

## Book Review

### **Cork Oak Woodlands on the Edge: Ecology, Adaptive Management, and Restoration**

James Aronson, Joao S. Pereira and Juli G. Pausas (eds). Island Press, Washington, DC, 2009. xv + 315 pp. Price AUD \$79.95 (paperback). ISBN 9781597264792.

Cork oak (*Quercus suber* L.) woodlands are distributed widely across the western Mediterranean, providing an enormous range of values from subsistence farming activities in west Africa to some of the most biologically diverse ecosystems in the Mediterranean basin. As an ecosystem it has been extensively studied for its ecological, biological, economic, social and cultural values and has been subject to numerous European and international conferences and working groups. Best known for the production of cork stoppers, cork oak woodlands also provide a wide range of other products such as pasture, honey, game, aromatic plants and acorns, in addition to the frequently un-costed environmental services such as biodiversity conservation and desertification control. Despite performing these important functions, cork oak woodlands are under considerable pressure due to a wide range of drivers such as disease, wildfire, over grazing, degradation and fragmentation. The persistence of cork oak woodlands over millennia has owed much to the maintenance of a managed landscape and in particular the management of shrub fuel loads through grazing. Fire risk has increased with agricultural land abandonment across its European extent coupled with the increased incidence of summer droughts and associated wildlife risk. However, throughout their west African extent the opposite is true. With increasing land use intensity and overgrazing, cork oak woodland persistence is threatened through a lack of regeneration and the spread of desertification. Cork oak woodlands, as an ecological and culturally derived landscape, therefore provide an interesting but challenging topic to synthesize. The editors stated objectives are ambitious: to provide a synthesis of current knowledge of the ecology, biogeography and genetics of cork oak; its socio-economics, restoration and adaptive management options, for a broad audience interested not only in western Mediterranean ecosystems but also in the management of cultural landscapes and their land use systems.

The book is divided into five parts. The first part is scene setting: ecology; genetics; historical land uses; and the significance of the rapidly changing cork stopper industry. Here the strong linkages between the cultural and silvopastoral uses of cork oak woodlands are explained, and the significance of the fact that without this monetary and cultural value these

woodlands would tend to revert to multispecies forests of mixed oak and pines.

The second part of the book addresses the ‘Scientific basis for restoration and management’, including key background material for developing strategies to reverse the current trends of degradation. Chapters are presented on the most common antagonisms in the trees development and persistence: drought; mycorrhizal symbiosis and nutrition; soil properties; pests and diseases; and finally the bottlenecks present in its regeneration cycle. The chapter focussing on regeneration (Chapter 10) is particularly useful as the lack of regeneration in many mature cork oak woodlands is both a symptom of their general decline and perhaps the answer to their restoration.

The third part of the book describes approaches which can be used in active restoration, from germ-plasm selection and nursery techniques to site preparation and caring for plantings. The fourth part conducts a series of economic analyses on the costs and benefits of cork oak management, contrasting scenarios in the northern Mediterranean where land abandonment and historic management practices are dwindling, to the southern Mediterranean where land use intensification is increasing and management planning is in its infancy or is largely unregulated.

It is within Part Four where the reader is gradually convinced that if the current trends in cork oak woodland degradation are to be addressed, a total economic value conceptual framework, where total private and social benefits are calculated, is required. The reader is further persuaded that, ultimately, many of the indirect benefits of these woodlands (e.g. catchment protection, other ecosystem services, recreation and cultural tourism) need to be given a monetary value and the land owner or manager paid to undertake that form of management. Such payments, generally referred to as stewardship or ecosystem services payments, are being developed elsewhere and offer one option to implement a total economic value approach.

The final part of the book (Part Five) considers challenges to ecoregional planning across national borders and the worrying trend in increasing aridity in Mediterranean landscapes attributed to climate change. The final chapter, titled ‘The Way Forward’ (Chapter 20), concisely outlines the main challenges and opportunities to woodland restoration in Europe and Africa, finishing on an optimistic note which I found less than convincing, considering the very difficult economic and institutional environment in Africa in particular.

The editors have clearly met their objective of providing a synthesis of current knowledge of the cork oak woodland ecology, management and restoration and of the challenges of reversing its decline. Despite the very

substantial research efforts which have been directed at the restoration of cork oak woodlands, and even where a technical solution to implementing a sustainable management regime has been identified, finding the appropriate mechanism to implement and fund the solution remains problematic which may leave the reader feeling somewhat pessimistic for their future.

I found the book easy to read. The editors have done an excellent job of ensuring that the individual chapters flow seamlessly together, despite the multitude of authors involved, and it is almost as if the whole book had been written by a much a small group of authors rather than the sixty-eight listed. The books organization into five parts and twenty chapters, each with its own introduction, followed by a comprehensive

glossary, bibliography and subject index, provides ready access to a very diverse set of information. As a case study in integrating the management and restoration of a woodland ecosystem with its economic products, the book is certainly worth reading even if you never intend to visit the classic cork oak woodland landscapes of the *dehasas* in Spain or the *montados* in Portugal. If you decide to read this book you will never look at a cork stopper the same way again.

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