



NSW **National Parks
and Wildlife Service**

Kosciuszko National Park Plan of Management (2006)

2006-2007 Implementation Report



Department of **Environment & Climate Change** NSW



Kosciuszko National Park Plan of Management (2006)

2007-2008 Implementation Report

Executive Summary

The Kosciuszko National Park Plan of Management is available on line at:

<http://www.environment.nsw.gov.au/parkmanagement/knpgmtplan.htm>

This Implementation Report, a requirement under the Plan of Management (Chapter 16) charts the trends in condition of the park's values and the progress of the plan's implementation. This report covers the period from July 2007 to June 2008, two years since the plan was adopted and is intended for presentation to the Advisory Committees and key stakeholders.

The plan of management identifies 15 key milestones (Section 4.4). Their implementation will set in place structures and processes to govern many of the efforts directed at protecting, maintaining or improving the significant values (Section 2.2) of the park. They will assist with the achievement of the Key Desired Outcomes (Section 4.3) for the park. They will also provide a framework for the implementation of management objectives, policies and actions over the life of the plan.

These key milestones will be delivered through a series of strategic projects. The ordering of these strategic projects is not an indication of priority. Their timely achievement does not negate the need to undertake ongoing park management tasks. The ordering of these projects relates to establishing the systems that will underpin the implementation of the Plan.

Some key milestones will be delivered through projects specific to Kosciuszko National Park whilst others will be delivered via state-wide programs whose implementation will see achievement of key milestones within Kosciuszko National Park. A key responsibility of the Project Officer managing these projects is to coordinate implementation across three groups responsible for managing Kosciuszko National Park: Snowy Mountains and South West Slopes Regions and the Resorts Section.

The development of a database system has also commenced. The Database will be used to assist with monitoring and evaluating the plan, tracking the implementation of individual actions detailed in Schedule 11 of the plan of management and assisting with meeting the reporting requirements detailed within Chapter 16 of the plan of management.

Update on development of key milestones:

The following key milestones detailed in Section 4.4 of the plan of management are to be completed or substantially underway within two years of plan adoption:

•**Key Performance Indicators, Integrated Monitoring Program and Integrated Evaluation System (Chapter 16).** Draft KPIs and Kosciuszko Database are near completion and will be trialed during the 2008/2009 reporting period.

•**Park Restoration Plan (Section 11.1).** A Project and Planning Officer is managing the project ensuring that the objectives of the plan as detailed in the PoM are being met. To be completed during 2008-2009.

•**Environmental Management Systems (Section 12.1).** EMS for alpine resorts and lessees have been developed. Perisher Range Resorts – The first public PRREMS report was published [Perisher Range Resorts EMS - 2002- 2006 report](http://www.environment.nsw.gov.au/parkmanagement/PerisherRangeEnvironmentalManagementSystem.htm) is available on line at: www.environment.nsw.gov.au/parkmanagement/PerisherRangeEnvironmentalManagementSystem.htm - 36k.

EMS information for the park will be developed during 2008-2009 in line with the State wide corporate program.

Projects have commenced which will contribute to meeting some of the eleven key milestones detailed in Section 4.4 of the plan of management that are to be completed or underway within five years of plan approval:

- **Visitor Data System (VDS) (Section 8.1).** The development of VDS has commenced and components have been implemented across the park.
- **Limits of Disturbance and Recreation Monitoring Program (Section 8.1).** Monitoring of impacts at horse camps continue. Some information has begun to be captured through the Natrec system.
- **Management Partnerships (Chapter 7).** Management partnerships exist with the Kosciuszko Huts Association. Memorandums of Understanding are currently being negotiated with Aboriginal Communities in the north and south of the park. The Polish community and Park managers have worked together to celebrate early exploration heritage and to facilitate an annual cultural festival in/near Jindabyne.
- **Huts Conservation Strategy (Chapter 7)** The completed strategy is being implemented and can be viewed on line at: <http://www.environment.nsw.gov.au/National%7Barks/parkHome.aspx?id=N0018>
- **Visitor Facility Strategies (Section 8.2).** A Park Facilities Manual has been developed for the NPWS. This is a state wide strategy and objectives are applied to new facilities and redevelopments across Kosciuszko National Park consistent with the Manual. A State wide Signage Manual is being developed and will be completed during 2008-2009.
- **Main Range Recreation Management Strategies (Section 9.1).** The Waste Management Strategy is completed and is being implemented. Walking Track Management Plan is currently in draft.
- **Visual Management System (Section 11.6).** There are currently visual management strategies being implemented. The first edition of the NPWS Rehabilitation Guidelines for the Resorts of Kosciuszko National Park was published. These guidelines have been prepared to assist land managers, lessees and contractors in the ski resorts to plan and undertake rehabilitation work using indigenous species. These guidelines can be viewed on line at: http://www.environment.nsw.gov.au/aprkmanagement/knp_resortrehab.htm.
- **Park Communication Plan (Section 13.1)** A Draft Communication Plan has been completed and is currently being reviewed.

Schedule 11 Plan Implementation Priorities:

The management actions identified throughout the plan are summarised in Schedule 11. These actions are given an implementation priority. Of the 480 actions, 101 have a High priority, 191 have a Medium, 17 Low and 171 have been identified as actions that are ongoing park management tasks often associated with agency-wide policy and procedures. When the Kosciuszko Database is completed it will allow the implementation of these actions to be tracked. Overall progress and a detailed list showing the status of each action against the Key Desired Outcomes (Section 4.3) will appear in future Implementation Reports.

Current Research:

During this reporting period there was a variety of research projects underway in Kosciuszko National Park. The Implementation Report provides a summary of the results of some of these research projects which include

- Spotted Tree Frog recovery project
- Southern Corroboree Frog
- The Alps Vegetation Fire Response Monitoring System
- “Dogs in Space”
- Spotted Tail Quoll
- Mountain Pygmy-possum populations
- Bog mapping project

Kosciuszko National Park Plan of Management

The Kosciuszko National Park Plan of Management (2006) requires the preparation of a report produced on an annual basis that charts the trends in condition of the park's values and the progress of the plan's implementation (see Chapter 16 "Monitoring, Evaluation and Reporting"). This is the first of those reports covering the period from July 2006 to June 2007, the first twelve months since the plan was adopted. The information contained in this report is intended for presentation to the Advisory Committees and key stakeholders. For more detailed information please contact the Park Managers.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park. A plan of management is a legal document that outlines how an area will be managed in the years ahead. The plan of management establishes the scheme of operations for Kosciuszko National Park in accordance with Section 73B of the *National Parks and Wildlife Act 1974*. The Kosciuszko National Park Plan of Management (2006) details a statement of significance, overarching principles, key desired outcomes, key milestones, management objectives, policies and actions to guide the long-term management of the broad range of natural, cultural and recreational values the park protects. The actions identified in the plan are being undertaken by the National Parks and Wildlife Service and other organisations building upon the legacy of the past six decades of conservation management.

The Kosciuszko National Park Plan of Management is available on line at:
www.environment.nsw.gov.au

Key Milestones:

The plan of management identifies 15 key milestones, these are detailed in Section 4.4. Their implementation will set in place structures and processes to govern many of the efforts directed at protecting, maintaining or improving the significant values (Section 2.2) of the park. They will assist with the achievement of the Key Desired Outcomes for the park detailed in Section 4.3. They will also provide a framework for the implementation of management objectives, policies and actions over the life of the plan. These key milestones will be delivered through a series of strategic projects. The ordering of these strategic projects is not an indication of priority. Their timely achievement does not negate the need to undertake ongoing park management tasks. The ordering of these projects relates to establishing the systems that will underpin the implementation of the Plan.

Some key milestones will be delivered through projects specific to Kosciuszko National Park whilst others will be delivered via statewide programs whose implementation will see achievement of the key milestone within Kosciuszko National Park.

Work has commenced on the four key milestones that are required to be completed or substantially underway by 2008. These are:

- **Key Performance Indicators and Integrated Monitoring Program** (Chapter 16) - *essential to measuring the condition and trends in condition of key attributes over time and the success or otherwise of park management actions in achieving stated objectives.*
- **Integrated Evaluation System** (Chapter 16) - *sets in place structures and processes to measure the effectiveness of park management in achieving key desired outcomes.*
- **Park Restoration Plan** (Section 11.1) - *provides an overarching framework for the integrated management of site rehabilitation and weed and feral animal control.*

• **Environmental Management Systems** (Section 12.1) - *provide frameworks for reducing impacts associated with all operations and infrastructure in the park.*

These key milestones will be delivered through 2 strategic projects, one to develop the Key Performance Indicators and Integrated Monitoring Program and an Integrated Evaluation System as part of the Environmental Management Systems and the second to prepare the Park Restoration Plan.

A Project Officer has been employed to manage these projects. A key issue in managing these projects is to coordinate implementation across the two regions involved in managing Kosciuszko National Park, Snowy Mountains and South West Slopes Regions as well as the Resorts Section.

Technical workshops run during September, October and November 2007 will provide staff with an opportunity to participate in developing the indicators and systems. External assistance will be sought when appropriate during their development.

A Planning Information Management System (PIMS) was developed and is already being used in other parts of Southern Branch and will be applied to Kosciuszko National Park as part of the proposed Integrated Evaluation System. It is also being further developed for use as a statewide system in future.

PIMS will be used to assist with monitoring and evaluating the plan, tracking the implementation of individual actions detailed in Schedule 11 of the plan and assisting with meeting the reporting requirements detailed within Chapter 16. The database system will identify the parts of the organisation responsible for delivery of each action. Base line data relating to individual key performance indicators will be stored in the database system enabling easy access to information for preparation of these implementation reports and the five yearly assessments, required under the plan of management.

Environmental Management System for the Perisher Range Resorts is being implemented and current DECC policies and procedures to manage or reduce impacts of all operations are being applied as necessary.

A Research Workshop has been planned for Snowy Mountains Region, South West Slopes Region, Resorts Section and Southern Branch to collate research priorities for the whole of Kosciuszko National Park and address each of the Schedule 11 Actions 15.0.1.1- 15.0.2.6 in the Kosciuszko National Park Plan of Management (2006). Particular attention will be given to Action 15.0.1.2: “to identify research priorities for the next five-year period, based on the Register of Required Research Schedule 10, taking into account research priorities identified in the Service’s Corporate Framework and associated research plans and priorities developed for the Australian Alps agencies”. The recently completed “Southern Branch Research Plan (2006 – 2010)” identifies research themes, actions and priority projects for the Service to support and undertake during the life of the plan including some of those within the Kosciuszko National Park.

Other Key Milestones:

A further eleven key milestones have been identified in the plan to be completed or underway within five years of the plan's approval. These are listed in section 4.4 of the plan. Projects have been completed that contribute to meeting the eleven key milestones objectives. The detail of these projects is summarized below. A number of key milestones may be delivered through projects specific to Kosciuszko National Park whilst others will be delivered via statewide programs.

• **Visitor Data System** (Section 8.1) - *provides visitor information that is essential for informed and sustainable management of recreation in the park.* Visitor data information has been collected for several years now. Implementation of the Visitor Data System has commenced and is ongoing. Vehicle counting devices are utilised across the park at various locations. Recording of visitor numbers occurs at Yarrangobilly Caves for visitors participating on the cave tours and accommodation at Caves House and Currango Homestead. Statistics are kept on all passes sold year round with Annual, Day and other Pass numbers sold at the Selwyn Visitor Entry Station recorded during the ski season only. Manual counting is also carried out in the Rawson's Pass / Mt Kosciuszko area during peak visitor periods.

• **Limits of Disturbance and Recreation Monitoring Program** (Section 8.1) - *sets in place limits of acceptable impact for certain recreational activities and sites and the measurement of disturbance. Essential for informed and sustainable management of recreation in the park.* The priority areas for these monitoring programs are the Main Range and to a lesser extent the Pinch River camping area. Focus points for the Main Range are Thredbo, Charlottes Pass, Guthega and Guthega Power Station. Recreational horse impact monitoring is undertaken at horse camps pre-season and then on a regular basis over the summer period. The monitoring was curtailed in the summer of 06/07 due to the s44 fires at Long Plain which closed that part of the Park where the camps are located.

• **Geodiversity Conservation Strategy** (Section 6.3) – *creates a framework for the protection of earth science features and processes that are susceptible to disturbance.* “Post January 2003 Bushfire Erosion Modelling and Slope Stability Assessment for the Kosciuszko National Park, NSW (2006)” has been completed. This report provides information that will contribute to the development of management strategies to protect geological features and processes within the park. It also identifies catchments where significant soil loss has most likely occurred as a result of the 2003 bushfires.

• **Karst Management Strategy** (Section 6.4) – *provides an overarching framework for the protection of all karst areas and values.* DECC Karst Conservation Management Unit is preparing a State-wide Karst Management Strategy that will also guide karst management within Kosciuszko National Park. The State-wide Karst Advisory Committee will provide guidance for policy direction on karst management in KNP. A user group consisting of local speleological groups will be established to discuss local operational issues.

• **Significant Plant and Animal Management Regimes** (Section 6.7 and 6.8) - *guide the management of those parts of the park containing significant plant and animal species and communities so as to optimise their protection.* The identification of actions to assist with the protection and conservation of threatened species and communities within Kosciuszko National Park has commenced. Examples of some of the threatened species and communities include Montane Peatlands and Swamps, Mountain Pygmy possum, Brown Treecreeper, Leafy Anchor Plant, Broad-toothed Rat, Hooded Robin, Olive Whistler, Speckled Warbler, Monaro Golden Daisy, Diamond Firetail, Spotted tail quoll. So far approximately 55 actions have been identified.

- **Management Partnerships** (Chapter 7) – *the Aboriginal Management Partnership provides the basis for Aboriginal involvement in park management. Heritage Management Partnerships formalise local community involvement in heritage management.* A consultancy is currently underway, which will provide options and recommendations for future co-management and Aboriginal involvement in KNP. This process is planned to be finalised by June 2008. An Aboriginal Working Committee was established in 2004/05; in 2006/07 the Committee continued to work toward cooperative involvement of the Aboriginal community in park management issues. As required by the Kosciuszko NP POM a MOU is being developed in consultation with the Aboriginal Community. The detail of the MOU is still to be determined and will consider access to the reserve for traditional purposes.
- **Huts Conservation Strategy** (Chapter 7) - *guide many facets of ongoing hut management in the park.* This document has been completed and can be viewed on line at www.nationalparks.nsw.gov.au. Continual liaison with the Kosciuszko Huts Association (KHA) in regard to hut reconstruction work and ongoing maintenance. Following consultation with key stakeholders such as KHA hut rebuilding guidelines were prepared.
- **Visitor Facility Strategies** (Section 8.2) - *the Visitor Facilities “Signature” Appearance, Site Design Principles and the Disabled Access and Facilities Strategy provide visitor facility design, construction and siting principles that are necessary prerequisites to the development of new visitor facilities and the redevelopment of existing facilities.* DECC has developed a new statewide Facilities Manual which will be applied to new facilities and redevelopments across Kosciuszko National Park, whilst allowing for unique park conditions.
- **Main Range Recreation Management Strategies** (Section 9.1) - *completion of the human waste management strategy, walking track management plan, site plans for Charlotte Pass and Crackenback Chairlift visitor nodes, Blue Lake climbing and abseiling impact assessment and the introduction of the visitor registration system provide a framework for sustainable visitor use of the Main Range.* The Waste Management Strategy is completed and is being implemented. The Rawsons Pass Toilet is expected to be finished and operating by the end of February 2008. The Charlotte Pass Toilet upgrade is underway and will also be completed over the summer period and there is now a pump out toilet at the new Guthega Power Station car park. Some of the Main Ranges Tour Operators are implementing a waste removal practice. The rehabilitation of Rawson’s Pass Car Park is well advanced and will continue.
- **Park Communication Plan** (Section 13.1) - *creates an overarching framework for the integrated provision of all communication materials, facilities and programs across the park. A prerequisite to the production of new communication products and the revamping of existing material and services.* A Draft Communication Plan was developed several years ago. This draft plan is currently being reviewed and revised. It will then be presented to all internal stakeholders and the Kosciuszko National Park Plan of Management Steering Committee for review and approval.

Schedule 11 Plan Implementation Priorities:

The management actions identified throughout the plan are summarised in Schedule 11. These actions are given an implementation priority.

Of the 480 actions, 101 have a High priority, 191 Medium, 17 Low and 171 have been identified as actions that are ongoing park management tasks often associated with agency-wide policy and procedures.

The Planning Information Management System (PIMS) when developed will track the implementation of these actions which is a reporting requirement identified in Chapter 16. Overall progress and a detailed list showing the status of each action against the Key Desired Outcomes (Section 4.3) will appear in future Implementation Reports. Actions from this and other Plans of Management are considered when Regions and Sections develop their Regional Operational Plans and work plans. The database will be able to record when these actions are included into these operational plans and implemented.

The following sections highlight some other key projects undertaken in 2006 - 2007 that have contributed to the Key Desired Outcomes identified in Section 4.3 of the plan. This does not represent a full list of all actions completed during 2006 - 2007. For further information on projects completed during this reporting period please contact Park Managers.

Integrated management of values:

- The drafts of the Snowy Mountains and South West Slopes Regional Pest Management Strategies (2008-2011) have been completed. Pest species within Kosciuszko National Park have been assessed and allocated priorities for their management.
- Commenced development of the Kosciuszko National Park Horse Management Plan. The plan is currently on public exhibition.
- Assessment of former Snowy Mountain Hydro sites for natural and cultural values has occurred to assist with development of rehabilitation strategies.
- The update of the Kosciuszko National Park Fire Management Strategy is near completion, with the draft plan expected to go on public exhibition in December.
- Assessment of the Australian Alps including Kosciuszko National Park for National Heritage Listing continues by the Australian Heritage Council.
- Rehabilitation works commenced at former Snowy Mountains Hydro Electric Scheme construction sites. This has included weed and pest animal control, waste removal, soil stabilisation and erosion control and revegetation work sites. In close proximity to all resort areas, intensive willow eradication programs have commenced followed by replanting with native species.

Natural values:

- Fauna and flora monitoring programs continued (see Current Research Section).
- Partnerships with Snowy Hydro Limited and Roads and Traffic Authority and volunteers such as Talbingo and District Bushwalking Group working cooperatively to reduce weeds.
- Revegetation of Rolling Grounds assisted by Conservation Volunteers Australia.
- Routine inspections carried out for new weed incursions.
- Weed control programs undertaken in target catchments, along roads, high visitation recreation areas and areas where certain threatened species are vulnerable from weed invasion.
- Trapping of wild horses has continued in alpine, karst and wilderness areas.

Cultural values:

- Monitoring of rock art sites at Goobragandra continues.
- Cooperative involvement of Aboriginal communities in park management issues has continued.
- A part-time Aboriginal liaison officer was recruited to facilitate community participation in Committee matters.
- Implementation of Kosciuszko National Park Huts Conservation Strategy available on line at www.nationalparks.nsw.gov.au.
- Draft plan detailing conservation of Coolamine Homestead is available on line www.nationalparks.nsw.gov.au.
- Planning and works on Teddy's and Rugman's Huts has occurred.
- The rebuilding of 7 burnt historic huts has commenced, with construction work underway on Broken Dam hut, and work soon to commence on Delaneys hut. Planning work for the remaining huts is well underway..
- Implementation of Currango Conservation Management Plan available on line at www.nationalparks.nsw.gov.au.

Recreational values:

- Building works essentially completed on Rawson's Pass toilet building. Final fitout should be completed by February 2008.
- Completion of Multi-use Thredbo Valley Walking Track feasibility study.
- Wallace's Creek Lookout completed.
- Planning has commenced for the Island Bend former township Draft Concept Plan. Steering Committee has identified future visitor nodes, campgrounds, picnic areas, road networks, interpretational drives and walks.

Main Range:

- For information see Main Range Recreation Management Strategies heading under Other Key Milestones Section.

Karst areas:

- Weed control has occurred in Yarrangobilly and Coolamine Plain Management Units.
- Upgrade of Blue Waterholes camping and day use area at final stage of completion.

Alpine Resorts:

- Securing water supply to Smiggin Holes through the construction of a new link main between Perisher and Smiggin Holes.
- Completion of sewer and water rising mains.
- Water supply headwaters report investigation completed.
- Detailed design for the concrete sealing of roads within Smiggin Holes and Guthega completed.

Scenic Quality:

- Significant rehabilitation of Rawson's Pass precinct has occurred and will continue.

Regional approach to management:

- Cooperation between Australian Alps agencies occurred through representative members on the following groups Alps Natural Heritage Working Group, Alps Wild Dog Working Group, the steering committee for the Alps Deer Workshop and attendance at the Alps Climate Change Workshop.
- A coordinated management program within Kosciuszko National Park with the ACT and Victoria to control new weed incursions, wild dogs and feral pigs is ongoing.
- Work with Rural Lands Protection Board's during development of Regional Pest Strategies.
- Presentations were made to an ACT Government Inquiry regarding Biosphere Reserve status for the ACT and surrounds.

Environmental stewardship:

- Implementation and reporting on the Perisher Range Resorts Environmental Management System.

Education and interpretation:

- Organised, participated in and assisted with funding for the following events; Boys Camp at Camp Hudson, Women's Camp and a Family Camp.
- Conducted various Discovery and NAIDOC events in Kosciuszko National Park during the Easter and Christmas periods and NAIDOC week.
- Conducted numerous Discovery programs with schools and community groups and participated in local festivals and fairs.
- A total over 840 adults and 2550 children participated in Discovery Programs in South West Slopes Region. Visitors participating on guided cave tours for 2006-2007 were approximately 20,000.
- The Education Centre at Sawpit Creek focuses on providing school groups education on the history and current issues surrounding the Alpine country. It provides outdoor activities as well as 'hand on' indoor activities. The centre also manages the Regions Discovery Programs. In 2006/07 the Education centre catered for 2319 adults and 8905 children through its programs.

Reporting:

- Regions involved with State of Parks reporting.
- Information on Research projects- refer to Current Research heading.

Current Research:

During this reporting period twenty eight scientific licences relating to specific projects within Kosciuszko National Park were issued. This does not include broader area applications where scientific licences cover an area greater than Kosciuszko National Park.

Examples of some of the variety of research projects and their results include:

- **Spotted Tree Frog recovery project in Kosciuszko National Park** conducted by the Department of Environment and Climate Change and the Amphibian Research Centre. The future is improving for the near extinct Spotted Tree Frog in Kosciuszko National Park. The first year of survival in the wild was recorded for a group of about 40 captive bred Spotted Tree Frogs, whose original population in Kosciuszko National Park had been almost completely wiped out by disease almost ten years ago. Monitoring has shown that as many as 20% of the one year olds released in January 2005 have survived. The release of captive bred frogs into the wild has been tried many, many times in other parts of the world with extremely limited success so this result is very significant. The population will continue to be monitored.



(photo: S. Cohen, DECC)

- **Southern Corroboree Frog:** While the Spotted Tree Frog reintroduction program is working at this stage, further efforts to release captive reared Southern Corroboree Frog back to the wild have not been successful as unfortunately none of the released animals have returned. With the monitoring results demonstrating that both the Northern and Southern Corroboree frogs are in a serious state of decline, further efforts will be undertaken to develop a successful reintroduction technique for these species, as this may be the only way to prevent their complete extinction from the wild.
- **“Dogs in Space”** funded by NPWS with support from the Australian Alps Liaison Committee consisting of representatives from NPWS, Parks Victoria and Environment ACT. The two and half year “Dogs in Space” research project has revealed some of the long hidden secrets on where wild dogs live and travel. The wild dogs were tracked within Kosciuszko National Park and four other national parks in Victoria, NSW and the ACT. The project has established that most wild dogs have large home ranges, travelling consistently within these areas but not straying too far from their home range. Significantly, it was found that there are not large numbers of wild dogs within the heart of the parks with them appearing to be most dense in areas where there are forest habitat adjoining open areas where the greatest food sources are found.

- This information confirms that NPWS should continue to focus **wild dog control measures** in those areas where the forested bushland habitat of dogs adjoins more open country containing greater food resources. This latest research forms part of a concerted campaign over the last five years which has involved research into wild dogs and the impact of aerial baiting for wild dogs on the endangered Spotted Tail Quoll. There have been major improvements in trapping and baiting techniques and the reintroduction of aerial baiting in some areas while developing new synthetic wild dog lures, trialing llamas as guard animals and trialing of a new poison delivery device known as the M-44 ejector.



(photo: A. Claridge, DECC)

- **Spotted Tail Quoll: establishing broad scale monitoring for the species** in both the northern and southern sections of the reserve, using a combination of infra-red cameras and latrine-site mapping and revisiting.
- **Mountain Pygmy-possum populations** have been monitored at the end of November each year on 4 sites since 1987 (2 in resorts Blue Cow and Charlotte Pass and 2 outside- Paralyser and Summit Road), and more recently on Mt Kosciuszko. Populations in the resorts began to decline in the late 1990's and reached critically low levels in 2004. It is suspected that an increase in feral cat numbers in the resorts was largely responsible. Cat control has been undertaken in the resorts each winter since 2002 by trapping, with 75 cats removed from Perisher Blue and 4 from Charlotte Pass. A slight recovery in possum populations has occurred since 2005 but numbers are still well down. Cat control needs to be continued, with further resourcing required. Monitoring of key food resources has also occurred annually (Bogong moths in November and Mountain plum-pine seeds in autumn). An honours student project, analysing the diet of the possums on the monitored sites for the last 13 years, is nearing completion.
- **2006** was the worst winter recorded for snow cover with frost damaging many shrubs in the alpine and subalpine zones due to the lack of snow. Early flowering of plants was recorded with plants not necessarily flowering in the same order as they would have in previous years. The late arrival of the Bogong moth occurred in October 2006. Monitoring revealed low numbers of Mountain Pygmy Possum. *Antechinus* and *Rattus fuscipes* are also not anywhere near as common. Ice thickness recorded at Blue Lake revealed a reduction from 220cm in 2004 to only 45cm in 2006 with ice break up by 21st September being three weeks earlier than earliest recording since 1960's.

- Recorded a **new endemic alpine moth species** of *Oxyanus*. A full scientific description is not possible until a male moth has been found.
- **Weekly bird monitoring** along Whites River aqueduct to look at the impact of climate change on bird migration has continued. This year a transect along the side of the valley that was burnt during the 2003 fires was completed during the time of peak bird abundance. The monitoring revealed that the birds have still not returned to pre 2003 fire numbers with five species of birds in the burnt side compared to 19 on the unburnt side. Although **flora monitoring across the park** indicates all plant species have returned and are regrowing despite the dry conditions.
- **Mountain Invasives Research Network (MIREN) global survey of exotic plants** in mountain environments. Australia is participating in a global project to identify patterns of plant invasion in mountain areas and then investigate the processes influencing invasion. In 2006 the work involved surveys of exotic species along three roads in KNP (in conjunction with the National Herbarium of Victoria).
- DECC hosted a **post-graduate student** from Switzerland in 2006. Her thesis investigated the distribution of exotic plant species along an altitudinal gradient in KNP (Kosciuszko Rd) and the factors influencing invasion. Publication is in preparation. In collaboration with Eidgenössische Technische Hochschule Zürich Switzerland.
- **Dendroecology of *Podocarpus lawrencei***. The fire of 2003 burnt the habitat for the Mountain Pygmy Possum at Mt Blue Cow, killing many plants of *Podocarpus lawrencei*, a long-lived shrub. The age of the shrubs is being determined using conventional cross-dating techniques. The work will give us an indication of fire frequency over the past 300 or so years (and hopefully an indication of climate, especially snow fall, during that period). This project is in collaboration with Linda Broome and the Australian National University.
- **The bog mapping project** was established to determine the number of functional peatlands and sphagnum bogs and fens (collectively “bogs”) in Kosciuszko National Park (KNP). The extent and distribution of bogs is of interest intrinsically, but are also significant within the Mountain catchments, through their role in the storage and slow release of large volumes of water to the streams and rivers and for the habitat value they possess for other organisms, such as the endangered corroboree frog. Parts of the community also fall within a listed endangered ecological community (EEC) “Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions”. Appropriate management of this EEC and its associated reliant species requires a good understanding of the distribution and location of bogs. Mapped areas were delineated using a series of topographic maps (with elevation and orthophoto data) and aerial photographs both pre and post 2003 fires. Considerable additional fieldwork was completed to ground truth these identified areas. To date a total of 2,198 patches have been captured, with these totalling 1,081 ha in area. It is expected that this mapping will be completed by the end of 2007. This project is being completed by Professor Geoff Hope of the Australian National University.

- **The Alps Vegetation Fire Response Monitoring System** was initiated in 1996 with the support of the Australian Alps Liaison Committee. It is an ongoing, long-term monitoring project established to investigate the effects of fire on vascular plant species and communities in the Australian Alps National Parks (AANP) (Forward & Hall, 1997). Permanent monitoring plots are located in four main areas of the three AANPs (Kosciuszko National Park (NSW) Alpine National Park (Victoria) and Namadgi National Park (ACT)). In total 40 sites were selected to cover the main vegetation communities with a variety of fire histories. In Kosciuszko National Park monitoring has been completed in these plots after both fuel reduction burns and wildfire. Data is held in an electronic database and holds all the data collected for the three states. This system is updated and maintained on a regular basis by NPWS staff.

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