

**PROCEEDINGS OF THE AUSTRALIAN RANGELAND SOCIETY
BIENNIAL CONFERENCE**

Official publication of The Australian Rangeland Society

Copyright and Photocopying

© The Australian Rangeland Society 2012. All rights reserved.

For non-personal use, no part of this item may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior permission of the Australian Rangeland Society and of the author (or the organisation they work or have worked for). Permission of the Australian Rangeland Society for photocopying of articles for non-personal use may be obtained from the Secretary who can be contacted at the email address, rangelands.exec@gmail.com

For personal use, temporary copies necessary to browse this site on screen may be made and a single copy of an article may be downloaded or printed for research or personal use, but no changes are to be made to any of the material. This copyright notice is not to be removed from the front of the article.

All efforts have been made by the Australian Rangeland Society to contact the authors. If you believe your copyright has been breached please notify us immediately and we will remove the offending material from our website.

Form of Reference

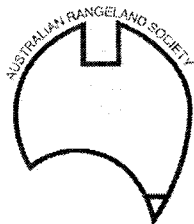
The reference for this article should be in this general form;
Author family name, initials (year). Title. *In*: Proceedings of the nth Australian Rangeland Society Biennial Conference. Pages. (Australian Rangeland Society: Australia).

For example:

Anderson, L., van Klinken, R. D., and Shepherd, D. (2008). Aerially surveying Mesquite (*Prosopis* spp.) in the Pilbara. *In*: 'A Climate of Change in the Rangelands. Proceedings of the 15th Australian Rangeland Society Biennial Conference'. (Ed. D. Orr) 4 pages. (Australian Rangeland Society: Australia).

Disclaimer

The Australian Rangeland Society and Editors cannot be held responsible for errors or any consequences arising from the use of information obtained in this article or in the Proceedings of the Australian Rangeland Society Biennial Conferences. The views and opinions expressed do not necessarily reflect those of the Australian Rangeland Society and Editors, neither does the publication of advertisements constitute any endorsement by the Australian Rangeland Society and Editors of the products advertised.



The Australian Rangeland Society

TRANSITION TO SUSTAINABLE USE OF RANGELANDS - WHAT ECONOMISTS COULD CONTRIBUTE

Nick Abel

CSIRO Division of Wildlife and Ecology, PO Box 84, Lynham ACT 2602

ABSTRACT

The Australian rangelands are changing rapidly under the influence of social, economic, political and environmental forces. The prevailing political climate favours markets as a means of achieving social ends, but the free operation of markets cannot lead to ecologically sustainable resource use. To achieve that, intervention is needed. Economists could influence the coming changes in many ways. They include: the use of both market and non-market values in estimates of net benefit of development; representation of future generations on decision-making bodies; designing policies which match market demand to ecological supply over time and space; estimation of conservation-production trade-offs in conflicts over regional land allocation; finding ways of linking new resource uses into local economies; and the design of instruments for promoting sustainable resource use.

ECONOMISTS AND SUSTAINABLE DEVELOPMENT

This paper is about the role economists could play in influencing the direction and pace of change in the Australian rangelands. I wish to counter the view of many Australians that all economists are a danger to the environment. Some are, but the economists I have in mind are unconventional - they explore linkages among the economy, society and the bio-physical environment, acknowledge the diversity of values in society, and put persistence of ecological systems over profitability. This paper will show what these unconventional economists could contribute to ecologically, economically and socially sustainable use of rangelands.

The paper begins with a discussion of change in the rangelands, then covers the issues of valuation, time, space, equity, and instruments for promoting sustainable use.

CHANGE

Resource use in Australia's rangelands is likely to change rapidly over the coming decades. A shift in Australian values is one force driving the change (Holmes 1994a), but world population and economic growth, increasing internationalisation and mobility of capital (Powell 1988), and perhaps changes in world and regional climate are potentially at least as important. Australians could leave the outcomes of change to circumstances, hoping the result will be acceptable; or they can intervene, and promote a pattern of resource use consistent with social objectives and ecological sustainability (Walker, in press). The current fashion in economic management is to minimise government interventions, and let markets direct the economy on the assumption that this produces economically efficient and socially desirable outcomes. But the future cannot be left to unmanaged markets because:

- many parts of nature which are valued highly by some groups are not bought or sold (rare species; beautiful landscapes), and incentives are often needed to protect them;
- markets for the future are inadequate;
- future generations have no political representation;
- markets do not account for spatial and temporal variability in ecological systems supplying the economy;
- markets do not promote equity;
- the Australian economy is relatively small, and very open to the growing influence of the Global economy, so it is increasingly difficult for Australians to maintain control over the use of national resources.

The rest of this paper is about economic interventions and key principles behind them, beginning with valuation.

VALUATION

I have pointed out that new uses of resources are associated with new sets of values. Environmental economists (Pearce and Warford 1993, Young 1992) capture them using the concept of *total economic value*. This comprises: *direct use value* - e.g. the value of wool from a property; *indirect use value* - e.g. the ability of a rangeland to store carbon and reduce carbon dioxide output; *option value* - e.g. the value to future generations of Mulga woodlands for some unknown use; *intrinsic value* - the value of a component of the environment which exists independently of its use or option values, for example the value of a rare species which has no economic use; and *bequest value* - e.g. the value to the leaseholders of a property as an inheritance for their children.

Most people hold most of these values, and the total value we place on any part of nature is likely to comprise more than one element. Different stakeholders emphasise different values. The framework is broad enough to capture all values, and should be widely acceptable. The conversion of these values to monetary estimates is more controversial. Better social processes for negotiating trade-offs among these values are needed so we can set priorities for conservation, priorities which we must have in our world of scarcity.

TIME

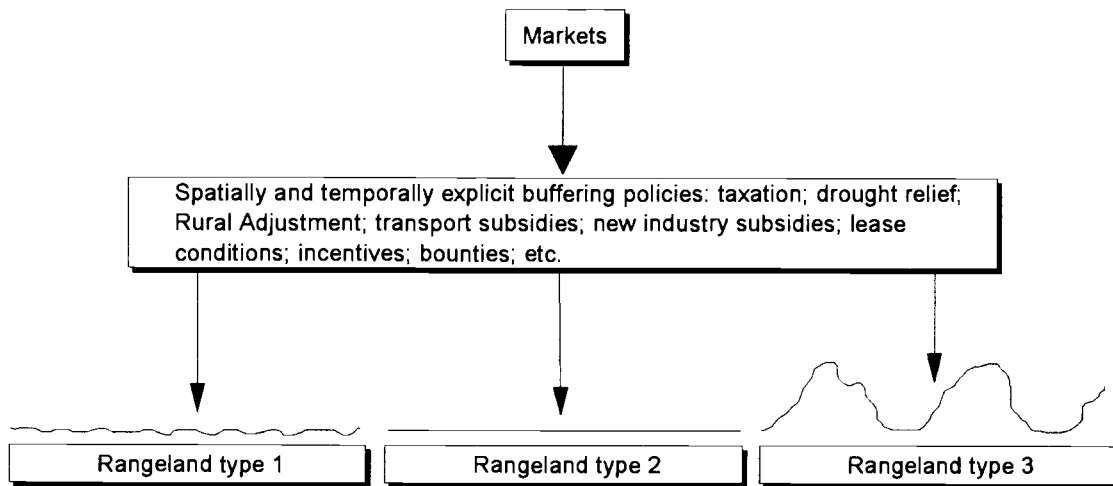
Many economists are concerned with the distribution of benefits across generations. A small but growing number is examining the mismatch between variations in demand from economic systems and supply from ecological systems. I discuss these in turn.

Young (pers. comm.) suggests that equity between generations would be improved if investments were governed by the rule that costs should not exceed benefits within any ten-year period. Abel and Tatnell (1996) propose the appointment of proxies to advocate patterns of resource use for the rangelands to suit the predicted requirements of future generations at local, State, and national levels. The approach could be formalised, and individuals paid to represent future generations. Projects could be subject to veto by such representatives.

The second time related issue is that economic demand is not synchronised with supply from ecological systems. Local prices fall when fodder is scarce, and pastoralists all try to sell. This encourages pastoralists to maintain stock on depleting range, increasing the risk of degradation. Conversely when rains have been good animals are locally expensive, and range often remains under-stocked. Supply depends on producers decisions, which are made under the often conflicting influences of ecological and economic signals. But producers for competitive markets must supply reliably or lose market share. They may attempt to force the ecological system to produce a demand-driven output even when economic and ecological signals are in conflict. This may lead to losses of resilience and productivity (Holling 1995). The challenge for economists is to build better institutional buffers between prices and ecological systems, spreading costs, benefits and risks over time.

SPACE

Markets are not sensitive to spatial variation in ecological systems either. Rangeland types differ markedly in their resilience, stability, productivity, biodiversity and scenic values. They consequently differ in their suitability for various uses, and ability to meet market demands. Buffering institutions should have an explicitly spatial element - what is good for the Mitchell grasslands may not work for the Mallee, and the rangelands of the seasonal tropics behave very differently from those of the temperate zone (Figure 1).



Rangeland types could be distinguished at broad or finer scale, depending on purpose.
 e.g. broad scale: wet-dry tropics vs temperate; finer scale: Chenopod vs Mulga.

Figure 1. Spatially and temporally explicit buffering policies.

Economists' skills are useful in comparing the suitabilities of land for various uses, and estimating trade-offs in conflicts over land resources. For example, conservation of biodiversity at a regional scale will be necessarily based around a strategy which takes account of ecological attributes such as the relative scarcity of species and ecological communities. 'Fertile patches' in the landscape are important for both pastoral production and nature conservation (Lunney *et al.* 1995). Faith (1995) is among those who have used economic approaches to express trade-offs in such circumstances.

EQUITY AND LOCAL ECONOMIC LINKAGES

Sustainable use of the rangelands requires that sufficient profit is reinvested locally for the maintenance of ecological, social and economic systems. Intervention will be needed to ensure that costs of new resource uses are not borne locally, while benefits are enjoyed elsewhere.

Australian pastoralism relies on the establishment of families and settlements in fixed locations for the long term. Local retention of benefits is ensured as profits are spent within local settlements. New resource uses may be less sedentary, and much less likely to spend locally. Holmes (1994b) cites four-wheel-drive recreation, some tourism, and fly-in-fly-out mining as examples of 'footloose' resource uses. Their economic linkages may by-pass local service centres, their capital investments may bring few local multiplier effects, and they may not be able to use local skills. When the resource is used up, or if more attractive opportunities arise elsewhere, a footloose enterprise will migrate, perhaps leaving depleted resources and unusable infrastructure as memorials. Solutions lie in constructing economic linkages at the outset of projects - profit-sharing, for example - and building in conditions on environmental management, employment of local people, and training. These may drive some investors to places with less stringent conditions. This is not necessarily a bad outcome.

INSTRUMENTS

Economists have much to contribute to the development of instruments for modifying market forces (Common 1995; Morton *et al.* 1995; Young 1992, 1995; Young *et al.* 1996). Potential and actual instruments include:

- spending on better information on potential new uses;
- establishment of conservation incentives to compensate pastoralists for losses in production;

- tax rebates for expenditure on conservation;
- tax mechanisms for reducing income variability, thus easing pressures on pastoralists and on their land;
- land buy-out and compensation schemes;
- bounties on feral animals when the net value of harvesting is less than the value of the damage animals are causing;
- subsidised establishment of 'infant' rural industries until they are sufficiently competitive to support themselves (e.g. kangaroo harvesting);
- re-designed lease conditions which allow new uses and promote conservation;
- requiring investors to lodge environmental assurance bonds, redeemable if no harm is done;
- linking any environmentally damaging project to an offset project for environmental enhancement;
- institutions for buffering market influences over time and space.

CONCLUSIONS

I have argued against leaving the fate of Australia's rangelands to free markets, and have suggested a variety of important roles for economists in influencing the coming changes. They include: the use of non-market as well as market values in estimates of net benefit; proxy representation of future generations on key policy- and decision-making bodies; design of policies which buffer market forces over time and space; estimation of trade-offs in conflicts over regional land allocation; design of ways to link otherwise 'footloose' resource use projects into local economies; and the design of instruments for promoting sustainable resource use on Australia's rangelands.

ACKNOWLEDGEMENTS

Mike Young, Barney Foran and Bill Tatnell criticised the paper, and I responded with many changes, though not as many as they proposed. I am very grateful for the major improvements resulting from their advice. I take full responsibility for what is left unchanged, and for the paper as a whole.

REFERENCES

- Abel, N. and Tatnell, W. (1996). Patterns of Sustainable Land Use for the Rangelands for the 21st Century. Research Proposal to the Land and Water Resources Research and Development Corporation. CSIRO and NSW DLWC.
- Common, M. (1995). 'Sustainability and Policy: Limits to Economics.' Cambridge University Press, Cambridge.
- Faith, D. (1995). 'Biodiversity and Regional Sustainability Analysis.' CSIRO Division of Wildlife and Ecology, Canberra.
- Holling, C.S. (1995). What Barriers? What Bridges? *In* 'Barriers and Bridges to the Renewal of Ecosystems and Institutions.' (Eds L.H. Gunderson, C.S. Holling and S. Light). Columbia University Press, New York, pp. 3-36.
- Holmes, J. (1994a). Changing values, goals, needs and expectations of rangeland users. *The Rangeland Journal* 16: 147-154.
- Holmes, J. (1994b). Changing Rangeland Resource Values - Implications for Land Tenure and Rural Settlement. *In* 'Outlook 94: Natural Resources.' Australian Bureau of Agricultural and Resource Economics, pp. 160-175.

Lunney, D., Pressey, B., Archer, M., Hand, S., Godthelp, H. and Curtin, A. (1995). Integrating Ecology and Economics - a Conflict of Space and Time. Ecological Economics Conference. Coffs Harbour, November 19-23.

Morton, S.R., Stafford Smith, D.M., Friedel, M.H., Griffin, G.F. and Pickup, G. (1995). The stewardship of arid Australia: ecology and landscape management. *Journal of Environmental Management* 43: 195-217.

Pearce, D.W. and Warford, J.J. (1993). 'World Without End. Economics, Environment, and Sustainable Development.' World Bank. Oxford University Press, Oxford.

Powell, J.M. (1988). 'An Historical Geography of Australia: the Restive Fringe.' Cambridge University Press, Cambridge.

Walker, B.H. (in press). Having or Eating the Rangelands Cake: a Developed World Perspective on Future Options. Invited paper to the 5th International Rangelands Congress, Salt Lake City, Utah, 23-28 July 1995.

Young, M.D. (1992). 'Sustainable Investment and Resource Use.' Parthenon Press, Carnforth, and UNESCO, Paris.

Young, M.D. (1995). Inter-generational equity, the precautionary principle and ecologically sustainable development. *Nature and Resources* 31: 16-27

Young, M.D., Gunningham, N., Elix, J., Lambert, J., Howard, B., Grabosky, P. and McCrone, E. (1996). Reimbursing the Future: An Evaluation of Motivational, Voluntary, Price-based, Property-right, and Regulatory Incentives for the Conservation of Biodiversity. Biodiversity Series, Paper no. 9. Biodiversity Unit, Department of Environment, Sport and Territories, Commonwealth of Australia.