

A national reference library of expert site condition assessments

The Australian Government Department of the Environment and Energy (DEE) is collaborating with the CSIRO to develop innovative approaches for assessing and collecting information about ecological condition across Australia. This includes the development of a national Habitat Condition Assessment System (HCAS), as well as this linked project, which will elicit expert ecological condition assessments from Australia's ecological science and natural resource management (NRM) communities.

About this project

This project is developing an approach for eliciting site-level ecological condition assessments from Australia's ecological science and NRM communities. The elicited data will be one of the data sources used to build a library of site condition observations from across Australia. The condition data captured through elicitation will support ongoing development of the CSIRO-DEE Habitat Condition Assessment System, and will be made available to the research community for other purposes as appropriate.

What is ecological condition?

Ecological condition refers to the capacity of an area to support the plants and animals that would exist at that location if it were still in a natural state.



Image credit: Garry Cook

Why do we need information on ecological condition?

Australia's unique biodiversity is dependent on our ecosystems being maintained in good condition. Ecosystems maintained in good condition also underpin our agricultural productivity and our social wellbeing through the provision of ecosystem services, such as clean air and water.

Much of Australia's natural environment has been subject to modification and disturbance since European settlement and this has impacted on ecological condition. Reliable information about ecological condition is therefore critical for the effective design and implementation of national environmental policies and programs. Information on ecological condition can support decision makers to respond flexibly to environmental change, and deploy policy, regulatory and funding mechanisms strategically.

Why use expert elicitation to develop a reference library of site condition assessments?

There is currently no nationally consistent way to measure site condition. Ecological condition and notions of integrity are human constructs and there is subjectivity in the way condition is defined, assessed and interpreted. Existing metrics rely on the comparison of a suite of weighted ecosystem variables with specified archetypes or benchmarks defined in terms of those variables.

While most state and territory condition assessment protocols are similar in terms of the attribute information collected, they can differ in critical detail, approaches to benchmarks or purpose. This makes it challenging to aggregate or interpret condition consistently with a national view.

Rather than attempting to aggregate a multitude of complex raw attribute data, this project is collating expert interpretations of condition using a simple scoring system.

Project partners:



Australian Government
Department of the Environment and Energy



Over many years of field observation and training, members of Australia's ecological science and practitioner community have developed a deep understanding of our ecosystems. This includes knowledge of ecosystem dynamics and an understanding of how ecosystems respond to anthropogenic disturbances.

This project acknowledges that reliable condition assessment is heavily dependent on this deep ecological knowledge, and places this expertise at the heart of the assessment system.

How will it work?

Experts will be asked to record their assessment of site condition through an online data capture tool. Using an interactive mapping tool, experts will be asked to map a site or sites that they have deep familiarity with.

The sites may be relatively small or cover many hundreds of hectares depending on the area over which a consistent condition score can be applied. For example, some experts may be able to provide a score for a very large area within the Rangelands, while it may be necessary to define smaller areas in environments where condition varies greatly.

For each site, experts will provide a condition score between 0 and 1, with '1' being in undisturbed, best attainable condition, and '0' being in worst condition with natural habitat completely removed.

Experts will be asked to identify the time period to which their assessment applies. Disturbances that influenced the condition score given to the site can also be recorded.

Resprouts following fire, Image credit: Dan Metcalfe

How will the library be used in the HCAS?

The HCAS is designed to provide Australia with its first national assessment of biodiversity habitat condition. This ground breaking approach optimises the use of time-series remote sensing data, world-leading environmental modelling techniques and inferred and direct assessments of site condition (as both reference and validation data) to form a continental view of habitat condition.

HCAS is addressing the complexities and challenges of using remote sensing for ecological condition assessment. These include the paucity, limited spatial coverage and consistency of field condition assessments used for training remote sensing image interpretation; challenges associated with extrapolating site field observations across landscapes; and the complexities of accounting for natural dynamics. Please see the [hyperlink: HCAS flier] for more information.

The development phase of HCAS requires expert site condition assessments to help establish and validate the models and methods of interpreting the outputs of condition assessment.

How to get involved

Established expert practitioners within the Australian ecosystem sciences and natural resource management communities are invited to participate in the project.

If you would like to participate, or know more about this project or HCAS, please contact us or visit <https://research.csiro.au/biodiversity-knowledge/>.



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