

From the Editor

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The theme of this issue is provenance. 'Provenance' is one of those broad terms that we use a lot, and we think we know what it means, but it actually covers a range of issues for best conservation practice that need to be disentangled. The usual paradigm that is debated is 'local' versus 'broad' provenance, but what does this mean and why is it important?

The emphasis on 'local' provenance has deep roots in the empirical practice of pioneer bush regenerators in some parts of Australia, based on perceived patterns of plant variation and planting results, although rarely in an experimental framework and until recently with only limited genetic investigations. The long tradition of local empirical knowledge, and the associated tradition of reinforcing local resilience, needs to be respected, and reinforced by new science. The current debate is not unique to Australia, but has raised controversy overseas, particularly in Europe.

Important research in recent years has looked at 'provenance' from a different geographic and (because it is now possible) a more genetically informed standpoint, taking account of the fundamental issue of the 'genetic health' (by which is normally meant maximising genetic diversity) of the source material used for restoration and the limited and compromised gene-pools often used in restoration.

This issue of APC presents articles on only some aspects of 'provenance', but we hope this will be the start of more frequent articles and debate in these columns. The ANPC sees the clarification of provenance issues as vital for best practice. 'Broad vs local' is a starting point for this debate, but needs unpacking and by itself does not take us very far – and if used simplistically it may tend to entrench positions and attitudes without getting at the core underlying issues: genetic health, conservation of particular combinations of genetic variation which may be present in populations of a species only in a few locations or in particular habitats, capacity for effective reproduction, fitness of offspring, and potential for species recovery and future adaptation to threats and changing environmental pressures.

These are the core criteria that we need to use to inform our understanding of the provenance issue, to evaluate both research and practice, and to synthesise new forms of best practice based on a better understanding of biological and bio-physical reality.

Climate-change is one of the environmental threats which must be considered when determining the appropriate provenance to be used in particular circumstances, and discussion is often focussed on 'assisted colonisation' – the deliberate moving of plants from present locations to others which are predicted to experience similar climate conditions at some time in the future. Some of the ideas for refocussing restoration efforts to anticipate climate change are radical. The challenge of climate change adaptation, and the research findings around it, need to be promulgated carefully. Proponents need to avoid giving grounds for the taking of bureaucratic decisions to downgrade the importance of conservation and resilience of existing populations, and to reduce measures to address other existing non-climate threats. Sceptics need to recognise that new climatic realities require a new proactive and precautionary approach that pushes the boundaries of conservation practice as we have known it.

The issues around 'Provenance' are not simple. The scientific and empirical experience communities need to engage in continuing dialogue, and avoid the temptation to think that a binary (right/wrong) view is useful. Reality is more nuanced, and a 'one approach fits all' paradigm is rarely useful (except for an insistence on the core criteria noted above).

The exciting thing, that helps put much better conservation outcomes within reach, is that our knowledge and technical capabilities are better than ever, are increasingly able to be applied effectively and cheaply, and evaluated at local level, and can be used to leverage better and better-directed resourcing. What remains of fundamental importance is that all decisions need to be fully documented in data bases which need to be maintained for the long term.

Climate-ready provenance was the topic discussed at a recent workshop held at Kooyanga Golf Club in Adelaide in March organised by the Technical Advisory Committee of Trees for Life., and the first article in this issue is a summary of what was clearly a valuable and informative event, covering a range of topics of relevance across Australia.

Mark Tjoelker, Belinda Medlyn and John Drake present a study of a single species, *Eucalyptus tereticornis* (Forest Red Gum), which has a wide geographic distribution across a range of communities in south-east Australia. These findings do not show adaptation to local climate. In relation to climate there is no evidence that local provenance is 'best', but of course this does not mean that there is not adaptation to other environmental factors. The authors also point out that their finding does not mean that climate change will not have impacts on the species.

Peter Ridgeway, Daniel Smart and Damien Vella discuss variation of the local scale in a herbaceous plant *Scaevola albida* var. *pallida*. In restoration plantings, other than in grassland, there is a tendency not to give much attention to herbaceous elements but to concentrate on shrubs and trees, but this study shows that there can be considerable variation within herbaceous species and, as genetic variation is one component of biodiversity, recognition and conservation at this level of diversity is important. The authors are strongly critical of the climate-ready revegetation approach, and I am sure that this will stimulate debate. The suggestion that there is a sharp dichotomy between climate-ready and other approaches is not how I would read the climate-ready guidelines and other literature. However, the fact that there are other interpretations suggests that some clarification is perhaps required. There will be species and circumstances where the climate-ready approach is an option to be considered and possibly adopted, but there will be others where a different approach may be required. In an ideal world we

would know about the ecology and genetics of all species in a community before making decisions, but there will be many occasions when we will not have the luxury of being able to wait until all information is available. We need to recognise that a range of possible options may be available, and develop protocols for decision making when there might be uncertainty.

In the case of species with limited geographical distribution and small populations then options for choice of provenance are very limited and options for assisted migration may not arise. Two such species are discussed in articles by Bell and Henery. Stephen Bell presents a study of *Banksia conferta*, a species with a very restricted distribution in NSW, disjunct from other known populations in Queensland. Seed production is low, and Bell suggests that this may reflect pollinator limitation, and any conservation measures for the species would need to consider how that issue can be managed. Martin Henery discusses *Zieria murphyi*, a small shrub in the NSW Southern Highlands, describing a recent intensive survey and seed collection expedition which has substantially increased the amount of seed in the Australian National Botanic Garden's seedbank, and recorded increases in the known size and extent of distribution of the species.

Part of the ANPCs role is to encourage the interest of young people in plants and plant conservation, and Carly Westbye is active in developing a Kids Hub of projects for children of all ages. Carly provides an introduction to this aspect of her work and encourages others to contribute to the continuing development of the program.

In addition to the articles the issue has a rich collection of regular Features, including news from the Seedbank Partnership, reports of workshops (again highlighting the enthusiasm of our indefatigable Project Manager Martin Driver), book reviews and the Research Round Up.



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