Science for Saving Species

Research findings factsheet

Project 5.1 Better offsets for threatened species

Threatened Species Recovery Hub

National Environmental Science Programme

How much benefit do we get from 'protection'? Guidance for biodiversity offsetting

Key messages

- Accurately estimating the benefits of an offset action is difficult, especially for offset actions aimed at preventing future biodiversity losses.
- Overestimation of the amount of 'averted loss' achieved by protecting habitat is common, and this results in failure to achieve a 'no net loss' outcome from an offset.
- Offsets that avert future biodiversity loss by protection will be most effective when the future risk of loss is genuinely high.
- Estimates of such risk of loss must be based on a robust and logical approach.
- A step by step framework has been developed to guide calculation of risk of loss at a site with and without an offset, and hence inform estimates of offset benefits. Use of the framework will increase confidence in offset calculations.

When are biodiversity offsets used?

The use of biodiversity offsets for addressing impacts on biodiversity driven by development has become increasingly common worldwide.

In Australia, developments are generally required to avoid and mitigate impacts to Matters of National Environmental Significance (MNES).

If significant impacts cannot be avoided, a biodiversity offset is often required to compensate.

This compensation is achieved by requiring a biodiversity offset gain in one place that is at least equal to the biodiversity loss created by the development in another, so that there is 'no net loss'.

To be confident that no net loss has been achieved, both the environmental losses from the development and the gains from offset actions must be estimated in a robust and credible way.

Protecting land may not result in a net gain if the land was unlikely to be developed, as may happen in the case of flood prone melaleuca forest. Photo: Mick Morrison CC BY-ND 2.0

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Types of biodiversity offset actions

There are three main types of actions that can be used as biodiversity offsets. They are:

A. **Protect biodiversity** - securing habitat in order to prevent its future complete loss. The protection benefit is the difference between the chance the site will be lost completely if we don't protect it as an offset and the chance it will be lost if we do.

B. **Maintain condition of biodiversity**, eg. undertake regular weed control in a place that currently has low weed cover to prevent a future weed invasion. The maintenance benefit is the difference between the likely condition of the vegetation if the weed control is not done and current condition of the site, which will be maintained.

C. **Enhance condition of biodiversity** - improving the quality of habitat or an ecological community, such as by planting native habitat species at a degraded site. The enhancement benefit is the difference between the current and future condition of the vegetation or habitat.

Most offsets contain a combination of these types of actions.

Risks with risk of loss

Knowing how much value a protection and/or maintenance offset is really worth comes down to: how much can the risk of loss of the site or its values be reduced? In practice, the offset value of actions A (protection) and B (maintain condition) is often greatly overestimated. In particular, there is often an assumption that biodiversity has a high chance of being lost without the offset action, when this is often not the case. When this happens, the actual benefit of the offset is much less than calculated, and therefore no-net-loss may not be achieved.

Protection of land is often attractive as it can be perceived as immediately securing existing biodiversity values, and equivalent to avoiding the complete loss of those values. However, in most cases the actual risk of loss at a site if it were not protected as an offset is not immediate and usually relatively low. If left alone, biodiversity values at a site sometimes may not change much, or more commonly, will increase or decrease gradually over time. The problem is that the exact future trajectory of the site if left alone cannot be known, and is affected by many factors.

For example, if an area of private land with Melaleuca forest is purchased and converted into a conservation reserve, the value of the biodiversity offset benefit may be perceived to be equal to the current value of the Melaleuca forest, based on the assumption that it has been protected from clearing. However in reality, the Melaleuca forest may never have been cleared, even if it remained private land, as it was flood prone; or town planning overlays regarding vegetation zones and minimum lot sizes may have restricted future clearing to a fraction of the whole area. Even if it was likely to be developed, in many cases, that future development would itself have required an offset! In either of these cases, it is not valid to conclude there is a benefit from the site's protection that could be used to offset a loss elsewhere.

In addition, while the development impact being offset is immediate, the risk of loss at the offset site accumulates slowly over time – the longer the time period considered, the higher the chance the site may have been lost. So the benefit does not accrue immediately, and so offset calculations must consider this time-lag.

In general, plausible estimates of averted loss are very low. Biodiversity offsets aimed at averting future risk of loss will be most effective where the future threat at the offset site is genuinely high and has been credibly estimated.

Biodiversity offsets for developments which impact malleefowl can take many forms such as habitat protection, financial funds and predator or fire control.

Photo: Butupa CC2.0

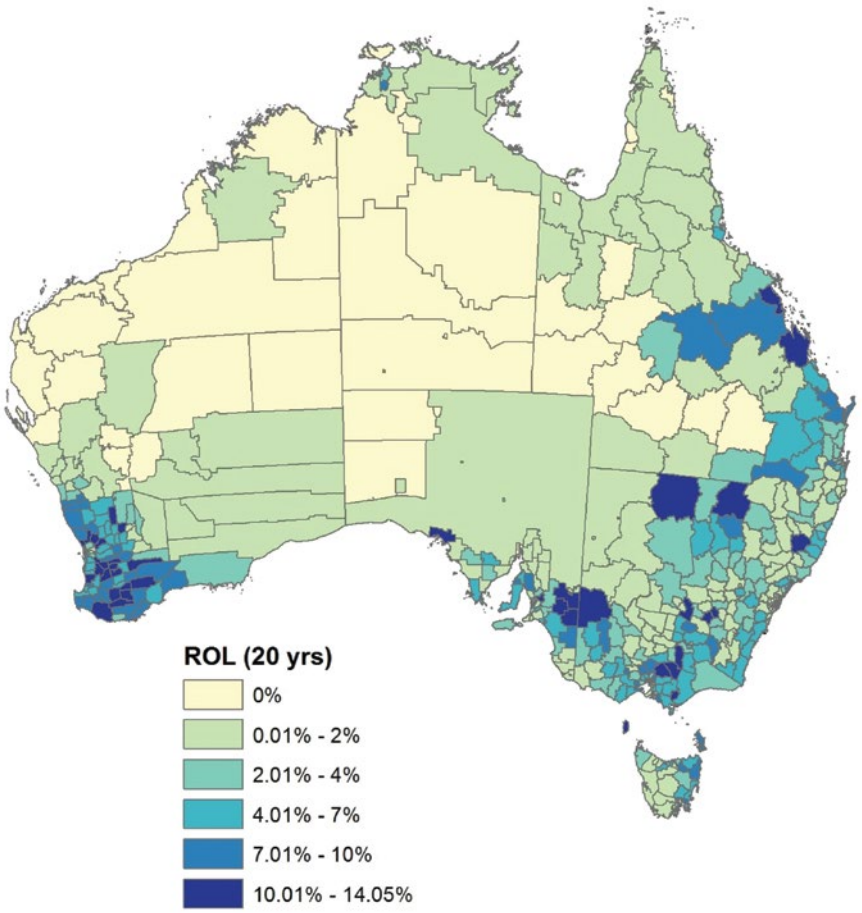


Figure 1: Range of recommended Risk of Loss (ROL) % over 20 years shown for each Local Government Area across Australia, based on average annual rates of loss. Ranges of recommended ROL are shown by colour as indicated in the legend.

Improving risk-of-loss estimation

In order to improve the estimation of both the risk of loss and the value of the benefit we have developed a step by step framework to guide the estimation of risk of loss and the offset benefits likely to be achieved from protection of a given site.

The framework is designed to estimate the risk of complete loss of a site with and without a protection offset. While it is not yet adapted to maintenance offsets, the same principles apply. Use of the framework will reduce overestimation of the value of averted losses, which will reduce the risk of under-delivering on biodiversity gains.

Credible, robust evidence should be used when using the framework to calculate risk of loss and anticipated offset benefits. For example, robust data on recent observed loss at similar sites would form an effective basis for estimation, as these provide a plausible and objective indication of future risk of loss without an offset.

Relevant observed loss data is not always available, and so to fill this gap recent background rates of loss have been calculated for deforestation by local government area and could be used as a proxy for other habitat types (e.g. non-woody habitats or specific forest types) until such time as habitat specific data becomes available.

What can go wrong?

In practice the difficulty arises in estimating the value of the offset benefit to ensuring it is at least equal to the development impacts. In particular, for actions A (protection) and B (maintaining condition) the calculation of the value of the offset benefit is based on avoiding or averting a future loss, which relies on predicting the future.

Under the EPBC Act's Offset Policy a biodiversity offset may be required as part of conditions of approval to compensate for residual impacts on Matters of National Environmental Significance (MNES) such as the Critically Endangered western ringtail possum.

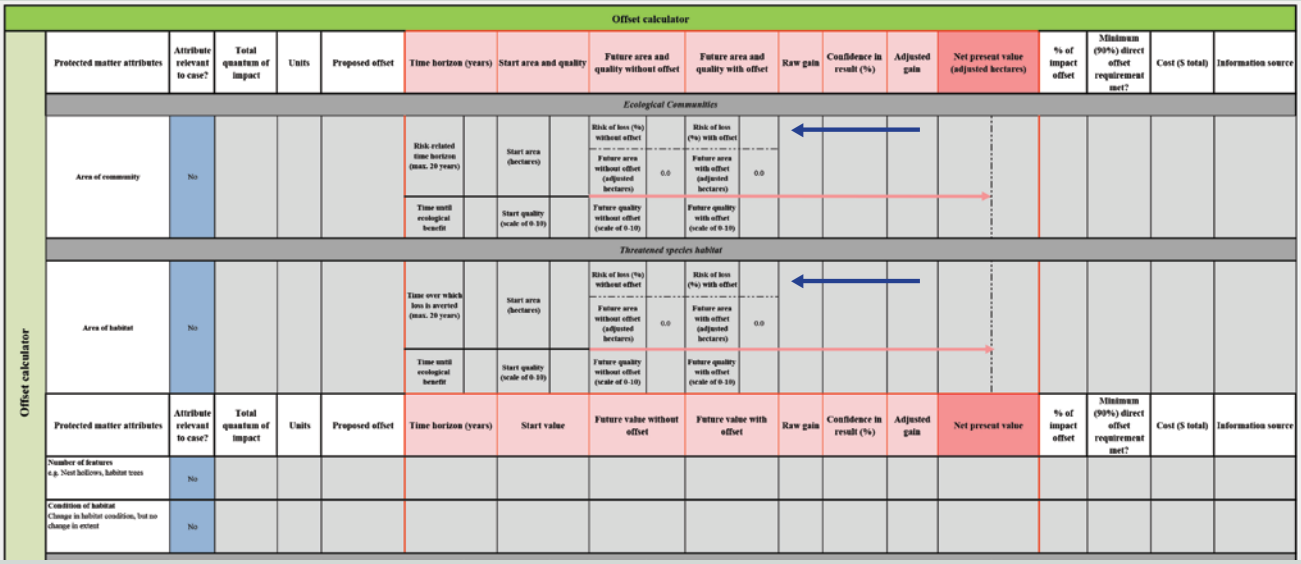
Photo: Kaori Yokochi and Roberta Bencini CC BY 4.0

'Overestimation of the amount of 'averted loss' achieved by protecting habitat is common, and this results in failure to achieve a 'no net loss.'

Protecting the protected

Protection alone should generally not be considered to generate benefit to a site that contains a threatened species or ecological community which is already protected under the EPBC Act or other state/territory, or local government legislation. This is because any future development proposals at that site would themselves trigger an offset requirement to neutralise the impact of the proposed development. This effectively eliminates the value of the initial offset, as the long-term value of the biodiversity of the site is already protected.

Figure 2: Screen shot of the offset calculator section of the Guide, showing the entry point for ROL estimates (blue arrows) for both with and without offset scenarios. Note that Risk of loss estimates are entered separately to the 'quality' and 'confidence in result' scores.



Full details of the risk of loss calculation framework :

Maseyk, F., Evans, M., and Maron, M. 2017. *Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act. Report to the National Environmental Science Programme Department of the Environment and Energy.* Threatened Species Recovery Hub.

Further Information

For more information about this TSR Hub research, contact Assoc Prof Martine Maron - m.maron@uq.edu.au or visit our website at http://www.nespthreatenedspecies.edu.au/

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