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Ancient Woodlands and Trees: A Guide for Landscape Planners and Forest Managers

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Preamble

Ancient woodlands, trees and forests are at the very core of many global landscapes. However, understanding the resource which these living landscapes provide requires genuinely multi-disciplinary research. Furthermore, our interest in and understanding of ancient woodlands and trees has grown significantly over recent decades.

Therefore, it is a challenge to keep abreast of current developments and ideas. The production of a major review volume which brings together key researchers and writers from across Europe and beyond, is immensely valuable to landscape planners, forest and woodland managers, and to a wider audience such as policy makers and educators too. It also contributes to international efforts towards identifying, recording and developing globally important agricultural heritage systems.

This book comprises fifteen major contributions by leading scholars on the ecology, history, heritage, and management of ancient trees, ancient woodlands and forests. Taking trees, woods and forests as eco-cultural resources, the authors explore ecology and nature, history, tradition and heritage, and the evidence base of archaeology, literature, and archives. The book is dedicated to the memory and works of the late Professor Oliver Rackham OBE whose research and writing triggered an interest in this field by the many that followed.

It is a great pleasure for IUFRO to be involved in the production and publication of this book since it is highly relevant to the aims and objectives and visions of the organisation. Furthermore, many of the authors are actively involved in IUFRO activities. Finally, I would like to extend my thanks to TÜBA for this fruitful collaboration.



Alexander Buck
IUFRO Executive Director

Preamble

Nature offers endless inspiration and wisdom to all sciences, and trees are one of the unique elements of this ever-changing source of knowledge. Nature has also been subject to human development over thousands of years, an intimate interaction that has generated cultural landscapes with often strong elements of local, regional, and national character. Being one of the oldest continually inhabited regions in the World, Europe and Anatolia contain diverse cultural landscapes with ancient woodlands and trees rich in biodiversity. Ancient woodlands and trees are strongly influenced by human activity reaching back far into history, an interaction which was often fine-grained and sustainable, but which sometimes also caused degradation of these unique resources. For instance, relict ancient woodlands and trees found in various regions of Turkey today are considered as the witnesses and hosts of the many civilisations that flourished in Anatolia. But especially in recent times, the landscapes and their biodiversity have been affected by over-exploitation and long-term degradation. Today, the greatest concentrations of ancient woodlands and trees in Anatolia and Europe are mostly found in traditionally-managed forests, wood pastures, parklands, wooded commons, village squares, cemeteries, residential gardens, hedgerows, meadows, and even in urban areas like squares, parks and streets.

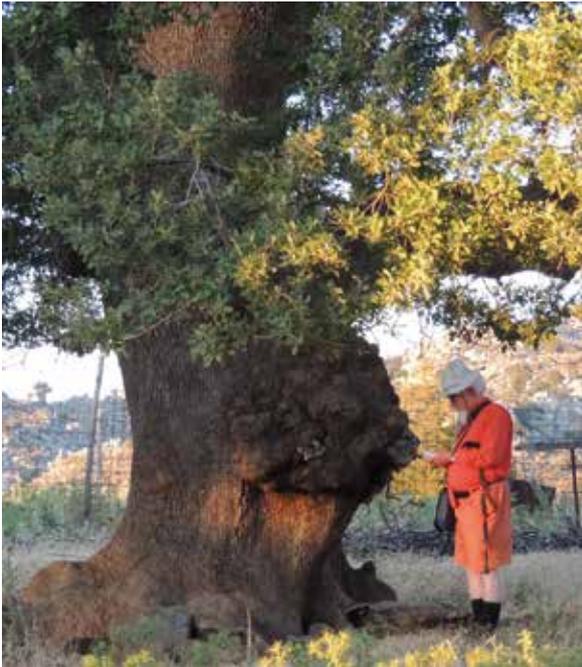
Ancient woodlands and trees have long been and will remain important elements of our cultural landscapes; a living archaeology and often relics of former land-use and distinctive countryside. These ancient woodlands and trees, widely considered as the “common heritage of mankind”, have been some of the most typical components of diverse landscapes over hundreds and even thousands of years. Furthermore, the woods, trees, and forests reflect the close contact between mankind and nature and in some cases connect to specific historic events or people. One of the most fascinating examples of such a specific ‘witness’ is in northern Turkey where hundreds of ancient yew trees with a probable maximum age of 4,000 years (the yew in Alaplı (Zonguldak) is thought to be our oldest tree, ca. 2,500 – 4,000 years old) form a unique ancient treescape - almost a symbolic ancestor of ancient woodlands and forests of Europe today.

Ancient woodlands and trees are known as one of the richest habitats in terms of associated fauna and flora diversity. However, these highly valuable habitats are continually threatened both in rural and urban environments. This is why we have to take urgent measures to conserve these irreplaceable survivors that link us with our past and our future.

This publication has been prepared as a result of ambitious studies of twenty-two scientists from prestigious institutions from Turkey, UK, Austria, Germany, Netherlands, Sweden and Denmark. It is also an important outcome of fruitful international and inter-disciplinary studies. It has been a pleasure for TÜBA to support this publication as a successful cooperation and we hope that it will draw attention to transferring ancient woodlands and trees not as one country’s heritage but a world heritage. I would like to thank IUFRO for this joint publication.

Prof. Dr. Ahmet Cevat ACAR
President of Turkish Academy of Sciences (TÜBA)

Dedication



Oliver Rackham communing with an ancient deciduous oak (*Q. brachyphylla*), Pano Ambeli (above Anogia) Crete, June, 2012 (Photo: Jennifer Moody).

This book is dedicated to the memory of Professor Oliver Rackham OBE FBA. Oliver was one of the originators of the concept of ‘ancient woodland’; a prodigious and brilliant writer with a wide-ranging intellect. His death cut short a long and productive career and we are saddened by the loss of a giant on the world stage with his enthusiasm for “ancient woodlands” and one of the most original thinkers and leading scientists in his field. Oliver is greatly missed by all those who care for trees, woods, history and the landscape, and more widely. Not only did he inform and influence our professions, but he has been a great advocate too. We salute Oliver and all that he has done.



Oliver Rackham in an ancient and burnt cypress stool, Mavrodassos, Anopoli Sphakia, July, 2010 (Photo: Agnieszka Helman-Wazny).

“We will miss him very much in our exchange of thoughts in order to disentangle the riddles of nature and trees in particular”

Frans Vera

“Oliver Rackham is one of the very few academics who has changed the way that everybody thinks; a rare talent indeed”

Oliver Gilbert

Table of Contents

Preambles	4 & 6
Executive Summary	11
1 Ancient woodland in concept and practice <i>George F. Peterken</i>	16
2 The Cultural Heritage of Woods and Forests <i>Ian D. Rotherham</i>	28
3 Archaeology of Trees, Woodland, and Wood-Pasture <i>Oliver Rackham</i>	40
4 Ancient Rights in Ancient Forests <i>Graham Bathe</i>	64
5 The importance of an Open Grown Tree – from Seed to Ancient <i>Ted Green</i>	78
6 Ancient and other trees of special interest: indicators of old growth biodiversity and heritage <i>Jill Butler</i>	86
7 Worked Trees and Ecological Indicators in Wooded Landscapes <i>Ian D. Rotherham</i>	94
8 Ancient Forests in Germany: Distribution, Importance for Maintaining Biodiversity, Protection and Threats <i>Monika Wulf and L. Zalf</i>	106
9 Tree Abundance, Density and Age Structure: The Key Factors Which Determine Species-richness in Saproxyllic (Wood-decay) Invertebrates <i>Keith N.A. Alexander</i>	124
10 Old Growth and Dead Wood as Key Factors for Nature Conservation in Managed Forests. Basics and Practice <i>Harald Schaich, Thomas A.M. Kaphegyi, R. Lühl, N. Schmalfuß, Mathias Rupp, T. Waldenspuhl and Werner Konold</i>	136

11	The Diversity of Ancient Woodlands in Austria: Historical Developments and Contemporary Social Importance	156
	<i>Elisabeth Johann</i>	
12	The Wood Pasture: for food, wood and biodiversity	184
	<i>Frans Vera</i>	
13	The Ancient Woodland Concept as a Practical Conservation Tool: the Turkish Experience	214
	<i>Simay Kirca, Alper H. Çolak and Ian D. Rotherham</i>	
14	Using Pollen Data and Models to Asses Landscape Structure and the Role of Grazers in Pre-agricultural Denmark	242
	<i>Anne Brigitte Nielsen</i>	
15	Tanneries and Treescapes: The Influence of the Tanning Industry on Woodland Management	250
	<i>Christine Handley and Ian D. Rotherham</i>	
16	A hidden Treasure in Turkey - Old Oaks with Unique Values	260
	<i>Nicklas Jansson, Ogün Türkey and Mustafa Avcı</i>	
17	European Woodland History and Management: some concluding thoughts	268
	<i>Ian D. Rotherham, Alper H. Çolak and Simay Kirca</i>	

Executive Summary

Tree landscapes, woods and forests, are complex and long-lived. Indeed, the process leading from birth to death of ancient trees and wooded landscapes may mask a complexity nature's 'web of relations and inter-relations' and the often-defining roles of people too. The truth is all trees are born, grow and die. Yet the process of becoming 'ancient', however defined, is a web of relations involving a complex combinations of influences between (1) ancient trees and woodlands and other organisms, (2) ancient trees and younger trees in a forest stand, (3) ancient trees and woodlands and the landscape, and, last but not least, (4) ancient trees and woodlands and people. Long before the time of scientific studies attempted to understand these relations, the English landscape painter Jacob George Strutt beautifully depicted the various aspects of ancient trees and woodlands in the introduction of his book in 1830 as; *"Among all the varied productions with which Nature has adorned the surface of the earth, none awakens our sympathies, or interests our imagination, so powerfully as those venerable trees which seem to have stood the lapse of ages -silent witnesses of the successive generations of man, to whose destiny they bear so touching a resemblance, alike in their budding, their prime and their decay."*

From ancient times until today, these trees and woods have inspired artists, writers and scientists. Such venerable ancient trees are generally portrayed by ecologists and in many works of art and literature, with a wide and hollowing trunk (in some species more than one trunk or a wide trunk reaching up to the sky), epiphytes such as fungi, mosses and lichens, a lessening of the canopy with large dead branches and deadwood on the ground. This means, a single tree provides a vast array of habitats which are an integral part of the complex co-evolutionary relationships evolved over its lifetime and even during its sometimes long afterlife. So, as trees age, they become ecologically more rich and full of life, and their relations with other organisms including people become more complex.

After picturing giant hollow trees in mind and admiring their wisdom and beauty as portrayed in the paintings of Barend Cornelis Koekkoek, Jean-Baptiste-Camille Corot, and Ion Andreescu for example, it is easy to think of a "virgin forest" composed of ancient trees when one hears the concept of "ancient woodland".

However, in reality, this would not be more than a mirage, since across the world, almost everywhere, people have managed the land and transformed its ecologies. With the exceptions of some remote islands the human footprint is indelibly pressed into the landscape. Forest cover has declined dramatically in the last 1,000 years or so, and what remains of tree covered land has been more or less altered from its original condition. Today, 'virgin forests' are only to be found on a few sites unreachable by humans, and even then they are affected by climate change, atmospheric pollution, and sometimes species extinctions; human influence is all-penetrating. Although the concept of an "ancient tree" or a "veteran tree" can be directly related with the age of a tree, (though this may vary with species), an "ancient woodland" does not necessarily need to be composed of old or ancient trees. Ancient woodland is generally defined as land that has been continuously wooded for hundreds of years (e.g. since the Middle Ages or early industrial in Britain (post-1600 AD or post-1700 depending on the authority), over 200 years in Germany, and from hundreds of years to the Neolithic Age in Turkey). Very often the key is habitat continuity, rather than any precise age, and even this concept of continuity masks the ebbs and flows of crisis and continuum in the landscape.

What does continuity bring? Why is it so important? Answers to these questions are hidden in the aforementioned web of relations. Many rare woodland plant species have existed in ancient woodlands continually over long periods, and have a localised distribution, and are not found in woods of recent origin. These are thus identified as "ancient woodland indicators", which are vulnerable to direct or indirect changes (i.e. exploitative timber harvesting, biomass extraction, over-grazing, land conversion, climate change, etc.) in the landscape pattern.

The enormous variation in the types of vegetation in ancient woodlands and in the combination of human uses of these landscapes has, in recent years, attracted great interest. These areas are very rich in wild plant and animal species, and this diversity is associated with continuity. However, in terms of the concept of the ancient woodland, we are not solely talking about spatial continuity that creates connection between ecological components and capacity for organisms to move across a landscape, but also a continuity of traditional human uses and practices such as wood pasturing, coppicing and

pollarding. Such traditional forest management practices helped create structurally rich forest stands, today very valuable for biodiversity conservation and the provision of forest-related ecosystem services.

The aim of this book is to help an understanding of the web of connections relating to ancient trees and woodlands, and to offer techniques to ensure effective conservation and sustainability of this precious resource. The approach is aided by considering the issues from different aspects and varied geographical locations. In this respect, the concept of ancient woodland is handled in detail in Chapter 1 by George Peterken. This provides a wide array of knowledge on how the concept developed in Britain and its strengths and limitations for ecologists and conservationists. This chapter also considers the use and limitations of this concept in mainland Europe and eastern North America. Since the idea of ancient woodland is closely related with the human history, Ian Rotherham in Chapter 2 stimulates an interest to 'read' the story of the woods and follow the footprints of abandoned and forgotten traditions in order to develop approaches to 'reading' the evidence of species, archaeology and other heritage. Here, conservation issues and concerns are also introduced. Complementary to Chapters 1 and 2, Oliver Rackham in Chapter 3 defines the major terms and habitats related to the concept of ancient woodland and it also introduces the methods of 'historical ecology' for establishing the history of the countryside. This contribution deals with the resources of woodland archaeology by drawing attention to the roles from the tiniest plants to the whole ecosystem, and considers the importance of understanding former and current practices, traditional uses, written and visual records, and scientific methods. Graham Bathe continues to address the issues from the historical use of wooded landscapes as hunting forests throughout much of Europe in Chapter 4. This approach is in order to reveal important points, which, if they are to be successful, modern conservation efforts may need to emulate. This chapter examines how hereditary use helped shape the royal hunting forests, drawing especially on examples taken from forests in Britain.

After providing a conceptual and historical perspective for ancient woodlands, in Chapter 5, Ted Green deals with the individual history of an open grown tree as a source of biodiversity through ages. This chapter tries to set out and describe some of the vast array of habitats provided on and within a single tree which are an integral part of the complex co-evolutionary relationships with other organisms. From a similar perspective to Chapter 5, Jill Butler draws particular attention to the biodiversity and heritage value of ancient trees by emphasizing the importance of large-scale surveys - like the Ancient Tree Hunt held in the UK - in order to describe a practical and necessary approach on 'Where to find what?' as well as to determine old-growth hotspots for effective nature conservation in Chapter 6.

In Chapter 7, Ian Rotherham handles the issue from

a different perspective by considering the signs that ancient trees and woodlands indicate on cultural history and use of trees. This chapter provides an introduction and overview to the use of worked trees and ecological indicators as a mid-layer between nature and cultural landscape for developing effective planning strategies based on woodland history, use and management. It also invites us not to look far for finding some evidence on woodland history, while such information may even be hidden in our gardens.

Germany has been one of the pioneer countries in Europe which pioneered ideas relating to ancient woodlands as a crucial component of natural and cultural heritage. So, Monika Wulf reports the German experience by describing the status of ancient forest and recent forest inventories, the importance of maintaining plant species richness in ancient forests, and need for the protection of ancient forests in Germany in Chapter 8. The potential threats like habitat fragmentation and alteration are also described.

Keith Alexander considers the specialised habitats provided by decaying wood in Chapter 9. In this context, these ancient landscapes are hotspots of species richness; but even today, these are barely considered much modern forestry since planning and practice generally concentrate on living and healthy trees. Yet in the ancient woodland concept, the saproxylic faunas are markers of the continuum of land-use though long time-periods. This chapter provides detailed information on the key factors which determine species richness in saproxylic (wood decay) invertebrates as well as management and conservation techniques for decaying wood habitats.

Following ideas introduced in the previous chapter, Harald Schaich, Thomas A.M. Kaphegyi, Rudolf Lühl, Nicole Schmalfuß, Mattias Rupp, Thomas Waldenspühl and Werner Konold derive practical and policy recommendations on how to foster old growth and dead wood features in complex, human-shaped forest landscapes and how to mesh this important issue with other goals of ecosystem service provisioning in European forests in Chapter 10. This is discussed with a regional perspective from the federal state of Baden-Württemberg, Southwestern Germany.

Elisabeth Johann presents a closer look at the Austrian forests, which are an important part of the European forest network in Chapter 11. She does this by presenting two case studies. Although these forests have at times been intensively utilised and exploited (as is the case across Europe), the chapter suggests that understanding socioeconomic and ecological factors in the past which were responsible for developments that contributed to the modern landscape. Furthermore, an understanding gained from the study of these processes can help improve the knowledge base for decision-making at the interfaces of energy, biodiversity, and forest policy as well as in forest resource management.

Wood pastures, which play a particular role in the ancient woodland concept by providing enormous



variation of habitats to a large number of species, are handled in detail by Frans Vera in Chapter 12. Wood pastures are described as the wilderness taken into use by mankind in order to fulfill the needs of its household. So, this chapter describes how the wood-pasture as system works, how it provided mankind his living and how it is related to the originally present wilderness.

Simay Kırca, Alper Çolak and Ian Rotherham introduce these issues from the perspective of the southeastern end of Europe, Turkey in Chapter 13. The authors provide detailed insight to the interactions between different civilizations and woodlands in Anatolia through history in order to clarify how the ancient woodland concept has developed in Turkey. With two case studies, this discussion also raises the question of, in terms of restoration and conservation, “How to handle highly valuable ancient woodlands as natural and cultural heritage?”

Anne Brigitte Nielsen, in Chapter 14, concentrates on a particular methodology for understanding how the landscape looked like in the past and what were the reasons behind it as to develop planning strategies for the future. In order to do this, simulated landscapes were created based on landscapes without and with different levels of grazing impact. Pollen deposition in these landscapes was simulated using a model of pollen representation, dispersal and deposition, and the resulting pollen spectra were statistically compared to existing pollen records from Denmark from the Atlantic period (*ca.* 6,800 - 3,900 BC). This is an important contribution to debates on understanding European wooded landscapes, past, present, and future.

Christine Handley and Ian Rotherham focus on the relationships between supply and demand for wood, timber and bark in different markets by using examples from the UK and the USA in Chapter 15. These different examples reveal the effects of the tannery industry on woodlands varied depending on the longevity and intensity of the industry at particular points in time. Thus, this knowledge is significant because of the way in which these relationships have influenced the form, structure and management of woodlands through the ages.

Lastly, in Chapter 16 Nicklas Jansson, Ogün Ç. Türkay and Mustafa Avcı concentrate on the diverse beetle fauna associated with the old oaks of Turkey in Chapter 16. They also try to draw attention to the degradation and loss of old trees and deadwood, which provides valuable habitats for these species while little is known about the Turkish beetle fauna in comparison to the other European countries. Essentially, this chapter is a call for further scientific research on the highly valuable but shrinking oak habitats in Turkey.

Overall, given the urgent need to discover, understand, conserve and where necessary restore ancient woodlands and trees, it is hoped that this publication provides a modest step to raise awareness and enthusiasm. There is so much more to learn and to read through understanding the web of relations in the mysterious world of ancient

woodlands and ancient trees. In addressing this hugely important topic and most fascinating subject in our European ecology and our continent's landscape, the editors humbly dedicate this volume to the memory of the greatest pioneer and enthusiast for ancient woods and ancient trees, the late Professor Oliver Rackham.

Simay Kırca, Alper H. Çolak and Ian D. Rotherham
January, 2018