



A free and easy spatial decision–support tool that improves research uptake

Want greater research impact?

Then consider MCAS–S: a decision support tool that makes your spatial data more accessible to end–users not familiar with combining large datasets from different disciplines.

By including research outputs in a readily available and easy–to–use tool, the Landscapes and Policy Hub’s spatial data is more accessible, relevant and used by land managers.

MCAS–S — the tool

- » The Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS–S; Figure 1, developed by the Australian Bureau of Agricultural and Resource Economics and Sciences, is a decision support tool designed for non-GIS users to integrate spatial data — www.abares.gov.au/mcass
- » Using the tool needs little training. Users can combine maps and instantly see the results of alternative management scenarios to inform policy decisions and management quandaries.
- » In ecosystem management, it has the potential to be very useful, particularly in workshop situations where decision-making is by consensus.
- » We've made great inroads into getting our data used by the Australian Alps Liaison Committee and the Tasmanian Government, thanks to MCAS–S.

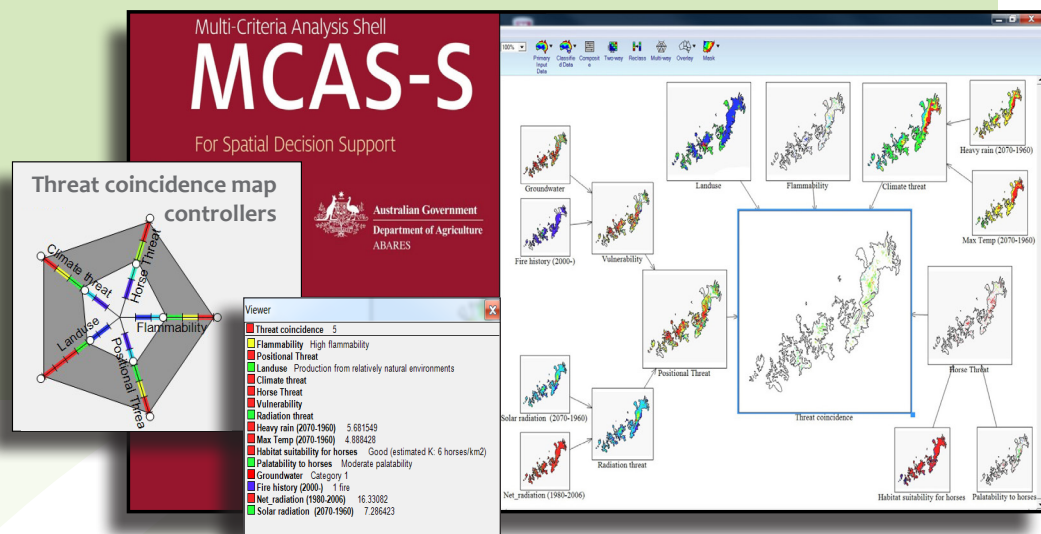


Figure 1: MCAS–S User Interface

A means to an end — the aim

The health or condition of aquatic ecosystems is a combined result of processes occurring within the ecosystem and in the surrounding terrestrial environment (the catchment).

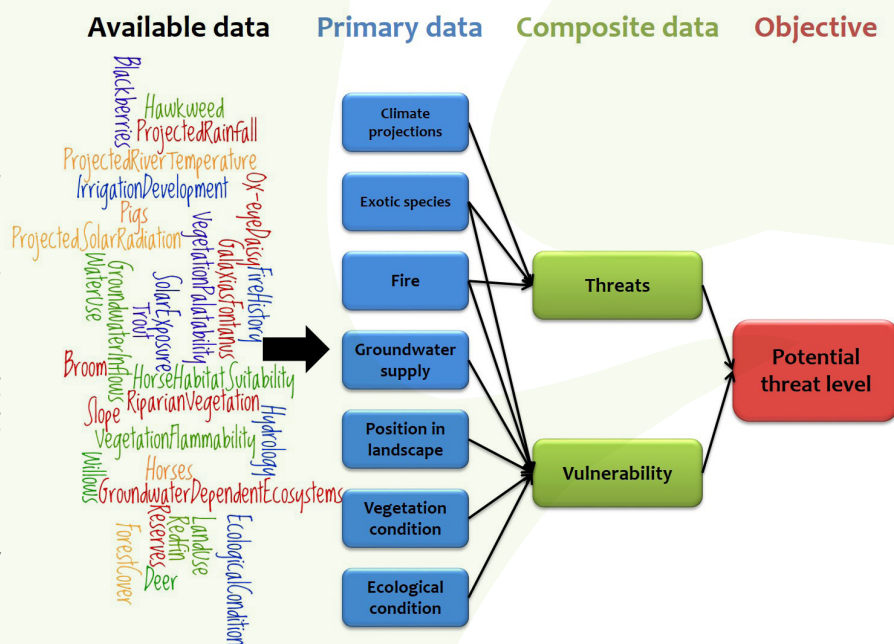
Making decisions about how to manage aquatic ecosystems in a changing climate is thus challenging because variation in climate can influence aquatic ecosystem condition via multiple pathways many of which are poorly understood and indirect.

We used MCAS–S to develop two models that explore spatial variability in threats to two aquatic ecosystems.

We integrated our research results with existing data and various future scenarios, including climate change, irrigation development and invasive species distributions. Our approach to model development was similar for both ecosystems (Figure 2), but tailored to answer different research questions.

Each datapack consists of spatial data and a guide to show how the data can be combined to support decision-making.

Figure 2: Simple means-to-end diagrams helped us to identify the data we needed to achieve our objectives.



Australian Alps

The Alpine Bogs MCAS-S Datapack can be used to identify where threats coincide with alpine bogs most vulnerable to their impacts (Figure 3).

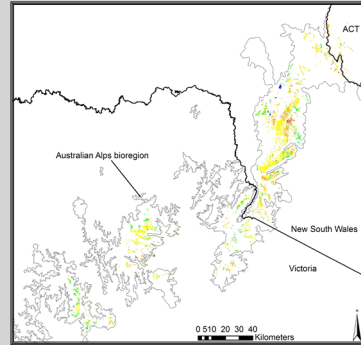


Figure 3: Threat coincidence
(low to high: blue-green-yellow-orange-red)

The Alpine Sphagnum Bogs and Associated Fens Community occurs throughout the Australian Alps bioregion and is protected under federal legislation. While the community is abundant (>12,000 bogs identified) and most examples are situated on conserved land, the community is at risk because of its restricted geographical extent, small size (<1 ha), vulnerability to fire and invasive species and dependency on water.

Tasmanian Midlands

The Midlands Aquatic Refuge MCAS-S Datapack can be used to identify potential climate refuges by integrating geographic information on topographical features, groundwater, tree cover, solar radiation and enhanced flows associated with climate change or irrigation (Figure 4).

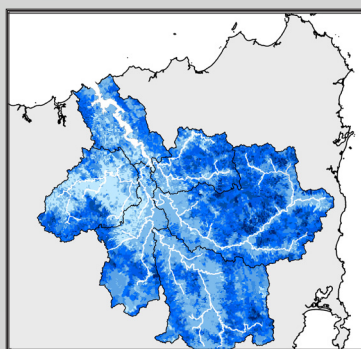


Figure 4 Potential refuges
(darker blue = higher potential)

Climate projections from the Climate Futures for Tasmania project suggest that Tasmanian rivers are likely to experience summer temperature maximums that will severely impact aquatic biota. Local-scale and catchment-scale features may create locations protected from these short-term temperature peaks and act as refuge for aquatic organisms.



Who is involved?

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Reg is a freshwater ecologist at the University of Tasmania. Her research focuses on understanding patterns and processes in aquatic ecosystems to better understand the influence of humans on aquatic ecosystem health.

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Oberon works for the Tasmanian Department of Primary Industries, Parks, Water and the Environment. He has a particular interest in the management of biodiversity refuges in the face of climate change, specialises in spatial data integration.

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Gill Anderson



Gill is the hub's Alps Knowledge Broker, based in Bright, Victoria. She has a long professional and personal association with the alps, which she contributes to hub's understanding of people and place in biodiversity conservation.

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As the hub's Knowledge Broker for the Tasmanian Midlands, Louise helps to integrate the research and deliver it to stakeholders. Louise also works for Tasmania's Department of Primary Industries, Parks, Water and Environment.

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Further reading

This information sheet was developed from a poster prepared for the 2014 Ecological Society of Australia Conference (Alice Springs, Australia) by Regina Magierowski, Oberon Carter, Anita Wild, Louise Gildfedder, Gill Anderson, Suzie Gaynor, Ted Lefroy and Peter E Davies.

www.abares.gov.au/mcass

About the NERP Landscapes and Policy Hub

The Landscapes and Policy Hub is one of five research hubs funded by the National Environmental Research Program (NERP) for four years (2011–2014) to study biodiversity conservation.

We integrate ecology and social science to provide guidance for policymakers on planning and managing biodiversity at a regional scale. We develop tools, techniques and policy options to integrate biodiversity into regional-scale planning.

The University of Tasmania hosts the hub.

www.nerplandscapes.edu.au



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