, as a way of minimising impact on existing licensees by giving all current licensees an opportunity to bid for the available areas. It also assumes that there is a functioning market. An overview of implications is included in Table 9.

Option A3 – Allocate licences to current licensees

11.11 Option A3 would involve offering available areas to the current licensees for the relevant areas. It involves minimal change from the current arrangements.

11.12 This option would cause the least disruption to existing licensees (where their licences coincide with ongoing grazing areas) and would be efficient and cost effective to administer. It would, however, exclude other graziers seeking summer grazing to take pressure off their home pastures. An overview of implications is included in Table 9.

LICENCE FEES

11.13 A number of submissions raised the issue of licence fees, as did the National Competition Policy review (see Chapter 6). The current fee ($5 per AE per season, excluding GST) is significantly below the Valuer General's 1998 valuation of $18 per AE cattle per season, and there has been no fee increase since 2000.

11.14 Three main options relating to setting an appropriate fee are:

- Option F1 – set the fee through an auction/tender process
- Option F2 – set a fixed fee by independent valuation
- Option F3 – set a fixed fee based on achieving cost recovery.

Option F1 – Fee set by auction/tender

11.15 Option F1 would see fees determined through the actual market value of grazing in the national park as determined by auction. It could be applied in conjunction with either of the competitive licence allocation options (Options A1 and A2). It could not apply to Option A3. A reserve price could be set (see Option F2 or F3).

11.16 This option would potentially lead to the greatest gross financial return to the State, particularly if there was a functioning market (see paragraph 11.8). However, there would be increased administration costs to run an auction process. The implications of this option, over and above the use of any competitive allocation option (Options A1 and A2), are summarised in Table 10.

Option F2 – Fixed fee based on independent valuation

11.17 Under Option F2, the licence fee would be set by the Valuer General or other independent process, based on a derived market value. It would be subject to regular review or linked to a relevant price index. The option ensures that the community obtains a reasonable return for the private use of a public resource where a functioning market does not exist or is small. This process could be used as the sole determinant of the licence fee or to set a reserve price (minimum fee) for an auction/tender option.

11.18 This option would increase the financial return to the government and the community. It would also be simpler to administer than Option F1. The implications are summarised in Table 10.

Option F3 – Fixed fee based on cost recovery

11.19 Option F3 would involve setting the licence fee based on recovering all or some of the costs to government of managing grazing in the park. The option responds, in particular, to suggestions of an implied subsidy. It would require a transparent process to verify reasonable management and administration costs. Cost recovery could be used as the sole determinant of the licence fee or to set a reserve price for an auction/tender option.

11.20 This option would enable government expenditure to be reallocated to other park management priorities. However, with Parks Victoria's current basic grazing management costs of $200–$250 000 per year (without the costs associated with managing grazing after the fires), fees would need to be set at around $45–50 per AE to achieve full cost recovery (based an the pre-fire average of about 4500–5000 AE cattle in the park). This may make grazing in the park uneconomic.

11.21 Full cost recovery may be difficult to achieve if there are significantly fewer cattle in the park. This is because management costs are unlikely to reduce proportionately, as some costs (such as vehicle use) do not directly relate to the number of stock carried. A summary of the implications of this option is included in Table 10. Where full cost recovery was not pursued, this option would ensure that any subsidy would be explicit.

LICENCE TERM

11.22 Most licences in the park have seven-year terms. In contrast, most high country grazing licences under the Forests Act or the Land Act are annual. Such shorter term licences provide the manager with more flexibility to respond to changed circumstances (e.g. new records of rare and threatened species or practical difficulties of livestock remaining within the respective licensed area) and increase the range of options for the manager to respond to poor performance (e.g. by changing licence conditions or reallocating a licence). On the other hand, the longer term offers licensees a greater degree of security for business planning and investment.

11.23 The Taskforce considered three options for the term of the licence. They have varying degrees of compatibility with the three previously described licence fee options.

Option T1 – 1 year

11.24 This term is similar to most State forest grazing licences. This option would provide the greatest flexibility for management but, with less certainty for licensees, it may create a disincentive for business planning and investment. Given the potential administrative cost of setting of fees by auction (Option F1), an annual licence term lends itself best to fees set as a fixed price (Options F2 or F3).

Option T2 – 3 or 4 years

11.25 This period would provide additional flexibility compared to seven years but would still provide licensees with a degree of security.

Option T3 – 7 years

11.26 This period is the current term of most park licences. Of the three options, it provides the greatest security for licensees and allows them the opportunity to invest in management services. However, it makes changes to grazing arrangements more difficult.

Findings in relation to administrative options

Licence allocation

34. The most cost effective and simplest licence allocation option is to offer licences to existing licence holders (Option A3). However, it restricts the opportunity for new entrants.

35. Allocating licences competitively (Option A1 and to a lesser extent Option A2) is more equitable and would increase gross returns to the government and the community, provided that there is a functioning market.

Licence fee

36. The best way to determine the true market value of grazing in the national park is to conduct an auction process (Option F1). This could increase financial returns to government. However, administration costs could exceed any increased revenue.

37. A fixed fee based on assumed market valuation (Option F2) or cost recovery (Option F3) will better reflect the real costs and benefits of grazing, and increase the return to government.

38. Full cost recovery is unlikely to be obtained by auction or market valuation methods (Option F1 or F2) and, if sought as a fixed fee (Option F3), will most likely be uneconomic for most graziers.

Licence term

39. Shorter terms will increase the flexibility of the government to make changes to the licence conditions and boundaries and respond to poor performance, but reduce the incentive for licensees to commit additional resources to their licensed area.

Table 9: Implications of licence allocation options

OPTION/ IMPLICATIONS	OPTION A1 – COMPETITIVE MARKET (OPEN TO ALL)	OPTION A2 – COMPETITIVE MARKET (RESTRICTED TO CURRENT PARK LICENSEES)	OPTION A3 – GRAZING AREAS ALLOCATED TO EXISTING LICENSEES
SOCIAL (including for local communities)	• Establishes a more equitable basis for licence allocation. • No implications for the level of social benefit contributed to local communities. • Creates uncertainty and potentially disruption for existing licensees.	• Continues to exclude potential new applicants. • Treats existing licensees equitably.	• Continues to exclude potential new entrants. • Minimises disruption to existing licensees, where their licences coincide with ongoing grazing areas.
ECONOMIC (including for local communities and management services)	• Will adversely affect current licensees with unsuccessful bids. • May encourage additional investment in cattle businesses. • Likely to increase gross financial returns to government and the community (depending on licence fee option) and thus reduce the existing implied subsidy. • Provides competition and thus may encourage innovation and efficiency.	• Will adversely affect current licensees with unsuccessful bids. • Introduces some level of competition, albeit within a closed market. • Reduces likelihood of new entrants and innovation (opportunity cost).	• Continues financial benefits to ongoing licensees. • Continues non-competitive allocation. • Cost effective and simple to implement.
ENVIRONMENTAL (including for security of natural values and park viability)	• May create incentives to exceed required minimum standards of environmental management and encourage innovation. • May lead to management difficulties arising from new entrants introducing cattle not used to licensed areas.	• May create incentives to exceed required minimum standards of environmental management and encourage innovation. • May lead to management difficulties arising from introducing cattle to unfamiliar licence areas.	• No implications other than potential opportunity costs from lack of incentives.
CULTURAL HERITAGE	• May reduce traditional geographic associations, skills and knowledge of existing licensees (but also may broaden skills base).	• May reduce traditional geographic associations of licensees involved with grazing in the park.	• Retains in the park the traditional associations, skills and knowledge of licensees involved with grazing in the park.

Table 10: Implications of licence fee options

OPTION/ IMPLICATIONS	OPTION F1 – FEE SET BY AUCTION/TENDER	OPTION F2 – FIXED FEE BASED ON INDEPENDENT VALUATION	OPTION F3 – FIXED FEE BASED ON COST RECOVERY
SOCIAL (including for local communities)	• Introduces equity through competition. • May exclude some current licensees.	• Reduces subsidy.	• May exclude some current licensees. • Removes subsidy.
ECONOMIC (including for local communities and management services)	• Results in licence fees accurately reflecting the market rate. • Likely to deliver the highest gross financial return to government and the community (where there is a market). • Fee revenue may not recover the government's administration costs.	• Likely to result in licence fees more accurately reflecting the market rate. • Increases financial returns to government and the community. • Fee revenue may not recover the government's administration costs.	• Increases financial returns to government and the community. • May reduce incentive for more efficient licence administration. • Full cost recovery may be uneconomic for graziers who may exit from licence areas, thus adversely affecting local economies.
ENVIRONMENTAL (including for security of natural values and park viability)	• May increase revenue available for park management.	• Likely to increase revenue available for park management, depending on number of cattle.	• Likely to increase revenue available for park management, depending on number of cattle grazed.
CULTURAL HERITAGE	• No implications.	• No implications.	• No implications.

CHAPTER 12 – MAXIMISING VALUES WITHIN OPTIONS

12.1 This chapter responds to the fourth term of reference. It suggests ways in which natural, economic, social and cultural values can be maximised (or at least enhanced) within the options set out in Chapter 10.

12.2 The discussion relates to maximising particular values within each option rather than maximising each value overall. There may well be conflict between, for example, maximising natural values and maximising economic values where grazing continues. As such, this chapter offers a range of possibilities rather than a prescription of how best to proceed.

MAXIMISING NATURAL VALUES

12.3 The main opportunities for maximising natural values in the park are to:

- reduce as far as possible the impacts on those values
- prevent additional impacts
- repair any damage through rehabilitation and restoration.

12.4 If grazing continues, the emphasis in the grazing areas must be on reducing impacts and preventing additional impacts. If grazing is removed from part or all of the park, the emphasis in the areas where grazing is removed must be on repairing damage and preventing new impacts.

12.5 It is important to acknowledge that many submissions and many of those who met the Taskforce referred to the need for better control of various weeds and pest animals in the park. The Taskforce notes that these issues are important and need to be addressed regardless of whether cattle are present or not.

12.6 Various groups, and particularly the MCAV, made suggestions for the preparation of management plans involving key stakeholders such as cattlemen, scientists, environmentalists, tourist operators and managers, to assist in the sharing of information and knowledge and to enhance understanding and foster cooperation. It was proposed that this would lead to better outcomes for the environment – as well as for those engaged in economic activities in the park.

12.7 More general education and interpretation programs for visitors and local communities were also suggested. Such approaches could also assist in maximising natural values, irrespective of whether grazing was continued or not.

Opportunities in areas where grazing continues

12.8 The Taskforce considers that the main way to maximise natural values in areas where grazing continues is for more active management of the grazing operation.

12.9 The Taskforce sees a cooperative approach between the park manager and the licensees as essential, while recognising that the park manager has the responsibility for ensuring that the park is managed in accordance with a range of statutory requirements.

12.10 The MCAV submitted an ‘Alpine Grazing Management Plan’ which sets out a range of possible management arrangements as a way to address various management issues in a cooperative manner. The Taskforce considers that there are elements of the plan that could be incorporated in the future management of any grazing in the park, and

that these may help to reduce impacts on particular natural values. One such element was for licensees to adopt an accredited Environmental Management System (EMS), which would provide a framework for enhanced environmental management of the licence area. This would need to be developed in consultation with the park manager.[163]

12.11 The Taskforce heard of examples of specific activities being carried out by licensees relating to natural values management but believes there is scope for more. On-ground activities are fundamental to the success of improved environmental management.

12.12 Various skills of the cattlemen and their familiarity with their licence areas could be both capitalised on and enhanced through information sharing. For example, it is noted that some licensees are contracted to provide services for weed control and basic maintenance. This has provided a basis for enhancing relationships between licensees and the park manager and has provided alternative employment opportunities. There may be other opportunities of this nature.

12.13 More specific ways in which natural values could be better protected in areas where grazing continued include:

- excluding cattle from particularly sensitive areas (such as mossbeds or areas with records of threatened species) within the licence area by the use of temporary or permanent fencing, salt licks and artificial watering points
- increased weed and feral animal control
- setting benchmark grazing management standards as part of the licence allocation process
- reviewing stocking rates, especially on those licence areas which contain particularly sensitive areas or values
- reviewing entry and exit dates to take account of ecological requirements (e.g. flowering and seeding times)
- increased monitoring and supervision of cattle – possibly including, as suggested by the MCAV, full time drovers
- more stringent licence conditions and enforcement of licence conditions (including penalties for non-performance) – see also Chapter 12
- developing and entering into stewardship agreements with licensees.

12.14 Some of the administrative options may also assist in improving the protection of natural values. For example, selecting successful applicants through a tendering process based on the provision of additional management services beyond those required under the standard licence conditions (see Chapter 10) would provide additional management.

12.15 With regard to fencing sensitive areas, it is clear from observations at different sites visited by the Taskforce, as well as from several studies over many years[164], that the scattered distribution of the most vulnerable parts of the landscape would require

[163] Other management proposals are included in D Kemp, 'Grazing management for the Victorian Alpine National Park', Paper four in *Report of the Scientific Advisory Panel on fire-affected grazing*, report prepared for Parks Victoria, 2003.

[164] For example, see: A B Costin, *Report on the condition of the high mountain catchments of Victoria*, Soil Conservation Authority of Victoria, 1957; R K Rowe, *A study of the land in the Victorian catchment of Lake Hume*, Soil Conservation Authority, Melbourne, 1967.

extensive fencing and artificial watering points across the licensed areas. This would shift impacts elsewhere, would have significant impacts on other park values (such as landscape values) and would be very costly.

12.16 Mossbed rehabilitation is costly and labour-intensive. The Taskforce notes that ongoing grazing would limit the success of any rehabilitation works.

Opportunities in areas where grazing does not continue

12.17 There are greater opportunities to maximise natural values in areas where grazing does not continue. The direct impacts caused by cattle would cease and this would lead to improved environmental outcomes.

12.18 In addition, the removal of grazing would also create the opportunity for management activities which would improve the condition of affected areas without the ongoing impacts caused by cattle. Particular examples include:

- rehabilitation and restoration of damaged areas, such as mossbeds
- control of weeds which are particularly spread by cattle
- integrated programs to control feral animals
- control of visitors in rehabilitation areas.

12.19 The Taskforce was shown an example of the work being undertaken on parts of the Bogong High Plains to rehabilitate damaged mossbeds. This is an intensive activity involving physical works to reduce the flow of water through the bogs and the replanting of Sphagnum moss, but essential if these areas are to have any chance of recovering. Some mossbeds will continue to degrade after the removal of cattle unless there are active rehabilitation programs.

12.20 The absence of cattle also provides opportunities for additional weed and feral animal control. The removal of one of the causes of the spread of weeds allows for better control of weed infestations in areas that have been frequented by cattle. The Taskforce notes that such works would be best integrated with programs to control other causes of weed spread in particular areas.

MAXIMISING ECONOMIC VALUES

12.21 The key way to maximise economic values is to encourage additional economic activity, or at least to sustain the current levels of economic activity. Regardless of whether grazing continues or not, there is potential for increased economic activity due to increased tourism in the high country. For example, the *Alpine Resorts 2020 Strategy* emphasises the need to market alpine resorts as four-season visitor attractions with its accompanying benefits for local towns.

12.22 Improvements to visitor facilities in the park, such as along the Bogong High Plains Road and to the road itself (by sealing), have been proposed as ways to develop tourism in the high country.

12.23 The Great Alpine Road provides a major opportunity for promoting high country tourism with benefits for Omeo. Omeo's location at the centre of an array of natural and cultural attractions means that it can capitalise on the visitor traffic using the Great

Alpine Road. This would be assisted through further works to implement the Omeo Destination Plan, including providing a focus for visitors to source information. [165]

12.24 Another suggestion made in submissions was for heritage values associated with cattlemen and horsemen and horsewomen of the high country to be promoted as part of the development of a major regional visitor centre (at Omeo or elsewhere). Alternatively, these could be promoted in smaller information centres focussing on different areas of the park.

12.25 Other suggestions include:

- diversifying and further developing agriculture across the region
- exploring alternative management and market or business opportunities (e.g. high country branding)
- encouraging and training eco-tourism operators in the park.

Opportunities if all or most grazing continues

12.26 The continuation of grazing will maintain current economic activity. However, economic values could be increased by increasing fees and also through competitive allocation of licences where applicants bid based on price (Chapter 10).

12.27 As discussed above, increased tourism promotion of the high country is likely to result in increased visitation and therefore increased economic activity in local towns.

Opportunities if all or most grazing does not continue

12.28 Should all or most grazing within the park cease, the park could be promoted more for its nature-based visitor opportunities, as well as its cultural heritage values (as outlined above). Several submissions noted that the summer wildflower displays, particularly on the Bogong High Plains, have the potential to become a key attraction for visitors to the park. As discussed in Chapter 7, wildflowers attract visitors to Kosciuszko National Park, Grampians National Park and south-west Western Australia.

12.29 The URS socio-economic study estimated that an increase in tourism in the high country of 1.75% (or 12 700 visitor days) would offset the loss of the estimated $1.4 million generated by cattle grazing in the Alpine National Park. This visitor day target could be achieved with moderate, targeted tourism promotions and strategic infrastructure investments as discussed above.

12.30 With respect to licensees no longer able to graze in the park, opportunities could include:

- assistance with home property pasture improvement, development of 'environmental management systems', and business diversification
- providing assistance or opportunities for re-training or farm business planning through schemes such as those run through Agriculture Advancing Australia
- encouraging the contracting of licensees for park management tasks such as maintenance of park infrastructure or pest plant and animal control. This would provide an alternative source of employment for interested licensees and capitalise on their knowledge and skills.

[165] The Omeo Region Business and Tourism Association, *Strategic plan & action plan*, Omeo Region BTA, 2003.

MAXIMISING SOCIAL VALUES

12.31 A range of social values has been identified as being associated with the licensees. Maximising social values within each option requires minimising the impact on individuals and their communities. In addition wider social values arise from recreational use and appreciation of the park.

Opportunities if all or most grazing continues

12.32 If all or most grazing continues in the park, there would be no impact on the current social values associated with individual licensees, provided that the current licensees retained their licences.

12.33 Competitive tendering of licences, while potentially impacting on existing licensees, would establish a more equitable basis for allocating licences, especially where local farmers who currently do not have a high country licence took up the opportunity to apply.

12.34 Recreational values could be enhanced if cattle exclusion fencing was erected around popular camping areas.

Opportunities if all or most grazing does not continue

12.35 If all or most grazing were to cease in the park, some individuals would be significantly affected while, for others, there would be little change to their overall operations. Impacts on individuals could be mitigated by:

- providing professional assistance to undertake business planning and improve knowledge and skills
- providing financial assistance to expand the home property operation or establish replacement businesses
- making use of ‘mountain cattlemen’ skills and knowledge to assist with park management, create or enhance tourist operations, or as part of off mountain pastoral activities.

12.36 Many of the suggestions to maximise economic values (see earlier section) would also assist in maximising social values – both for individuals and local communities.

MAXIMISING CULTURAL VALUES

12.37 The key requirement for maximising cultural values associated with high country grazing within each option is to protect as many of the key elements as possible which contribute to the heritage values. The Taskforce believes that the history of the high country and the associated cultural heritage, including that associated with grazing and the mountain cattlemen, has an important role to play as an attraction of the high country, regardless of whether grazing continues in the park or not.

Opportunities if all or most grazing continues

12.38 If the grazing licences were renewed to existing licensees, there would be opportunities to interpret and promote better the existing elements of the cultural heritage associated with high country grazing. These could include:

- better interpretation of sites inside and outside the park
- promoting aspects of the activity to park visitors (e.g. droving, musters).

Opportunities if all or most grazing does not continue

12.39 If all or most grazing did not continue, examples of ways in which heritage values associated with grazing could be maintained in the absence of grazing in the national park include:

- continuing grazing in the high country in areas of State forest outside the national park
- ongoing maintenance of the cattlemen's huts, which attract visitors regardless of the presence or absence of cattle
- high quality interpretation of the history of grazing and the mountain cattlemen (both inside the park and at appropriate locations outside, such as at Omeo)
- involving cattlemen in aspects of park management (e.g. in management activities such as feral horse control) or through running horse riding tours (e.g. some current licensees run trail rides in the park)
- supporting the mountain cattlemen's get-togethers and other festivals relating to traditional skills and heritage (e.g. 'The Man from Snowy River Bush Festival'), which are held outside the park.

Findings in relation to maximising values

40. A number of actions will increase values irrespective of whether grazing continues or not. Actions to improve a particular value may, however, adversely affect other values.

Maximising natural values

41. In areas where grazing continued, natural values could be improved by more on-ground management (e.g. fencing or full-time droving) by licensees. However, the extensive fencing which would be required to protect sensitive areas such as streams and mossbeds, together with the provision of alternative watering points, would be very costly and have considerable impacts on the landscape and other values of the park.

42. In areas where grazing ceased, on-ground works to rehabilitate and restore damaged areas, and integrated weed and feral animal control programs, would help to maximise natural values.

Maximising economic values

43. A major way to maximise economic values is to increase the level of tourism to the high country through targeted promotion and improved visitor facilities on strategic routes and locations.

Maximising social values

44. Maximising social values is most relevant to the situation if all or most grazing does not continue. Providing some form of assistance, providing support to individuals and local communities through various programs and encouraging employment opportunities in the park for those affected could assist in maximising social values.

Maximising cultural values

45. Regardless of whether grazing continues or not, a range of measures have been identified which could maximise the cultural heritage values in the park (e.g. better interpretation), recognising that the activity continues outside the park.

CHAPTER 13 – LICENCE CONDITIONS

13.1 This, the final chapter of the Report, responds to part of the fifth term of reference relating to licence conditions, which is:

> *Identify any further available evidence that will be useful to the Minister … in determining what conditions may be required in relation to any renewed licences.*

13.2 The Taskforce considers that, if grazing within the national park continues, the operation of licences must be reviewed to ensure that grazing is managed sustainably and efficiently.

13.3 A copy of the current grazing licence is included in Appendix F. The licence includes conditions to manage and control stock (e.g. stock allocation, entry times, stock containment, the use of horses, dogs and firearms, and the use and maintenance of huts and yards), as well as general administration (fees, licence transfers, public liability insurance, etc).

13.4 Use of licence areas is also subject to several environmental conditions, such as those relating to the introduction of pasture species, supplementary feeding and stock numbers. There are no specific restrictions placed on access to mossbeds and other natural water bodies or water sources, nor from significant areas of vegetation or habitat. However, the park regional manager, after consultation with the licensee, may review the number of stock carried (to protect soils, flora, fauna and water catchments) and require cattle to be excluded from areas of special conservation significance or in areas requiring rehabilitation. It is under these provisions that stock numbers were reduced and stock excluded from other areas in response to the 1998 and 2003 fires.

13.5 If grazing is continued in the park, the issuing of new licences provides the opportunity to review and where appropriate amend the current licence conditions in the light of experience of managing grazing in the park.

13.6 The Taskforce notes that the licence provides for generally appropriate restrictions and controls on grazing, but does not promote active management of the impacts of grazing and the general stewardship of grazing areas by licensees.

13.7 As noted in Chapter 6, some aspects of the MCAV's 'Alpine Grazing Management Plan', particularly the adoption of an accredited environmental management system, would, allied with the extensive ecological information held by the park managers, provide a basis for identifying cattlemen's responsibilities and set priorities to protect and restore grazed areas in the park.

13.8 Some licensees are currently contracted to undertake basic infrastructure maintenance and pest and weed control within their licensed areas. The skills, experience and presence of cattlemen could be utilised further in their licensed operations. Conditions to protect particular environmental values within an area could be strengthened and/or made more specific. Conditions could be included to mitigate possible impacts on park visitors. It is important that any conditions be specific and measurable.

13.9 Examples of possible additional conditions include:

- specifications (beyond 'best endeavours') to contain cattle to licensed areas
- identified cattle exclusion zones within licensed areas

- a requirement to prepare and implement an accredited 'environmental management system'
- weed control targets and performance measures
- responsibilities for rehabilitation of damaged areas
- a requirement for returns on the number of cattle grazed
- explicit provision for amending the stocking rate (on an annual or seasonal basis) to reflect variations in environmental conditions such as drought, fire, or flooding.

13.10 An issue raised with the Taskforce was the need for licences to contain reasonable enforcement clauses and penalties. Parks Victoria advised the Taskforce of a variety of breaches of licence conditions in each grazing season, including failing to remove all cattle from the park at the end of the season, cattle straying outside licensed boundaries, and cattle entering conservation exclusion areas.[166] The only available penalty for non-compliance is licence cancellation. For minor breaches, this is an excessive penalty. An approach, similar to that adopted for commercial tour operator licences, where there is a graded penalty system, would provide greater flexibility.

Other matters relating to licences

13.11 Several other matters relating to licences were raised in the course of the investigation, which should also be addressed. These include:

- as advocated by the MCAV, the need to review licence boundaries to reflect better the geographic areas where cattle actually graze, rather than historic lines on maps – where appropriate, natural boundaries should be adopted, minimising the need for fencing to exclude cattle from certain areas. The Taskforce notes that this will also make it easier to identify responsibilities that may arise out of grazing activity
- rationalisation of licences – there may be opportunities to amalgamate several licence areas where they are held by the one licensee
- the need to review maximum stocking rates to ensure that historic allocations are still appropriate – the Taskforce does not believe that substantial changes would be expected in any licence area
- the need to ensure that the person/s or business named on the licence owns the cattle that actually graze the licensed area – this is to establish a clear responsibility for the cattle and the meeting of licence conditions
- recognition that some areas of the park, such as on the Bogong High Plains, are grazed as common lands
- the need to ensure that cattle do not enter reference areas, several of which abut licence areas.

13.12 The Taskforce considers that such matters should be resolved in consultation with licensees.

13.13 Some submissions suggested that greater emphasis be placed on self-regulation. The MCAV raised the possibility of it acting on behalf of the government to collect licence fees and oversee breaches by licensees. The Taskforce notes that, given the diverse

[166] Currently Parks Victoria advises the licensee of breaches either verbally or by letter.

views about the impacts of cattle among licensees, self-regulation of environmental conditions is likely to be difficult to achieve in practice.

13.14 Many licensees hold licences in both the Alpine National Park and the adjoining State forest. This results from dividing the original licences at the time the park was created. The two licence areas have continued to be operated in an integrated manner. Some licensees have commented on the difficulty of managing stock so that they remain in one licence area or another.

Findings in relation to licence conditions

46. Licence conditions could be improved to enhance environmental outcomes and gain more value from licensee presence and experience. They could also be improved by including an appropriate penalty system.

47. Licence boundaries could be improved by ensuring that they more closely match natural boundaries and the areas actually grazed.