

## Climate change research priorities for the Australian Alps National Parks

The Australian Alps Liaison Committee commissioned Griffith University to survey park staff and researchers to determine research priorities for managing the Australian Alps National Parks in a changing climate. Research has already documented a range of impacts with reductions in snow cover one of the most obvious. There are also ongoing monitoring programs assessing existing threats to the Parks such as weeds, feral animals and fire. Research has already been published on many effects of climate change and predictions about future impacts, adaptation strategies and their limits.

Park staff saw climate change as an immediate challenge. They believed that the Australian Alps is already experiencing climate change including less snow, increased risk of fires, changes in rainfall and subsequent reductions in water availability, changes in the timing of biological events such as flowering and an increase in weeds and feral animals.

Although climate change research already exists in the Alps, they want more information about the range of threats and better ways to deal with them. The most important issues they need to know more about are



*Celmisia* mass flowering in the alpine zone

invasive species, threats to endemic species and plant communities and the increased risk of fires.

Specifically they want more information on bogs/moss beds/fen communities, alpine plant communities, frogs and the Mountain Pygmy-possum. When asked to specify the types of ecological research they require, responses included:

*"The high alpine and bog and fen ecosystems to ensure they are resilient to withstand changes brought about by climate change, particularly to be resilient to movement upwards of invasive species, both plant and animal, increased fire and decreased soil moisture"*

*"As a priority all obligate alpiners and endemics but all communities and species need some attention to ensure maintenance and survival"*



Small mammal trapping; a Dusky Antechinus (*Antechinus swainsonii*) in the hand

*"Southern Corroboree Frog, Baw Baw Frog, Spotted Tree Frog, Mountain Pygmy Possum, Broad-toothed Rat"*

Climate change will increase the abundance, diversity and impacts of invasive plants and animals. Park staff need to

know more about these species including feral horses, introduced deer and hawkweed among others. When asked to specify critical research for invasive species, responses included:

*“Horses, pigs, deer, cats, foxes, rabbits and hares all require control programs and co-ordinated research”*

*“Feral horses, feral pigs, rabbits and hares, exotic daisies, brooms, seeding willows, weeds of alpine bogs and streams”*

*“This is the key area that needs research, but expect that increased pressure will come from the upwards movement of Broom, Blackberry, Willow, Feral Horses, Deer et al”*

They also want long-term datasets established and/or supported including on the spread of invasive species and changes in hydrology and wetlands. Examples of specific long-term datasets they urgently need include:

*“Rainfall, snow data, soil moisture, solar radiation from the alpine areas. Vegetation change data-sets in alpine/sub-alpine areas too -specifically changes to woody vegetation (trees/shrubs)”*

*“Vegetation changes including both native and non-native plant species transition into higher altitudes and habitats not previously seen”*

*“Using historical data (plots, photos) gives us the best data to assess how climate change is already affecting the Alps”*

*“Widespread monitoring of deer and horse impacts across all areas”*

In terms of how this information should be disseminated, park staff prefers science-management workshops and reports, with factsheets and websites also useful.



**Wreath Pennywort (*Dichosciadium ranunculaceum*); an alpine endemic**



**Monitoring vegetation after fires**

Based on Park staff responses, and previous studies, the following approach and priorities are recommended to support climate change research for the Alps.

1. Maintain and support existing long term monitoring programs, particularly those already run and supported by the Parks. They already exist and are often part of day to day management. The Alps are lucky as they already have several programs, some with over 50 years of data. This is very unusual in Australia and puts the Alps at the forefront of monitoring the effects of climate change and other processes.
2. Provide support through co-funding and/or logistical support when approached by outside organisations (Universities or others) for research that match the topics listed by Park staff. Co-funding and/or logistical support provides greater benefit to the Alps from limited funding pools.
3. Widely disseminate existing research. There is a lot of good research in the Alps, but often Park staff are unaware of it. Science-management workshops and newsletters are great ways to promote recent research findings and ensure that research is easily available. This can also include practical implications of research for management.

For more information and a copy of the full report, please contact Catherine Pickering, Griffith University ([c.pickering@griffith.edu.au](mailto:c.pickering@griffith.edu.au)) or the Australian Alps National Parks at [www.australionalps.environment.gov.au](http://www.australionalps.environment.gov.au)

