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THE DISTRIBUTION AND ABUNDANCE OF WOOD CALAMINT ON THE ISLE 0F WIGHT 1999-2005

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Abstract

Wood Calamint (Clinopodium menthifolium Host Stace) has its only British location in the Rowridge Valley on the Isle of Wight. The plant is associated with a woodland edge habitat, and its current range is much reduced compared with the original site description of 1843. Over the years, many organisations have co-operated to bring back the plant from near-extinction, including the Forestry Commission, Hampshire and Isle of Wight Wildlife Trust, The Isle of Wight Natural History and Archaeological Society, Nature Conservancy Council/English Nature, Nunn Harvey Clarke Settlement, Plantlife and Wight Wildlife. Practical management by the Isle of Wight Natural History and Archaeological Society has taken place each winter since 1960. In February 2001, some clearance and re-profiling at the south end of one of the lay bys took place to create an area for the plant to spread. Since then the abundance of the plant has been monitored in late August or early September to gain a greater understanding of how the population is responding to management.

Introduction

In 1843, William Arnold Bromfield discovered a plant new to Britain, Wood Calamint. He wrote in *The Phytologist* " I have great pleasure in announcing, through your pages, the discovery by myself, on the 29th of August last, of a *Calamintha*. It is in a picturesquely wooded valley between Apes Down and Rowledge, that this fine addition to the Labiatae of Britain grows in the greatest profusion and luxuriance" (Bromfield, 1843). A specimen of the plant is in Bromfield's herbarium, which is now under curation at the Hampshire Museum Service (Plate 1). There is another claim to be the first discovery -a year earlier by Sir David Brewster, also in the Rowridge valley, but this report did not appear in print until 1882 (Davenport Adams, 1882)

Bromfield expected that the plant would be found elsewhere in the British Isles but the Apse Down valley has always been the main British site. Other records from Dorset, Devon, Hampshire and Kent have either not been verified, or have since died out. He describes Wood Calamint as a "highly beautiful plant with flowers of a fine pale rose colour, spotted with purple or even blood-red: the corolla is nearly an inch long and three times the length of the calyx…the leaves are of a brighter green (pointed and much more closely and acutely serrated) than in the usual form of *C.officinalis*: the whole plant is taller, more slender and much less branched; the stems are lax, ascending or reclining: the cymes fewer flowered; the calyx coloured (purple), the teeth of the upper lip strongly recurved: the lower lip of the corolla is very broad, its lobes rounded, the middle one but little exceeding the two lateral ones in length, and separated from them by a very narrow and shallow emargination, hence appearing almost as one undivided lobe" (Bromfield, 1843).

Bromfield describes Apse Down as being "clothed with thick woods, interrupted by bands or strips of down". The Wood Calamint was growing "amongst the long herbage and under the shade of the bushes in vast quantity, for a great part of the way towards the head of the vale, scattered over the hill-side copses wherever there is shade and shelter sufficient, but unlike our common species of Calamintha, always avoiding open and exposed situations or where there is not plenty of herbage and undergrowth….". He later remarked that "this beautiful species grows readily from slips and when treated as a greenhouse plant or kept entirely within doors becomes extremely showy" (Bromfield 1856). It grows readily from seed where it has been taken into a

garden (Colin Pope pers. com.) and does well in open ground, producing bushy clumps about 60cm high. This is comparable to the range of heights obtained at the Rowridge site. The branching of the garden plants results from insect damage to the apical shoots. Such damage has not been observed at Rowridge; rather the plants are 'drawn up' as a result of competition with the surrounding vegetation.

Attempts have been made to understand the distribution of plants and their communities by reference to the habitat conditions in which they are found. Ellenberg defined a set of indictor values (1979, 1988, Ellenberg *et al* 1991) for a wide range of European plants (not however including Wood Calamint) scoring them on a scale of 1-9 for factors such as light requirement, and soil factors such as moisture, fertility, chemistry, and salinity. These lists have been extended and interpreted for the British Flora and Wood Calamint has been given values of 5 (middle of the range) for soil moisture, soil fertility and light requirement and 8 (alkaline but not equivalent to pH) for soil chemistry. (For a full discussion of the concept see Hill *et al* 1999)

Wood Calamint has its only extant British station in the Rowridge valley. A difficulty with establishing its distribution elsewhere is not helped by a long-standing degree of confusion in the nomenclature. In 1923 H.W. Pugsley reviewed the situation with this genus, and since then further changes have occurred. Wood Calamint is classified in the family Lamiaceae (formerly Labiatae). Bromfield initially thought that it would prove to be the *Calmintha officinalis* known "as a native of rocky and shady subalpine woods in Switzerland, Carniola and other parts of the south of Europe". He did however note that it had a number of differences from the usual form of *C. officinalis*. Its specific name has been changed over the years as understanding of plant families has developed, and a discussion of its classification is beyond the scope of this paper. Currently it is called *Clinopodium menthifolium*; previously it has been referred to as *Calamintha sylvatica, C. intermedia,* or *Satureja sylvatica.*

The existence of common names suggests its distribution in mainland Europe includes France (Calament des bois), Germany (Wald bergminze), and Holland (Bergsteentijm). A recent account from The Netherlands describe the habitat as 'dry, calcareous soil along forest fringes and hedges. It is extremely rare in the southern part of the Netherlands' (van der Meijden 2005) and from Germany 'oak scrub and forest in woodland clearings, in road verges on moderately dry base rich soil. Species of semi-shade' (Oberdorter 2001). The plant appears on the Rote List (red list) of rare plants for the region of Hessen in Germany. The Collins Pocket Guide to Alpine Flowers (Grey-Wilson and Blamey 1995) describes its habitat as "open woodland and thickets and stony places to 1600m". A field meeting report of AGEO in canton Aargau in the north of Switzerland notes its presence in a wooded river gorge. A botanist from the Algarve in southern Portugal describes it from the hills of the Monchique, from both cork oak and eucalyptus forest in damp shady places, but absent from the open heaths of the coastal plain (Will Simonson pers. comm.). Clapham, Tutin and Warburg (1962) suggest that it is also in central Spain, Algeria and North Syria. It is absent from Norway, Sweden, Denmark, Finland and Iceland. There is general agreement that the on the Isle of Wight it is on the edge of its range; indeed Bromfield commented (1843) that it was "probably one of those plants that, like *Tamus communis, Briza minor, Gastridium lendigerum* and other species common here, have a tendency to migrate in a north-westerly direction towards their vanishing point".

The Isle of Wight colony declined to near extinction over a period of 150 years, reaching a low of just five clumps in 1959. Conservation work was begun by the Isle of Wight Natural History and Archaeological Society (IWNHAS) in 1960, and has continued each winter since this date The plant numbers have recovered in response to this management, although it could not be regarded to be present "in the greatest profusion" previously noted. Currently it is

confined principally to two lay bys (the fifth and sixth from the junction of Rowridge Lane with the middle road B 3401) although there are clumps in the verge both to the north and south (Figure 1).

The Rowridge valley, which lies in the Isle of Wight Area of Outstanding Natural Beauty, is covered by the statutory designation Site of Special Scientific Interest (SSSI) and was notified under the Wildlife and Countryside Act 1981 on 21 January 1987. The presence of Wood Calamint is one of the interest features of the site. Wood Calamint is included on Schedule 8 of the Wildlife and Countryside Act 1981, to protect it from intentional picking, uprooting or destruction without a licence. It was inserted into the list after the intervention of Stephen Ross, the Island's MP, who has been informed of the plant's rarity and the attempts to conserve it by Bill Shepard and Colin Pope. Although some plants may have been lost to collection, the principal cause of decline has been attributed to loss of habitat, resulting from the cessation of coppicing (Bevis *et al* 1978).

The land use and management of the site.

The land use of Apse valley recorded on the 1793 Mudge map shows two woods in the vicinity of the current site, separated by a triangular shaped piece of land. The 1868 Ordnance Survey map shows scrub encroaching into the open land and on the 1908 map these two areas of woodland are joined at the top of the slope and described as Rowridge Copse. In 1930 and 1960 national land utilisation surveys were carried out by Dudley Stamp and Alice Coleman respectively, and on both maps the triangular piece of open land can be seen. Aerial photographs from the 1940s and 1971 still show open land but by 1986 this triangle is barely visible, as is the case in the subsequent photographs of 1993 and 1999.

From the mid 1850s until the late 1880s the wood was coppiced by Bill Shepard's grandfather Frederick Gill, who tended 500 sheep on Apes Down. He used the poles to make hurdles for his own use and for other shepherds. The map of 1908 has symbols for coppicing in the wooded area and in 1935 the Moody brothers set up a more ordered coppice scheme. The war meant that the coppicing was neglected, and tall and dense woodland with old and uncommercial hazel and poor standard oak and ash was the result (Bill Shepard pers. comm.).

There are references to pigs being kept in the woods in 1960 (Frazer 1979) and in recent years pheasant rearing and a shoot have taken place on the land.

In 1960 the road, which leads to the Farm and BBC transmitter was metalled and lay bys constructed. The roadside colony suffered and only a few plants remained in the 5th lay by from the Yarmouth Road. Oliver Frazer and Bill Shepard met with Sir Ralph Clarke the landowner who was sympathetic and arranged to fence of an area 40 x 10 yards to protect it form the depredations of the pigs. On 28 December 1960 14 members of IWNHAS cleared a strip of undergrowth from the edge of the road where 2 plants had been seen in 1960. A photograph from 1962 shows the results of the working group's efforts. The woodland behind the site looks more open at this time.

Reports in the *Proceedings* in the following years noted that the conservation measures were effective "Calamint now flourishing and occasional plants throughout the cleared area". However bramble and nettles were also flourishing. (Waite 1963, 1964; Kettell *et al* 1973) In 1979 Dorothy Frazer wrote to the Estate asking if the fence could be replaced and the area enclosed extended, which was agreed. In the following year, The Nature Conservancy Council gave permission for growing Wood Calamint in cultivation from seed (Frazer 1979, 1980). In 1981, the next lay by to the south, where a small amount of Wood Calamint had been found, was

also cleared and the plants responded well. Yearly working parties have continued since this time. In recent years removal of Bramble, Ivy, Hemp Agrimony, Mullein, Thistles have been significant together with some trimming of woody shrubs. (photos available Plates 2 - 1962 and 3 - 2006).

Research and published information relating to Wood Calamint was reviewed by Heather Winship (Winship 1995). This report identified the ecological requirements of the plant, the likely reasons for population decline, and set out a management plan aimed to recover the species to a point where it had re-established its former range. The main aim of the recommendations was to increase the area occupied by Wood Calamint, and proposed actions included:

1. Return of the area known as the Triangle (an area known to be a site for the plant) to open ground

A Woodland Grant Scheme was entered into by the Trustees of the estate and the area known as the Triangle was coppiced in the winter of 1999/2000. It remained as relatively open ground for two years and searches for Wood Calamint were made in the autumn of 2001 and 2002 but to no avail. Regrowth of both the field and shrub layers has been vigorous and the site is not in a suitable condition for Wood Calamint to grow.

2. Taking the plant into cultivation at Ventnor Botanical Gardens in 2000.

This has been carried out successfully and the plant is present in the woodland areas as well as in the propagation area.

3. Management of area between 5th and 6th lay bys to connect them

There has been some progress on this recommendation. The Hampshire and Isle of Wight Wildlife Trust made some money available to the Society in 1999-2000 for further survey work and habitat creation. The following programme was agreed and carried out in the winter of 2001.

The fence in lay by 5 was removed as it was not serving a useful purpose, and it presented a hazard to working parties clearing the site in the winter.

The hazel scrub on the bank immediately adjacent to the south end of lay by 5 was removed. An area 5 m deep (to top of hedge bank) by 7 m long was cleared and the bank was re-profiled to make a steep slope similar to that of lay by 5. This created an area adjacent to the main population into which the plant could spread.

One row of hazel stools behind lay by 6 on top of the hedge bank was coppiced to increase light available to Wood Calamint and prevent damage to plants. The hazel overhanging the lane is mechanically trimmed to allow access for farm vehicles and occasionally large branches drop down and damage the plants. Removal of these hazels along the lay by removes the need for this trimming.

The annual clearance of the main lay bys by a volunteer working party from the Society in February has continued. The aim is to clear all growth back to ground level. In the two years after lay by 5 was extended growth of Mullein, Lesser Burdock and Spear Thistle was controlled by hand pulling of plants and this has been effective in removing the threat they present to the lower growing vegetation. Cut material is dragged clear into piles underneath the coppice further back; in addition, some of the overhanging branches on the shrubs at the back of the lay bys are removed. On some occasions this has proved difficult to achieve if the weather has been wet or volunteer numbers have been low.

The following items in the Heather Winship's report have yet to be acted on.

4. ***Adjacent woodland areas to be coppiced on a rotation*** to benefit Wood Calamint, as well as Dormice and Red Squirrels.
5. ***Summer clearance of lay bys***
6. ***Scraping of soil and creation of a ride***

Wood Calamint studies 1999 to 2005

A small team from the botanical section of the society, Ann Campbell, Beth Dollery, Maureen Whitaker and Anne Marston, and Janet Ager from Medina Valley Centre began a series of detailed observations on the abundance and distribution of the plant in September 1999. Following their initial report, some additional clearance took place, as described above, with the intention of creating more habitat. The abundance of the plant was subsequently assessed during its flowering time each year from 2001 to 2005 inclusive.

Distribution

Both sides of the length of Rowridge Lane from its junction with the B3401 to the lay by at GR SZ 452865 were searched. The position of plants was noted and their location in relation to landmarks was assessed by accurate pacing. The field boundary below the hazel hedge (opposite lay by 5 and 6 and south to the footpath) was also searched between GR SZ 453867 and SZ 453868. The positions of the plants were subsequently recorded with a GPS unit (eTrex personal navigator Garmin corporation) and plotted on to a map base. Photographs were taken from fixed points to provide data for comparison in subsequent years

Abundance

Wood Calamint spreads both by the germination of scattered seed and from established plants by growth of rhizomes. It is difficult to determine what constitutes a 'plant', so the number of flowering shoots was counted, being judged as a method that could be subsequently repeated with some degree of reliability.

Initially the distribution and size of clumps within the two main lay bys were mapped using tapes and a scaled grid. Clumps of tall and large vegetation of other species were recorded by this method. For the stands in the lay-bys, the number of shoots was estimated by counting the number in a 50 x 50 cm quadrat, and then multiplying by the estimated area. In the survey of 1999, there was limited access to some of the plants as a barbed wire fence ran across lay by 5. For each of the isolated clumps of Wood Calamint, all the flowering shoots were counted.

In subsequent years this method was further refined to give a more rapid and reliable survey. Estimation of the area occupied by the plants is difficult to record accurately, because the flower spike is delicate and can be difficult to see unless growing in a mass with others. The tape was laid out along the edge of the lay by. A 0.5 x 0.5m open quadrat was placed systematically over the whole area (in effect a series of continuous belt transects) and the abundance in each was estimated according to the following scale.

Abundance	Level of % cover
1	<20%
2	20 - 49%
3	50 - 80%
4	>80%

The maximum number of flowering spikes in a 50cm x 50cm quadrat was approximately 50.

Plants growing in association with Wood Calamint

Wood Calamint is considered a 'threatened' plant by the Botanical Society of the British Isles. All plants on the 'threatened' list are being investigated in terms of their vegetation community requirements to help understand their ecology.

Data have been made available from the BSBI threatened plant database and visits to the site have been made at intervals during the monitoring period to record the species growing in both lay bys. In 2005 a series of fixed-point photographs was taken to record the development of the vegetation from May to September.

Seed Bank Investigations

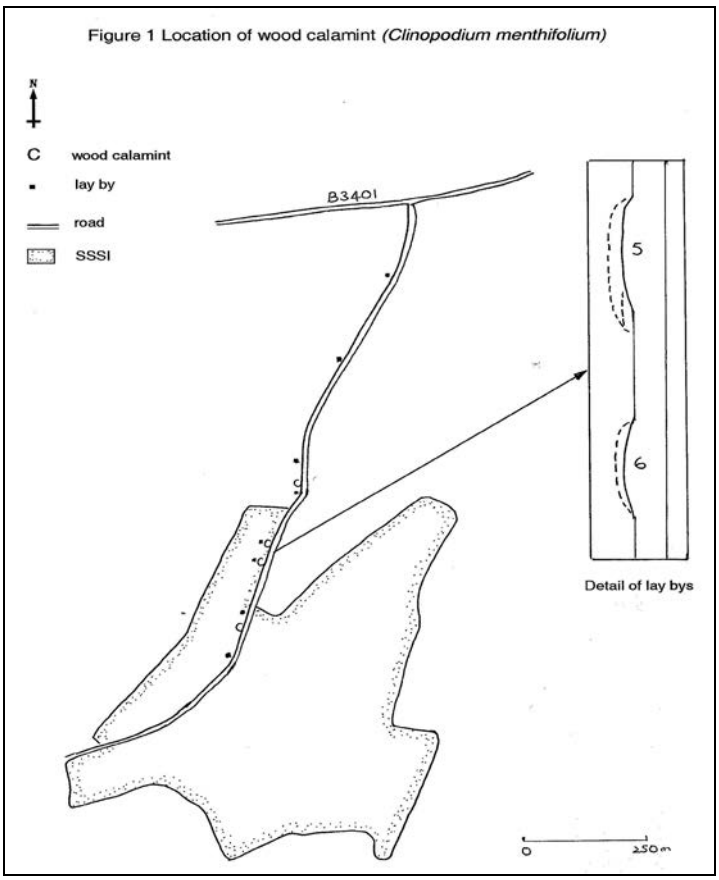
Samples of soil were collected from various locations on the western side of Rowridge Lane in September 1999, placed in seed trays and watered over a period of months to determine if there was any viable seed in the soil.

Results of monitoring 1999 – 2005

Distribution

The distribution of the plant is shown in Figure 1. The most northerly clump lies outside the SSSI boundary.

Figure 1 Location of wood calamint *(Clinopodium menthifolium)*

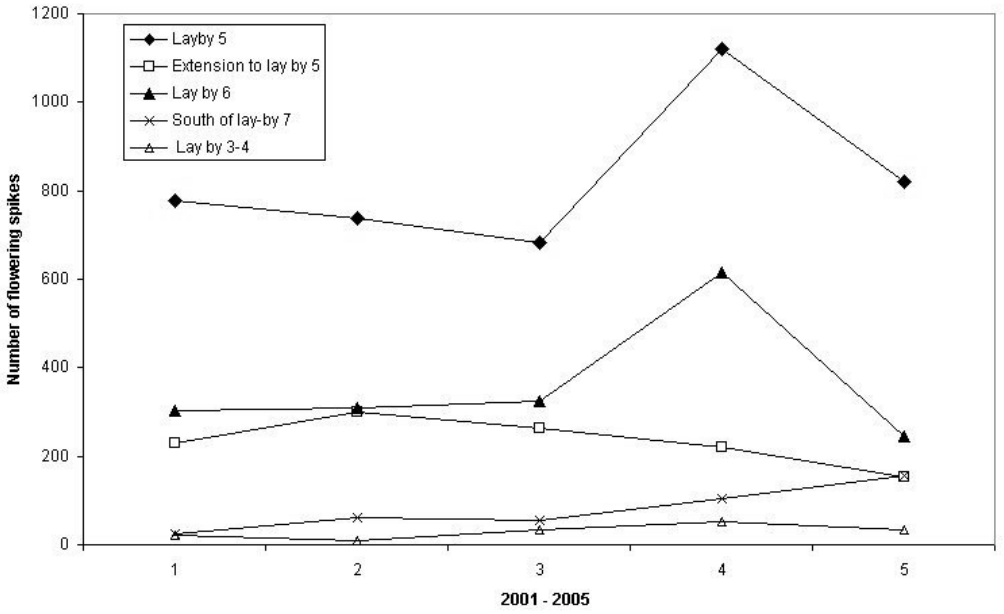


Abundance

The position of the clumps has shown a similar distribution throughout the monitoring period, although their precise position varies slightly. In the main lay-bys, where the Wood Calamint is growing amongst tall plants, the spikes are relatively long and the position they adopt depends on that of the surrounding plants, even if they are growing from the same rootstock as the previous year. The greatest abundance is along the lower edge of the lay bys.

An analysis of the results by area Figure 4 gives an indication of how the plant is faring in each part

Figure 4 Number of flowering spikes in selected areas



The estimated number of flowering spikes in each year is given in appendix 1. Mapping of the results gives a more visual representation shown in Figures 2 and 3.

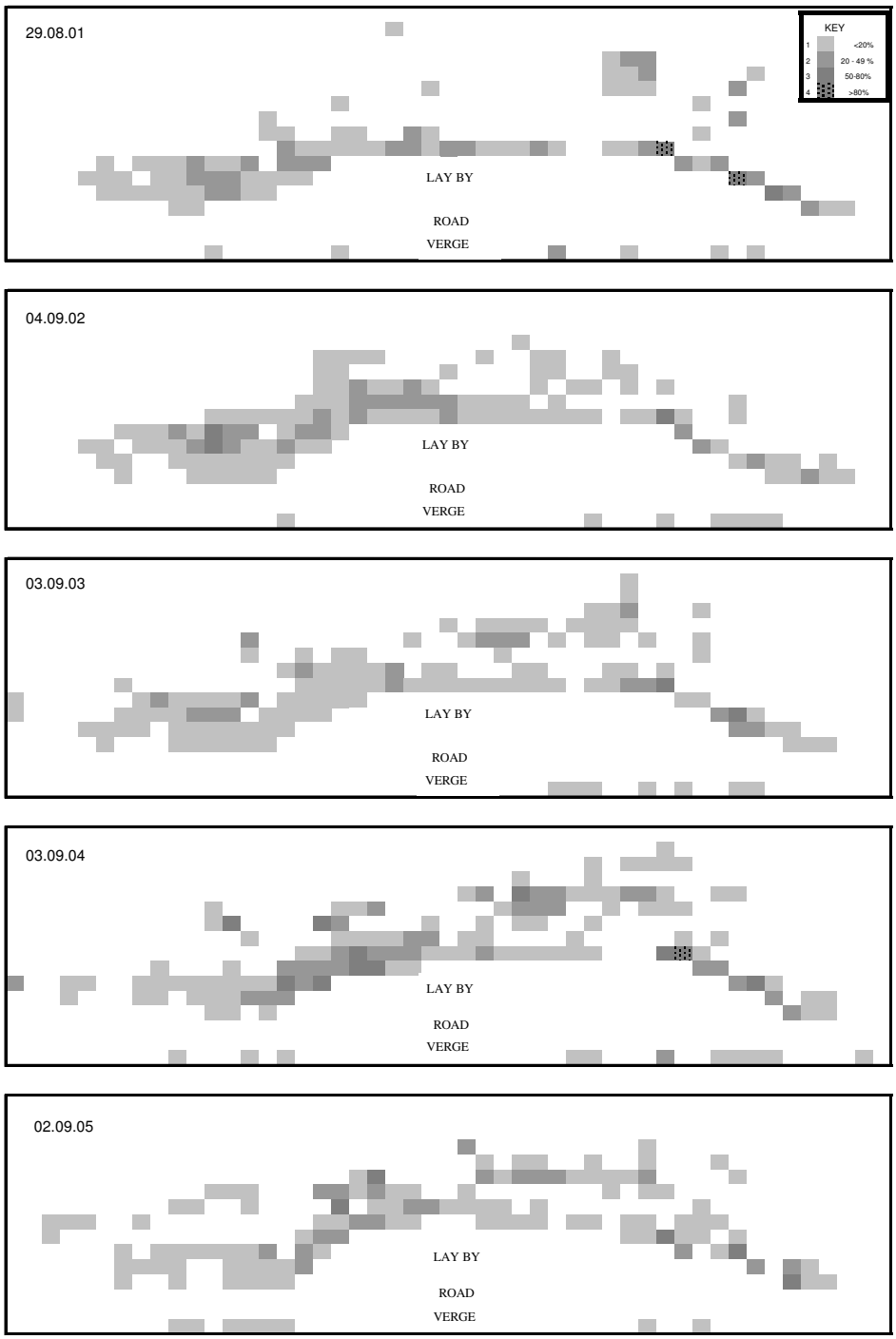


Figure 2 Distribution of wood calamint in lay by 5

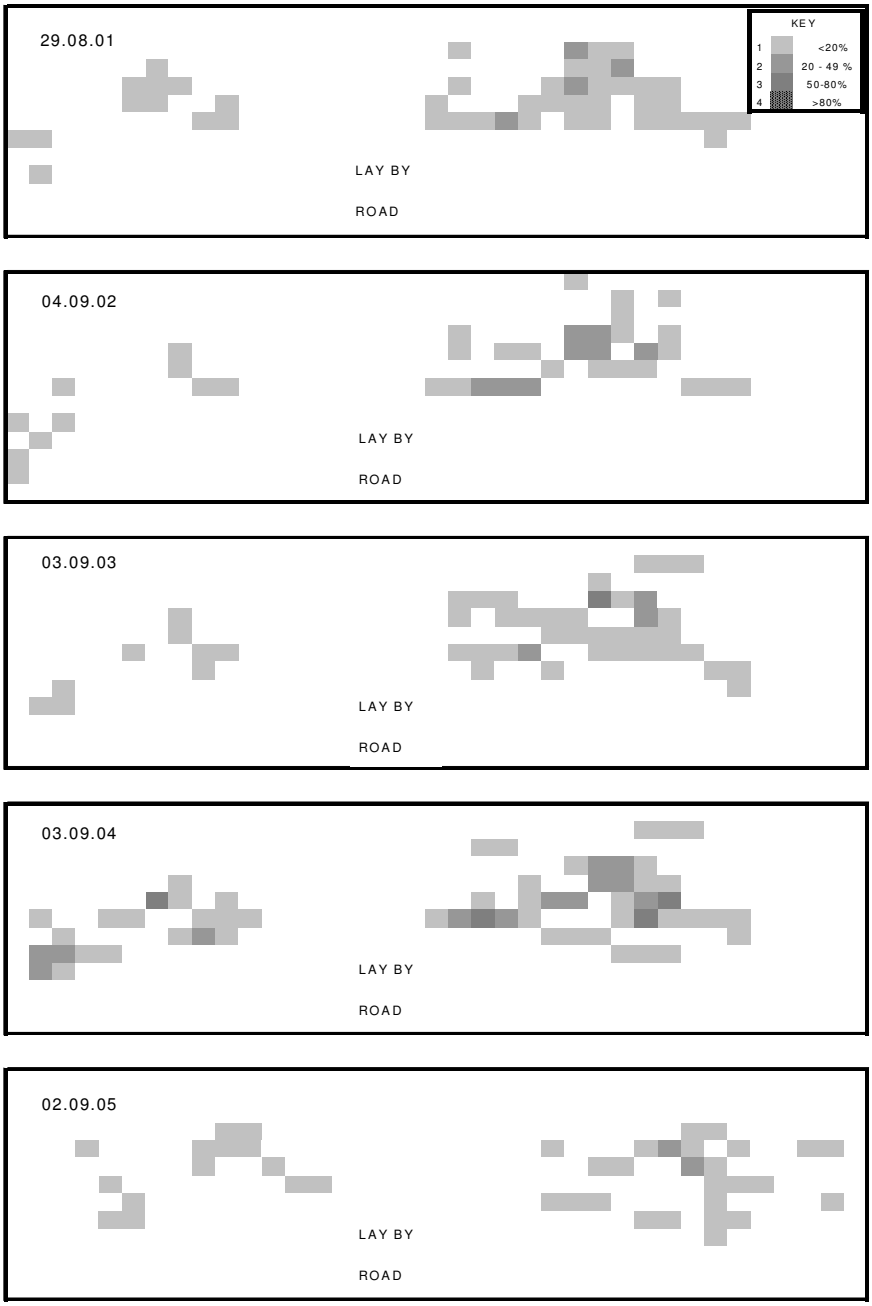


Figure 3 Distribution of wood calamint in lay by 6

In the main lay bys there has been fluctuation in the number of flowering spikes but of particular note is the trend seen in the extension to lay by 5. The plant grew rapidly in the first two years but in the last three years has shown a downwar d trend. This is attributed to the extremely vigorous growth of Hemp Agrimony, which from June onwards dominates the area and causes noticeable shading. It is difficult to see the plants growing underneath and they are straggly in growth with very pale pink flowers; there are also non-flowering shoots present.

The number of flowering spikes on the plants south of lay by 7 has steadily increased and in 2005 the plant had three times as many flowering spikes as in 1999 and was present over a 4.5 m length of the verge. The clump near lay by 4 continues at a similar abundance, but plants have not consistently been found by the stile. The edge of the field opposite the main site was not searched as it takes a disproportionate amount of time and it is not a location that will be managed for the survival or spread of the plant.

Associated species

A full list of associated plants is given in appendix 2. A total of 92 different species was recorded in the two main lay bys of which 10 are ancient woodland indicator plants. 79 species occur in lay by 5 and 67 in lay by 6. Fifty-five species are common to both. The species are typical of disturbed woodland, and include some that are associated with chalk soils. The plant community conforms to W22 of the National Vegetation Classification: Ash–Field Maple-Ramsons (Rodwell 1991). The abundant species (more 50% cover) are Ramsons *(Allium ursinum),* Hemp Agrimony *(Eupatorium cannabium)*, Ivy *(Hedera helix*), Dewberry *(Rubus caesius*), Nettle(*Urtica diocia*), Ground Ivy *(Glechoma hederacea*).

The difference between the two areas can be accounted for in part by the plants found in the season after the clearance of the lay by extension when plants of disturbed ground were found in lay by 5. The fixed-point photography in Plates 4 and 5 illustrate how the appearance of the lay bys changes over the flowering season.

Seed bank results

In all cases, seeds germinated, but the seedlings quickly died in all but the sample taken from the top of the bank by lay by 6. Fifteen species grew from this sample including Wood Calamint and it has subsequently flowered. (see appendix 2 for full list). Wild Garlic (*Allium ursinum*) grew from in the soil sample derived from the area between lay bys 5 and 6

Future management of the site

New proposals for SSSI management have recently been drawn up, and this includes some short rotation coppicing and grazing of the woodland to encourage the formation of dappled shade habitats and a herb layer which does not rapidly form a closed canopy. Extra clearance work for the lay bys containing Wood Calamint has been agreed. Clearance of Hemp Agrimony by hand pulling and/or strimming is planned for late May or early June to reduce the competition for light. Unless this action is taken further decline is likely and the benefit of the habitat creation scheme in 2000 will no longer apply. If further open habitat is created between the lay bys this management is likely to be required here also.

Trimming of the woodland edge to allow vehicles to pass along Rowridge Lane has not caused a problem to the Wood Calamint since the removal of the hazels at the top of lay by 6. There are no overhanging branches above either lay by so no cutting is necessary, and therefore there is no disturbance to the plants. The area south of lay by 7 where the plant has spread over a

patch approximately 4.5 m by 1m may be vulnerable to this operation and some thought needs to be given to carrying out a small amount of trimming by hand in this area, so that debris from mechanical cutting does not fall on to the plants.

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Conservation working party 1962

Conservation working party 2006

Appendix 1 Calculations of abundance

The number of spikes was estimated from the figure of 50 maximum per 0.5 x 0.5 m quadrat.

Level of Abundance	% cover	Number of spikes	Mean number of spikes
1	<20%	1-10 spikes	mean 5.5spikes
2	20-49%	11-25 spikes	mean 18 spikes
3	50-80%	26-39 spikes	mean 33 spikes
4	>80%	40-50 spikes	mean 45.5 spikes

The number of quadrats with each level of abundance was counted, and the total number was multiplied by the mean figure to give an estimate of the number of spikes.

	1999 (estimated)	2001	2002	2003	2004	2005
Lay by 5	600	779	737	684	1120	820
Extension to lay by 5		231	299	262	219	154
Verge opposite lay by 5	20	51	39	39	73	44
Lay by 6	380	303	309	324	615	245
Field edge	50	41	12	19	0	NR
South of lay by 7	50	25	60	56	103	157
Stile	NR	4	4	0	3	0
Lay by 3-4	NR	20	10	33	52	33
Total	NR	1454	1468	1417	2185	1453

NR = not recorded
No measurements were made in September 2000, as heavy rain damaged the plants before survey work could be undertaken.

Appendix 2

Plants associated with Wood Calamint and plants which grew from a soil sample taken from behind lay by 6

Ancient woodland indicator species are shown in bold type. Several Wood Calamint seedlings grew from the soil sample.

		Lay by 5	Lay by 6
Acer campestre	**Field Maple**		x
Agrimonia eupatoria	Agrimony		x
Allium ursinum	**Ramsons**	x	x
Anagallis arvensis	Scarlet Pimpernel	x	
Anthriscus sylvestris	Cow Parsley	x	x
Arctium minus	Lesser Burdock	x	x
Arrhenatherum elatius	False Oat-Grass	x	
Arum maculatum	Lords-and-ladies	x	x
Atriplex patula	Common Orache	x	x
Atriplex prostrata	Spear-leaved Orache	x	
Brachypodium sylvaticum	Wood False-brome	x	x
Bromopsis ramosa	**Hairy Brome**		x
Bryonia dioica	White Bryony	x	x
Campanula trachelium	**Nettle-leaved Bellflower**	x	x
Capsella bursa-pastoris	Shepherd's-purse	x	x
Cerastium fontanum	Common Mouse-ear	x	
Chenopodium album	Fat-hen	x	
Circaea lutetiana	Enchanter's-nightshade	x	
Cirsium arvense	Creeping Thistle	x	X
Cirsium vulgare	Spear Thistle	x	X
Clematis vitalba	Traveller's Joy	x	X
Clinopodium vulgare	Wild Basil	x	X
Cornus sanguinea	Dogwood	x	X
Coronopus didymus	Lesser Swine-cress	x	
Corylus avellana	Hazel	x	X
Digitalis purpurea	Foxglove		X
Dipsacus fullonum	Wild Teasel	x	x
Epilobium obscurum	Short-fruited Willow-herb	x	
Euonymus europaeus	Spindle	x	x
Eupatorium cannabinum	Hemp-agrimony	x	x
Euphorbia amygdaloides	**Wood Spurge**	x	x
Fallopia convolvulus	Black Bindweed	x	
Galium aparine	Cleavers	x	x
Galium mollugo	Hedge Bedstraw	x	x
Geranium robertianum	Herb-Robert	x	x
Geum urbanum	Herb Bennet	x	x

Glechoma hederacea	Ground-ivy	x	x
Hedera helix	Ivy	x	x
Heracleum sphondylium	Hogweed	x	x
Holcus lanatus	Yorkshire-fog	x	
Hyacinthoides non-scripta	**Bluebell**	x	
Hypericum hirsutum	Hairy St John's wort		x
Hypochaeris radicata	Common Catsear	x	
Inula conyzae	Ploughman's-spikenard		x
Lamiastrum galeobdolon	**Yellow archangel**		x
Lapsana communis	Nipplewort	x	x
Lathyrus pratensis	Meadow Vetchling	x	
Matricaria discoidea	Pineapple Weed	x	
Medicago lupulina	Black medick		x
Melampyrum pratense	**Common Cow-wheat**	x	x
Mercurialis perennis	Dog's Mercury	x	x
Moehringia trinervia	Three-nerved Sandwort	x	
Mycelis muralis	Wall lettuce		x
Odontites vernus	Red bartsia	x	
Plantago major	Greater Plantain	x	x
Poa annua	Annual Meadow-grass	x	x
Polygonum aviculare	Knot-grass	x	x
Polygonum rurivagum	Cornfield Knotgrass	x	x
Potentilla reptans	Creeping Cinquefoil	x	
Primula vulgaris	**Primrose**	x	x
Quercus robur	Pedunculate Oak	x	
Ranunculus ficaria	Lesser Celandine	x	
Ranunculus repens	Creeping Buttercup	x	
Rosa sp.	a rose (unidentified)	x	x
Rosa canina	Dog rose		x
Rubus caesius	Dewberry	x	x
Rubus fruticosus agg.	Bramble / Blackberry	x	x
Rumex obtusifolius	Broad-leaved Dock	x	
Rumex sanguineus	Wood Dock	x	x
Sambucus nigra	Elder	x	x
Scrophularia nodosa	Common figwort		x
Senecio vulgaris	Groundsel	x	x
Silene dioica	Red Campion	x	x
Sisymbrium officinale	Hedge Mustard	x	x
Solanum nigrum	Black Nightshade	x	x
Sonchus arvensis	Perennial Sow-thistle	x	x
Sonchus asper	Prickly Sow-thistle	x	x
Sonchus oleraceus	Smooth Sow-thistle	x	x

Stachys sylvatica	Hedge Woundwort	x	x
Stellaria holostea	Greater Stitchwort	x	
Stellaria media	Common Chickweed	x	x
Tamus communis	**Black Bryony**	x	x
Taraxacum aggregate	Dandelion	x	x
Teucrium scorodonia	Wood Sage	x	x
Torilis japonica	Hedge parsley		x
Trifolium pratense	Red Clover	x	
Urtica dioica	Stinging Nettle	x	x
Verbascum thapsus	Great Mullein	x	
Veronica chamaedrys	Germander Speedwell	x	x
Veronica persica	Common Field-speedwell	x	x
Viola riviniana	Common Dog-violet	x	x

Wood Calamint in Flower
Photo Keith Marston

Wood Calamint Site. Lay by 6 in September
Photo Keith Marston

Wood Calamint
Photo Keith Marston

Plate 1, Wood Calamint pressed
BHerbarium MOD
Photo Andy Butler

Flowering Plants & Ferns 2005
Epipactis phyllanthes var. *vectensis*
Photo Colin Pope