

## Issue 6 (Friday, 10 August 2007)

AEDA News is a fortnightly email for members of the Applied Environmental Decision Analysis CERF Hub.

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### 1. Big new things on the horizon

from the Director

It seems that the idea of national facilities and centres is becoming increasingly popular. AEDA is one of several CERFs, a program of \$100 million, that has enabled a substantial injection of funds to applied environmental and ecological research. Remarkably, more big new opportunities are emerging!

DEST (The Department of Education, Science and Technology) has been rolling out a series of national infrastructure facilities. While national infrastructure is easy to understand in areas like astronomy (where they typically want a big telescope); national infrastructure for the environment is more difficult to coordinate. Under discussion at present is a national infrastructure proposal for the environment called AEON - Australian Ecosystem Observation Network. Some of us are very involved in developing a nationally coordinated bid, which isn't easy with so many ecologists and environmental scientists in so many institutions. However, it's an important task, and one where AEDA, with its interest in long-term monitoring, will hopefully play an important role.

Just recently there was a federal government call for bids for a 'Climate change adaptation research facility'. It's expected that this facility will be 'generating the knowledge to underpin effective adaptation and risk management for the impacts of climate change'. Again, AEDA is well placed to play an active role (although the timelines are short). This adaptation facility is coordinated through the Australian Greenhouse Office which lies within the Department of Environment and Water Resources.

*Smart science for wise decisions*

All this is particularly relevant as some of us spend the week in Tasmania discussing one of the AEDA themes, monitoring. However, having spent weeks helping with AEON, I sometimes wonder how much time I should be spending to help coordinate others to do science, instead of doing some myself!

*Hugh Possingham*

Director, AEDA

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### 2. Spatial prioritisation in Australia

A presentation to DEW

*Considering Biodiversity, Conservation Costs, Ecological Processes, and Condition*

Presented by: Carissa Klein, Kerrie Wilson, Josie Carwardine, Hugh Possingham



*Venue:* Department of Environment and Water Resources\*, Canberra

*Date:* Thursday, 23 August, 2007

*Time:* 1:00 pm

This presentation will summarize an approach to identify priority areas for biodiversity conservation in Australia. The analysis has been undertaken by the University of Queensland under contract to the Department of Environment and Water Resources (DEW). The objectives were to provide a nation-wide spatial prioritisation assessment approach for Australia that: (i) is quantitative, systematic, repeatable and not entirely reliant on expert opinion,

## Spatial prioritisation in Australia (continued)

(ii) represents the full range of Australia's biodiversity and the ecological and evolutionary processes that maintains and generates this biodiversity,

(iii) incorporates spatially explicit data on the cost of acquisition and stewardship and

(iv) can identify important large and intact areas for conservation.

The report identifies spatial priorities, however it is important to note two things:

1) We were unable to access all the data we had hoped to access, this is largely a consequence of intra- and inter-agency data ownership issues and

2) Our contract is to provide a method not a result.

It is however important to present some results so the method can be understood. The approach provides guidance to support decisions by DEW (and other organisations) about spatially explicit conservation priorities at a continental scale.

\* The DEW office is located in the John Gorton Building, (Environment entrance) on King Edward Terrace. Anyone entering the area must sign in with reception and they'll let you know the exact room.

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### 3. Two new CERFs

TRaCK and Landscape Logic have been formally launched (and both have a lot to do with decision making).

#### Introducing Landscape Logic

Landscape Logic wants to work with regional natural resource managers to develop decision-making approaches that improve the effectiveness of environmental management.

Landscape Logic is focusing on two major knowledge gaps in the current regional investment process:

1. Finding better ways to organise existing knowledge and assumptions about links between management actions and environmental outcomes (resource condition targets).

2. Improving our understanding of these links through historical studies of the effects of past private and public investment on environmental condition in two areas - water quality and native vegetation condition.

In taking this approach, Landscape Logic is attempting to move from a linear, issue-by-issue decision-making approach with many hidden assumptions to a networked approach that makes social and biophysical causal links and assumptions explicit. The challenge is to incorporate assumptions and uncertainties into a workable framework that can be used by catchment managers faced with multi-million dollar decisions about where and when to invest for the best overall environmental outcomes.

**More info: [www.landscapelogic.org.au/](http://www.landscapelogic.org.au/)**

## On TRaCK: Tropical Rivers and Coastal Knowledge

A new \$30 million project has been launched to research the rivers and water resources of northern Australia.

The four-year Tropical Rivers and Coastal Knowledge Research Hub (TRaCK) is being funded by a consortium of government and research organizations, including Charles Darwin University, CSIRO, Griffith University, Land & Water Australia, the North Australia Indigenous Land and Sea Management Alliance and the University of Western Australia.

The research hub aims to increase knowledge of the important natural assets and ecosystem services provided by tropical rivers and coasts; understand the implications of potential developments and identify opportunities to foster sustainable enterprises in the region, and will also contribute to meeting the objectives of the National Water Initiative.

The Federal Government is investing \$16 million to the project through the Commonwealth Environmental Research Facilities program and the National Water Commission's Raising National Water Standards program. Funding is also being provided by Land & Water Australia, the Fisheries Research and Development Corporation and through the Queensland Government's Smart State Strategy.

TRaCK will be headed by Professor Michael Douglas, and based at Charles Darwin University.

**More info: contact Professor Douglas on 08 8946 7261.**

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### 4. A distinct lack of evaluation

WA's State of the Environment Report reveals a need for better monitoring

*Too little scientific information and a distinct lack of evaluation, those were two of the major problems identified by the recently released State of the Environment Report for Western Australia. As these themes are pretty close to AEDA's heart, here's an article by Peter Terry describing the report's findings. It originally appeared in the ScienceWA website (see [http://sciencewa.net.au/science\\_news.asp?pg=21&NID=1175](http://sciencewa.net.au/science_news.asp?pg=21&NID=1175)).*

Western Australia has too little scientific information about its natural environment and the knowledge gap is now undermining the State's ability to protect it. That's the warning issued in WA's latest environmental report, State of the Environment 2007. It claims a lack of detailed scientific understanding is "preventing good decision making" and this is leading to "ineffective environmental outcomes".

"In some areas, there is a need for more baseline environmental monitoring and information across WA," the report says.

"More research effort is needed in areas under significant pressures and for many of the Priority 1 and 2 environmental issues."

This is the third State of the Environment report to be

commissioned by the WA State Government, previous reports were released in 1992 and 1998.

The report itself is the key document for setting WA's environmental policy agenda. Although it is published by the State's Environmental Protection Authority (EPA) it is compiled with the help of specialist groups and individuals from both inside and outside government.

The report lists Priority 1 and 2 areas as including climate change, population and consumption, greenhouse gas emissions, introduced animals, weeds, phytophthora dieback, land salination, salination of inland waters, particulates, changed fire regimes, loss or degradation of native vegetation and soil erosion.

If the government acts on the warning it could lead to a major upsurge in WA's level of environmental science. The report itself finds that WA's remote inland desserts are so far the only parts of the State to have escaped serious environmental problems. It says everywhere else in WA - but particularly the southwest corner - the environment is suffering growing pressure from the economic boom, population growth, and climate change.

Worse still, the report gives environmental managers low marks for the work they have already been doing to redress the problems. The report say that where action has been taken there has been a "distinct lack of evaluation" to discover whether interventions are working.

"In many cases, (government) agencies were not able to ascertain whether or not their completed actions were effective, whether they had produced a positive environmental outcome, or even if they were making positive progress," the report said.

"The state of the environment will ultimately impact on our own wellbeing. It is our collective responsibility to look after our environment and our collective and individual behaviours will determine how well we do this."

As well as giving government and industry "encouragement" to respond to the report's findings, the EPA intends to improve the quality of its environmental data and identify gaps in government policy - particularly in high priority areas. It will also undertake a major review of what data it has collected on the clearing of native vegetation.

"Despite new regulations, there are still inadequate mechanisms for determining total rates of clearing across WA," says the report.

"While our understanding of the environment and responsibility towards it has improved over time, and we have made significant progress in dealing with some environmental issues, the need to do more is now urgent.

"The health, prosperity and sense of place of this and future generations depend on our ability to stabilise and even reverse major environmental problems.

## 5. Ten reflections on Freycinet

A pre workshop report on AEDA's monitoring workshop in Tasmania

*As a few AEDAites have already experienced, I'm not below hassling you for workshop reports. Well, I attended my first AEDA workshop earlier this week at Freycinet Lodge on optimal and robust monitoring. So, I thought I should put my money where my mouth is and pen a few words on my own workshop experience. Though, strictly speaking, I was an observer more than a participant and I left before the real workshopping took place. So this report is more a collection of ad hoc observation - a workshop report you have when you're not having a workshop report. The real report will follow in a future issue.*

**1. Lots of road kill:** Freycinet Lodge is on the Freycinet Peninsula, 2.5 hours drive north of Hobart. The road itself was quite average (windy, no overtaking lanes, old surface etc) but the scenery is simply world class. I was amazed at the number of fresh road-killed native animals on display; far more than I've experienced when travelling around NSW. My fellow passengers pointed out this was largely due to a lack of predators, specifically foxes, meaning more wildlife. Therefore, it was a bit of surprise when David Lindenmayer commented that he thought the last piece of road kill we passed was a fox. Unfortunately, there was a timber truck bearing down on us and we never got the chance to follow up on it. How many foxes are there in fox-free Tasmania? It's a burning issue down there. Now there's an optimal monitoring challenge.

**2. Treescapes abound:** Surely the Apple Isle is being transformed into the blue gum tree plantation isle if the horizon-to-horizon treescapes we passed through are anything to go by. The logging trucks are a bit scary too - hurtling juggernauts.

**3. A new environmental warning monitor:** The first thing you see as you enter Coles Bay, which sits at the entrance to the Freycinet Peninsula, is not the traditional fire warning sign but a 'water monitor sign' with a dial going from full to empty. Coles Bay is empty. Maybe a sign of things to come.

**4. A diversity of monitoring:** The first one and a half days of the workshop involved participants giving 10 minute presentations on their research with an emphasis on their interest in monitoring. The presentations covered an impressive diversity of different forms of monitoring and their various challenges, both theoretical and applied. What's appropriate monitoring for a pest that you think has



*Coles Bay, just outside of Freycinet was out of water on our visit. The Hazards are seen on the horizon.*

## Ten reflections on Freycinet (continued)

been eradicated (eg, fire ants in Australia and goats in the Galapagos)? How much monitoring is required to prevent a weed from entering an ecosystem (eg, willow in peat bogs) or a pest entering the country (the varroa mite into Australia)? How do you apportion resources for a state-wide assessment of ecosystems health of national parks in Victoria? How do we monitor long term restoration efforts in catchments? What's a simple metric for measuring meaningful change in the peri-urban fringe of our communities? These were just a few of themes discussed, and established an interesting base for where the workshop working groups might travel. (I can't wait to see the real workshop report.)



Gerry Maynes from DEW addresses the workshop.

**5. Optimal monitoring is a real challenge** (the Devil's in the detail): We were also given a series of presentations on the problem of Devil Facial Tumour Disease, the weird disfiguring cancer epidemic that is threatening the very existence of the iconic Tassie Devil. It's already infected some 60% of the island's population and has led to the reduction of some local populations by 90%. There is no known cure. Scientists and managers are struggling to come up with a solution for protecting the species and one of the key challenges they're facing is how they will allocate limited resources between a range of monitoring functions: long term monitoring of diseased sites, monitoring of disease spread and monitoring of population decline and recovery. Dr Clare Hawkins from the Tasmanian Department of Primary Industries and Water was tasked with formulating recommendations on how resources would be allocated between these tasks, and she had a week in which to do it. For everyone gathered at the workshop this drove home the importance of optimal monitoring. In



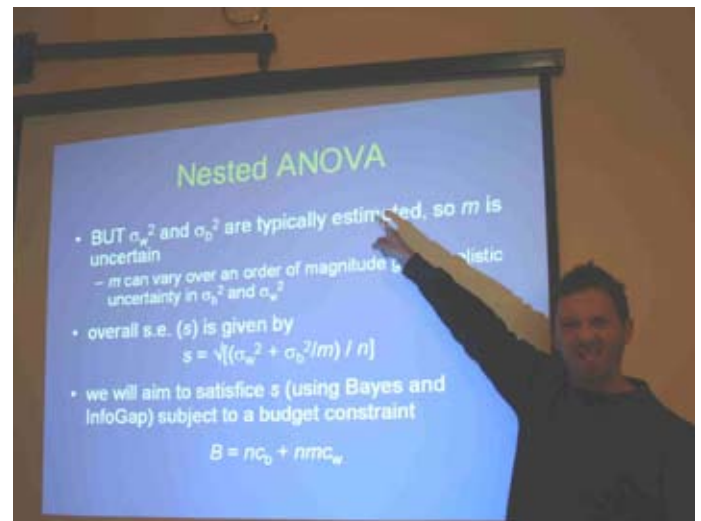
Ted Lefroy, Director of Landscape Logic, networks with Hugh Possingham, Director of AEDA.

the real world it's not just about being scientifically robust, it's just as much about monitoring that delivers appropriate information for management, and how you allocate limited resources.

**6. The joys of networking:** Well, maybe 'joy' is overstating it but the workshop presented a wonderful opportunity for AEDAites to mix among themselves. Just as importantly, we were able to engage with some of our stakeholders (and hopefully future collaborators). Ted Lefroy, Director of the Landscape Logic CERF hub, gave a presentation on their activities and extended an invitation to interact with us on several projects. Gerry Moyne from the NRM team at DAFF and DEW spoke on their activities, as did several NRM managers from Tasmania and Victoria. I think everyone was fairly impressed with the ecological talent on display at the workshop and the task now is to engage with our new contacts and grow the AEDA network.

**7. Perverse possums:** The brushtail possums of Freycinet are a truly perverse bunch of animals. They wait till you're just drifting off to sleep then they seem to do an almighty dive bomb onto the tin roof right over your head to shatter your calm and set you on edge. Then they wait till you think they've gone away and they do it again – right through the night!

**8. Brendan looked tired:** Brendan Wintle was the heart and brains behind organising the workshop, and he was looking quite tired by the end of the second day (bloody possums). Sorting out the endless details and keeping everything on schedule takes its toll, but Brendan has done himself proud. Everything proceeded swimmingly and with a minimum of fuss, and the venue at Freycinet was simply breathtaking. Thanks Brendan.



Brendan starts to look a bit weird. Apparently it has something to do with being seen next to a slide titled 'nested ANOVA'.

**9. Optimal but not robust** (we attempt to leave Tasmania): At Hobart airport confusion reigns when the fuel cap on our plane refuses to open meaning the plane can't be refuelled and so can't take off. Of course, there are no engineers on hand to fix the problem. Everyone's in a panic because no-one knows what's happening. The terminal's PA system doesn't work and there are hardly any airline staff available to explain what's the solution. Eventually one harried staffer stands up on a chair and shouts out the names of 45 passengers put on the next available flight in an effort to get them to Melbourne to make connecting flights (which we missed because we were too late). At Melbourne the chaos continues as no-one knows where

the luggage has gone. The airline in question might be optimal in having eliminated all redundancy in their system but it hardly seems robust in the face of small disturbances.

**10. Winter in Tassie:** Is grey and melancholy, even when the sun is out. (A great place for poets.)

David Salt  
Canberra Node, AEDA

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## 6. New publications by AEDA members

Buckley, Y.M., Bolker, B.M., & Rees, M. (2007)  
Disturbance, invasion and re-invasion: managing the weed-shaped hole in disturbed ecosystems. *Ecology Letters*, 10, 809-817.

This paper looks at the relationship between disturbance and invasion where invasive plants are assumed to be good colonisers of disturbed sites. Interestingly disturbance itself does not promote invasion from rarity when disturbance of weed occupied and non-weed occupied sites is equal. We separate invasive plants into two categories "disturbance suppressors" can easily invade under disturbance and "disturbance promoters" which may need to achieve a threshold density before they can invade. This paper highlights the need to understand the disturbance ecology of communities into which plants are invading as well as how the weeds themselves and weed management activities may alter disturbance of weed occupied sites in order to understand invisibility and determine more effective control options.

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*Have you published an article or book recently that other AEDA members might be interested in? If you have, please send us the information so we can list it in the next issue of AEDA news. And here's a 'stretch goal' for you. Just as Yvonne has taken the time to tell us a little about the significance of her paper, can you tell us in a few sentences what your paper is about? Does it have any policy relevance?*

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## Funny end bits

Increasingly people add a 'funny' end bit to their email signature. It might be a pithy saying, a riddle, a pointer to somewhere or an astute (or sometimes not so astute) observation. Sometimes these end bits are 'funny' because they're humorous, sometimes it's because they're quirky, wry or incisive. Often they're not funny at all. In any event, AEDA news needs a funny end bit so from this issue forward I'm including one. The one below is bit more relevant to AEDA and isn't actually all that funny (though it contains a very valid lesson). If you think you've seen a funny end bit that you'd like to share with fellow AEDAites, please pass it on to me.

By the way, funny end bits are often missed because we're all too busy and we never read beyond the part of the message that we're strictly interested in (would that be optimal behaviour?). You won't find a mention of our funny end bit in the front end of AEDA news. Therefore, many of our readers may never know that this section even exists. (Which is almost a funny end bit in itself!)

*(PS: Sometimes I feel like AEDA's funny end bit - Ed)*

### This issue's funny end bit:

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Data you don't have at least two copies of is data you don't care about!

*(Seen on the end of an email sent by Rob Mackay-Wood, Centre for Marine Studies, University of Queensland)*

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## That ends issue 6 of AEDA News.

If you have news or views relating to AEDA or of interest to AEDA members, please send it to the editor, David Salt, dsalt@cres.anu.edu.au