

BRITISH OAKS

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Introduction

Research is actively underway to collate information on the two native British oaks, the Pedunculate *Quercus robur* and the Sessile *Quercus petraea*. At present with only a few publications available, albeit most out of print, there is no other publication or reference work that includes an overall coverage of the two oaks. The subject areas under research have been outlined below and it is in these categories that information is being sought and collated.

Evolution and Distribution

Geological and archaeological periods will be included to give details of how the two oaks evolved in relation to the changing pattern of the European continent. Data from using pollen counts and radiocarbon dating will be used and methods explained. The latest distribution maps to be included together with details of the pattern of change in the British flora. Reference to ancient semi-fossilised tree trunks formed in bogs, known as 'bog oaks' will be shown as an important source of information on the origin of oaks in Britain.

The geographical distribution and variation in migration patterns since the last ice age together with the ecological succession throughout the British Isles will be covered. The controversial history behind the present day taxonomy of each oak will be explained. The inclusion of the relevance of soil type, climate and altitude and the effects of human activity through several cultures from Neolithic, Bronze Age, Iron Age, Anglo Saxon, Roman, Norman and Medieval periods.

Physiological Characteristics

The biological features of the oaks their structure and function, will be explained, with the use of several diagrams, including life and nutrient cycles. Cytology, genetics and reproduction, in particular hybridization, morphological and genetic traits between the two oaks, will be included with details of experimental methodology.

Variation of morphology and chemical characters of acorns from within and between natural populations and individuals will be discussed. Consideration of studies made on chloroplast DNA variation in oak populations, with the attended influence of postglacial colonisation and human management. Growth patterns will be explored from young oaks to maturity including lateral root systems, crown architecture and the timing of canopy and epicormic shoots. Discussion of the anatomical characters in the wood of oak, which predispose trees to shake and the problems relating thereto with breeding programmes.

Ecology and Natural History

The fascinating ecology of the oaks and their important role in supporting considerable number of fauna and flora will be presented in an interesting clear manner.

Native oaks are known to support a huge diversity of organisms and the major groups will be covered giving a wide picture of the importance of the oak. Reference to be made to studies conducted to ascertain the extent of the level of species established in the native oak and its close environs. Populations of breeding birds and bird communities in oakwoods will be referred to and their influence on the future expansion of woodland and individual growth and survival. Lichen, mosses, fungi, mistletoe and other epiphytes that are found on or close to oaks will be described and their effects on the oak's growth and welfare. Invertebrate play a large part in the 'habitat' of an oak and descriptive notes and roles of butterflies, moths, beetles, bugs and spiders in the life of the oak will be outlined. Mammals, including various species of bat, will also be identified and their roles in the life of the oak explained, especially seed production and food conditions for rodents in oak woodlands. The influence of birds and mammals in the localised distribution of oak and the survival of oak seedlings from naturally planted acorns.

Important national woodlands that support considerable numbers of fauna and flora will be highlighted and reference to studies made of these woodlands.

Illustrations and coloured photographs of some of the many species that frequent the 'habitat' of the oak will be included.

Woodlands

The historical significance of our ancient oak woodlands has become in recent years an important issue to ensure their restoration and long-term survival. It is intended to set out the background to this issue and refer to various management and conservation programmes underway in the Britain. Forestry techniques past and present will also be discussed. Reference to coppicing, pollarding and regeneration of our oak woodlands referring to some of our ancient and interesting oaks and oak woodlands. Former rights and privileges relating to oak woodlands will also be explained.

Present and future plans for oakwoods and their management will be explored and the results of various projects undertaken throughout the Britain will be discussed.

Diseases and Predators

To outline past and present diseases including the fungal pathogens their biology and ecology, particularly those that have been held responsible for a number of diseases affecting our two native oaks. Emphasis will be made on present day diseases and infections causing die back and sudden oak death. Reference will be made to the programme of research in this area. The role and effect of defoliators and galls on the two oaks to be detailed with coloured photographs and illustrations. Tables will be published of mortality rates and the decline of oaks.

Uses of Oak

Few publications devote specific reference to the importance and durability of oak timber in shipbuilding, building construction, medieval woodwork in churches and the manufacture of industrial implements, utensils and furniture. The role of our native oaks in providing timber from the time of early man will be emphasised. Oak and its natural components are still used in various other industries, including the curing of foods, pharmacy and tanning of leather. Examples of these uses, some still operating today, will be made showing how old traditions and crafts are still preserved. Even acorns played an important part in the historical life of oakwoods where the old right of pannage was practised and the sale of acorns a useful income. The use of oak timber in modern times will be outlined.

Pollution and Climate

Climate influence and atmospheric deposition have an effect on the growth and survival of trees and the two oaks are no exception. The effects of global warming, extreme weather conditions on the growth of oaks will be reviewed from recent results of phenological studies. Data will be included to show these effects as well as data on the effect of chemicals, acidification and radiation.

Cultural Heritage

In this chapter, it is intended to collect together folklore, legends and myths that have been published over the years in various publications. Poems, love tokens, 'Oak Apple Days', the 'Green Man' figure and the use of the 'oak' in heraldic designs, naming places and buildings will be explained giving examples and where appropriate locations. Historical events and the many ceremonies and celebrations relating to the native oaks will be explained.

Conservation

Conservation has been referred to in the management of oak woodlands but several projects have been proposed or implemented nationwide to enhance or create new oak woodlands. These have been supplemented with landowner stewardship schemes, tree preservation orders and nursery cultivation. These and other activities to enhance the future of native oaks will be explained. Nature reserves play an important part in the management of oak woodlands, the organisations involved, and their reserves will be highlighted in detail.

The Future

Considerable research is being undertaken especially in respect of genetics and the effects of present day problems with growth and survival. Conservation of individual trees and woodlands is continually being monitored as well as project planting of woodlands and forests. The effects of climate changes will be addressed and education of the public to assure a future for the two native oaks.