



Offsets in conservation policy

understanding the strengths and weaknesses of biodiversity offsets

Biodiversity offsetting is one of the fastest-growing areas in conservation policy both here in Australia and overseas with more than 64 such programs currently underway around the world. However, policy makers need to be aware of the circumstances in which offsetting will and will not work.

The idea behind offsets is that losses of biodiversity at the site being developed (the impact site) are compensated by the generation of ecologically equivalent gains elsewhere. The result, in theory, is that there is 'no net loss' of biodiversity. CEED research on this topic has shown that it is important to acknowledge the limitations of what can be achieved through biodiversity offsetting.

Averted loss vs restoration

Most biodiversity offset activity falls into two categories. The first, called 'averted loss' offsetting, involves the protection and maintenance of sites that would otherwise be under threat of clearing or degradation. By definition, this approach doesn't avoid overall declines in biodiversity.

The second, often referred to as 'restoration' offsetting, involves improving the quality or extent of habitat or vegetation through improved management or revegetation.

In countries such as Australia, with relatively low deforestation rates and statutory vegetation clearing controls, the main offset opportunities arguably lie in restoration. And, increasingly, the science and practice of ecological restoration are being called upon to achieve effective offsets.

Use offsets with care

- Acknowledging the limitations of what can be achieved through biodiversity offsetting is important.
- If care is not taken, the use of offsetting policy could result in the loss of irreplaceable biodiversity.
- It is better to offset part of the damage than none at all.
- However, without a transparent accounting framework that makes clear what losses are actually effectively compensated for through offsetting, and what residual damage is accumulating, it is difficult to judge the true costs of development.

But how confidently can we use restoration and revegetation to replace lost biodiversity? Our research has examined the effectiveness of restoration as an approach for offsetting biodiversity loss. We found that there is little evidence to support many of the expectations set by current offset policy.

When to use biodiversity offsets?

Biodiversity offsetting is increasingly popular, but its rapid growth and broad application often lacks scientific support. We recommend that restoration be used to deliver biodiversity offsets only when:

- the impacted biodiversity and ecosystem values can be explicitly defined and measured;
- there is an existing and sound evidence base that restoration of the values in question is feasible; and
- time lags and uncertainties involved are explicitly accounted for in the calculation of loss and gain, and any time lags do not pose an interim threat to the persistence of the biodiversity value in question.

Some things can't be replaced

The evidence base for different types of restoration offsets varies depending on the biodiversity being targeted. There are very few—if any—situations in which an entire ecosystem can be reliably re-created. Similarly, old growth habitat may not be able to be effectively offset, due to the long lag times and large uncertainties involved.

There is better evidence to support offsets for impacts on particular species, where a clear threat to the species could be reduced, or where a specific element of habitat could be replaced. For example, where a species is threatened by introduced predators and those predators can be controlled, then it's possible an effective offset may be feasible.

However, if a species like the south-eastern Red-tailed Black-Cockatoo requires centuries-old trees for feeding, removing such trees and offsetting by planting new seedlings risks the target species becoming extinct before the offset outcome is achieved (see Maron et al., 2010).

The consequences of failure

The fact that restoration practice cannot recreate lost ecosystems is not an argument against restoration—it still generates benefits for biodiversity, and there are continual improvements to the practice of restoration. However, in the context of offsetting, the consequences of failing to achieve proper restoration are multiplied, since the promise of effective restoration may increase the chance that damage to biodiversity is permitted.

Because the reach of biodiversity offsetting is now extending into many areas of environmental policy — including threatened species protection, environmental impact assessment and protected area investment — it is crucial that there is closer collaboration between policy makers, restoration scientists and practitioners.

For more information: Associate Professor Martine Maron, m.maron@uq.edu.au, (07) 3365 3836

Resources

Bull JW, et al (2014). Comparing biodiversity offset calculation methods with a case study in Uzbekistan. *Biological Conservation* 178: 2–10. (See [Decision Point #85](#))

Maron M, et al (2010). Can offsets really compensate for habitat removal? The case of the endangered red-tailed black-cockatoo. *Journal of Applied Ecology* 47: 348–355.

Maron M, et al (2012). Faustian bargains? Restoration realities in the context of biodiversity offset policies. *Biological Conservation* 155:141–148. (See [Decision Point #63](#))

Limitations to restoration

The main factors limiting the ability of ecological restoration to achieve a successful offset are:

1. **Poor measurability:** can we precisely measure the thing we are trying to offset?
2. **Uncertainty:** is there evidence we can re-create the thing we have lost?
3. **Time lags:** can the lost values be replaced with minimal delay?

If the answer is 'no' to any of these questions, then offsetting is unlikely to be an appropriate response to a potential biodiversity impact.