

ECO Ecology + Conservation Outcomes

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The scientific report of the Conservation
Ecology Centre – Cape Otway



Welcome note

We are delighted to bring you the first of a regular series of updates to keep our valued supporters informed about exciting scientific developments in ecology and conservation.

In this issue, the CEC's Conservation Coordinator, Dr Jack Pascoe, shares the latest research and opinions in the areas in which we are working. The remote acoustic sensors will complement other quoll survey methods and we hope to gain greater insights into the Otways population. Habitat restoration is a key activity, incorporating carbon sequestration and reconnection to build resilience in declining ecosystems. The CEC works on building models that can be applied across the wider landscape – we hope you enjoy hearing about them here.

With very best wishes,

Lizzie Corke
CEO

If a tree falls in the forest ...

... we will know just how it sounded.

A team at the Queensland University of Technology (QUT) have trialled the use of new technology designed to monitor the response of birds to climate change¹. Automated acoustic sensors record bird calls and transmit them to an online library for analysis. Specially developed software then filters the sound files to identify signature bird calls. This method has the advantage of being able to generate data on a continuous basis without the need for intensive and expensive field surveys.

Possibly the most exciting part for the Conservation Ecology Centre is that the software can be modified to detect not only bird calls, but also the distinctive voice of the Tiger Quoll. Tiger Quolls are still in the Otways, as recent Quoll DNA positive scats confirm, but the species remains cryptic and acoustic sensors may prove an important survey method for the CEC. Discussions are underway and we hope that a new collaboration with QUT may see field trials take place in the near future.

¹ australiangeographic.com.au/journal/tracking-bird-tweets-in-the-wild-made-easier.htm



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Untradeable but potentially invaluable

Soil carbon was omitted from the Kyoto protocol as a tradeable commodity and remains excluded as a tradeable credit from Australia's new Carbon Tax.

Despite this, sequestration of Soil Organic Carbon (SOC) may have a role to play in both the future of conservation and the contribution of agriculture towards carbon emission mitigation. In fact, SOC sequestration could contribute 89% of the technical mitigation potential of global agriculture¹.

Biochar (a product with SOC sequestration potential) is a high carbon charcoal produced by pyrolysis (the combustion of organic material at high temperatures in an oxygen poor environment). Sequestration of Biochar into soil could become an important part of future carbon emission schemes^{2,3}.

As well as the benefits gained by keeping carbon from the atmosphere by locking it in soil, there are other potential benefits of increasing soil carbon, including increasing soil microorganisms and enhancing water holding capacity⁴.

The Manna Gum woodlands in South West Victoria are suffering from extreme die back and there is little evidence of young seedlings emerging to replace dying trees.

CEC is looking for ways to improve the health of established trees and to encourage seedling establishment. Could the addition of Biochar to soils improve tree health? We are optimistic about the possible benefits of increasing soil carbon and are undertaking a major project to investigate the potential of Biochar to restore and enhance this key koala habitat.

¹ unfccc.int/resource/docs/2008/smsn/ngo/082.pdf

² nature.com/ncomms/journal/v1/n5/pdf/ncomms1053.pdf

³ theconversation.edu.au/can-biochar-save-the-planet-1099

⁴ geocities.jp/yasizato/literature.htm

The shape of future revegetation

Revegetation has been heavily utilised in Australia to reverse processes such as dry-land salinity and to conserve resources such as healthy top-soils. But revegetation has benefits to the environment that go beyond the benefits of agricultural land care and the subsequent boosts to productivity.

Restored natural vegetation can act as habitat for many native flora and fauna species. Unfortunately, it's not as simple as just 'getting trees in the ground', says David Lindenmayer of the Australian National University¹. Research suggests that block-shaped, gullies or flats near other native vegetation with a scattering of old trees often make ideal habitat for a high diversity of native species.

Fortunately, the CEC's next habitat restoration project, Manna Gum Reserve, is rectangular and flat with a gully running through it, adjoins a National Park and has a scattering of older trees throughout. Revegetating this block of land will reconnect key habitat areas and provide great biodiversity benefits.

¹ theconversation.edu.au/theres-more-to-successful-revegetation-than-getting-trees-in-the-ground-6844

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