



Guiding Australia's NATURAL RESOURCES REPORTING

The national audit has been documenting the status of information on native vegetation, invasive plants and animals, salinity, aquatic ecosystems, soil condition and estuarine, coastal and marine ecosystems. David Freund, iStockphoto

The National Land & Water Resources Audit and its partners have made significant recent progress in building the basis of an enduring information system to report on the status of Australia's natural resources and changes to the environment. The program's future, however, is undecided.

Since 1997, the National Land & Water Resources Audit¹ (the Audit) has played a vital role in the consistent collection, collation and reporting of natural resources information. Considering this involves multiple agencies and managers, all with different needs and perspectives, it is a complex challenge, but crucially, it is one that enables governments to determine what needs to be measured, how to measure it and where there are gaps in what is being measured.

The Executive Director of the Audit, Blair Wood, maintains that to be able

to monitor the health of Australia's environment, and to effectively manage our natural resources, good quality data and information need to be made widely available. Often the information has been collected, but in different ways and for different audiences across Australia. In order to be useful, data and other relevant information must be compared across state boundaries in a consistent way.

The Audit has recently completed a five-year program (2003–2008) working with the states and territories, and other Australian Government agencies, to look at what information existed on a series of indicators of resource condition for native vegetation, invasive plants and animals, land salinity, aquatic ecosystems, soil condition and estuarine, coastal and marine ecosystems.

This assessment of available information and its scope is crucial if

ongoing environmental monitoring is to be effectively coordinated. Unfortunately, with the Audit's latest five-year funding program now complete, the future for the data assessment processes and state frameworks it has recently established is still undecided.

That aside, the program's latest work is very timely.

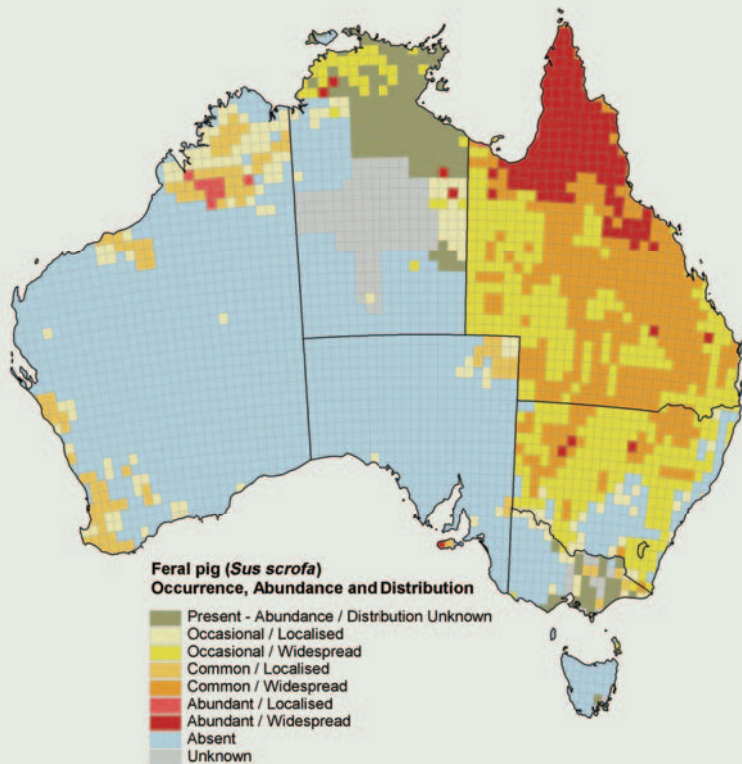
Monitoring native vegetation

The Audit discovered that much of the native vegetation information available across Australia is based on a mix of historic mapping projects as well as recent efforts. While this provides valuable information on the types of vegetation (e.g. heath, forest, woodland, grassland), it does not provide a comprehensive statement of the amount of vegetation left in the landscape, where it is located or its condition or status.

Under a collaborative effort with the states and territories, the Executive Steering

¹ The National Land & Water Resources Audit was established in 1997 under the *Natural Heritage Trust Act*.

Progress



Feral pigs occupy 45 per cent of Australia, with the highest concentrations in the north-east.

National Land & Water Resources Audit

Committee for Australian Vegetation Information (ESCAVI) has recently developed nationally consistent reporting criteria – or indicators – which allow agencies at both the national and state levels to better monitor and evaluate the impact of vegetation management. Over time, the data sets that are being developed will provide critical information about the rates of change in vegetation cover, changes in land use and the impacts of specific land-use policies.

We now have an Australia-wide data set of pre-1750 vegetation types and a statement of the extent of ‘native’ vegetation as of 2004/5 (with ‘native’ status being defined by each jurisdiction). This is the most up to date information currently available.

ESCAVI is also developing a common indicator for reporting the status of vegetation condition, both at a site level and nationally. This should allow tracking of environmental change effects, including climate change.

According to Peter Wilson, Data and Information Coordinator for the Audit, ‘future investment is required to continually improve our capacity to report on native vegetation and to build a reporting framework that allows the

interpretation of condition related to various ecosystem services.’

So far, none of the states or territories monitor changes and trends in the condition of native vegetation in a consistently and nationally agreed way. But Mr Wilson says, ‘there is great collaborative spirit and willingness to continue to improve understanding, capacity and outcomes in the vegetation information area.’

Tracking invasive animals

Invasive animals critically affect the maintenance of our unique biodiversity. They are also a cause of major losses in our agricultural grazing and cropping industries – most agricultural sectors suffer significant economic losses through predation of livestock, crop damage and competition for feed.

The need for accurate national data on invasive animal populations has led to a major collaborative program during 2006 and 2007 between the Audit, the Invasive Animals Cooperative Research Centre, the Vertebrate Pests Committee, and all states and territories. For the first time, consistent national information on the distribution and abundance of 10 significant invasive animals has been compiled.

The 10 species assessed were feral pigs, feral goats, feral deer, rabbits, foxes, wild dogs, feral cats, common starlings, common carp and cane toads.

The program has since resulted in national maps of priority invasive animal species, nationally endorsed monitoring approaches, and agreed data standards for monitoring and reporting information about invasive animals, amongst other benefits.

The program’s major publication – ‘Assessing invasive animals in Australia (2008)’ – clearly highlights how invasive animals are a national problem, and identifies where pest problems are most pronounced throughout the country.

Key findings presented in the assessment report include that invasive animals inhabit all areas of mainland Australia and many islands; about 73 invasive animals have established wild populations and several species inhabit over 70 per cent of the continent; invasive animals are estimated to cause losses in excess of \$1 billion per year through environmental and economic damage; invasive animals are listed in the top three greatest threats to vulnerable species and ecosystems; and new and emerging species, particularly alien fish, could establish wild populations.

Improving estuarine, coastal and marine monitoring

The Audit has also been working with the Intergovernmental Coastal Advisory Group and the Department of Environment, Water, Heritage and the Arts to assess marine, coastal and estuarine areas. The result is the first nationally consistent compilation of mapping of these habitat zones, as well as the development of a framework which could form the basis of environmental reporting and enable vulnerability, pressure (threat) and risk assessments to be made when resource condition information isn’t available, or when data is poor.

In these habitats, almost no current national monitoring occurs of important ecological aspects including biodiversity or ecosystem function (such as reproductive capacity, food webs or ecological resilience). Also, few long-term environmental or ecological monitoring programs exist. And there are gaps in the monitoring of physical zones: while there are significant reef monitoring programs, there are no monitoring programs for intertidal (mangrove, saltmarsh, dune and beach) and soft sediment (sand and mud) habitats.

Region boundaries for marine natural resource management are lacking for New South Wales, Victoria, Western Australia and the Northern Territory. But, in collaboration with the Department of Climate Change, the Audit has recently built substantial new capacity for long-term reporting on estuarine, coastal and marine habitat extent and distribution at a variety of relevant scales.

Helping land-use planning

Information about land use is fundamentally important for better management of natural resources. Increasingly, these management programs require information on land cover and land cover change that supports, and is supported by, information on land use and land management.

Blair Wood suggests that information on land use is a consistent requirement across all natural resource themes when interpreting and relating resource condition change to required management action.

Nationally consistent land-use and land-management practices information is collected under the Australian Collaborative Land Use Mapping Program (ACLUMP). Its membership includes Australian, state and territory government partners. The Australian Land Use and Management classification has been adopted by all partner agencies and as a result ACLUMP can now deliver nationally consistent land-use mapping covering Australia at national and catchment scales.

There are significant opportunities for wider applications of land-use mapping in dealing with national issues such as carbon accounting, biodiversity conservation and salinity assessments.

ACLUMP is also proceeding with the development of a national land-use change reporting system, with a focus on 'hotspots' for change in priority land uses (e.g. irrigation) and major changes in particular land use (e.g. peri-urban development).

Future directions – online

To facilitate systematic updating and use of the data, the Audit has established web-based sources and repositories for natural resources information.

The Australian Natural Resources Atlas (www.anra.gov.au) provides a number of tools as well as access to theme summaries and reports from the Audit. It also includes the Map Maker, a tool for creating maps at regional, state and national levels.

The Australian Natural Resources Data



Foxes are major predators of native wildlife. Invasive Animals CRC



While much of the available natural resources data covers types of native vegetation, it does not show the amount left, where it is located or its condition. Greg Rinder, ScienceImage



The audit has recently focused on mapping coastal and estuarine zones and identified gaps in monitoring of mangrove and other intertidal habitats. Willem van Aken, ScienceImage

Library (<http://adl.brs.gov.au/anrdl/php>) enables discovery of, and access to, data and information products.

The Audit is also developing Australia's Resources Online (www.anra.gov.au/aro) as a reporting tool to allow national reporting, and is working with other agencies to develop improved information hubs such as OzCoasts (www.ozcoasts.org.au) and ASRIS (the Australian Soil Resource Information System – www.asris.csiro.au).

The Audit has now produced status-of-information reports on native vegetation; invasive vertebrate pests; land salinity; land use; estuarine, coastal and marine ecosystems; soil condition and socio-economic information. Baseline assessments are also being produced. Several more final reports will be released over the coming months on topics such as biodiversity, invasive plants and further

socio-economic issues, as well as on various agricultural industries.

Along with its partners, the National Land & Water Resources Audit has continued to help build the nation's environmental information assets, ensuring better investment decisions and better results from our expanding natural resource management programs.

Looking to the future, Blair Wood emphasised that with renewed importance now on monitoring environmental changes across Australia, it is critical that there be follow-through on the platform the Audit has been building. 'Australia needs an enduring national monitoring agency and audit process that is independent of administrative cycles, and which capitalises on the investment made to date.' Stay tuned at www.nlwra.gov.au.

● **Denise Fowler**