BACK FROM AND THE BRINK BEYOND

Peter Andrews has attracted media attention and stimulated debate with his ideas on landscape management. As well as appearing on TV (in Australian Story, ABC TV etc) he has written two books (Andrews 2006, 2008) and even been a speaker locally in the Blue Mountains last year.

Some of his ideas about 'weeds'' have been controversial, raising concerns amongst ecologists and bush regenerators.

However, two of his basic premises are shared enthusiastically by bush regeneration practitioners:

1. Plants are the key to ecosystem function; loss of vegetation is the prime cause of landscape degradation, and weeds are better than bare soil.
2. Groundwater and wetlands or swamps are the key to healthy natural systems in most landscapes.

Andrews' Objectives

Andrews has developed his theories based on his own observations of hydrological and landscape processes and the results of his own practical experiments. His concern is to restore the 'productivity' to the landscape and believes that a productive landscape is more important than the landscape that has evolved in isolation prior to white settlement

Andrews sees lack of fertility as a problem Andrews (2008, p. 220). This is in contrast with ecologists recognize the non-utilitarian value of landscapes regardless of their fertility. LeBrocque and Buckney (2003) provide an introduction to the scientific literature on the relationship between plant species diversity and soil fertility. The research primarily demonstrates higher biodiversity is associated with low fertility.

He appears to be focused on a specific range of landscapes; which are those suitable for farming. Subsequently his use of the term 'biodiversity' is narrower than that of an ecologist concerned about a range of landscapes as each having unique value with different structures and different species.

A Lost Cause?

Andrews (2006, p. 146-7) believes that the Australian landscape is so altered by foreign plants and animals that there is no point in trying to preserve its biodiversity. As bush regenerators we take the view that Australia contains a number of unique landscapes each of which have value in themselves beyond our immediate human needs. Here in the Blue Mountains where we are

fortunate to have extensive natural areas it is possible to preserve it if we exercise proper practices.

As a result of these different values, it is not surprising that there is a difference in recommended practices about the use of weeds.

Creeks
In the Blue Mountains, we share the same principles in our efforts to stop creeks becoming eroded channels. Slowing and spreading the water, and re-instating vegetation is critical.

Whilst Andrews uses rocks and willows, we would use a range of materials including rocks, logs, jute logs and plants depending on the situation. We would be looking to re-establish local native plants particularly rushes and sedges, but certainly not willows.

Weeds
Andrews recommends the use of 'weeds' for a number of purposes, however we don't necessarily disagree as we have two different understandings of the term 'weed'.

Whilst Andrews does not define the term 'weed', he seems to use it to mean any plant that is not an agricultural crop or an edible plant for stock. He includes local native shrubs and ground-layer plants in this, such as turpentine bush which is a native shrub in parts of NSW (ibid., pp. 37-38,41).

In contrast, ecologists and bush regenerators define weeds as plants that are not native to a particular locality and which are invasive or otherwise undesirable. It is a term that can be applied to any of the forms of plants, including groundlayer, vines, shrubs and trees.

When discussing the merits of 'weeds' compared to grass, he uses the term to mean plants with tap roots. He claims 'weeds' carry out the important functions of bringing minerals up into the topsoil (because of their deeper roots), to be available for grasses or other plants (Andrews 2008, p.135) and to pump carbon into the soil. He also speaks of some weeds being the preferred plants because of their role in combating bacterial and fungal problems in the landscape (Andrews 2006, p. 107)

Andrews states that natives out-compete weeds, however, in his example of blackberries (ibid., p. 135) he does state that 'if the conditions are right' (meaning soil chemistry / fertility).

We would all agree on the fact that weeds can play a useful role in the environment and are far better than bare soil.

However, we would say that reintroducing native plants is a better solution in the long term, whereas Andrews seems to be saying it doesn't matter, so long as there are plants performing useful functions

Use of Willows in Streams

Andrews is a strong advocate for the use of willows in streams (ibid., p 139). Andrews argues that natives could not have done the job of holding creek-beds by citing just one native tree (swamp oak, *Casuarina glauca*), in just one location. He doesn't appear to have looked into the range of possible alternative native plants in that location, nor concede that there may be different species best suited for different locations.

When assessing the issue of using willows in streams, it is worth considering the important work done by Bill Hicks in developing the long stem tubestock method. This method was developed to assist native plants adapt to eroding creek-bank situations, where Andrews advocates the use of willows – with the added bonus of not creating another problem to fix in the future.

Jeff Cottrell visited Gerry Harvey's property in the Widdon Valley with the National Willows Taskforce, and reported on three sites they were shown by Peter Andrews.

- The first site had used a crack willow as part of a leaky weir but during a major flood in June 2007 the willow diverted flows on to the weakened bank on the river and a 10m wide side channel had been washed away. Both upstream and downstream of this site had a stand of casuarinas on both banks and there was no bank erosion
- The second site had a phragmities reed bank upstream of the leaky weir and no willows and there was no sign of erosion and the sediment had built up almost to the top of the bank.
- The third site was in a narrow part of the stream with young weeping willows along one bank and no sign of erosion or the willows spreading.

Whilst Andrews considered these sites were evidence of why willows can be used, the taskforce members saw them as a demonstration of why invasive willows should not be used.

Andrews has some valid objections to some of the methods used to remove willows. Unfortunately he hasn't considered the availability of a bushland restoration approach with gradual removal/treatment being paced to match the growth of replacement native plants.

We also agree that willows are not the source of the problem but are 'stepping into the breach to repair a damaged environment …the problem can be traced to the catchment' (ibid., p.144)

However, we disagree that 'natives will usually take over of their own accord and in their own time' (ibid., p.145). This is not our observation of the behaviour of many weeds, particularly willows in the Blue Mountains. Andrews uses an example of one property, 'Tarwyn Park', where after 30 years, the casuarinas outcompeted the willows.

Conclusion

The fundamental principles that Peter Andrews has espoused from his close observation of the Upper Hunter area provide the foundation for a thoughtful consideration of options to rehabilitate this particular landscape. This is based on his detailed understanding of the natural processes at work within it.

However, his recommended practices need to be adapted to each particular landscape in a case specific manner. There is no 'one size fits all' solution. The adoption of many of his practices in the farming areas of the upper Hunter will undoubtedly make a substantial contribution to the rehabilitation and better management of that landscape. We can all be inspired by his years of careful observation.

References

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LeBrocque A. F.& Buckney R.T. (2003) Species richness–environment relationships within coastal sclerophyll and mesophyll vegetation in Ku-ring-gai Chase National Park, New South Wales, Australia. *Aust. J. Ecol.* ***28****, 404–412*

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