



## May 2019 Edition 38

### In this issue

- Forum on Linear Reserves: Linking People, Nature and Infrastructure
- Are OEH's Biodiversity Information Systems meeting your needs?
- The need for connectivity
- Australia's Environment in 2018 Report
- Mental models for conservation research and practice
- Scientists need your help spotting dead trees
- EcoRoadside and RAM training opportunity
- Emergency+ App

### Latest news from the REC

The REC will again sponsor the Roadside Environmental Management Award as part of the 2019 Local Government Excellence in the Environment Awards.

Entries for the 2019 Awards are expected to open in June with details at

<https://www.lgnsw.org.au/event-s-training/environment-awards>

---

## Forum on 'Linear Reserves: Linking People, Nature and Infrastructure'

---



The NSW Roadside Environment Committee (REC) is organising a state-wide linear reserve environmental forum to be held on **Wednesday 21 August 2019**. The forum venue is the Aerial Function Centre, University of Technology Sydney.

The forum theme is 'Linear Reserves: Linking People, Nature and Infrastructure' with a broad range of projects and ideas to be presented from linear reserve managers and researchers across NSW.

A feature of the forum will be the opportunity for networking and discussion. There will be many practical projects highlighted from across tenures including roadsides, travelling stock reserves, rail corridors and utility easements.

A detailed program and a website for registrations will be available soon.

For more details and to obtain the forum program/registration details, please contact the REC Executive Officer, Neil Dufty [ndufty@molinostewart.com.au](mailto:ndufty@molinostewart.com.au)

---

## Are OEH's Biodiversity Information Systems meeting your needs?

---



The NSW Office of Environment and Heritage (OEH) is responsible for managing a number of systems that gather, hold and deliver biodiversity information to the community.

This brief (seven question) survey will help OEH improve its systems and stakeholder input will impact on how and where it will focus its resources. It will also help OEH check back with a 2015 survey to see how it is progressing in meeting stakeholder needs.

For the purposes of this survey, OEH's Biodiversity Information Systems comprise the following:

- BioNet Atlas application
- BioNet Fauna Survey module
- BioNet Flora Survey module
- BioNet Threatened Biodiversity (web) application
- BioNet Vegetation Classification application
- BioNet Vegetation Maps (via SEED)
- BioNet Web Services
- SEED Environmental portal

The survey is open until 31 May 2019. To access the survey please go to:

<https://www.surveymonkey.com/r/H52PC9S>

---

## The need for connectivity

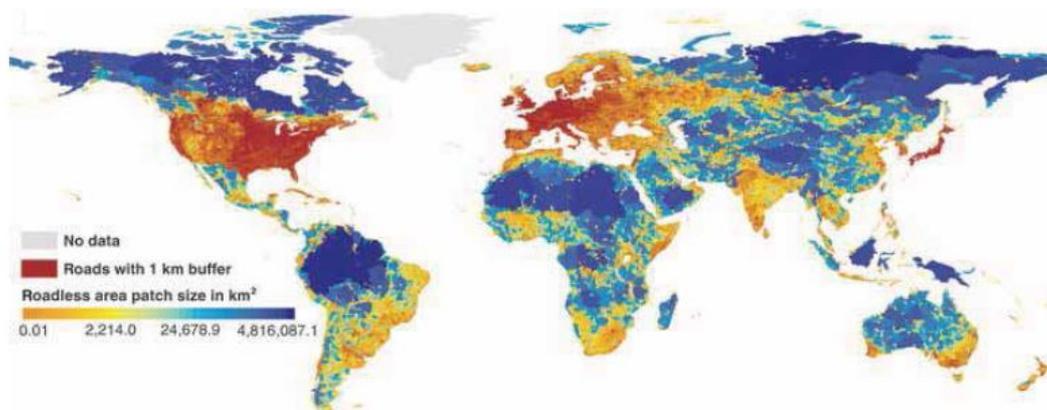
---

Societies are transforming the Earth's biosphere and reshaping its ecology in unprecedented ways. The latest research indicates that more than 75 per cent of the planet's land surface has been modified by humanity.

Linear infrastructure is often the tip of the spear of modern development. Roads, rails, pipelines, fences, and canals are being built at record rates, especially in remote, previously undeveloped regions of the tropics. Ninety per cent of all new road construction is expected to occur in developing nations. In India, where

nearly 60 per cent of the world's tiger population is found, critical tiger corridors are threatened by 4,300 kilometres of newly planned national and state roads.

An analysis of a dataset of 36 million km of roads across the world shows that roads have fragmented the earth landscape into more than 600,000 patches. More than half of these patches are within 1 km range of any road (shown in red in the map below). Moving towards the blue shade are land patches further away from all roads and less influenced by road effects.



*Landscape fragmentation by roads*

Globally, over 25 million kilometres of new roads are anticipated by 2050 – a 60 per cent increase in the total length of existing roads in 2010.

Maintaining or restoring connectivity between fragmented habitats or landscape patches has been identified as the key to counteracting many of the negative impacts of fragmentation. Connectivity can be defined as the degree to which landscapes and seascapes allow species to move freely and ecological processes to function unimpeded. Scientific evidence built on island biogeography research and species meta-populations studies overwhelmingly demonstrates that connected habitats are more effective in preserving species and ecological functions.

Connectivity as a conservation target requires shared goal setting among stakeholders to ensure multidimensional consideration and implementable coordinated action. Public and private sectors must work together for effective outcomes because stopping biodiversity loss and reducing the impact on ecosystems is a shared responsibility of both sectors, from the community level to a global scale. In many instances, connectivity efforts can incorporate local socioeconomic concerns within a larger conservation framework.

As an emergent practice, ecological connectivity conservation faces its greatest implementation challenges outside of protected areas. Limiting impacts from fragmenting forces such as linear infrastructure development is obviously a critical need. Educating policymakers, government agencies, and local community stakeholders about the importance of ecological connectivity is equally crucial. While some nations could introduce regulatory measures to conserve connectivity, the vast majority of ecological connectivity efforts will rely on incentive-based participatory conservation approaches.

Excerpts from UNEP (2019) *Frontiers 2018/19 Emerging Issues of Environmental Concern*. United Nations Environment Programme, Nairobi.

---

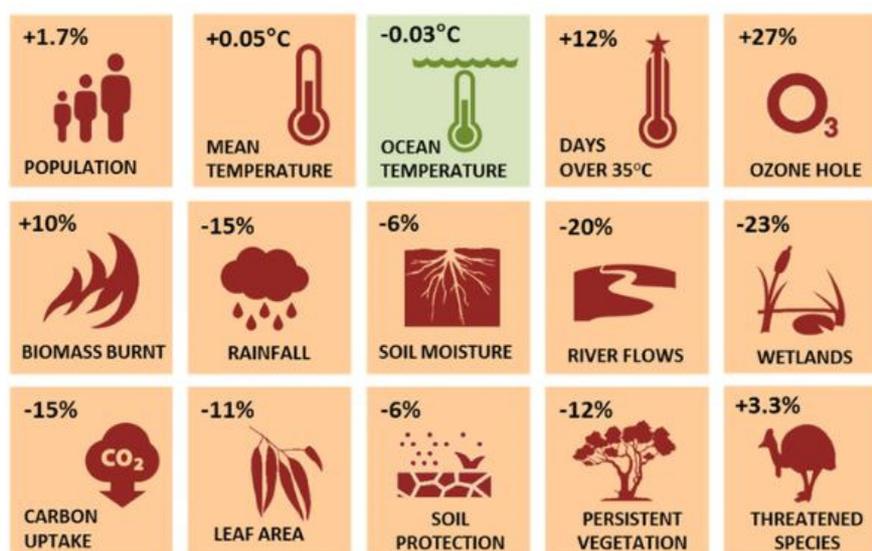
## Australia's Environment in 2018 report

---

The *Australia's Environment* report, produced by the Australian National University (ANU), aims to make spatial information on environmental conditions more accessible and easily interpreted at different levels of detail.

Every year, ANU analyses vast amounts of measurements from satellites and on-ground stations using algorithms and prediction models on a supercomputer. These volumes of data are turned into regional summary accounts that can be explored on the [Australian Environment Explorer](#) website. ANU interprets these data, along with other information from national and international reports, to assess how the Australian environment is tracking.

Whereas 2017 was [already quite bad](#), 2018 saw many indicators dip even further into the red.



*National environmental indicators: change from 2017*

Temperatures went up again, rainfall declined further, and the destruction of vegetation and ecosystems by drought, fire and land clearing continued. Soil moisture, rivers and wetlands all declined, and vegetation growth was poor.

According to the report, the combined pressures from habitat destruction, climate change, and invasive pests and diseases are taking their toll on our unique plants and animals. Another 54 species were added to the [official list of threatened species](#), which now stands at 1,775. That is 47% more than 18 years ago and puts Australia [among the world's worst performers](#) in biodiversity protection. On the upside, the number of predator-proof islands or fenced-off reserves in Australia reached 188 in 2018, covering close to 2,500 square kilometres. They offer good prospects of saving at least [13 mammal species from extinction](#).

To access the report go to <http://wald.anu.edu.au/australias-environment/>

One million species at risk globally - IPBES Global Assessment  
<https://www.ipbes.net/>

---

## Mental models for conservation research and practice

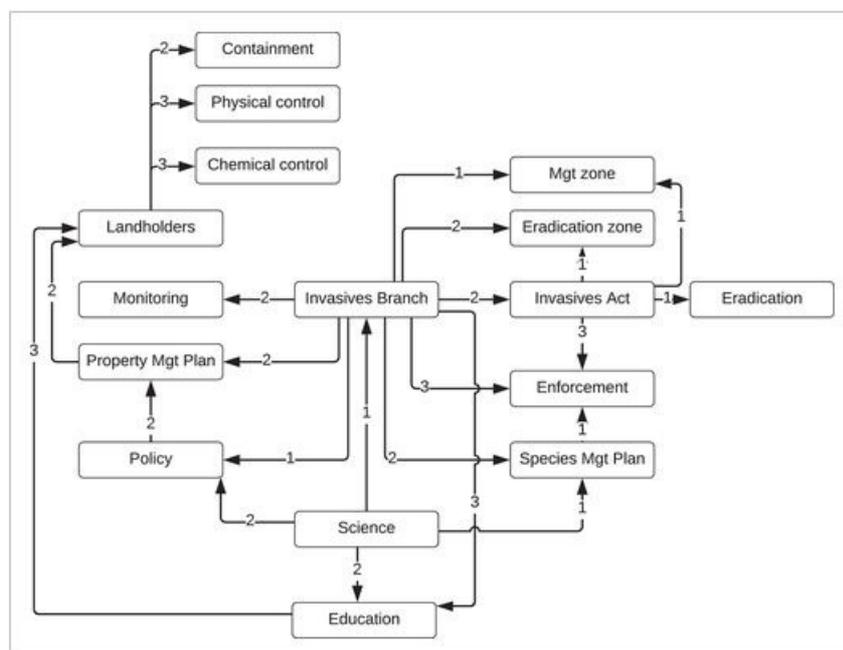
---

Conservation practice requires an understanding of complex social-ecological processes of a system and the different meanings and values that people attach to them. Successful conservation therefore relies on the co-design of policies, strategies, and programs that meet multiple objectives and diverse needs and priorities.

Mental models research offers a suite of methods that can be used to reveal these understandings and how they might affect conservation outcomes. Mental models are representations in people's minds of how parts of the world work.

Mental models can assist conservation in a number of ways. They can reveal how people understand the system, in terms of its content (what exists in the system) and structure (how the parts of the system are arranged or how they function). They can also provide opportunities to create a conceptual model of a system on the basis of the collective knowledge of a group of stakeholders which can underpin mathematical modelling. Models can also be elicited in a group setting to create a shared vision for how people would like to experience or change a system.

One of the most common diagram-based methods used to capture relationships between variables within a social-ecological system is directed graphs, or digraphs (see example below).



*Example of a digraph representation of a mental model of invasive species management elicited through influence diagram method*

Excerpts from Moon et al (2019) Mental models for conservation research and practice. *Conservation Letters* Open Access. Accessed at <https://onlinelibrary.wiley.com/doi/full/10.1111/conl.12642>

---

## Scientists need your help spotting dead trees

---



Western Sydney University (WSU) has just launched a new citizen science project, [The Dead Tree Detective](#), which aims to record where and when trees have died in Australia.

The current drought across southeastern Australia has been so severe that native trees have begun to perish, and WSU needs people to send in photographs tracking what has died. These records will be valuable for scientists trying to understand and predict how native forests and woodlands are vulnerable to climate extremes.

WSU encourages participation from land managers and community members alike. Of particular interest will be tree death in linear reserves. 'We encourage anyone who sees dead trees around them to hop online and contribute. The Detective also allows people to record tree deaths from other causes – and trees that have come back to life again (sometimes dead isn't *dead*). It can be depressing to see trees die – but recording their deaths for science helps to ensure they won't have died in vain'.

---

## EcoRoadside and RAM training opportunity

---

LGNSW through the Council Roadside Reserve project held two successful sessions in 2018 for local councils to learn more about undertaking conservation value assessments of roadside areas. The training uses a Rapid Assessment Methodology (RAM) and captures data using the EcoRoadside App.

A training session is planned in Parkes on 18 June.

The session includes an in-field component with participants provided with assistance in understanding the types of vegetation communities in their area and the dominant species they might encounter when assessing their roadside reserves.

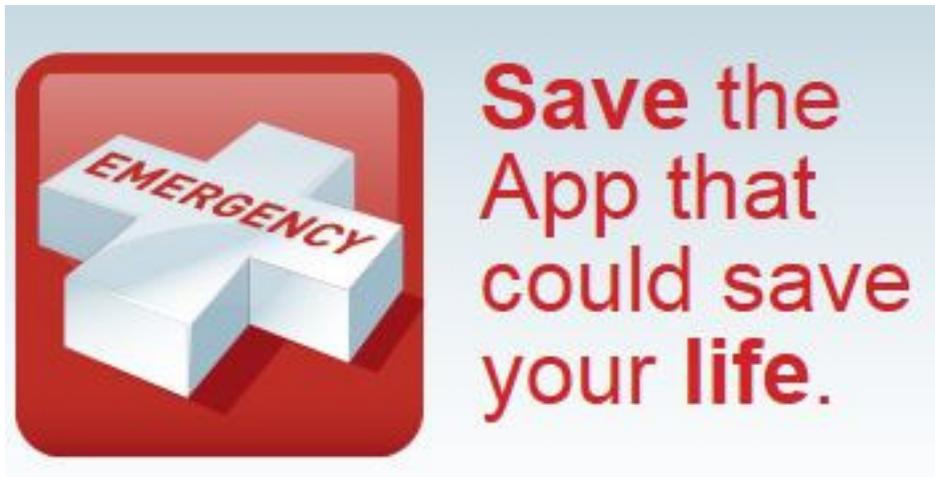
For more information contact CRR Project Officer – Kathy Godfrey or 02 9242 4053

*This project has been assisted by the NSW Government through its Environmental Trust.*

---

## Emergency+ App

---



Environmental fieldwork may require activities in isolated locations. The Emergency+ app is a free app developed by Australia's emergency services and their Government and industry partners.

The app uses GPS functionality built into smart phones to help a Triple Zero (000) caller provide critical location details required to mobilise emergency services.

The app may be downloaded via <https://emergencyapp.triplezero.gov.au/>

---

*The aim of this newsletter is to share information about the management of NSW linear reserve environments and profile the NSW Roadside Environment Committee (REC).*

*For more information about the REC: <https://www.rms.nsw.gov.au/about/what-we-do/committees/roadside-environment-committee.html>*

*Please contact the REC Executive Officer if you wish to subscribe or unsubscribe.*



For more information contact:

**Neil Dufty - Executive Officer - (02) 9354 0300**

**[ndufty@molinstewart.com.au](mailto:ndufty@molinstewart.com.au)**