

The distribution and naturalisation of *Lathraea clandestina* L. (Orobanchaceae) in the British Isles

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ABSTRACT

Lathraea clandestina L., the Purple Toothwort, is a native of Belgium, France, the Pyrenees and Italy. It contains no chlorophyll and is parasitic on the roots of many tree species, usually willows and poplars. It was introduced into Great Britain in the late 19th century. Since then it has been extensively planted and has become naturalised in many places. Its seeds are explosively ejected over large distances, and the plant often spreads far from planted colonies, particularly along watercourses. This paper reviews the present distribution of the plant in the British Isles.

KEYWORDS: Purple Toothwort, holoparasite.

INTRODUCTION

Lathraea clandestina L., the Purple Toothwort, is native in Belgium, France, Spain and Italy (Webb 1972). In Belgium it occurs principally in East Flanders (van Rompaey & Delvosalle 1979). It is widespread in the south and west of France (Coste 1937), in the Pyrenees and the eastern end of the Cordillera Cantabrica in north-eastern Spain and occurs very locally throughout the Italian peninsula, from Pisa in the north to the Aspromonte range in southern Calabria (Pignatti 1982). It has become naturalised in the Netherlands (van de Beek 1993). It was introduced to Britain in the late 19th century and has since been extensively planted in many private and botanical gardens. There are several examples of escapes from gardens and subsequent natural establishment some distance away. *L. clandestina* was first introduced into Britain sometime before 1888. A plant was presented to the Royal Botanic Gardens, Kew in May 1888 by Dr Schumann of the Berlin Herbarium (Hooker 1890), and this is usually cited as the date of introduction. However, Tallack (1889) states that in June 1888 he had sent the plant for naming and that it had already been established at Livermere Park, Bury St Edmunds for several years. The plant is now well established in many sites throughout Britain and Ireland, both in private and botanical gardens and uncultivated areas.

THE BIOLOGY OF *LATHRAEA CLANDESTINA*

Lathraea clandestina is holoparasitic, obtaining all its requirements from the roots of its host (Kuijt 1969), usually species of *Salix* or *Populus*. Freely branched underground stems bear yellowish scale leaves. Erect flowers are borne, 4–8 in a raceme, on pedicels up to 3 cm long. The corolla, 4–5 cm, is usually dark purple. The flowers appear usually between March and May. Towards the end of this period the plant is typically very difficult to find, being hidden by other low growing vegetation and for most of the rest of the year there is no evidence of the plant at all. Pollination has been observed principally by long-tongued bumblebees both in Britain and Spain (Prŷs-Jones & Willmer 1992). The nectar is secreted in the base of the corolla in a chamber closed by a narrowing of the corolla tube and by a ring of hairs at its upper end. The nectar has an unusually high ammonia content, rendering it unpalatable to birds and ants (Prŷs-Jones & Willmer 1992).

The seeds of *L. clandestina* are unusually large for a parasitic plant, being approximately 5 mm in diameter, and four or five are contained in a capsule. The seeds are explosively ejected, and they

may be thrown for a considerable distance (Druce 1925; Ridley 1930). The plant is often associated with water and transport of seed or fragments of plant along watercourses may be one of its principal modes of dispersal. Examples of this are the Roman River valley near Colchester, N. Essex (v.c. 19) where several colonies have been found downstream from a garden where it was planted (Tarpey & Heath 1990); Mickleton, in E. Gloucestershire (v.c. 33) where it established from a colony 2 km upstream and a string of sites along the River Tamar in Devon and Cornwall (v.cc. 2 & 3). However, it is not always associated with water, as for example, at Warley Place, N. Essex (v.c. 18), where it was seen growing next to a hedge at a considerable distance from a pond and well above the water level. Kuijt (1969) alludes to the possible distribution of the seeds by ants and Salisbury (1961) to transport by birds.

Germination in *L. clandestina* normally occurs only when chemically stimulated by root exudates (Heinricher 1894), although the chemical stimulus does not cause the radicle to grow towards the host (Kuijt 1969). After contact with the host root a haustorium develops whose xylem connects with that of the host's root. This haustorium ramifies over a period of many years, and may grow for ten years before flowers emerge (Heinricher 1894). This accords with many observations that flowers usually appear at least three years after planting a cutting of *L. clandestina* on the roots of a tree, e.g. Lancaster (1990). Although most reports of *L. clandestina* state the host as *Salix* or *Populus*, many other trees can apparently act as hosts. Lancaster (1990) lists *Cercidiphyllum japonicum* Sieb. & Zucc., *Corylus avellana* L. and *Acer saccharinum* L. as hosts. I have seen it very close to a hawthorn hedge (Warley Place, S. Essex, v.c. 18) and Grenfell (1985) reports it in the vicinity of *Pinus*, *Betula* and *Ilex aquifolium* L. It has been recorded on *Fagus sylvatica* L. (Anon 1904). It has also been reported on gymnospermous hosts, such as *Metasequoia glyptostroboides* Hu & W. C. Cheng at Wisley, (Surrey, v.c. 17), *Taxus* at the Royal Botanic Garden, Edinburgh (Midlothian, v.c. 83) (Matthews 1995) and on a cypress (Tallack 1889). It has been seen growing amongst bamboo plants, by myself in the University Botanic Garden, Cambridge (v.c. 29) and in Abbotswood gardens, Stow-on-the-Wold (E. Gloucs., v.c. 33) (M. Caddick, in litt. 6 June 1991). It is of course difficult to determine the identity of roots parasitised without extensive excavation.

Lathraea clandestina has certainly been planted in many sites, either as seed or by placing pieces of the rhizome near the roots of a tree. However, several authors (Brunker 1950; Good 1969; Hall 1980; Walsh 1958) consider that in some cases, it may have been accidentally introduced with imported trees.

L. clandestina is occasionally found up to several metres above the ground in old willow trees, presumably having grown up through cracks from the ground. This has been observed in Shinfield Grange (Berks., v.c. 22) (C. J. Hora, in litt. 23 April 1991), at Birmingham Botanical Gardens (Warks., v.c. 38) (M. L. Grant, in litt. 19 December 1992) and by myself at Childswickham (Warks., v.c. 38).

There is a remarkable observation which has not to my knowledge been reported elsewhere, that in a meadow in the west of France, *L. clandestina* was growing on the roots of *Alnus* but that the *Alnus* existed only as the roots and had no above ground parts (André 1893).

PRESENT DISTRIBUTION AND NATURALISATION

The most northerly site is in Main Argyll, v.c. 98 (Fig. 1). The distribution is centred around the south of England. I am only aware of four records from Ireland. The distribution of sites known to be in existence in or after 1990 is shown in Fig. 2.

Many, but by no means all plantings of *L. clandestina* have been made in gardens. There is a well documented example of a planting in the wild. In 1908 Mr Bernard Reynolds found a patch of *L. clandestina* in Coe Fen, Cambridge (v.c. 29) and sent it for naming (Anon 1908). A reply (Druce 1908) sparked a controversy which lasted until 1920 and included letters to *The Times*, on the desirability of the Cambridge Botanic Garden "to connive as it seems to have done in the establishing of a foreign plant 'in a wild-looking station'" (Anon 1910).

Several factors cause difficulties in determining whether a particular stand of *L. clandestina* is cultivated or naturalised.

1. Colonies are very long-lived and therefore persist long after planting in sites which may not be recognisable as gardens.

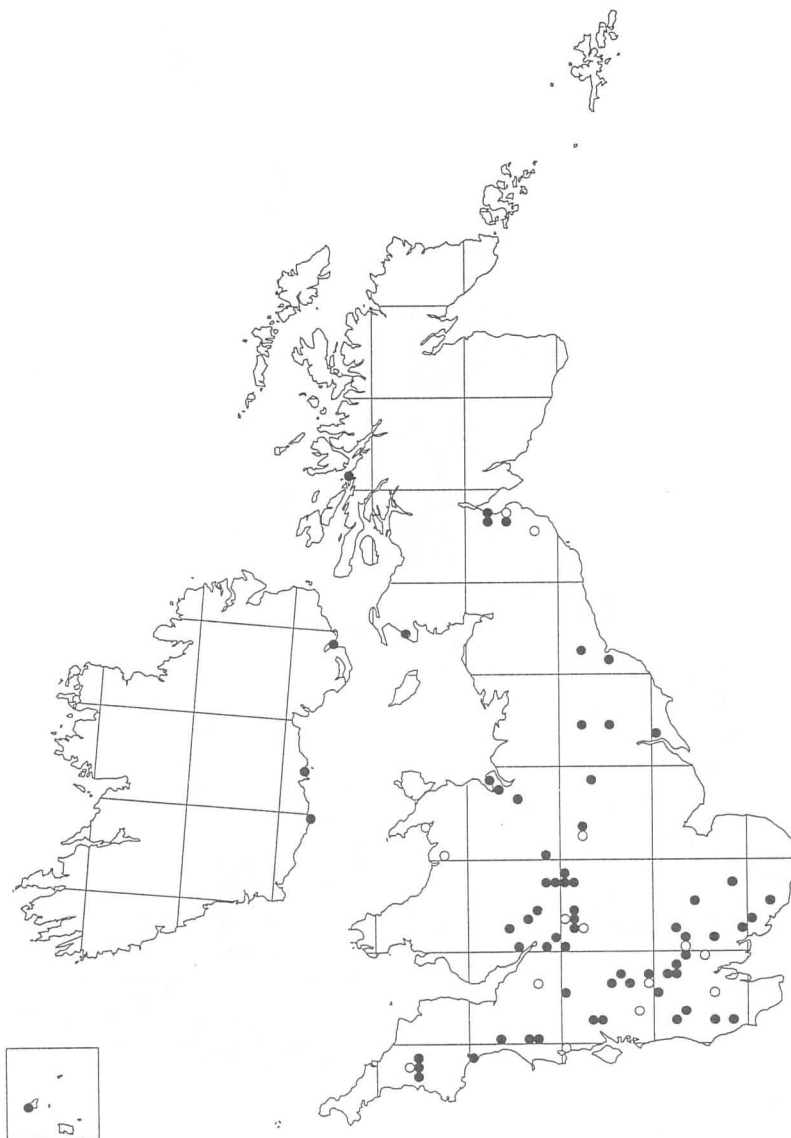


FIGURE 1. The distribution of *Lathraea clandestina*. All localised sites are recorded (o = considered naturalised).

2. Colonies can become established well away from existing colonies, usually but not exclusively downstream along watercourses. This is usually presumed to be by seed but the possibility of fragments of plant being carried downstream and establishing cannot be excluded.

According to the terminology of the B.S.B.I. Plant Status Working Group (Macpherson 1995), an alien can be considered naturalised if it has been in the wild "for (say) > five years and is regenerating vegetatively or producing viable seeds". In sites where *L. clandestina* has established itself, for example along watercourses, and has been there for five years or more, it can clearly be considered naturalised. If it was planted in a wild spot and has persisted for many years (e.g. Coe Fen, Cambridge) it can also be regarded as naturalised. If the garden in which it was planted is now

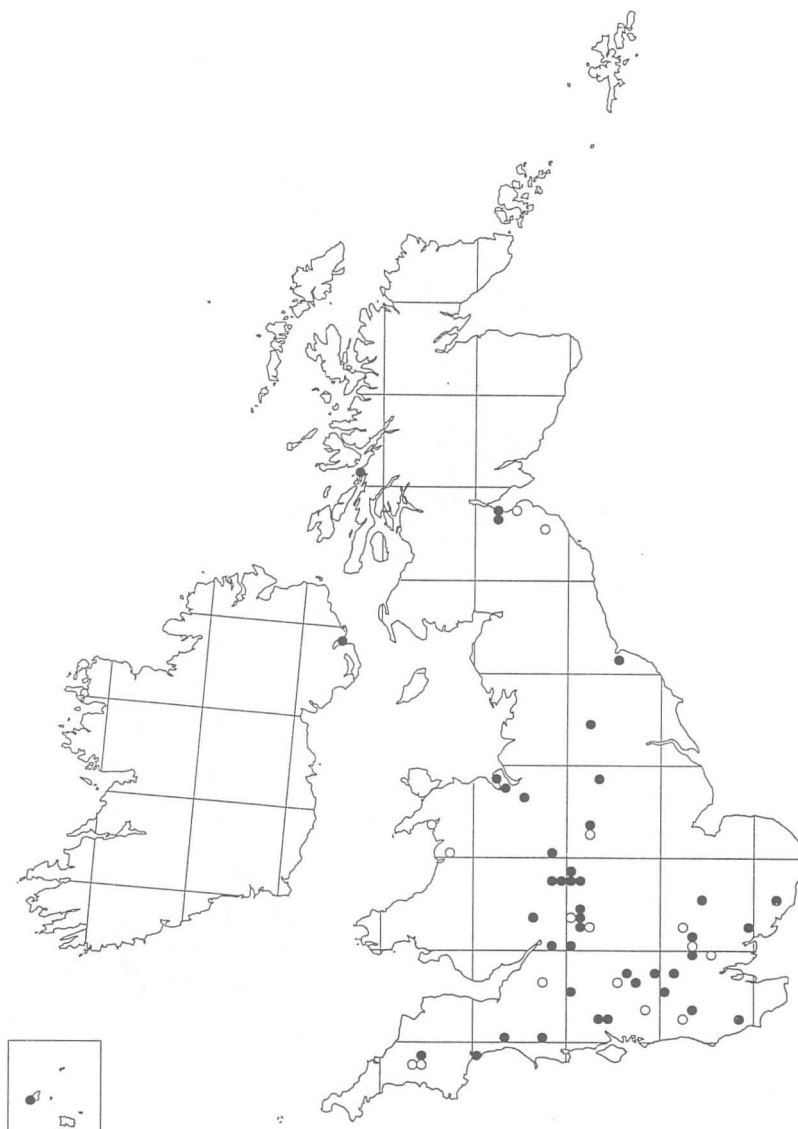


FIGURE 2. The distribution of *Lathraea clandestina*. All sites known to be in existence in or after 1990 are recorded (o = considered naturalised).

unattended (as for example at Warley Place in Essex), the status is slightly more ambiguous, but I would treat it as naturalised since the garden is no longer maintained.

The records listed below have been gathered from local Floras, from B.S.B.I. journals, and from other literature, from herbaria (**BM** and **RNG**) and from many letters sent to me in response to requests for information in *B.S.B.I. news*, *The garden* (Royal Horticultural Society) and the *Newsletter of the Hardy Plant Society*. Colonies growing in gardens have been included as they may well give rise to self-established colonies in the future.

Sites appended with (N) are considered naturalised by the criteria discussed above, at the present time. Those appended with (H) are historical records which have not been reported for many years.

- V.c. 2, *E. Cornwall*: A colony was found near Gunnislake Bridge (SX/4.7) (N) in 1980 (Margetts & David 1981), and re-found in 1988 and 1991 (M. Atkinson, in litt. 7 May 1991). A cluster of sites in Wareham Wood on the River Tamar near Gunnislake, in an area which was owned and planted by the Duke of Bedford in the 19th century. First found in 1988 (Atkinson & Atkinson 1989; Margetts & Spurgin 1991) (SX/3.7) (N). All colonies are within a few metres of the river which is liable to flood most winters.
- V.c. 3, *S. Devon*: On the River Tamar at Morwellham 1973 (SX/4.6) but it has not been reported since (M. Atkinson, in litt. 7 May 1991; Ivimey-Cook 1984) and at Horsebridge (SX/4.7) (Ivimey-Cook 1984).
- V.c. 4, *N. Devon*: Sydenham House (SX/4.8). Recorded in 1938 (Kemble-Martin & Fraser 1939) and confirmed there recently (Ivimey-Cook 1984). Budleigh Salterton, private garden (SY/0.8). Material was collected from there in 1973 (N. Jee, in litt. 22 April 1991). Stowford (SX/4.8). Extensive patches in wet woodland, recorded in 1989 (Heath 1990).
- V.c. 6, *N. Somerset*: Lower Weston, Bath (ST/7.6) (N). Reported on an overgrown shrubbery by a stream in 1954 (Gilwhite 1954). It has been seen recently (I. P. Green, in litt. 30 March 1994). Bath Botanic Garden (ST/7.6). It was transferred here in 1967 from a nearby site, Lower Weston (Roe 1981) and was still growing in the Botanic Garden in 1994 (I. P. Green, in litt. 30 March 1994).
- V.c. 8, *S. Wilts.*: Easterton (SU/0.5). On Aspen in the west Wood, 1992 (Gillam 1993).
- V.c. 9, *Dorset*: Minterne Estate (ST/6.0). Recorded in 1961 (Good 1984) and known there at least until 1985 (D. Paul, in litt. 20 March 1991). Forde Abbey, Chard (ST/3.0). On willows in bog garden (R. Smith, in litt. 29 April 1992). Broadstone, near Poole (SZ/0.9) (N). This was recorded in 1968 in derelict garden (Good 1969; 1984) and several years later, at the base of a roadside hedge (Grenfell 1985). Ansty, Dorchester (ST/7.0), private garden. Planted in 1986 and growing well in 1991 (A. Stevens, in litt. 19 August 1991).
- V.c. 11, *South Hants.*: Chandler's Ford (SU/4.2). Introduced to Hillier's former nursery from Cambridge Botanic Garden in about 1963 by R. Lancaster (in litt. 9 January 1991). Hillier Arboretum, Romsey (SU/3.2). Introduced from Chandler's Ford in the early 1970s again by R. Lancaster (in litt. 9 January 1991).
- V.c. 13, *W. Sussex* or v.c. 14, *E. Sussex*: A considerable quantity of *L. clandestina* was reported in Sussex by Watson (1920) but no locality was given.
- V.c. 13, *W. Sussex*: Near Hawkin's Pond, St Leonards Forest, near Horsham (TQ/2.2). 1920, collector unknown (BM). Near Horsham, 1930, Miss N. Smart 1930 (BM). By Hawkins Pond near The Goldings, St Leonards Forest, 1953, J. E. Lousley (RNG). By pond in St Leonards Forest, 1964, E. C. Wallace (RNG). Manning's Heath (TQ/2.2) (N). Reported by Hall (1980). On a roadside bordering a pond. Seen in 1991 (A. Hoare, in litt. 5 August 1991).
- V.c. 14, *E. Sussex*: Wakehurst Place (TQ/3.3). Found in 1969, when Wakehurst Place was acquired by the Royal Botanic Gardens, Kew. Seen in 1992 in several sites in the garden (A. Hoare, in litt. 5 August 1991; J. Chidell, in litt. 26 March 1991). Great Dixter, near Northiam (TQ/8.2). Well established in garden (Lancaster 1990). Cox's Mill, Dallington, on planted willows in a swamp (TQ/6.2) (Hall *et al.* 1960; 1961, J. E. Lousley (RNG); Hall 1980). Turner's Hill near Crawley (TQ/3.3), 1958, Mrs Harbridge (BM).
- V.c. 16, *W. Kent*: Mereworth (TW/6.5) (N). Naturalised on poplars (Philp 1982).
- V.c. 17, *Surrey*: Lightwater (SU/9.6) (N). Naturalised along stream (Leslie 1986). Side of Hindhead Road, north of Shottermill (SU/8.3) (N). First recorded before 1962 (Howard 1962). Introduced by the former owner of Frensham Hall (Lousley 1976; L. Ponsonby, in litt. 17 August 1991). Royal Botanic Gardens, Kew (TQ/1.7). Presented in 1888 by Dr Schumann of the Berlin Herbarium (Hooker 1890) and grown on a "willow adjacent to the ornamental water in front of the Palm-house" (Anon 1889). Seen c. 1990(!) near the Princess of Wales House. Royal Horticultural Society Gardens, Wisley (TQ/0.5). Seen in 1991 near the pond (S. Berrett, in litt. undated). Canizzaro Park (TQ/2.7), relic of cultivation 1978 (Burton 1983; Leslie 1986). Egham. London University Botanic Garden (SU/9.7). A good number of plants in a wet area of the arboretum (A. Daly, in litt. 1991).
- V.c. 18, *S. Essex*: Warley Place (TQ/5.9) (N). The former garden of Miss E. A. Willmott. It was recorded here by Shenstone (1912). The garden was subsequently abandoned in the 1930s and is now a nature reserve. It was noted in 1972 by Hollick (1973), Jermyn (1974) and subsequently by

- D. Thomas (in litt. 20 April 1991). Several colonies were seen in 1991(!). It has spread to the hedge in Dark Lane, a lane on the western edge of the garden (1958, *B. T. Ward* (RNG); 1964, *J. E. Lousley* (BM); 1971, *Mrs A. M. Horowitch* (BM); Jermyn (1974)).
- V.c. 19, N. Essex*: Colchester, private garden (TL/9.2) (G. Edwards, in litt. 17 March 1991). Pye's Fruit Farm, Hounslow Green (TL/6.1) (Jermyn 1974). Chest Wood, Colchester (TL/9.2) (N). First observed in 1974. Presumed to have arrived from a site 5 km upstream where it was planted with French stock in the early 1970s. (Tarpey & Heath 1990; G. Edwards, in litt. 17 March 1991), 1991(!).
- V.c. 20, Herts.*: Whitney Wood, Stevenage (TL/2.2) (N). Recorded in 1954 (Dony 1967) and still present in 1991 (P. Harmes, pers. comm., 1991). Knebworth House (TL/2.2), recorded as naturalised in 1935 (Dony 1967). Bayfordbury Estate near Hertford (TL/3.1). It has probably been here for over 50 years. The estate used to be the site of the John Innes Institute. Seen in 1991 (G. Hanson, in litt. 25 April 1991). Broxbourne, private garden (TL/3.0). Arrived about 1983 but was not planted (D. Parsons, in litt. 5 March 1991).
- V.c. 21, Middlesex*: Myddleton House, Bulls Cross, Enfield (TQ/3.9). Formerly the home of the plantsman E. A. Bowles. Seen in 1991 (M. Laughton, in litt. 4 March 1991). Regents Park (H) (TQ/2.8). Growing in the garden of the Royal Botanic Society (Anon 1904).
- V.c. 22, Berks.*: Plentiful on bank of River Embourne (1964, *A. R. Hadden* (BM)). This record is unlocalised but a number of sites are close to the River Embourne; Inwood copse, Newbury (SU/5.6) (N). Locally abundant on poplars, in damp alder gullies (J. Norton, in litt. 20 April 1991); Crookham Common (SU/5.6) in an alder gully, 1966 (Bowen 1968), and Brimpton, private garden (SU/5.6) (C. J. Hora, in litt. 23 April 1991). Newbury (SU/4.6), 1961 (Bowen 1968). Prospect Park, Reading (SU/6.7). First recorded here in 1959 (Bowen 1968). Recorded in 1962, *collector unknown* (RNG) and 1986, *H. J. M. Bowen 4902* (RNG). Next to a pond (C. J. Hora, in litt. 23 April 1991). Savill Gardens, Windsor Park (SU/9.7) (C. J. Hora, in litt. 23 April 1991). Shinfield Grange, Reading (SU/7.6). Introduced in about 1980. Abundant in 1991 (C. J. Hora, in litt. 23 April 1991). Tidmarsh, private garden (SU/6.7) (C. J. Hora, in litt. 23 April 1991).
- V.c. 25, E. Suffolk or v.c. 26, W. Suffolk*: Livermere Park (H) (TL/8.7). Planted before 1888 (Tallack 1889) and last reported in 1910 (Druce 1910; 1910, *G. C. Druce* (BM)) (who reported that it was planted in 1894). Druce (1925) was unable to find it in June, 1925.
- V.c. 25, E. Suffolk*: Letheringham Mill, Woodbridge (TM/2.5). Two plants were introduced from the Pyrenees in the late 1970s (F. W. Simpson & E. M. Hyde, in litt. 1993), 1992(!) when both purple and white flowers were seen. White flowers were seen in 1978 (*loc. cit.*).
- V.c. 26, W. Suffolk*: Higham, private garden (TM/0.3). Planted in 1970s from Aveyron. Not reported since 1978 (L. Gooden, in litt. 28 February 1991).
- V.c. 29, Cambs.*: Coe Fen, Cambridge (TL/4.5) (N). Planted before 1908 from the Cambridge University Botanic Garden (Druce 1908). Subsequent records are: 1952, *D. P. Young* (BM); 1946, *J. E. Lousley* (RNG) and 1991(!). Cambridge University Botanic Garden (TL/4.5). It has clearly been here since the early years of the century, and has been taken from here to many other sites. It is currently to be found on the north side of the lake.
- V.c. 33, E. Gloucs*: Mickleton (SP/1.4) (N). Three colonies on *Salix*. First recorded in 1976 (Holland *et al.* 1986). Originated from Hidcote gardens about 2 km upstream, 1991 (M. Caddick, in litt. 6 June 1991; Dudley 1993). Bledington (SP/2.2) (N). On the southern bank of the Westcote Brook (J. Chapman, in litt. 22 April 1991). Sezincote Gardens (SP/1.3). Next to a stream, on *Cercidiphyllum*, 1991 (M. Caddick, in litt. 6 June 1991; J. Turner, in litt. 29 July 1991). Abbotswood gardens, Stow-on-the-Wold (SP/1.2). Reported in 1968 and in 1984 (Holland *et al.* 1986). Many hundreds of plants widely naturalised on various trees and bamboo (M. Caddick, in litt. 6 June 1991). Ampney Park, near Cirencester (SP/0.0) (Holland *et al.* 1986). Seen in 1991 (M. Caddick, in litt. 6 June 1991). Hidcote Manor Garden (SP/1.4), now a National Trust property. By the bridge in the Lower Stream Garden. Seen in 1990 (J. Briggs, in litt. 23 September 1991 & J. Turner, in litt. 29 July 1991). Near Cheltenham. In stone duct in bank, 1946 (H) (Riddelsdell *et al.* 1948). Near Moreton, 1944 (H) (Riddelsdell *et al.* 1948). Colesborne (SO/9.1) (H). In a saw yard, parasitic on Hazel, 1938 (Riddelsdell *et al.* 1948).
- V.c. 34, W. Gloucs.*: Hyde Hill, Chalford (near Stroud) (SO/8.0) (N), first recorded in 1964 (Holland *et al.* 1986). Seen in 1991. Plentiful by footpath, probably an escape from Hyde Lodge (M. Caddick, in litt. 6 June 1991). Brimscombe (SO/8.0), by footpath, first recorded in 1956

- (Holland *et al.* 1986). Seen in 1991 (M. Caddick, in litt. 6 June 1991). Hyde Lodge (SO/8.0) where it was planted in about 1926. (M. Caddick, in litt. 6 June 1991).
- V.c. 35, *Mons.*: Lydart (SO/5.0). Old Green Lane, recorded in 1987 (Harper 1990).
- V.c. 36, *Herefs.*: Putley, nr Ledbury (SO/6.3). Imported from Birmingham around 1960 (F. Hadfield, in litt. 6 May 1991). Old Court Nursery, Colwall, (SO/7.4) (H), 1925–1935 (S. Thomson, in litt. 29 June 1995). Garway (SO/4.2). On the banks of the River Monnow, undated record (S. Thomson, in litt. 29 June 1995). Both records are given in less detail by Whitehead (1976).
- V.c. 37, *Worcs.*: Beoley Hall, Redditch (SP/0.7). Of unknown date. The source of at least two plantings. Chaddesley Corbett, private garden (SO/8.7), derived from Beoley Hall. Hopwood, private garden (SP/0.7), derived from Chaddesley Corbett. Lydiate Ash, private garden (SO/9.7), derived from Beoley Hall (A. Ogden, in litt. 25 July 1991).
- V.c. 38, *Warks.*: Birmingham Botanic Gardens (SP/0.8) (A. Gagg, in litt. 27 April 1991; M. L. Grant, in litt. 19 December 1992). It was introduced in c. 1974 from the Hillier Arboretum in Hampshire (Dudley 1984). University Botanical Garden, Birmingham (SP/0.8). Seen in 1988 (A. Gagg, in litt. 27 April 1991; M. L. Grant, in litt. 19 December 1992). Tanworth-in-Arden, private garden (A. Ogden, in litt. 25 July 1991). Childswickham (SP/0.3) (N). Seen in 1981 (A. Gagg, in litt. 27 April 1991), along a brook for c. 400 m, 1994(!).
- V.c. 39, *Staffs.*: Albrighton, private garden (SJ/8.0), 1994(!), introduced from Birmingham Botanic Garden in 1983 (P. Edwards, in litt. 12 March 1991).
- V.c. 48, *Merioneth*: Esgair-geiliog, N. of Machynlleth (SH/7.0) (N). On W. bank of Afon Dulas. Last recorded in 1990 (Grasse & Morton 1995). Llanfihangel-y-traethau (SH/5.3) (N). Growing outside a garden wall. Introduced c. 30 years ago and now well naturalised. Last recorded in 1993 (A. Daly, in litt. 1991; Hughes 1995).
- V.c. 57, *Derbys.*: Egginton Hall (SK/2.2) (N). First recorded in 1974 (Clarke 1975). Seen in 1992 and reported as having been there for some 50 years (R. Smith, in litt. 29 April 1992). I was not able to find it in 1992, or 1995. Hilton Gravel pits (SK/2.3). Found in 1980. Probably a recent introduction. Not on the same watercourse as the nearby Egginton Hall population (R. Smith, in litt. 29 April 1992). I was not able to find this in 1995.
- V.c. 58, *Cheshire*: Tarporley, private garden (SJ/5.6). Introduced from Ness Botanic Garden (A. Goulty, in litt. 6 March 1991). Irby, Wirral (SJ/2.8). On a willow in a small wood next to a right of way. Seen in 1991 (M. Wilson, in litt. 26 April 1991). University of Liverpool Botanic Garden at Ness (SJ/3.7).
- V.c. 61, *S.E. Yorks.*: Cottingham Botanic Garden, Hull University (TA/0.3). Seen in 1959 (Nelson 1959), probably from Cambridge.
- V.c. 62, *N.E. Yorks.*: Grey Towers, Nunthorpe (NZ/5.1). Long established on the roots of *Salix* (Lawrence 1994).
- V.c. 63, *S.W. Yorks.*: Sheffield Botanic Garden (SK/3.8). 1990(!). There are at least two colonies (D. Williams, in litt. 28 January 1991).
- V.c. 64, *Mid-W. Yorks.*: Askham Richard (H) (SE/5.4), in Parson's Wood, behind the Vicarage. Brought from Bath in 1919 and last recorded by Nelson (1959). I was unable to find it in 1995. Adel Dam, near Bramhope, Leeds (SE/2.4), seen c. 1990 (Geoffrey Willmore, in litt. 27 July 1995; Lavin & Wilmore 1994).
- V.c. 66, *Co. Durham*: Windlestone Hall grounds (NZ/2.2). Thirty plants seen in 1971 (Graham 1988).
- V.c. 74, *Wigtowns.*: White Loch of Myrton (NX/3.4). Recorded in 1979 (Lang 1981).
- V.c. 81, *Berwicks.*: Duns Castle (NT/7.5) (N). On the edge of the loch. Naturalised since 1962 (Braithwaite & Long 1990). Reported by Beattie (1963). Seen in 1981 by C. O. Badenoch (in litt. 4 June 1991).
- V.c. 82, *E. Lothian*: Haddington by River Tyne (NT/4.6) (N). Reported as having been present near the junction of Tyne Water and Birns water, but destroyed in the 1948 floods (Basden 1957; 1948, *E. B. Basden* (BM)). It was refound approximately 5 km downstream in 1971 (NT/4.7) (N) (Jones 1974) and in the same locality in 1991(!). A cluster of sites in this region is implied by Silverside & Jackson (1988), who remark that it is "very locally naturalised on the banks of the upper part of the River Tyne and its tributaries".
- V.c. 83, *Midlothian*: Royal Botanic Garden, Edinburgh (NT/2.7). Known since at least 1967 by

- D. R. McKean (in litt. 10 January 1992). Bush Estate, Penicuik (NT/2.6) (D. R. McKean, in litt. 10 January 1992; McKean (1988)). Logan House (NT/2.6) (Beattie 1961; McKean 1988; D. R. McKean, in litt. 10 January 1992).
- V.c. 98, *Main Argyll*: Arduaine Gardens, Loch Melfort (NM/7.1). Present in considerable quantity (P. Wilberforce, in litt. 29 April 1991).
- V.c. S, *Channel Islands, Guernsey*: private garden. Introduced in 1973 from Budleigh Salterton (N. Jee, in litt. 22 April 1991).
- V.c. H20, *Co. Wicklow*: Marlton House, Wicklow (T/3.9) (H). In a copse in a wet hollow, 1940 (Brunker 1950).
- V.c. H21, *Co. Dublin*: In the grounds of Holy Cross College, Clonliffe, Dublin (O/2.4) (H), seen in 1956 and 1957 (Walsh 1958). National Botanic Gardens, Glasnevin (O/2.4) where it was accidentally introduced with foreign plants. Still prolific. A herbarium specimen in **DBN** is dated 1943 (Walsh 1958).
- V.c. H38, *Co. Down*: Helen's Bay, near Bangor (J/4.8), in a garden, 1990, Hackney (1992).

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