

CONSERVATION SCIENCE

Trade-in to trade-up

Peter Kareiva

Nature reserves and protected areas enjoy sacred status in conservation — which translates into a ‘do not touch’ attitude. But selling off some of the less worthy of them would pay conservation dividends.

Protected areas set aside from major human activities and managed for biodiversity are the foundation of modern conservation. Until now, no conservationist would have considered trading them in. Yet trading-in and trading-up is exactly what Fuller and colleagues recommend for Australia’s protected areas, as described on page 365 of this issue¹.

Fuller *et al.* estimate that, by selling off 70 of Australia’s nearly 7,000 protected areas, the government could raise Aus\$20.6 billion (US\$17.4 billion), which could then be reinvested to achieve far more conservation elsewhere (Fig. 1). The idea is to sell off those protected areas that yield the lowest conservation value per assessed land value, and then reinvest the funds in lands that generate the highest conservation value per dollar spent. If these transactions were actually completed, the authors conclude, Australia could achieve a tenfold increase in the total area under conservation protection and a threefold increase in the diversity of vegetation types under protection. Real-world application of a return-on-investment analysis might be the best thing that could happen to conservation in Australia and, by extrapolation, elsewhere in the world.

Historically, the establishment of protected

areas has been anything but analytical or efficient. Before conservation emerged as a science, protected areas tended to be located to satisfy the tourist industry or the wishes of a wealthy few, or for convenience. They were often also sited so as to become bargaining chips between large corporate landowners and national governments; rarely were conservation goals a factor². One of the greatest contributions of the new field of conservation science has been to replace ad hoc establishment of protected areas with networks of nature reserves that are sited using computer-based planning tools³. It has now become clear that the use of data, quantifiable objectives and spatial-optimization programmes provides an opportunity to protect much more nature at far less public expense⁴.

However, the idea of applying a return-on-investment approach to the design of protected-areas networks has yet to gain full traction in the messy world of non-governmental organizations involved in conservation, or that of national governments. When protected areas are established, it is usually because a conservation group has lobbied for the budget allocation to make it happen. There is no need for economic analysis in such a case, because the problem of getting

enough money is seen as a lobbying effort, and when money or land becomes available, opportunity is what counts more than any return-on-investment assessment. The possibility of selling existing protected areas totally changes the nature of the discussion because there is no need to lobby for an opportunity for new protected areas — the opportunity exists by virtue of the funds generated from selling low-return nature reserves.

Doubtless, the very thought of such a ‘trade-in and trade-up’ scheme for enhancing the efficiency of conservation will cause many conservationists to shudder. The idea that a protected area might not be secured in perpetuity will be unsettling, as such a precedent may make it too easy for governments to revoke systems of protected areas in times of economic stress. Also, those 70 protected areas in Australia — the bottom 1% — tend to be in locations where land prices are high, which often means that they are near urban centres. Protected areas near high densities of human populations may not yield a high conservation return per dollar cost, but their public accessibility and visibility could be essential to maintaining public support for conservation.

Nature reserves and protected areas enjoy sacred status in conservation, which translates into a ‘do not touch’ attitude. Selling off inefficient protected areas for conservation cash opens the door to an entirely different, and perhaps more fruitful, approach to nature conservation. When protected areas are rigid, in perpetuity and established almost without regard to cost–benefit analyses, they essentially become monuments to one special-interest group — conservationists.

However, if protected areas were subject to the same cost–benefit analyses as any public-works project, they might win broader public support. In addition, for a world experiencing climate change with the attendant shifts in biomes and species, a dynamic approach that encourages continuously rethinking the management status of lands and waters may be essential to maintain any sort of functioning system of protected areas. What good is a floodplain reserve if a river changes its course, or a coastal sand-dune protected area that ends up being submerged by the rising sea? Conservation planning and priority setting need to evolve if they are to deal with today’s economic realities and the rapidly changing world.

To date, return-on-investment analyses in conservation have focused on land prices and management costs, with biodiversity representing the ‘return’⁵. But protected areas also provide substantial economic payouts in the form of water supply, recreation, water quality and climate regulation. Now that conservation scientists have clarified the importance of efficiency in spending limited conservation dollars, it is a small step to also factor in the economic benefits of protected areas.

To some, nature is sacred, and costing-out its value demeans and makes venal what is



Figure 1 | *Acacia harpophylla* — in need of protection. This vegetation type is down to less than 15% of its original extent, and is an example of habitat that would benefit from the scheme of Fuller *et al.*¹.

inspiring and in many regards priceless⁶. But as long as public money is spent on protected areas and conservation, return-on-investment analyses, including the economic returns, may be the greatest hope for conservation in an economically stressed world⁷. ■

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1. Fuller, R. A. *et al. Nature* **466**, 365–367 (2010).
2. Fairfax, S. K., Gwin, L., King, M. A., Raymond, L. & Watt, L. A. *Buying Nature: The Limits of Land Acquisition as a Conservation Strategy, 1780–2004* (MIT Press, 2005).
3. Murdoch, W. *et al. Biol. Conserv.* **139**, 375–388 (2007).
4. Bode, M. *et al. Proc. Natl Acad. Sci. USA* **105**, 6498–6501 (2008).
5. Naidoo, R. *et al. Trends Ecol. Evol.* **21**, 681–687 (2006).
6. McCauley, D. J. *Nature* **443**, 27–28 (2006).
7. Kareiva, P. & Marvier, M. *Conservation Science: Balancing the Needs of People and Nature* (Roberts, Greenwood Village, Colorado, in the press).