AUSTRALIAN ALPS NATIONAL PARKS

Australian Alps Science Management Forum

Science in Action

Evidence based land management: *making it work on the ground*

Thredbo Alpine Hotel, Kosciuszko NP
24 - 25 May 2018

People in Nature
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IUCN WCPA WORLD COMMISSION ON PROTECTED AREAS

AUSTRALIAN ALPS NATIONAL PARKS

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Evidence based land management:
making it work on the ground

Contents

1. Background

The Australian Alps Liaison Committee is keen to explore ways to support and deliver science based evidence that will address priority gaps in knowledge, and inform best practice and adaptive management in a timely way. In addition, to develop the skills to successfully communicate effective evidence based management practices to the wider community.

As part of the Australian Alps Science Management Series, this tenth such forum, *Science in Action: Evidence based land management: making it work on the ground* was held at Thredbo in Kosciuszko National Park 24 - 25 May 2018. The forum explored case studies and identified gaps in knowledge, then considered how to address those gaps and develop a way forward.

The forum was attended by staff from the 4 Australian Alps Agencies, various research institutions and organised, facilitated and reported on by People in Nature.

Science - Management Forum Objectives

- To evaluate past and present contributions of science to management of the Australian Alps national parks, identify priorities for science to support management now and into the future
- Provide advice on key communication strategies around science and management to enhance community understanding and support for Alps management decisions
- Explore how the Alps program and agencies can strengthen partnerships with institutions to help address the priority knowledge gaps.

2. Case Studies

Case studies were presented to explore how park managers have effectively used science based evidence to inform management and the value of that in final outcomes.

Key presentation points:

The objective was to distil what makes a successful collaboration between science and management, what are the gaps and how can the Alps agencies improve on the outcomes.

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The focus was on how the science was accessed and how effective it was in improving project outcomes? In addition how was the role of science communicated and if so was it accepted by stakeholders and community? The following is a summary.

Case Study	Background	Key Points
Willow Removal Elaine Thomas (PV)	The large bushfires in 2003 were a turning point in understanding the invasive potential of willows. Large areas of peatlands were burnt and within weeks masses of seedling willows appeared as a result of wind dispersed seed. The partnership of agencies, scientists and community over more than a decade of research, surveillance and control of seedling willows on the Bogong High Plains has improved ecological integrity and resilience in the face of climate change and the compounding impacts of deer and horses.	• Parks Victoria Partnership developed with Monash Uni. • Structured decision making workshop crucial in guiding the process. • Agreed objectives to focus efforts - developed co-operatively between managers and scientists • Face to face meetings where scientists present / explain research results and control issues discussed • Map results (rather than graphs) • Robust science leads to effective management and ongoing funding
Peatlands and Fire Dan Jamieson (PV)	The objective of this project was to improve the management of Alpine Peatlands in Eastern Victoria, by reducing the impacts of fire and fire control activities. Project outcomes informed fuel management planning (e.g. zoning and frequency) and mitigation of risk to Alpine Peatlands during bushfire response.	• Parks Victoria engaged UTAS and Natural Systems Analytics to provide science input including scientific modelling & analysis of fire behaviour & using a vulnerability index to prioritise peatlands for protection. • Identification of high risk priority peatlands to fire using MCAS, a decision support tool. • Development of fire suppression protocols through comprehensive staff engagement • The focus of the science and management partnership has led to operational acceptance & use of protocols to protect peatlands through official fire work instructions.

Case Study	Background	Key Points

Threatened Species – Frogs
 	
Dave Hunter (NPWS)
	For more than 20 years research and management programs around threatened frogs have been implemented in the Alps.
	
	Threatened species management is important with the backdrop of habitat condition management to help improve species resilience. Threats such as pathogens are difficult to manage.
		• Knowledge Strategy
		  ○ Survey
		  ○ Monitoring (maintained & relevant)
		  ○ Threat identification
		  ○ Threat mitigation
		• Articulate objectives so that research links directly to management & local context
		• Various scientists have been engaged to support the program and have been encouraged to view research through lens of manager.
		• The science and management partnership has led to and informed better understanding of threats and treatment, supporting re introduction programs now in place.

Changing Visitor Behaviour (Hawkweed and Hygiene) Hillary Cherry (NPWS)	The focus area is preventing seed spread via boots, and this includes using a CBSM – (Social Marketing + Community Based research = Community Based Social Marketing) approach to determine behaviours (and the benefits and barriers of getting people to change those behaviours) – in particular, setting up systems (like boot brush down bays) to improve hygiene. The use of sniffer dogs has been successfully trialled to locate Hawkweed.	• NPWS and Melb University worked together on sniffer dog trials and evaluation. • Benefits of on ground training - staff and volunteers • Hawkweed sniffer dogs good media and community 'hook' • CBSM - research to work out barriers to behaviour change i.e. what motivates visitors to use boot brush down bays? • Can be applied to other visitor impact behaviours

Case Study	Background	Key Points
Deer Control Trial Dan Brown (PV)	A Deer Control Trial has been established to understand the relationship between deer density, habitat use and observed impacts. It will also test whether deer impacts in alpine peatlands can be mitigated by control measures such as ground shooting.	• Scientists, hunters and staff provided 'expert design advise' & development of key trial question • A structured 'learning by doing' approach that will facilitate an adaptive, evidence-based approach to deer management in the ANP • PV led research into deer but other projects have 'piggybacked' on project leading to additional knowledge • Investigate deer ecology & how deer move through the landscape • The science and management partnership has established effective trials with community buy in through the Sporting Shooters Association & Australian Deer Association.
Feral Horse Control John Wright (PV)	Reducing the numbers and impact of feral horses is challenging due to the remote locations and balancing community attitudes. Science, research and community partnerships have been informing the development of feral horse management plans across the Australian Alps.	• Horse management is a work in progress • Progress is being made (even despite recent decisions) • Science is essential • Confidence of decision-makers • License to develop plans – public confidence • Inform approaches (e.g. improved aerial survey) • Needed for future management **Knowledge gaps** have been identified at a previous workshop and are guiding thinking. These include : • Abundance – impact relationships • Is active restoration needed? • Control methods • Horse ecology and demography • Social **Attitudes - horses & management** Acceptability of control methods How to educate and influence

Case Study	Background	Key Points

Visitor Experience - Thredbo Valley Bike Track
 	
Lawrence Franklin (NPWS)
	There has been major investment in the Thredbo Valley Bike Track with further investment announced recently; this will explore the social, tourism and environmental research which informed these investment decisions.
	
	KNP has a robust range of data to inform higher level outcome measures including:
	• Visitation to the Park
	• Visitor use of the track
	• Economic outcomes
	• Stakeholder feedback
	• Environmental outcomes
	The need for a more scientific approach to data collection mounts as government / community investments grow larger.
		Not enough time is invested early on to establish a science based data collection process.
		To comprehensively measure the impacts positive and negative of a project such as the TVT data needs to be generated for:
		• Profiling users
		  ○ Socio demographics/needs based segments/skill level
		• Profiling use patterns/issues
		  ○ Duration/distribution/conflicts between user groups
		• User satisfaction
		  ○ Good -bad/return intention /advocacy
		• User Attitudinal outcomes
		  ○ Environmental attitudes
		• Stakeholder/Community Attitudinal Outcomes
		  ○ Positive/negative
		• Health and wellness outcomes
		  ○ Physical/mental/relationships
		• Socio/Cultural Outcomes
		  ○ Positive/negative impacts on host community
		• Economic outcomes
		  ○ Related travel/expenditure
		• Environmental outcomes
		• Monitoring impacts

3. Knowledge Gaps

The first expert panel were asked to draw on the presented case studies and other relevant Alps agency science management projects &/or programs and discuss:

- stand out successes
- priority gaps in the current science based knowledge, partnerships and communication

The panel, along with ideas expressed by the whole group identified the following as being the key knowledge gap themes (and sub themes) to be further explored:

1. Social Science
    - Understanding the visitor and visitor experience
    - Community Engagement and developing social licence
    - Science Communication, awareness and education
2. Catchment Condition
    - Base line information
    - Monitoring and reporting condition
    - Economic value of water to community
    - Knowledge management/access
3. Biodiversity
    - Priority landscapes
    - Refugia
    - Endangered communities and spp
    - Visitor Impacts
4. Fire
    - Control burning and biodiversity
    - Relationship between fuels and fire danger
    - Economics of control burning
5. Invasive Species (plants and animals)
    - Understanding spp ecology and climate change responses
    - Feral Horses
    - Deer
    - European Wasps and other

5 topics were identified as being relevant to all:

1. Social Licence
2. Relationships & Partnerships
3. Futures Thinking
4. Threats
5. Trade Offs

4. Plugging the Knowledge Gaps

The objective was to flesh out what are the priorities in knowledge gaps and how they will be addressed for the 5 themes listed above.

Small groups were asked to discuss:

- What knowledge is missing?
- Priorities for new or supportive applied research to address the knowledge and evidence gaps (feasibility & impact)
- How should this research be undertaken?
- How do you build the research into operations (including community engagement & communications)?

The groups all focused on the first 2 points.

Social Science

Discussion revolved social science research that helps understand how people value the Alps, community perceptions, influencers of perception and need for communication strategies to better engage the community and change behaviour.

1. Data mining visitor information – social media and market segmentation

2. Understanding behavioural change and how to influence behaviours of park visitors
3. Tapping into what is important to young people and their aspirations for the Alps
4. Understanding values based segmentation and use this to improve, better target communication

Catchment Condition

An overview of general discussion points:

- Condition of alpine catchments is a big, complex issue
- There are multiple agencies involved beyond the 4 park partnership
- We need good quantities of baseline information
- All species & individuals + ecosystems health, are collectively connected by the overall health of the catchment
- Water will be / is the key economic driver for improvement of catchment condition
- The key water issues are about **quality**, **yield**, and the **flow regime**
- We need to better understand what are the key tipping points of catchment health
- The current AAnp 2015-2018 Strategic Plan has/had the theme of 'Connectivity through Catchment Health, see **theaustralianalps.strategic-plan-2016-2018**
- There is the opportunity, that is yet to be realised, to take recommendations from the 2011 'Caring for our Australian Alps Catchments' report (AAnp 2011 - Worboys, Good), further

Three key actions:

1. Further assessments need to be undertaken on alpine catchment water - **Quality, Yield,** and **Flow regimes** i.e. undertake a comparative analysis on past, present, and future catchment water supplies.
2. Undertake a research project on better marketing messages or the development thereof. Improve the information to the public about catchment health as related to Action 1.
3. Undertake a research project to develop a framework that identifies the many issues/inputs to alpine catchments health. Use this framework to guide Actions 1 & 2.

Biodiversity

1. Consistent vegetation map (fine scale) across whole of the Alps
    - Improved baseline data and ongoing monitoring
    - Which spp/communities do we need to know more about?
2. Identify threat spp priorities / distribution and which spp/communities are threatened
3. Develop an agreed approach to condition assessment
4. Engage citizen science to assist with mapping broader values and threats i.e. Canberra Map

Fire

A number of important research questions around fire are probably outside the feasibility of the Alps agencies or program to undertake – for example how does planned burning actually reduce risk to assets and values?

Recognise that Alps agencies have ability to **influence** policy around fire control and mitigation:

1. Risk based approach to planned burning: high value economic risks versus high value ecological risks
2. Undertake planned burn efficacy research at local level relevant to the decision maker

3. Are there vegetation communities/areas that need a specific focus due to climate change and related increased fire i.e. Victorian alpine ash
4. Scenario modelling for specific issues – pre-incident contingency planning i.e. peatlands and fire project
5. Better understanding of impacts of planned fire on fauna

Invasive Species

Identify priority assets and threats – where are the 'clean assets' at landscape scale to ensure ongoing protection
Behaviour change strategies related to invasive spp and hygiene – apply known techniques and train staff and influence park users
Best Practice Decision Framework for carcass management – environmental contamination, scavenger ecology, cost impacts & remote area management
Identify priority invasive grasses for control in Alps – what are they, where are they, what are the impacts and what is the feasibility of control?
Comparison of humanness (animal welfare issues) of different ungulate control measures

5. Communicating the Science

From **The challenges of communicating science to the public/s – Dr Craig Cormick**

Things we should know:

1. When **information is complex**, people make decisions based on their **values and beliefs**.
2. People seek **affirmation of their attitudes** (or beliefs) – no matter how fringe – and will **reject** any information or facts that are **counter** to their attitudes (or beliefs).
3. Attitudes that **were not formed by logic** are **not influenced** by logical arguments.
4. Public concerns about contentious science or technologies are **almost never about the science** – and scientific information therefore does little to influence those concerns.
5. People **most trust** those whose **values mirror their own**.

How we think:

- When we are time poor, overwhelmed with data, uncertain, driven by fear or emotion, we tend to assess information on mental shortcuts or VALUES not LOGIC.
- And opinions that were NOT formed by LOGIC or FACTS are not then able to be easily influenced by LOGIC or FACTS.

From **Un-write It - 10 tips for great messages – Dr Ian Lunt**

Tip 1 Cut the big words
Tip 2 Lead with reality not concepts
Tip 3 Start with stories not facts
Tip 4 Know your audience – talk as they do
Tip 5 Show people having fun in nature
Tip 6 If you use charts, keep them really, really, really simple
Tip 7 Lead by example, not by instruction
Tip 8 Cull Jargon
Tip 9 Kill Zombies
Tip 10 Don't give up – stick with it!

Great messages are:

1. Short: Succinct, not waffly
2. Accurate: Truthful, no 'alternative facts'
3. Unique: Distinctive, stands out
4. Exciting: Engaging, thrilling

6. Forum Outcomes

The final panel considered the key outcomes of the forum. The following is a summary of what was raised.

Science in Action: understanding the knowledge gaps and improving the science – management partnership on the ground can be divided into 2 broad areas, Actions and influencing factors:

Actions:

- Continue the Alps Science Management Forums – build on gaps and existing knowledge (see notes from small group discussions)
- Develop a science – management model / framework with research institutions;
    - Alps may build on the Alpine/Mountain Research Hub being developed by NSW NPWS , similar to the existing Fire Hub
    - ARC Infrastructure Bid is currently being developed for alps research
    - Learn from international science management models examples
    - Ensure researchers engage with on ground staff
- Build science – management relationship into the review of the AANP Strategic Plan
- Proactively diversify engagement both internally and externally
    - PHD students & academics – many keen to get involved in Alps & they can leverage $
    - Culturally – especially young Aboriginal people and their aspirations for Alps
- Develop research data base for the Alps
    - Data on the catchment condition and trend in condition will take place over many years
    - Develop fine scale vegetation map for whole of Alps – maintain relevance and keep up to date
    - Identify, prioritise and monitor values (ecological and social) and threats to those values
- Build social licence to undertake complex and/or controversial science management projects
    - Work with agency communication staff to develop **communication strategies** that reflect value segmentation and target those we can feasibly influence
    - Facilitate 'round table' community engagement

Overall Influencing Factors:

- Be bold, many decisions are challenging
- Undertake compelling evidence based management: don't repeat history but build on experience
- Understand the risks to environment and visitors
- Build trust: prepare the community and value partnerships research institutions
- Rethink how we have conversations with community – look for common ground
    - Set goals / objectives
    - Blockages
    - Address blockages or barriers
    - Get data
    - Evaluate
    - Reset goals/objectives
    - Learn, Reset…learn…reset

- Develop governance model that has an independent voice
- Think short, middle and long term when developing research
- Develop clear objectives in conjunction with scientists and on ground staff (and community if appropriate) and clearly link science to on ground outcomes

7. Summary and Conclusion

The Science in Action Forum continued the focus of the Australian Alps Co-operative Management Program on science management partnerships. Rather than one topic, this forum explored the notion of how to improve the onground effectiveness.

The case studies presented some examples of the very effective science based programs that managers are undertaking on the ground and the relationships that have been built with research institutions.

There was strong support expressed for continuing and improving that relationship for both the natural and social sciences. The importance of having knowledge of past research work and sharing information on current programs around the Alps was emphasized.

The communication sessions emphasized the importance of effective messaging to the community of science and evidence based decisions and the importance of that in achieving social license for management decisions.

The outcomes provide a solid basis for building a framework for guiding and implementing an effective science management relationship. This framework may take into account from the forum:

- Some exciting opportunities that are growing through the Alpine/Mountain Research Hub being developed by NSW NPWS, and the ARC Infrastructure Bid currently being developed for alps research;
- The review of the AANP Strategic Plan provides an opportunity to set a course for science and management over the next three years;
- Sharing learnings: The opportunity to develop a knowledge hub of past research work and sharing information on current programs around the alps to facilitate connections;
- The effective use of communication tools and expertise; and
- The opportunity to engage others, including younger managers and researchers.

Appendix 1 Program

Science in Action:

Evidence based land management– making it work on the ground:

Program

Thredbo Alpine Hotel, Kosciuszko NP – 24 - 25 May 2018

Wednesday 23 May

Time		Topic	Presenter
1600 onwards		Arrival – check in Thredbo Alpine Hotel Dinner – own arrangements	

Thursday 24 May Day 1

0815		Tea and coffee on arrival – Kosciuszko Room	
Why are we here?			
0830		Acknowledgement of Country & Welcome Introduction to the Program & International perspective	AALC Mick Pettitt Peter Jacobs IUCN WCPA Chair Mountains Specialist Group
0900	15 min	Setting the Scene - how has science shaped the management of the Alps?	Graeme Worboys IUCN WCPA Senior Advisor
Session 1: Understanding the successes and gaps (Plenary)			
Case Studies:			
0915	1hr 15 min	Case studies Willow Control Hawkweed & Hygiene Peatlands & Fire Endangered Species (Frogs)	Agency staff Elaine Thomas (PV) Hillary Cherry (NPWS) Dan Jamieson (PV) Dave Hunter (NPWS)
1030	**30 min**	**Morning Tea**	
1100	1 hr	Case studies cont. Deer Control Trial Feral Horse Control Thredbo Valley Bike Track	Agency staff Dan Brown (PV) John Wright (PV) Lawrence Franklin (NPWS)
1200	30 min	What have we learned? Drawing on presentations & other SM projects Panel will comment / discuss: • stand out successes • priority gaps in the current science based knowledge, partnerships and communication	**Expert Panel 1:** Mick Pettitt (NPWS) Marg Kitchin (ACT) John Wright (PV) Ewen Silvester (LaTrobe) Craig Cormick (Science Communicator)
1230	**1 hour**	**Lunch Cascades Restaurant**	

Session 2: Plugging the Gaps: Small Group Discussion (world café style)			
1330	1hr 30 min	Workshop key priority gaps in SM Topics TBC Priorities for new or supportive applied research to address the knowledge and evidence gaps	Workshop facilitators x 5 1 x 45 min key interest 4 x 10 min rotation
1500	**30 min**	**Afternoon Tea**	
1530	30 min	Facilitator feedback from small group discussions	
Session 3: Institutional Response (Plenary)			
1600	45 min	Panel will address / discuss: • How can institutions and agencies respond to the key outcomes / issues from workshop priority gaps	**Expert Panel 2:** Greg Summerell (NPWS) Julian Seddon (P&C ACT) Dave Hunter (NPWS) Ian Lunt (CSU) Adrienne Nicotra (ANU) Dick Williams (Melb)
1645	15 min	Synopsis of the day	Facilitator
1700 Session Finish			
1830		**Dinner Cascades Restaurant** Dinner Speaker – Dick Williams	

Friday 25 May Day 2

0830	15 min	Introduction to Day 2	Facilitator
Session 4: Telling the full story: why we do what we do (Plenary)			
0845	1 hr 15 min	Key issues around science communication on contentious operational issues	**Communication Experts** Craig Cormick (Science Communicator - Think outside the…) Ian Lunt (Ian Lunt Ecology – Science & Nature Writing)
10.00	**30 min**	**Morning Tea**	
10.30	45 min	Developing Communication Strategies (cont.)	
Session 5: Alps Science - Management Partnership: what does it look like on the ground?			
1115	30 min	Panel: Exploring a model for the future relationship between scientists, researchers, agencies and community.	**Expert Panel 3:** Brett McNamara Mick Pettitt Kerri Villiers Adrienne Nicotra Craig Cormick Ewen Silvester Dick Williams
1145	15 min	Conclusion and next steps/where to from here?	Program Manager & AALC