MISTLETOE ON OAKS IN BRITAIN

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Abstract

Oak trees have always been considered to be rare hosts for mistletoe in Britain despite the traditional association between the Druids and mistletoe growing on oaks in the minds of many people. Currently there are eleven confirmed mistletoe-oaks in Britain. Common oak (*Quercus robur*) is the most frequent host; mistletoe is growing on red oak (*Q. rubra*) at three separate sites, as well as on one scarlet oak (*Q. coccinea*). The estimated ages of the existing oak hosts range from 90 to 400 years and they are found in hedges, woodland edges, parks and a churchyard rather than in pure woodland. The existing mistletoe-oaks are concentrated in Herefordshire and the current range is very much more restricted than the historical range. Evidence from past records, reports and general accounts of mistletoe on oak indicates that the rarity of mistletoe-oaks in Britain has not changed since the 17th century. The current results suggest a population of mistletoe-oaks that is apparently fairly stable in number, but with some turnover as losses are compensated by the discovery of new sites and the parasitism of new trees.

Introduction

Mistletoe (*Viscum album*) has a wide range of hosts in Britain (Bull 1864a, 1864b, 1907; Somerville 1914; Nicholson 1932; Perring 1973). The commonest hosts are apple (*Malus sylvestris*), common lime (*Tilia* x *europaea*), common hawthorn (*Crataegus monogyna*) and hybrid black poplars (*Populus* x *canadensis*) (Perring 1973; Briggs 1999). Despite the traditional association between mistletoe, oaks, and Druids in the minds of many people (Frazer 1922; Kanner 1939; Box 1995), oaks have always been considered to be a rare host for mistletoe in Britain (Evelyn 1664; Ray 1670, 1677; Withering 1796; Loudon 1838; Bull 1864a, 1864b, 1907; Nicholson 1932; Tubuef 1923; Perring 1973).

The Botanical Society of the British Isles (BSBI) carried out a survey of mistletoe and its hosts from 1969 to 1972 using both BSBI members and the general public (Perring 1973). Mistletoe was not recorded on sessile oak (*Q. petraea*) and was recorded on common oak (*Q. robur*) in only twelve of the 10-km squares in Britain (2.2% of the 539 10-km squares recorded).

In contrast, the most recent survey of mistletoe carried out from 1994 to 1995 by Plantlife and the BSBI produced some 140 sightings of mistletoe on oak, 1.8% of the 8,000+ sightings of mistletoe sent in by the public and by botanists (Briggs 1995), although there are likely errors due to the misidentification of oak in winter (Perring 1973; Jonathan Briggs, pers. comm.).

An examination of historical records and the confirmation of existing sites of mistletoe-oaks was undertaken in order to provide firm evidence of their current and their historical distribution in Britain.

Methods

BSBI vice-county recorders, the national Biological Records Centre (Centre for Ecology and Hydrology at Monks Wood), and local Biological Record Centres (usually county based) were asked for past and present records.

County floras for England and Wales, from Victorian times to the present, were examined for references to mistletoe on oak, as were local floras for Bristol (Swete 1854; White 1912) and Chepstow (Shoolbred 1920) that are in mistletoe-rich areas.

Given the density of mistletoe records in Herefordshire and surrounding counties (Perring 1973; Briggs 1999), sources of local natural history records were checked: botanical records published by the Caradoc & Severn Valley Field Club (Shropshire) from 1892 to 1970 when the botanical records petered out; the Transactions of the Woolhope Naturalists' Field Society (Herefordshire) from 1851 to the present; the Transactions of the Worcestershire Naturalists' Club (1847 to the present); and the Proceedings of the Somerset Archaeological & Natural History Society (1850 to the present).

Mistletoe-oaks referred to in the published literature were followed up, if there was sufficient information to identify the site, through correspondence with the landowner and, if necessary, by a site visit.

Existing mistletoe-oaks were visited with the permission of the landowner or occupier. The girth of each tree was measured at 1.3 m above ground level (Hamilton 1975) and used to derive the diameter at breast height (dbh). The age of each tree was estimated using the dbh, taking into account the location in which each tree was growing (White 1994); additional estimates of age were derived from published accounts. Mistletoe is dioecious and the mistletoe on each oak was examined to determine if plants were female by examining for berries in December 1996/January 1997 using 12 x 25 binoculars; mistletoes without berries were checked again in November 1998.

Berries of *Viscum album*

Viscum album

Results and Discussion

The earliest known report of mistletoe on oak in Britain is the poem attributed to the 13th century Scottish poet, Thomas the Rhymer, describing the mistletoe-oak at Errol in Perthshire. Kanner (1939, p.913) reports an old account of mistletoe growing in profusion on a vast old oak in the neighbourhood of Errol, not far from the Falcon stone; the fate of the family of Hay was reputed to be linked to the continued existence of this tree (Gurney 1848, pp. 576-577; Melville 1935, p.156). Kanner (1939) also notes that the 13th century Scottish poet, Thomas Rymour of Ercildowne (Thomas the Rhymer, 1220-1297), is credited with the authorship of the poem that deals with the connection between this mistletoe-oak (aik) and the fate of the Hay family:

While the mistletoe bats on Errol's aik,
And that aik stands fast,
The Hays shall flourish, and their good grey hawk
Shall nocht flinch before the blast.

But when the root of the aik decays
And the mistletoe dwines on its withered breast
The grass shall grow on Errol's hearthstane,
And the corbie roup [raven croak] in the falcon's nest.

There are no further records of mistletoe on oak trees at Errol and the estate was sold by the Hay family in the 1630s to cover the debts of the 10th Earl (pers. comm., Jeremy Duncan, Local Studies Librarian, AK Bell Library, Perth).

The earliest definite published records of mistletoe growing on specific oak trees, rather than general statements about mistletoe on oaks, all date from the 17th century: the mistletoe-oak at Norwood (Surrey) felled in 1657 (Aubrey 1719); mistletoe on oak near Sheffield (Yorkshire) reported by Ray (1670, 1677); and mistletoe growing on oak at Staveley (Derbyshire) in the second half of the 17th century (Arnold 1887; correspondence from the Countess of Danby to Mrs. Colepeper, Folio 46, Harley MS 7005, British Library).

The 2nd Edition of Ray's *Catalogus Plantarum Angliae* (Ray 1677) contains details of mistletoe on an oak at Sheffield that were not in the 1st Edition (Ray 1670). Ray (1677, p.307) has "*Siquis viscum in Quercu crescentem videre desiderat, Sheffeldiam adeat, a qua non procul inveniri eum a D. Fr. Jessop certior factus sum*" [Anyone who wants to see mistletoe growing on an oak should go to Sheffield, not far from where I have been informed by D. Fr. Jessop, it can be found] whereas Ray (1670, p.319) only has "*Siquis viscum in Quercu crescentem videre desiderat*". Francis Jessop (1638-1691) of Broomhall, Sheffield, met John Ray in 1668 and Ray published some of Jessop's plant records (Desmond 1977).

The oak with mistletoe at Staveley was clearly famous in the 17th century for its rarity because Arnold (1887) reports that "*...in one of Colepeper's MSS. at the British Museum, in a curious notice of Sir Peter Freschville's house at Staveley, Derbyshire, is this passage:— 'Heare my Lord Freschville did live, and heare grows the famous Mistletoe tree, the only oake in England that bears Mistletoe.'*" The Sheffield and Staveley records are particularly interesting and may well be of the same tree, as Staveley is only some 14 km from the centre of Sheffield.

The earliest herbarium specimen of mistletoe from an oak is dated 1690 and was obtained at Stafford and is held in the Morisonian collection at Oxford University.

There was considerable interest in mistletoe and its wide variety of host species from the 19th century until the early part of the 20th century and information on mistletoe on oaks is contained in more general accounts (Lees 1842, 1851; Bull 1864a, 1864b; Anon. 1873; Webster 1885; Arnold 1887; Purchas & Ley 1889; Bull 1907; Elwes & Henry 1907; Somerville 1914; Tubuef 1923; Nicholson 1932; Durham 1935). Bull (1864a, 1864b) built on the initial observations of Lees (1842, 1851) and gives details of six records/ authenticated reports of mistletoe-oaks. Footnotes in the later reprint of this paper (Bull 1907) extended the list of records/ authenticated reports to eleven trees. Later lists of mistletoe-oaks appear to be derived from earlier accounts, often combined with additional second-hand reports without any first-hand evidence. Nevertheless, the various lists compiled

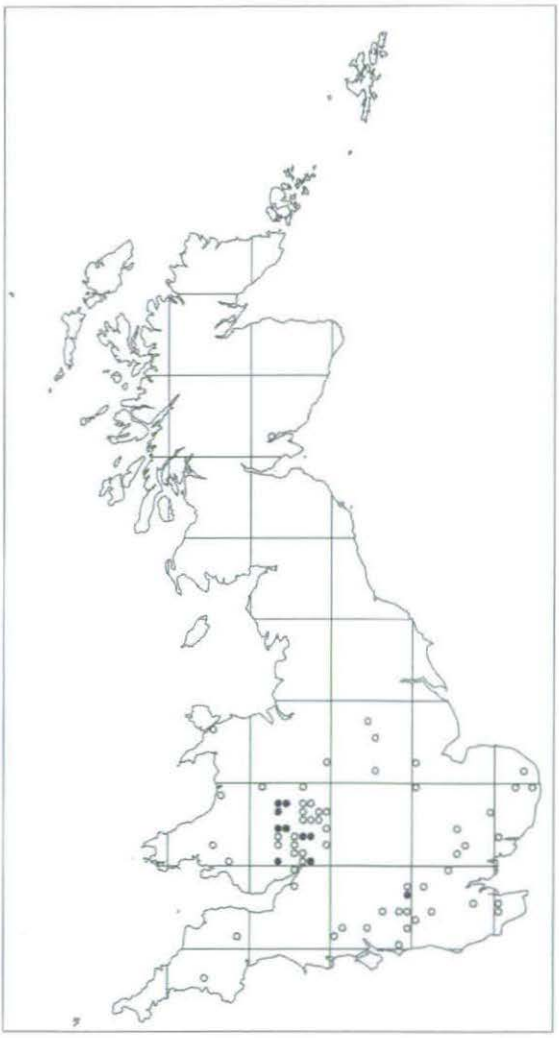

Figure 1. Distribution of records and reports of mistletoe-oaks and existing mistletoe-oaks. Current verifications shown as solid circles.

between the middle of the 19th century and the first part of the 20th century usually describe between ten and twenty mistletoe-oaks.

Currently, eleven oaks with mistletoe growing on them have been located and verified in Britain (Figure 1); nine of the oaks support female mistletoe plants. The mistletoe-oaks are concentrated in Herefordshire, with single examples in Berkshire, Gloucestershire and Gwent, and the records cover ten separate 10-km squares of the Ordnance Survey. This figure is similar to the twelve 10-km squares for which mistletoe-oaks were reported in the 1969 -1972 BSBI survey (Perring 1973).

These results, together with the lists of between ten and twenty mistletoe-oaks in the 19th and early 20th centuries, suggest a population of mistletoe-oaks which is apparently fairly stable in number, but in which there is a considerable turnover as losses are compensated by the discovery of new sites and the parasitism of new trees.

Common oak, *Q. robur*, is the most frequent host amongst the existing mistletoe-oaks. The presence of mistletoe on red oak, *Q. rubra*, at three separate sites, as well as on a scarlet oak, *Q. coccinea*, is notable as the BSBI survey recorded common oak as the only host species of oak (Perring 1973). It is interesting to note that Somerville (1914) includes a report of mistletoe on *Q. rubra* (syn. *Q. borealis*) in Worcestershire, although no details are given. Mistletoe, however, is found on 'red oaks' (*Q. rubra, Q. coccinea, Q. palustris*) in other parts of Europe, particularly in France (Frochot *et al.* 1994). Common oak is also the most frequent species of oak identified in past records/reports of mistletoe-oaks which now either no longer exist or where mistletoe is no longer present on the host tree.

The estimated ages of the existing oak hosts range from 90 to 400 years. These mistletoe-oaks are found in open situations such as woodland edges, hedges, parks and even a churchyard, but not in pure woodland; Frochot *et al.* (1994) report a similar finding with mistletoe on 'red oaks' in France. Records and reports of other oaks with mistletoe confirm the preference for open situations; locations in woodland tend to be on the edge of the woodland, for example "in the corner of a wood", or in "a fringe of ancient woodland" beside the Avon Gorge, or near a stream in the Wyre Forest. This preference for open, unshaded habitats (gardens, orchards, parks, hedgerows), rather than woodlands, is characteristic of mistletoe in general (Perring 1973; Briggs 1995, 1999).

Hedgeline containing a common oak without leaves but with two bunches of mistletoe. photo © John Box

The pattern of distribution for

Arrow shows a bunch of mistletoe on red oak in churchyard.

photo © John Box

all records and reports of mistletoe-oaks (Figure 1) is similar to the distribution for all mistletoe records given in Perring (1973) and Briggs (1995, 1999). However, the range of existing confirmed mistletoe-oaks (solid circles) is significantly more restricted than the historical range (all circles), but coincides with the concentration of British mistletoe records in Herefordshire and the surrounding counties (Perring 1973; Briggs 1999).

In conclusion, the verification of only eleven existing mistletoe-oaks confirms the rarity of mistletoe growing on oak in Britain. Past records, reports and general accounts suggest that this rarity has not changed significantly since the 17th century when it was commented on by Evelyn (1664) and Ray (1670, 1677). Indeed, mistletoe from the oak at Eastnor was considered sufficiently noteworthy to be exhibited in 1837 at both the Linnean Society and the London Horticultural Society (Anon. 1837; Loudon 1838). Mistletoe growing on native oaks (*Q. robur* and *Q. petraea*) would appear to be a rare association throughout most of western Europe (Tubuef 1923; Grazi & Urech 1983), although surveys over the last twenty years have identified almost 250 native oaks with mistletoe and some 460 'red oaks' with mistletoe in France (Frochot *et al.* 1994; Ramm *et al.* 2000). The present range of mistletoe-oaks in Britain is, however, less than the historical range based on past records and reports. This may be due to the clearance of woods and hedges resulting from the intensification of agriculture and the extension of urban areas over the past 50 years. Within the present range, the existing mistletoe-oaks are concentrated in Herefordshire, which coincides with the core of the present distribution of mistletoe in Britain.

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References

Anon. (1837). *The Gardener's Magazine* 13:333-334.

Anon. (1873). Mistletoe. *The Leisure Hour*, No. 1101, 1 February 1873, pp. 71-72.

Arnold, F. H. (1887). Notes on the mistletoe. *The Naturalists' Monthly* 1(4): 65-67.

Aubrey, J. (1719). *Natural History and Antiquities of Surrey*. E. Curll, London.

Box, J. (1995). The festive ecology of holly, ivy and mistletoe. *British Wildlife* 7:69-74.

Briggs, J. (1995). Mistletoe - distribution, biology and the National Survey. *British Wildlife* 7:75-82.

Briggs, J. (1999). *Kissing Goodbye to Mistletoe?* Plantlife, London.

Bull, H. G. (1864a). Mistletoe in Herefordshire. *Transactions of the Woolhope Naturalists Field Club* 5: 59-108.

Bull, H. G. (1864b). The mistletoe (*Viscum album*, L.) in Herefordshire. *Journal of Botany* 2:361-385. [Note on paper that it is abridged from the Transactions of the Woolhope Naturalists' Field Club with corrections by the author; the text appears to be almost the same as Bull (1864a)].

Bull, H. G. (1907). The mistletoe in Herefordshire. *Transactions of the Woolhope Naturalists Field Club*, 1852-1865, pp. 312-347. [A reprint of the early volumes of the Transactions with footnotes and postscript added to the paper originally published in 1864].

Desmond, R. (1977). *Dictionary of British & Irish Botanists and Horticulturists*. Taylor & Francis Ltd and The Natural History Museum, London.

Durham, H. E. (1935). On mistletoe. *Transactions of the Woolhope Naturalists Field Club* 1933-1935, pp. 140-153, issued 1938.

Elwes, H. J. & Henry, A. (1907). *The Trees of Great Britain and Ireland* 2:333-334. Privately published.

Evelyn, J. (1664). *Sylva, or a Discourse of Forest-trees*. 1st edition. London.

Frazer, J. G. (1922). *The Golden Bough*. Macmillan Press, London.

Frochot, H., Grazi, G & Urech, K. (2000) Sensibilité au gui du chêne rouge d'Amérique en France. In: Timbal, J., Kremer, A., Le Goff, N. & Nepveu, G. (ed.), Le Chêne Rouge d'Amérique, pp. 387-398 (pp. 504-511 for references). Institut National de la Recherche Agronomique, Paris.

Grazi, G. & Urech, K. (1983). La susceptibilité des chênes, des ormes et des mélèzes au gui (*Viscum album* L.). *Revue Scientifique du Bourbonnais* pp. 6-12.

Gurney, D. (1848). *The Record of the House of Gournay*, Part III. Privately printed by John Bowyer Nichols and John Gough Nichols, London.

Hamilton, G. J. (1975). *Forest Mensuration*. Forestry Commission Booklet No. 39. Her Majesties Stationery Office, London.

Kanner, L. (1939). Mistletoe, magic and medecine. *Bulletin of the History of Medecine* 7: 875-936.

Lees, E. (1842). *The Botanical Looker-out Among the Wild Flowers of the Fields, Woods, and Mountains, of England and Wales*, pp. 6-23. Tilt and Bogue, London and H. Davies, Cheltenham.

Lees, E. (1851). *The Botanical Looker-out among the Wild Flowers of England and Wales*. 2nd edition. Hamilton, Adams & Co, London.

Loudon, J. C. (1838). *Arboretum et Fruticetum Britannicum* 3:1831. Longman, Orme, Brown, Green & Longman, London.

Melville, L. (1935). *Errol: its legends, lands and people*. Hunter, Perth; reprinted in facsimile, 1985.

Nicholson, C. (1932). The mistleto and its hosts. *The Gardeners' Chronicle*, pp. 102-104, 145-146.

Perring, F. (1973). Mistletoe. In: Green, P. S. (ed.), *Plants wild and cultivated*, pp. 139-145. Botanical Society of the British Isles.

Purchas, W. H. & Ley, A. (eds.) (1889). *A Flora of Herefordshire*. Jakeman & Carver, Hereford.

Ramm, H., Urech, K., Scheibler, M. & Grazi, G. (2000). Cultivation and development of *Viscum album* L. In: Büssing, A. (ed.), Mistletoe: the genus *Viscum*, pp. 75-94. Harwood Academic Publishers, Amsterdam.

Ray, J. (1670). *Catalogus Plantarum Angliae, et Insularum Adjacentium*. 1st edition, John Martyn, London.

Ray, J. (1677). *Catalogus Plantarum Angliae, et Insularum Adjacentium*. 2nd edition, John Martyn, London.

Shoolbred, W. A. (1920). *The Flora of Chepstow*. Taylor & Francis, London.

Somerville, W. (1914). The mistletoe in England. *Quarterly Journal of Forestry* 8:20-25.

Swete, E. H. (1854). *Flora Bristoliensis*. J van Voorst, London.

Tubuef, K. von (1923). *Monographie der Mistel*. Verlag Oldenbourg, M?nchen u. Berlin.

Webster, A. D. (1885). Parasitical flowering plants. *Hardwicke's Science-Gossip* 21:172-175 [No 248, August 1885].

White, J. (1994). *Estimating the age of large trees in Britain*. Research Information Note 250. The Forestry Authority, Edinburgh.

White, J. W. (1912). *The Flora of Bristol*. John Wright & Sons Ltd, Bristol.

Withering, W. (1796). *An Arrangement of British Plants*, 3rd edition. M. Swinney, Birmingham.