

Foreword

This publication brings together the results of a meeting, the fourth in a series, which explores various aspects of the biology of willows. Like the symposium on oak, organised by the Botanical Society of the British Isles in 1973, on birches and sitka spruce organised by the Botanical Society of Edinburgh, in 1982 and 1986 respectively, the present publication concentrates in the main on British taxa, whilst calling on the experience of workers from continental Europe and Scandinavia.

Willows are widely distributed and some are important members of the world flora (except in Australasia and even there they have been extensively planted). There are 23 native British willows and as many hybrids, and they outnumber the species in all our native tree genera together. There are three times as many species in Europe as a whole, many in the cooler temperate northerly latitudes. It is a great honour to include a personal view of the European members of the genus by Karl Heinz Rechinger, Vienna, Austria, an Honorary Fellow of the Royal Society of Edinburgh who has had a long and distinguished career studying these plants. Willows have played an important role in the history of the development of our British vegetation and Brian and Jaqueline Huntley tackle the problems by interpreting the available data. These plants extend back in time further than the Pleistocene with its lulls of warm climate; Margaret Collinson explores this early phase.

Willows include arborescent and dwarf montane and arctic/alpine taxa but all are catkin bearers and dioecious. Many produce sweet smelling nectar which attracts pollinating insects, and is a source of high energy for bees etc., especially in early spring when food is at a premium. The pollinators can be very active visiting a whole array of closely related taxa so hybridisation is common-place. Willow-hybrids are notoriously difficult to identify and certain aspects of this nightmare are addressed by R. Desmond Meikle. Hybrids and parents may respond in very different ways to changing environmental conditions, a subject discussed by John Good. Thomas Elmquist of Umea addresses the link between willow sex-ratios as influenced by herbivory.

Willows are a source of food for many animals, vertebrates and invertebrates alike. The insects forming galls are an example of the latter and are discussed by Susan Hartley. So conspicuous and widespread are these galls that in Shetland they even demand a colloquial name, Dog berry, apparently because galled dwarf willows are attractive to dogs. The ability of insects to graze willow or induce galls depends on the chemical characters of the host. Jacques Pasteels, Brussels, discusses the chemical ecology and John Raven the various biochemical and physiological factors. Insects may be the staple food of birds, indeed many animals depend on willows for shelter as well as food. Two birds have even taken on the tree's name – willow tit and willow grouse. John Wilson deals with the ornithological importance of willows at Leighton Moss, Lancashire.

In commerce willows are used mainly in amenity horticulture. John White describes the ornamental uses of members of the genus *Salix*, calling on the leaves, bark and general form, a theme expanded by Jindrich Chmelař, Brno, Czechoslovakia. These trees, especially the arborescent forms have had a long history of use in many parts of the world especially in basketry. Ken Stott, who has headed a team based in Long Ashton studying willows for many years, has drawn together the historic aspects of this subject, whilst Malcolm Dawson explores the fact that willows are the best crop for biomass production in short rotation coppice.

Wherever plants are grown in stands diseases prosper. Bacterial diseases are probably the most notable as in the past they have particularly damaged the cricket bat industry, and even in amenity plantings have caused old trees to literally explode. John Turner discusses these interactions whilst Stephan Helfer tackles the taxonomy of the rusts, fungi which produce the familiar orange pustules on the leaves of willows ranging from 'alpines' to arborescent taxa.

Willows are important features of the countryside and landscape. Alistair Sommerville deals with them in a broad environmental spectrum. Larger fungi assist in the growth either directly as ectomycorrhizal partners or by rotting leaf and woody litter and releasing nutrients; Roy Watling explores some of the willow-fungi interactions.

The Botanical Society of Scotland would like to thank the Royal Society of Edinburgh for a grant towards Professor Rechinger's visit, and Rt. Hon. Michael Hesselstine for Dr J. Chemelař's attendance. Thanks are also extended to Prof. David Ingram, Regius Keeper for allowing facilities at the Royal Botanic Garden to be used whilst hosting the symposium, and his staff, especially Colin Will, who have helped in the smooth running of the event. The help of Dr George Holmes is recorded and Dr Ken Stott kindly assisted the editors in their efforts to produce a well-balanced publication.

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