Replacing lost environments - a devil's pact?

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(Phys.org) -- With up to a billion hectares of wilderness likely to be cleared to feed the world in the coming half century and an area the size of China devoured by cities, leading environmental scientists are urging caution over the extent to which lost ecosystems can be replaced or restored.

In a major scientific article, a team including Australian researchers from the ARC Centre of Excellence for Environmental Decisions (CEED) has advised governments worldwide to think twice before assuming an environment lost to development can easily be replaced elsewhere.

“There’s been a lot of talk among policymakers about ‘offsets’, meaning that if you damage or lose the environment in one place you compensate by restoring or protecting an equivalent area somewhere else,” explains Professor Richard Hobbs of CEED and The University of Western Australia.

Currently there are more than 64 such programs under way around the world and policy support for the solution is gathering steam, “But the science to date suggests it is very hard to replace a lost environment in another locality so there is no net loss of species,” he adds.

Also “When habitat is re-created on a highly degraded site through revegetation, the revegetated site rarely resembles the target ecosystem,” the paper states.

“Current conservation policies talk glibly about offsets and seem to promise much – but it isn’t clear they really appreciate how difficult and expensive it can be to translocate a whole ecosystem with all its species and their relationships. Or even to restore one that has been damaged to full vitality. You can’t simply go and plonk species somewhere else and feel you have conserved them,” says Prof. Hobbs.

Lead author Dr Martine Maron from The University of Queensland says “In some cases, we are trying to use offsets to replace centuries-old trees. For some species, the long wait before newly-planted trees can provide food or nesting hollows for fauna means that offsetting is a very high-risk strategy.”

Professor Hobbs says the purpose of the article was to inject a bit of realism into the current conservation policy debate about how much was genuinely achievable with ‘offsets’.

Prof. Hobbs says there are outstanding examples where environments have been very well protected or restored, instancing Perth’s famous King’s Park native bushland, and the jarrah forest restoration work of aluminium producer Alcoa on WA’s Darling Escarpment. “But these kinds of restoration are very expensive and, even then, it isn’t always clear that you have fully restored everything.”

At a less costly level, promising work has been undertaken to restore native vegetation in the Gondwanalink project across WA’s Great Southern region, by reconnecting islands of bush, use of carbon offsets and sandalwood plantations to regenerate land once cleared for agriculture. “This is a much lower budget project, and appears to be working well in the woodland areas – it is the heathlands, with their remarkable biodiversity, that are the real challenge,” he says

The team’s work brings together the issues of how you measure

biodiversity, how long it takes to re-establish and the risks of not achieving the goal.

“Confidence in the ability of restoration to deliver genuine biodiversity offsets is undermined by the problems of defining and measuring the biodiversity values that are lost and gained, considerable uncertainty surrounding the effectiveness of restoration techniques, and long time-lags,” the scientists say.

“The rapidly-increasing reach of biodiversity offsetting into many areas of environmental policy— including threatened species protection, environmental impact assessment and protected area investment—makes closer collaboration between policy makers and restoration scientists and practitioners an urgent priority.”

More information: The paper ‘Faustian bargains? Restoration realities in the context of biodiversity offset policies’ by Martine Maron, Richard J. Hobbs, Atte Moilanen, Jeffrey W. Matthews, Kimberly Christie, Toby A. Gardner, David A. Keith, David B. Lindenmayer and Clive A. McAlpine appears in *Biological Conservation* 155 2012 (Elsevier).

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