

JSTOR

[Skip to Main Content](#)

- [JSTOR Home](#)
- [Search](#)
- [Browse](#)
- [MyJSTOR](#)
- [Get Access](#)

Click to Show/Hide Navigation

[Skip to Main Content](#)



- [Login](#)
- [Help](#)
- [Contact Us](#)
- [About](#)



You are not currently logged in through a participating institution or individual account. See [access options](#) for more information.



Valuation of Ecosystem Services

Brian W. van Wilgen, Richard M. Cowling and Chris J. Burgers

BioScience

Vol. 46, No. 3 (Mar., 1996), pp. 184-189

Published by: [University of California Press](#)

Article Stable URL: <http://www.jstor.org/stable/1312739>

10.2307/1312739

[« Previous Item](#) [Next Item »](#)

You do not have access to this content through JSTOR.

You may have other access options through College of Mexico.

[Go to Article](#)

Rights and Permissions

- [Request Permissions](#)
- [JSTOR Terms And Conditions](#)



UNIVERSITY OF CALIFORNIA PRESS
JOURNALS + DIGITAL PUBLISHING

- [BioScience](#) >
- [Vol. 46, No. 3, Mar., 1996](#) >
- Valuation of Ecosyst...

Preview

If you need an accessible version of this item, please [contact JSTOR User Support](#). [View Full Screen](#)
[DOWNLOAD \(\\$14.00\)](#)

Valuation of Ecosystem Services

A case study from South African fynbos ecosystems

Brian W. van Wilgen, Richard M. Cowling, and Chris J. Burgers

The term *ecosystem services* refers to the many conditions and processes associated with natural ecosystems that confer some benefit to humanity. Examples include the generation and maintenance of fertile soils; prevention of soil erosion; detoxification and recycling of waste products; regulation of the hydrological cycle and of the gaseous composition of the atmosphere; control of potential agricultural pests; pollination; and preservation of the earth's genetic library.

Walter Westman's classic paper "How much are nature's services worth?" (Westman 1977) raised the question of the value of conserving ecosystems for the services they provide to humanity. He pointed out nearly two decades ago that Western societies have increasingly called

Watershed ecosystems provide quantifiable benefits that can justify management expenditure

for the explicit quantification, in monetary terms, of the value of items formerly regarded as priceless. The trend toward valuation persists today. Yet few studies that we know of present explicit ways of evaluating ecosystem services in order to justify the allocation of funds for ecosystem maintenance and restoration. This economic justification is important where strong competition exists for the public funding needed for conservation management.

In this article, we present a case study showing how invasion by alien plants has affected water resources in the mountain catchment areas of the Western Cape Province, South Africa. To provide an explicit accounting of the monetary value of maintenance of the ecosystem, we evaluate the benefits associated with a reliable supply of water (an ecosystem service). We compare the costs of a program of eradication of alien plants with these benefits and provide estimates of the costs of abandoning the program in the face of declining funding and competing demands for public funds.

The delivery of water from catchment areas, or watersheds, in the Western Cape Province, South Africa, serves as an example of a significant contribution from natural ecosystems to human well-being. The sustained supply of high-quality water depends on maintaining the cover of fynbos (shrubland) vegetation (van Wilgen et al. 1990). Fynbos vegetation is adapted to the summer droughts and nutrient-poor soils, as well as to the fires that occur periodically in the Cape mountains. The fynbos binds the soil, preventing erosion, while its relatively low biomass ensures conservative water use and low-intensity fires, which in turn ensure high water yields and low impacts on the soil from periodic fires.

South Africa is a dry country, and water is a resource that is likely to limit growth (Huntley et al. 1989). Catchment management is complicated by the invasion of the fynbos vegetation by nonindigenous woody trees and shrubs, which increase biomass and reduce runoff. The eradication of these weed species is seen by ecologists as a major part of catchment management (van Wilgen et al. 1990). Recent reviews have stressed that invasion of catchment areas by alien trees and shrubs would have serious effects on water supplies (van Wilgen et al. 1992, Versfeld and van Wilgen 1986). Ecologists have recognized this problem for many decades, but it has not yet received significant attention from policy makers. To justify funding for the maintenance and resto-

Brian W. van Wilgen is an ecologist in the Division of Forest Science and Technology of CSIR, Jonkershoek FRC, Stellenbosch, 7599, South Africa. His research has focused on the effects and use of fire in African ecosystems, especially Cape fynbos. Richard M. Cowling is director of the Institute of Plant Conservation, Botany Department, the University of Cape Town, Rondebosch, 7700, South Africa. His main interests are in the conservation and use of the flora of the Cape Floristic Region. Chris J. Burgers is an ecological planner with Cape Nature Conservation, Stellenbosch, 7599, South Africa. His duties include the development of plans for the conservation and management of Cape fynbos vegetation. © 1996 American Institute of Biological Sciences.



End of preview. [Back to top.](#)

BioScience © 1996 [University of California Press](#) and [American Institute of Biological Sciences](#)

Purchase a PDF

Purchase this item for \$14.00 USD and download it as a PDF.

ADD TO CART



How does it work?

- 1 Add this item to your cart.
- 2 Check out using a credit card or bank account with [PayPal](#).
- 3 Download the PDF from a link in your email or from your MyJSTOR account.

[Enter your token or email](#) if you've already purchased this item.

Think you might have access to this item via your library? [Login](#).

- [JSTOR Home](#)
- [About](#)
- [Search](#)
- [Browse](#)
- [Terms and Conditions](#)
- [Privacy Policy](#)
- [Cookies](#)
- [Accessibility](#)
- [Help](#)
- [Contact us](#)

JSTOR is part of ITHAKA, a not-for-profit organization helping the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways.

©2000-2013 ITHAKA. All Rights Reserved. JSTOR®, the JSTOR logo, and ITHAKA® are registered trademarks of ITHAKA



Think you might have access to this content via your library?

[Login](#)