

Conservation of Britain's biodiversity: *Rubus trelleckensis* (Rosaceae), Trelleck Bramble

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ABSTRACT

Rubus trelleckensis is a rare endemic bramble found only in one 10-km square near Trelleck, Gwent (v.c. 35), Wales. It is a perennial which flowers from mid-July to mid-August, and sets abundant fruit but probably does not spread vegetatively. A field survey was carried out in 1998. Five small populations were found, all in locations which were probably at one time either open heath or open Birch-Oak woodland but are now either conifer plantation, or conifers mixed with broad-leaved trees. Plants were most frequent on acidic podzols in sunny but sheltered spots on level ground. The main threats to its survival are change of land-use from forestry or changes in forestry operations. Seeds have been deposited in the Millennium Seed Bank at the Royal Botanic Gardens, Wakehurst Place.

KEYWORDS: Endemic, rare species, Wales.

INTRODUCTION

Rubus trelleckensis Edees & Newton, Trelleck Bramble, is a rare Welsh endemic species with a very restricted distribution centred on Beacon Hill near Trelleck in Gwent (v.c. 35, Monmouth). Along with a number of other rare brambles, it has been included in the 3rd edition of the Vascular Plant Red Data Book (Wigginton 1999), but as yet little is known about its detailed distribution or ecology. In 1998 the available information was collated, combined with a field survey, to establish its current status and determine its needs for conservation. A summary of the data are given below; full details are given in Randall & Rich (1999).

TAXONOMIC HISTORY

R. trelleckensis, as we now know it, has had a long and somewhat confusing history. It is a distinctive species but would probably not have received a name if it had not been distributed in the *Set of British Rubi* and later identified, erroneously, with a number of European species.

It was first collected by A. Ley in 1885 from plantations on Beacon Hill near Trelleck, Monmouthshire. Specimens were sent to W. O. Focke for naming, who commented '*R. virescens* G. Braun, var. *glandulosa*. The typical plant has no glandular bristles on the flower stalks'. In 1886, Ley again visited Beacon Hill and collected further specimens which he submitted to the Botanical Exchange Club (B.E.C.) as '*R. Borreri* Bell-Salt.' (Linton 1887). C. C. Babington commented that it was '*Sprengelii* probably' and Focke agreed.

In 1888 Ley again visited Beacon Hill and this time selected two plants for submission to the B. E.C. (Ley 1889). He suggested '*R. Borreri*, Bell-Salt. variety ?' for one of them but Babington and Focke were unable to place it (this taxon has received no name). The other plant was submitted as '*R. virescens* G. Braun' on the strength of the name supplied by Dr. Focke for Ley's 1885 specimen. Ley could not guarantee that he had collected the same plant as previously and, indeed, Dr. Focke's comments this time were less encouraging: 'Leaves exactly as in *virescens*, but the other characters do not agree. I can give no name'. Ley reported that both plants grew with *R. sprengelii* in the plantation and that the '*R. sprengelii* var.' partly showed the suberect habit of *R. virescens*. He was later of the opinion that the two species hybridised there.

In 1893, Ley again visited Beacon Hill, accompanied by W. A. Shoolbred on 4 July and by E. F. Linton on 3 August. Material from these visits was distributed as no. 60 in the *Set of British Rubi*, labelled *R. myricae* Focke var. *virescens* G. Braun, forma *glanduligera*.

When Focke visited Trelleck and saw living material he withdrew the name he had originally suggested (there is a specimen at BM (*Barton & Riddelsdell no. 4107*) collected on 31 July 1894 by Ley, Focke and W. H. Purchas; a typed note states that 'Part of this gathering is in Focke's *scaber* packet (159), without name or comment').

As the distinctive plant was not clearly identifiable with any known species it was duly described as new as *R. orthocladus* Ley (Ley 1896). Rogers (1900) pointed out that the name was already in use, viz. *R. orthocladus* Boulay (1869), and that the *Set of British Rubi* No. 60 contained representative material of Ley's plant. At that time it was thought that M. Gravet had discovered Ley's plant at Louette St. Pierre in Belgium, and it was listed as *R. orthocladus* Ley in Sudre (1908). Later he revised his views (Sudre 1910) and reduced *R. orthocladus* Ley to a synonym of *R. bracteosus* Weihe ap. Lej. & Court. (Lejeune & Courtois 1831), an earlier name that had been applied to the Belgian plant.

Watson (1932), at the time referee for the genus, associated a number of forms from around the country under *R. egregius* var. *effeminatus* Focke, a name that had originally been given to a plant from Oxfordshire. Included by Watson under this name was material collected by Ley from Beacon Hill Woods on 4 July 1893, labelled *R. orthocladus* and specimens from an open heath on Beacon Hill on 23 July 1897, labelled '*R. orthocladus* var.'.

At the time of the publication of *Rubi of Great Britain and Ireland* (Watson 1958) and *Flore Générale de Belgique* (Legrain 1958) it was listed as *R. bracteosus* Weihe ap. Lej. & Court., which was assumed to be present in both Britain and Belgium. Some specimens in herbaria were later labelled *R. euchloos* Focke under which name it occurs in *Flora Europaea* (Heslop-Harrison 1968) on Watson's authority.

E. S. Eedes and A. Newton assessed the validity of all the European species which Watson had claimed to be present in Britain, and decided that the name *R. bracteosus* could not be applied to the Trelleck plant and gave it a new name, *R. trelleckensis* (Eedes & Newton 1978). It fits rather uncomfortably into its current position in Subsection *Rubus* but would be equally ill-fitting in Series *Silvatici*, or Series *Mucronati*.

Summary of synonymy

R. myricae var. *virescens* sensu Focke *pro parte*, non *R. virescens* G. Braun in Focke
R. orthocladus Ley, non *R. orthocladus* Boulay
R. euchloos auct., non Focke in Ascherson & Graebner
R. bracteosus auct., non Weihe ex Lej. & Court.
R. egregius var. *effeminatus* sensu W. C. R. Watson *pro parte*, non Focke

IDENTIFICATION

There are a number of species which resemble *R. trelleckensis*, a guide to which is given in Rich & Randall (1999) (see also Eedes & Newton 1988). Its distinctive characters are the broad-based declining prickles, narrow green long-pointed leaflets, sub-racemose panicle, frequent unequal stalked glands and acicles on peduncles, white flowers, long-pointed green clasping sepals and carpels at first hairy. Hybrids with *R. pyramidalis*, *R. scissus* and *R. sprengelii* have been suggested but require more detailed study.

DISTRIBUTION

Locality and habitat information was abstracted from the literature, and from herbarium sheets at the Natural History Museum (BM) and the National Museum of Wales (NMW), which between them include much Botanical Exchange Club material and the herbaria of W. M. Rogers, H. J. Riddelsdell and E. S. Eedes. The records indicated that *R. trelleckensis* is very rare, being confined to woods and heathy ground between Trelleck and Tintern in Gwent, and these areas were concentrated on for the field survey.

The survey was carried out between mid-July and early September 1998, the best time being mid-July to early August when plants were flowering. About 80+ plants (i.e. distinct clumps) were found in five sites in one 10-km square, SO/5.0, all in v.c. 35 (Figure 1).

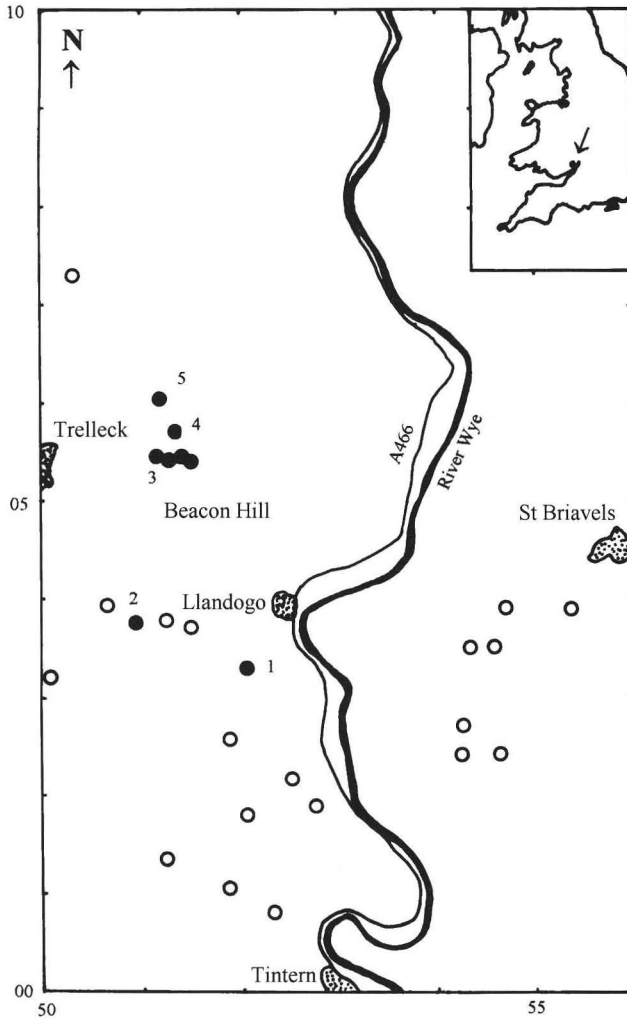


Figure 1. Location of sites in western part of SO/5.0 10-km square searched for *Rubus trelleckensis* in 1998. ● plants found. ○ no plants found. The inset shows the location of the map in Wales.

Site 1. Bargain Wood (SO/520.033)

This site was first found by A. Orange in 1997. Seven plants were found scattered along about 50 metres of a footpath in a recently replanted conifer plantation.

Site 2. Ninewells Wood (SO/509.037)

Two plants were discovered in open heathy birch scrub. This site is immediately south of Trelleck Bog, an old site (see also below).

Site 3. Beacon Hill (SO/512.054)

This is the type locality for *R. trelleckensis*, where Ley (1896) described it (*R. orthocladus*) as 'occupying a large area of woodland (some three square miles) on Beacon Hill, Monmouthshire'. Beacon Hill is now largely conifer plantation, some parts of which were being felled in rotation resulting in vigorous regeneration of the native vegetation, including brambles. About 50 plants were seen scattered in various forestry compartments across the hill.

Site 4. Beacon Hill - North Slope (SO/513.057)

In light of Ley's comments about the relative abundance of *R. trelleckensis* on Beacon Hill, a brief visit was made to the northern slopes. Three plants were found by a forestry track in a small patch where *Calluna* was frequent.

Site 5. Vicar's Allotment (SO/512.060)

A thriving population of over 20 plants was found along a bridleway through a recently felled conifer plantation.

Sites searched without success

A number of other sites in the area were also visited (Fig. 1). There were historical records for Trelleck Bog (now known as Cleddon Bog) but a check of the developing birch scrub on the south and west edges of the bog failed to locate any plants. Church Hill Common, Penallt (SO/52.10) was also searched as the soil maps (Soil Survey of England and Wales 1983) indicated that a podzol similar to that exhibited on Beacon Hill and the Vicar's Allotment was present; *R. trelleckensis* has not been reported from this site and none was found.

Erroneous or unconfirmed records

The record for ST/2.8 in Edees & Newton (1988) is based on a specimen from Pennsylvania near Castleton (v.c. 35) collected by A. E. Wade in 1941 (NMW). The specimen is not *R. trelleckensis* but belongs to Series *Anisacanthi* and is probably *R. hibernicus* (Rogers) Rogers.

A plant from Mitcheldean Meend (v.c. 34), distributed by Ley through the B.E.C. as '*R. orthocladus* Ley var.' was considered by Sudre to be *R. orthocladus* × *R. gratus* and subsequently described as a new species or hybrid *R. dobuniensis* Sudre & Ley (Sudre 1908). It is probably a hybrid of *R. gratus* with a species other than *R. trelleckensis*, perhaps *R. melanocladus* (Sudre) Riddelsd. which is abundant at Mitcheldean.

No specimens have been traced to support the unlikely records from Bewdley (v.c. 37) and Staffordshire (v.c. 39) (Watson 1958), or Dol-y-bont, Llanfihangel and Llyfnant Valley (v.c. 46) (Rogers 1908).

LIFE CYCLE

R. trelleckensis is, like all brambles, a polycarpic perennial. It is more-or-less evergreen, with leaves often persisting until the new year. Panicles arise from buds in the axils of the previous year's leaves (as in other species) but vegetative branches were not seen and it is likely that individual stems and branches die back after fruiting and are therefore biennial. The flowering time is mid-July to mid-August. Fruits were abundant at the end of August 1998, and most appeared to ripen about the same time. Dispersal of seed by birds and mammals probably occurs, as in other brambles. The fruits are quite sweet.

TABLE 1. PROBABLE NATIONAL VEGETATION CLASSIFICATION TYPES AT SITES OF *RUBUS TRELLECKENSIS*

Site	National Vegetation Classification types
Bargain Wood	H8e <i>Calluna</i> - <i>Ulex gallii</i> heath, <i>Vaccinium</i> sub-community developing in 5-year old cleared and replanted conifer plantation
Beacon Hill	U2 <i>Deschampsia flexuosa</i> grassland in recently cleared conifer plantation, H8e <i>Calluna</i> - <i>Ulex gallii</i> heath, <i>Vaccinium</i> sub-community in replanted older conifer plantation
Beacon Hill - north slope	W16 <i>Quercus</i> - <i>Betula</i> - <i>Deschampsia</i> woodland on disturbed edge of possibly original W10 <i>Quercus</i> - <i>Pteridium</i> - <i>Rubus</i> community.
Ninewells Wood	W16 <i>Quercus</i> - <i>Betula</i> - <i>Deschampsia</i> woodland, replanted with conifers
Vicar's Allotment	H8e <i>Calluna</i> - <i>Ulex gallii</i> heath, <i>Vaccinium</i> sub-community developing in 5-year old cleared and replanted conifer plantation

Although many *Rubus* species spread vegetatively by adventitious roots from the ends of the arching stems this does not appear to occur very often with *R. trelleckensis*. Most bushes observed appear to be groups of stems from a single rootstock.

Population sizes appear to depend on the amount of competition from bracken and other species, on the amount of shade, and on soil type and drainage. Plants were most frequent on the podzols of Beacon Hill and the Vicar's Allotment, with the best-growing plants in sunny but sheltered spots on level ground where there was good moisture retention.

At Beacon Hill, the state of the population was closely linked to the forestry management. In recently cleared areas there were scattered patches, mostly stunted due to the dry exposed conditions. In an area replanted with young trees, there were well-grown plants intermixed with other brambles, bracken and gorse. Where young trees were well established and beginning to crowd out the associated underscrub, *R. trelleckensis* and other brambles were confined to the margins of the plantation. Very few plants were found in the dense, well-established 3–4 m tall plantation except in gaps.

HABITATS, VEGETATION AND SOILS

All sites seen in 1998 are either conifer plantation, or conifers mixed with broad-leaved trees. An attempt was made to relate the vegetation types to the National Vegetation Classification (Rodwell 1991 *et seq.*), but this is difficult for recently disturbed conifer plantations (Table 1). The original vegetation types of these sites may have been the W16 *Quercus - Betula - Deschampsia* woodland type (possibly extending into other related woodlands such as the W10 *Quercus - Pteridium - Rubus* community), and the H8 *Calluna - Ulex gallii* heath. Ley's specimens and his comments on its distribution suggest that *R. trelleckensis* thrived in woodland.

R. trelleckensis is typically distributed on the tops and upper slopes of hills where a peaty soil has developed in situ over quartz conglomerate base rock. It was not found on deeper, more mineral-rich soils or the carboniferous limestone areas of the Wye Valley. Soils collected from the rooting zones in August 1998 are described briefly in Table 2. They are all heathy acidic podzols pH 3.4–4.0, probably derived from the local quartzite rock. At Beacon Hill and Vicar's Allotment they are classified as the 631e Goldstone Association, a humo-ferric podzol, developed over quartz conglomerate of the Old Red Sandstone, and in the Ninewells Wood - Bargain Wood area as the 541c Eardiston 1 Association, a typical brown earth, developed over the Tintern Sandstone Group of the Upper Old Red Sandstone (Soil Survey of England and Wales 1983; Geological Survey of England and Wales 1974).

TABLE 2. SOIL TYPES AT SITES OF *RUBUS TRELLECKENSIS*

Site	Soils
Bargain Wood	A fine grey-brown heathy soil with lots of organic matter, pH 4.0
Beacon Hill	A fine brown heathy soil with organic matter, pH 4.0
Ninewells Wood	A gritty brown organic soil, pH 3.6
Vicar's Allotment	A blackish organic soil with large quartz sand grains, pH 3.4

CONSERVATION REQUIREMENTS

Rubus trelleckensis is a rare plant. It is not protected under Schedule 8 of the Wildlife and Countryside Act 1981, but is listed in the *Vascular Plant Red Data Book* (Wigginton 1999). None of the sites found in 1998 are scheduled as S.S.S.I.s. Given that it is only known in five sites, most with tiny populations, it would be worth trying to protect the colonies at some sites. Consideration should be given to designating Beacon Hill, the type locality with the largest population, as a Site of Special Scientific Interest for this rare endemic species.

The main threats to its survival appear to be changes in the existing forestry regime (e.g. weed killing, longer periods of deep shade, fertiliser application to soils, etc.). The most favourable forestry management is currently thought to be a regime similar to that exhibited at Beacon Hill, where trees have been cropped in rotation with adjacent areas being felled several years apart. This

allows the possibility of seed from a regenerating section being bird-sown into the most recently felled area. The amount of regeneration on Beacon Hill shows that the seed-bank there is probably sufficient to ensure *R. trelleckensis* will survive as long as current forestry management continues.

Blackberries from plants at Bargain Wood and Beacon Hill have been deposited at the Millennium Seed Bank at the Royal Botanic Gardens, Wakehurst Place. One plant is held in cultivation by A. Orange.

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