



ECOLOGIC
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The Reality of Biodiversity Offsets

Many of the expectations for biodiversity offsetting remain unsupported by evidence.

Biodiversity offsetting is one of the fastest-growing areas in conservation policy, with more than 64 programs currently underway around the world. The idea is that losses of biodiversity at an 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.

Depending on who you talk to, biodiversity offsets represent either a great conservation opportunity or an attempt to green-wash “business as usual” for developers.

Australia is among the most advanced countries in terms of its biodiversity offset policy regime, with most states and territories having at least one offset policy. A federal scheme is also close to being finalised. However, although this approach is being increasingly applied, when we reviewed the literature on the effectiveness of restoration for biodiversity offsets we found there is little evidence that it works.



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, which we refer 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.

But how confidently can we use restoration and revegetation to replace lost biodiversity? Using recent reviews of the restoration ecology literature, we examined the effectiveness of restoration as an approach for offsetting biodiversity loss. We found that many of the expectations set by current offset policy for ecolog-

ical restoration remain unsupported by evidence.

The evidence base for different types of restoration offsets varies depending on the target biodiversity. There are very few, if any, situations in which an entire ecosystem can be reliably recreated. Similarly, old growth or late successional habitats can be considered effectively un-offsettable due to the long lag times and large uncertainties involved.

On the other hand, there is better evidence to support offsets for impacts on particular species, where a clear threat to the species could be ameliorated 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 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 extinction of the target species before the offset outcome is achieved.

The fact that restoration practice cannot recreate lost ecosystems is not an argument against doing restoration – it still generates benefits for elements of biodiversity, and we are continually improving restoration practice. But in an offset context, the consequences of failure to restore are multiplied since the promise of effective restoration may increase the chance that damage to biodiversity is permitted.

Acknowledging the limitations of what can be achieved through biodiversity offsetting is important. We suggest that the main factors limiting the ability of ecological restoration to achieve a successful offset are captured by the broad categories of:

1. Poor measurability: can we define and precisely measure the thing we are trying to offset?
2. Uncertainty: is there reasonable evidence we can recreate 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.

Biodiversity offsetting is increasingly popular, but its rapid growth and broad application often lacks scientific support. If we continue to destroy natural ecosystems – as we certainly will – 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.