

# **Economics and Management of Biodiversity**

**A Brief Bibliographical Survey**

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BIODIVERSITY	

# Biodiversity – General

## 1: SUSTAINABILITY

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**Abstract:** *Economists have recently begun to consider the questions raised by the ecological concept of resilience – a measure of the degree to which a system can be perturbed before it switches from one stability domain to another. At a theoretical level, it has been argued that the loss of resilience in an ecological-economic system involves a change in its long-run productive potential, but no consideration has yet been given to the empirical investigation of this. This paper discusses an econometric approach to the problem, using the example of semi-arid rangelands. The long-run productive potential of the system is regarded as an unobserved state variable, change in which is irreversible or at least only slowly reversible. It is estimated by applying the extended (nonlinear) Kalman filter. The paper illustrates the approach using data from Botswana for the period 1965–1993. The maximum likelihood estimates of the parameters associated with the loss of resilience mechanism are non-zero. They indicate a small loss of resilience event at the end of the long drought in the 1980s. However, these parameters are very imprecisely estimated and are therefore statistically insignificant. We find that the sensitivity of the system to exogenous shocks varies with fluctuations in both economic and non-economic parameters. Contrary to what is usually thought to be the case, the sensitivity of the system to exogenous shocks is only weakly affected by variations in offtake prices, but is very strongly affected by variations in the cost of herd maintenance. This suggests that offtake*

*prices may be a weak tool for controlling the size of cattle stocks and preventing a loss of resilience. On the other hand, taxes on cattle stocks or grazing fees may be very effective*

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- Abstract:** *Rational economic decisions regarding the conservation of biodiversity require the consideration of all the benefits generated by this natural resource. Recently a number of categories of values (inherent value, contributory value, indirect value, infrastructure value, primary value) have been developed, especially in the literature of Ecological Economics, which, besides the individual and productive benefits of biodiversity, also include the utilitarian relevance of the ecological structure and functions of biodiversity in the, so-called, total economic value. For the question of including the ecological structure and functions of biodiversity in the total economic value it is of crucial importance to note, that these categories of values are not only terminologically different, but also relate to different ecological levels of biodiversity and – most importantly – to specific complementary relationships – between species, between elements of ecological structures and between ecological functions and their contribution to human well-being. This paper analyses these complementary relationships, discusses their implications for the total economic value of biodiversity and draws conclusions for decision making in environmental policy.*
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- Abstract:** *Discusses the ways in which value can be attached to biodiversity and highlights the advantages and disadvantages of different approaches. Introduces biodiversity loss and biodiversity value. Distinguishes between economic and noneconomic value criteria and addresses some of the contrasting value systems being advanced in the global conservation debate. Discusses deliberative and inclusionary procedures for eliciting values. Introduces the concept of time discounting and considers how time preference rates may be altered to account for the specific dilemmas faced by biodiversity conservation. Spells out the economic interpretation of value and outlines the taxonomy of values associated with biodiversity. Discusses the range of economic valuation methods and their limitations, covering economic valuations based on market prices and stated preference methods. Describes the practice of benefits transfer, in which an estimate of willingness to pay from one site, the study site, is "borrowed" and applied to another site, the policy site. Provides policy recommendations.*
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and examines whether restricting the issue of labels could constitute an antidote.

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**Abstract:** *This paper provides background information for a series of case studies discussed during a workshop of the 4th session of the Global Biodiversity Forum held 31 August - 1 September, 1996 in Montreal. The paper and workshop focused on the use of economic incentives for biodiversity conservation and particularly fiscal measures, collaborative management of conservation areas, and commercialization of biological resources. The paper also outlines a framework for Biodiversity Impact Assessment which could be used as a tool for correcting perverse incentives and creating positive incentive measures*

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- Abstract:** *The Convention on Biological Diversity mandates impact assessments of policies, programmes, and projects by Contracting Parties in order to ensure that environmental and particularly biodiversity consequences are considered. This workshop examines the role of economics in designing procedures for Biodiversity Impact Assessment (BIA). The author outlines a framework of seven steps for BIA: identify an impact, establish the causes, determine the winners and losers of the impact, propose mitigation, determine the winners and losers of mitigation, implement mitigation measures, and monitor and evaluate. He recommends that the Conference of the Parties call for the development of new procedures for BIA, support NGOs as providers of independent economic information, and continue to seek new financing for biodiversity conservation.*
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## **6: CONSERVATION, PROTECTION AND PROTECTED AREAS**

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**Abstract** *Recent literature shows a lively debate on how to capture ecological and environmental aspects in different evaluation methods and the closely related issue of the (im) possibilities of monetization of these aspects. Although economists in general tend to favour Cost-Benefit Analysis (CBA) above Multi-Criteria Analysis (MCA), part of the literature suggests that CBA falls short of being the only decision-making*

*device for environmental problems, both for theoretical and practical reasons. This paper discusses both evaluation methods and the main results of a major, publicly-financed nature conservation project in The Netherlands. The evaluation method combines the straightforwardness of CBA with the flexibility of MCA. Conceptually, it consists of a MCA, the net result of a CBA being integrated as one of the criteria. The different aspects of the nature conservation project that can be monetized are incorporated into the CBA. Other aspects such as changes in biodiversity or scenic beauty are analyzed in their own dimension, provided (cardinal) quantification is possible. In fact, the analysis consists of a very simple MCA, with two criteria: social costs and a quantitative measure of nature. Quantifying the amount of nature in its own, non-monetary dimension is a key element of the empirical analysis. A detailed quantitative estimate is made of the improvement of nature, based upon 564 species and 131 different ecosystems. The result of the evaluation is a trade-off at the national level between ecological improvements (plus 18 percent) and social costs (DFL. 3.4 billion net present value). Due to the detailed quantification of the effect on nature the evaluation also yields results about the cost-effectiveness of four different instruments to create and to preserve nature. That part of the analysis shows that complete withdrawal of agricultural land for nature purposes in the project in general is more cost-effective than subsidizing nature-friendly farming, although the former is more expensive.*

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*of kangaroos; population effects, wildlife, and the management of kangaroos; whether wildlife should be viewed as a national asset or a pest to be managed; conflicts about living marine resources in Southeast Asian and Australian waters; the International Whaling Commission and socially optimal whale harvests; the economics of Antarctic minke whale catches; optimal Australian dugong populations and conservation plans; the conservation of Asian elephants; the provision of parks and the preservation of nature; the economics of wilderness; the provision of wilderness by clubs; policy issues related to the establishment and management of marine reserves; deforestation, capital accumulation, and lessons for the Kerinci-Seblat National Park, Indonesia; community-based forestry in Yunnan; and villagers and the use and conservation of Indian forests.*

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## 10. INTERNET WEBSITES ON BIODIVERSITY

1. World Conservation Union (IUCN) Gland, Switzerland
  - ! General web site  
<http://www.iucn.org/>
  - ! Economics of Biodiversity  
<http://economics.iucn.org/index.htm>
  - ! Economics Service Unit  
<http://economics.iucn.org/esu.htm>
2. International Institute for Environment and Development (IIED) - London
  - ! General web site  
<http://www.oneworld.org/iied/index.html>
3. International Institute for Sustainable Development (IISD) Winnipeg, Canada
  - ! General web site  
<http://iisd.ca/>
4. Organisation for Economic Co-operation and Development (OECD) - Paris
  - ! General web site  
<http://www.oecd.org/>
5. World Resources Institute (WRI) - Washington
  - ! General web site  
<http://www.wri.org/>
6. United Nations Organisations
  - ! Food and Agriculture Organisation  
<http://www.fao.org/>
  - ! United Nations Environment Programme  
<http://www.unep.org/>
  - ! United Nations Development Programme  
<http://www.undp.org/indexalt.html>
7. Convention on Biodiversity  
<http://www.biodiv.org/>
8. Economy and Environment Programme for South East Asia (EEPSEA)  
<http://www.eepsea.org>
9. Convention on International Trade on Endangered Species (CITES)  
<http://www.wcmc.org.uk:80/CITES/english/index.html>

10. EnviroLink Homepage  
<http://envirolink.netforchange.com>
11. Environment Australia On-Line  
<http://www.erin.gov.au>
12. Environment Canada's Green Lane  
<http://www.ec.gc.ca>
13. Environmental Data Services Ltd (ENDS)  
<http://www.ends.co.uk>
14. Nature Conservation  
<http://www.naturenet.net>
15. Environmental Protection Agency: Economy and Environment  
<http://www.epa.gov/docs/oppe/eaed/eedhmpg.htm>
16. Environmental Valuation  
<http://www.environment.detr.gov.uk/evslist/index.htm>

## **REGIONAL LINKS FOR SSEA**

- Centre for Science and Environment-India  
<http://www.oneworld.org/cse/html/cmp/cmp13.htm>
- Biodiversity Profile for India  
<http://www.wcmc.org.uk/igcmc/main.html>
- Malaysia Biodiversity On-line  
<http://biodiversity.ukm.my/>
- Maldives Rio+5 Summary Report  
<http://www.ecouncil.ac.ar/rio/natreg/english/nep.htm>
- Nepalnet Website-Introduction to Ecology & Biodiversity in Nepal  
<http://www.panasia.org.sg/nepalnet/bioframe.htm>
- Pakistan-WRI Biodiversity Guide to Pakistan  
[http://www.wri.org/wri/sdis/strategs/wdces/pa91\\_334.html](http://www.wri.org/wri/sdis/strategs/wdces/pa91_334.html)
- Philippines- Biodiversity Conservation in the Philippines  
<http://www.bwf.org/fpebio.html>

Philippines- Conservation International- Biodiversity Hotspot Profile  
<http://www.conservation.org/web/fieldact/hotspots/philippi.htm>

Singapore-WRI Biodiversity in Singapore  
<http://www.wri.org/wri/data/dces-861.html>

Thailand- Biodiversity Research and Training Program  
<http://www.brtprogram.org/dat/about.html>

Vietnam- Biodiversity Profile of the Socialist Republic of Vietnam  
<http://www.brtprogram.org/dat/about.html>