Making plans for what
tourists can see

Far North Queensland has many attractions, but what are the trade-offs between tourism and biodiversity?

In the World Heritage Daintree and Cape Tribulation rainforests of north Queensland, biological diversity is a major drawcard. Tourists want to see birds, crocodiles, huge vine-covered trees and other tropical wildlife.

But do the growing demands of tourists represent a threat to conservation targets in these fragile environments? And if they do, what is the best design for a regional rainforest-protection system?

These issues are being considered by Paul Walker of CSIRO Sustainable Ecosystems, Dr Chris Margules of the CSIRO Tropical Forest Research Centre and Dr Dan Faith of the Australian Museum.

They are pooling their expertise in rainforest ecology, conservation and systems thinking to develop a computer program for managers and planners to evaluate options for conservation and development in and near rainforest habitat.

The program, known as Target, combines information on the type and location of natural and tourism values in the Douglas Shire to address a range of biodiversity-related questions.

For example, what is the minimum set of (protected) areas that will conserve some target amount of biodiversity? Or, given a set of protected areas, which is the best area to add to these in order to increase biodiversity? Which area would be the worst to lose in terms of biodiversity representation? Which would be the 'best' to lose in terms of smallest loss of biodiversity? What is the potential contribution of any given area, and so on?

Suppose a manager or policy-maker wishes to find out how much rainforest of different types in the region is protected and the best way to acquire additional forest such that perhaps 10% of each vegetation type is preserved. Target processes the biodiversity, infrastructure and tourism data and delivers the information in the form of detailed maps that show different options.

A management agency may wish to reduce the threats to surviving populations of an important species. Target can show the best areas of habitat in a district and their proximity to one another. It will help the manager decide which parts would be best to acquire on a limited conservation budget.

The model can also tackle more complicated problems in which the costs of biodiversity protection are taken into account or where degrees of 'vulnerability' of some natural areas are considered. It will work out what set of protected areas provides a good trade-off between opportunity costs and biodiversity benefits.

Another use of Target could be to examine the consequences if some areas with restricted access for tourism were subjected to expanded tourism activities or operations. What would be the costs and benefits? The program can help decision-makers explore the nature of trade-offs between biodiversity and tourism or, indeed, for any other competing land-use.

Finding a satisfactory solution to the thorny problem of managing both the conservation of rainforests and the numerous people who wish to visit them is an unenviable task. CSIRO's Target program is a purpose-built modelling tool that should help to bridge the gap between science and policy and ease the burden for managers and decision-makers. Ideally, it will facilitate a sustainable and viable future for both rainforests and ecotourism.

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