

Pulmonaria obscura Dumort. (Boraginaceae) in Suffolk

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ABSTRACT

The identity of a lungwort with cordate, unspotted leaves growing in Suffolk is confirmed as *Pulmonaria obscura* Dumort. Its recorded history in Suffolk is summarised. This plant grows on poorly drained, fertile soil in ancient woodland with a history of management by coppicing. The associated community according to the National Vegetation Classification is *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland. *P. obscura* is probably native in Suffolk: only a small extension of its recognised natural range will include the Suffolk population; it grows in a relatively natural habitat; the associated plant community in Suffolk is of a type which on the Continent frequently includes this species; it is very rarely grown in gardens and thus is unlikely to be a garden escape; and it reproduces sexually. This plant is known from just three adjacent woods where it covers a total area of 18 m². Formerly it was more abundant and its decline seems to be related to a decline and cessation of coppicing in its habitat. It is recommended that its population is increased by the resumption of coppicing.

KEYWORDS: Suffolk Lungwort, native status, Britain, Belgium.

INTRODUCTION

In 1842 a lungwort with unspotted, cordate leaves was discovered in Burgate Wood, E. Suffolk (v.c. 25). Soon after its discovery it was recognised as a taxon similar to, but distinct from *Pulmonaria officinalis* L. s.str. which is the exotic species commonly grown in gardens and occasionally naturalised, and was considered to be a probable British native. Nevertheless, there has been reluctance to acknowledge this lungwort as native. This paper aims to establish that the Suffolk Lungwort is *Pulmonaria obscura* Dumort. and a probable British native. *P. obscura* is rare and without native status it is unlikely to receive the protection it requires.

IDENTIFICATION

The Suffolk Lungwort can be characterised as follows.

Perennial herb with creeping rhizomes bearing simple, flowering or non-flowering shoots (Fig. 1). Flowering stem 10–33 cm long, with 4–7 ovate or elliptic leaves up to 7 cm long and 3 cm wide. Radical leaves mid-green and unspotted (or rarely with faint, light green spots); lamina ovate with cordate base, 9–21 cm long, 5–13.5 cm wide; petiole 10–21 cm long, 0.8–1.5 times as long as the blade. Upper leaf surface covered with numerous aculeoli and occasional bristles of various size. Autumn leaves do not over-winter and are usually similar in shape to the summer leaves. Calyx barrel-shaped, 9–11 mm long (mean \pm 95% confidence limits = 9.6 ± 0.3 mm, $n = 31$) at flowering time, growing to 15 mm at fruiting time. Corolla 12–15 mm long (mean \pm 95% confidence limits = 13.7 ± 0.5 mm, $n = 31$), at first dark pink (R.H.S. colour chart 58c to 59b), later dull violet (90b to 90d). Inside of corolla with hair ring but otherwise hairless. $2n = 14$ (see Fig. 2).

These characteristics are consistent with *Pulmonaria obscura* Dumort. (1865) and the further

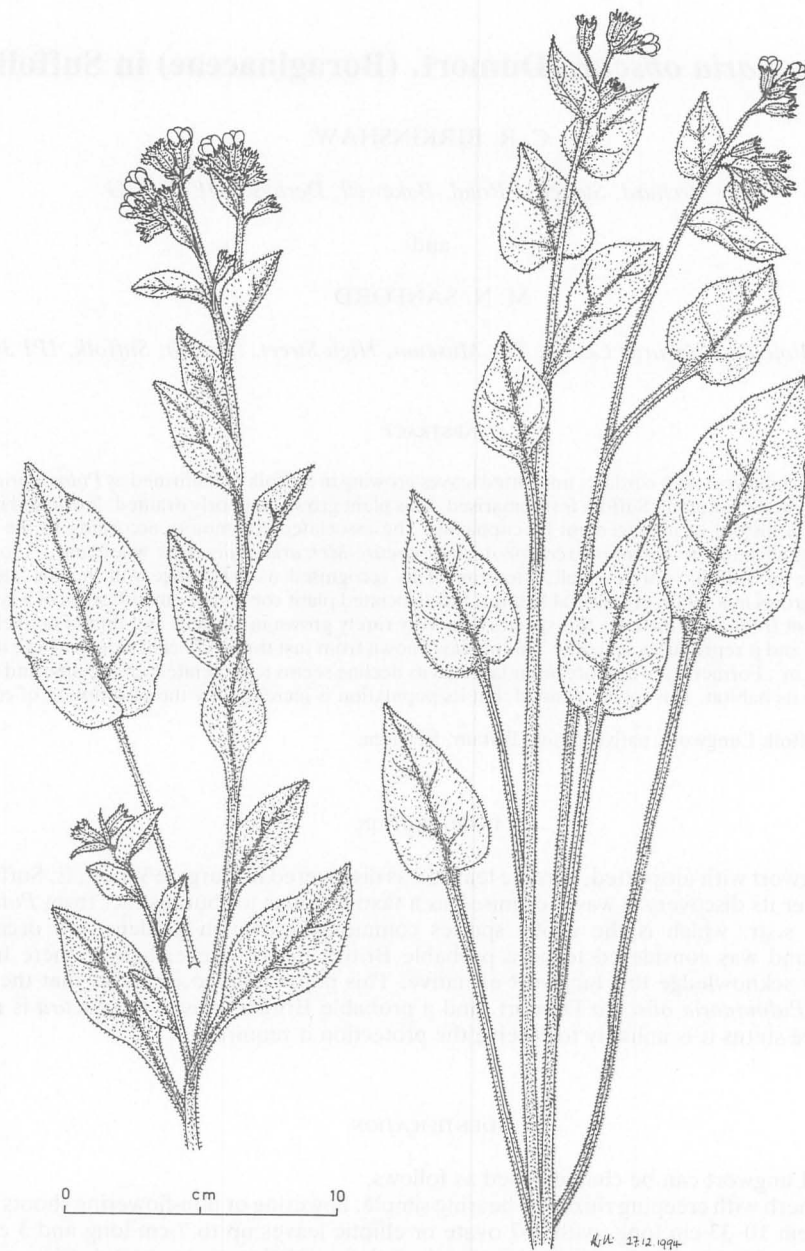


FIGURE 1. *Pulmonaria obscura* from Burgate Wood. Drawn from a herbarium specimen collected by W. M. Hind in 1885.

descriptions of this taxon given in Dumortier (1868), Wolking (1966), Sauer (1972) and Bollinger (1978). A herbarium specimen of the lungwort from Burgate Wood was examined by Prof. W. Sauer who confirmed it was *P. obscura* (pers. comm. 1993).

P. obscura is similar to *P. officinalis*, differing in its unspotted leaves, lack of over-wintering leaves, and chromosome number (for *P. officinalis* L. s.str., $2n = 16$ (Bollinger 1978)). Formerly *P.*

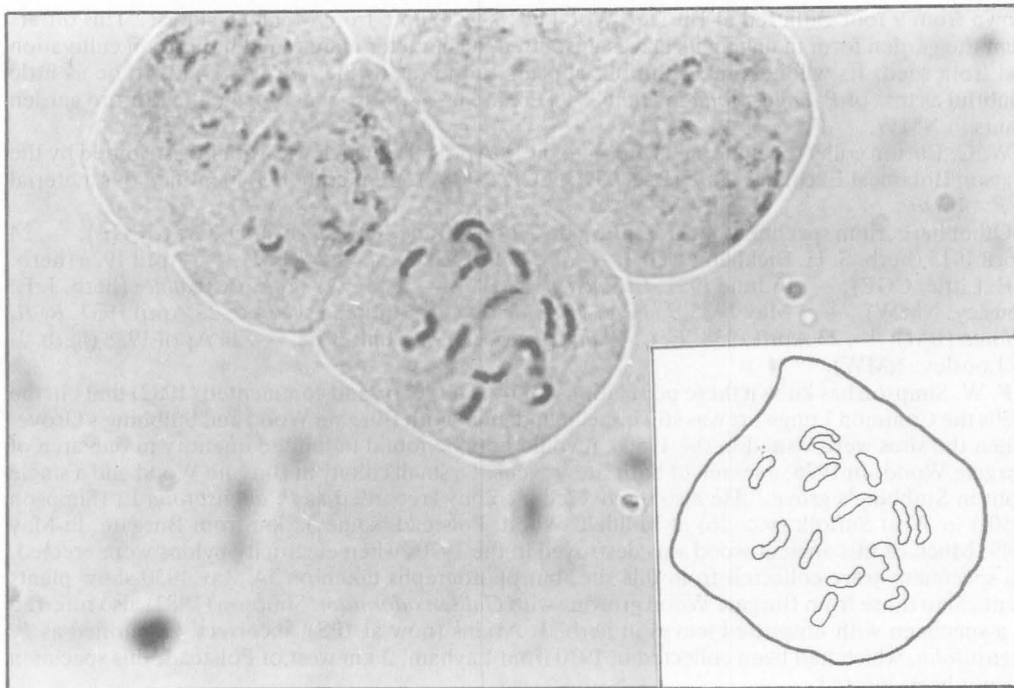


FIGURE 2. Mitosis in root tip cells of *Pulmonaria obscura* from Burgate Wood showing $2n = 14$. The inset shows a tracing of the chromosomes. (Feulgen squash in 1N hydrochloric acid.)

obscura has been considered a variety or subspecies of *P. officinalis* (*P. officinalis* var. *immaculata* Opiz; *P. officinalis* subsp. *obscura* (Dumort.) Murb.). However, now, on the basis of the sterility of hybrids between the two taxa, its specific status is generally accepted (Merxmüller & Sauer 1972).

RECORDED HISTORY

A population of lungwort has been known at Burgate Wood in E. Suffolk (v.c. 25) since 1842 when it was found by C. J. Ashfield. Ashfield lived in Norfolk but later moved to Preston, Lancashire; his herbarium (including a specimen of lungwort collected at Burgate in April 1842) was donated to the Preston Scientific Society and is now in Liverpool Museum (LIV). Ashfield (1862) noted, when he published the record for the first time, "I think there can be no doubt about it being a genuine wild locality; for the plant is plentiful, it grows far into the interior of an extensive wood, and has much the appearance of being truly wild as any of the plants near it. It is now more luxuriant than usual, in consequence of the underwood having been recently cut, a fact which I noticed last September when I was in the wood."

W. M. Hind (1889) visited the site in 1885 (specimen collected 3 June 1885; IPS) and noted "the plant . . . in profusion; and, in less quantity, in Stubbing's Grove [Botesdale], about a mile [2 km] to the West. The plant differs from the cultivated form, in having leaves unspotted, or very faintly so. This may account for its having been passed over by the simplers, and left to enjoy its native shade." Page (1911) repeated Hind's observations and added that "*Pulmonaria officinalis* is left to stand alone as the county's unique production. It is considered by its discoverer, Mr. C. J. Ashfield, the Rev. E. S. Marshall and others to be a true native of Suffolk."

Marshall visited Burgate Wood on 8 May 1888 and collected specimens (BM, CGE). A specimen (BM) collected by Marshall, labelled "*Pulmonaria officinalis* L. (forma concolor) = v. *immaculata* Op.", was collected from a garden plant at Milford, where Marshall lived, in 1894 having been

grown from a root gathered at Burgate Wood in 1889. A note from Marshall states: "This differs from the garden form in having its leaves unspotted, a character maintained hitherto in cultivation and from seed. Its wildness in E. Suffolk appears to me (as to the late Dr. Hind) to be as little doubtful as that of *P. angustifolia* in Hants." There are also two specimens from the Milford garden plants in NMW.

W. C. Barton collected material at Burgate on 18 April 1913 which was widely distributed by the Watson Botanical Exchange Club (BM, CGE, LCR, NMW). Bennett (1913) identified this material as *P. obscura*.

Other herbarium specimens include: Burgate Wood, 3 June 1884 (herb. J. D. Gray: CGE); —, 24 April 1915 (herb. S. H. Bickham: CGE); —, 12 May 1922, *T. J. Foggitt* (BM); —, April 1923 (herb. J. E. Little: CGE); —, 16 June 1931, *E. Vachell* (NMW); —, 5 May 1934, *E. C. Wallace* (herb. J. E. Lousley: NMW); —, 5 May 1935, *J. F. G. Chapple* (OXF); Stubbing's Wood, 25 April 1937, *R. B. Ullman* (BM); —, 23 April 1938, *E. C. Wallace* (herb. P. M. Hall: BM); —, 24 April 1938 (herb. J. E. Lousley: NMW).

F. W. Simpson has known these populations for over 60 years, and commented (1982) that "in the 1930s the Common Lungwort was still quite abundant in both Burgate Wood and Stubbing's Grove. When the sites were visited in the 1950s, it could only be found in limited quantity in one area of Burgate Wood. In 1976, a search of both sites revealed a small colony in Burgate Wood and a single plant in Stubbing's grove." He also discovered a colony (recorded as *P. angustifolia* L. (Simpson 1950)) in West Suffolk (v.c. 26) at Millfield Wood, Polstead, some 32 km from Burgate, in May 1949. Much of this ancient wood was destroyed in the 1970s when electricity pylons were erected. No specimens were collected from this site, but photographs taken on 14 May 1950 show plants identical to those from Burgate Wood growing with *Galium odoratum*. Simpson (1982) also referred to a specimen with unspotted leaves in herb. J. Atkins (now at IPS), incorrectly identified as *P. angustifolia*, which had been collected in 1910 from Layham, 2 km west of Polstead; this specimen has not been located.

Rackham (1979) surveyed the lungwort population in Burgate Wood and located five separate colonies of total area 7.9 m² with 86 inflorescences. Rackham considered the lungwort to be native, noting that it occupied a precise ecological niche within the wood and was not associated with other introduced species.

In 1985, C. D. Pigott (pers. comm. 1987) saw the lungwort in Burgate Wood and confirmed that it was *P. obscura*, a species which he had seen in Poland. He thought it was probably native to Suffolk because of the rarity of this taxon in cultivation and its "continental" type of distribution in Europe (see below).

In 1993, one of us (M.S.) searched other woods in the vicinity of Burgate Wood and Stubbing's Wood, Botedale, for lungwort populations and discovered a population in Gittin Wood, Wortham, about 1 km north of Burgate Wood.

A search of herbaria at BM, CGE, IPS, LIV, LCR, NMW and OXF revealed no specimens of *P. obscura* from sites other than Burgate Wood and Stubbing's Wood.

HABITAT

Burgate Wood, Stubbing's Wood and Gittin Wood are all ancient woods located on chalky till, with a history of management as coppice with standards. Within these woods lungwort is confined to areas with poorly drained, fertile, mull soils of acid to neutral pH (Rackham 1979). The physical structure and pH of soil samples (0–10 cm deep) collected from the base of three lungwort plants in Burgate Wood is shown in Table 1. The associated vegetation at all three sites can be classified as the N.V.C. community *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland (subcommunity *Anemone nemorosa* or *Primula vulgaris-Glechoma hederacea*) (Rodwell 1991) or according to the Peterken classification, ash-maple woodland (stand subtypes 2Aa or 2Ba) (Peterken 1981) (see Table 2). Other plants frequently associated with lungwort include *Ajuga reptans*, *Arum maculatum*, *Carex sylvatica*, *Circaea lutetiana*, *Corylus avellana*, *Geum urbanum*, *Glechoma hederacea*, *Lamiasstrum galeobdolon*, *Listera ovata*, *Orchis mascula*, *Poa trivialis*, *Rubus fruticosus*, *Urtica dioica* and *Viola reichenbachiana* (see Table 2).

The lungwort occurs in deep shade below a full canopy, semi-shade in gaps, and almost full light in

TABLE 1. PHYSICAL COMPOSITION (% DRY WEIGHT) AND pH OF THE SOIL (CORE 0-10 CM DEEP) ASSOCIATED WITH THREE *PULMONARIA OBSCURA* CLUMPS IN BURGATE WOOD

	Sample		
	1	2	3
Physical composition			
stones (>1 cm diam.)	0.0	0.0	1.7
CaCO ₃ (>1 cm)	0.0	0.0	0.0
stones (2 mm-1 cm)	0.3	0.0	0.5
CaCO ₃ (2 mm-1 cm)	0.0	0.0	0.0
coarse sand	34.3	43.4	37.8
fine sand	42.1	29.1	33.4
silt	2.5	11.3	11.6
clay	16.0	12.2	9.0
CaCO ₃ (<2 mm)*	0.3	0.5	1.1
organic matter**	4.5	3.5	5.0
pH***	4.2	7.0	4.1

* using a Rothamsted Calcimeter; ** by combustion at 350°C; *** in slurry with water using a Gallenkamp pH meter.

Rackham (1979) lists the soil pH at three lungwort clumps as: 7.4, 6.7, 4.6.

woodland rides. However, it flowers more freely, produces larger leaves, and grows more vigorously in conditions of higher illumination (Ashfield 1862; Rackham 1979). In Burgate Wood, lungwort is confined to the most recently coppiced parts of the wood (i.e. coppiced in 1964 and 1972) (Rackham 1979). Research is required into the dormancy and germination requirements of *P. obscura* seed, in particular, to test the hypothesis that dormant seed are stimulated to germinate by coppicing.

CASE FOR PRESUMING NATIVE STATUS

Webb (1985) provided criteria for assessing whether plants are native or alien to the British Isles, as follows:

1. "A species is more likely to be native if it was first recorded at an early date than if it was first recorded at a later date." While *P. obscura* was first recorded in Britain in 1842, this cannot be regarded as strong evidence against this species being native because it is rare and easily overlooked.

2. "A species is more likely to be native in the British Isles if it is recognised as a native in neighbouring countries than if it is not." *P. obscura* has a continental distribution (sensu Matthews 1955). Its distribution as an accepted native is shown in Fig. 3 (adapted from Bolliger 1978). The continental population nearest to that in Suffolk is in the Ardennes, a direct distance of c. 400 km. East Anglia has the most continental climate in Britain (Watt 1938) and several other species with a continental distribution gain a toehold here (e.g. *Artemisia campestris*, *Thymus serpyllum*, *Scleranthus perennis* subsp. *prostratus*, *Silene otites*, *Veronica spicata* subsp. *spicata*). In France and Belgium, *P. obscura* is also restricted to areas with the most continental climate.

3. "A species is more likely to be native if it grows extensively in natural habitats than if it is restricted to man made habitats." All populations of *P. obscura* are in ancient woods (as listed in English Nature's Ancient Woodland Inventory). Moreover, the community *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, associated with *P. obscura*, is regarded as a calcareous variant of the *Carpinion betuli* (Rodwell 1991), a community which on the continent includes *P. obscura* (Oberdorfer 1970; Bolliger 1978; Ellenberg 1988). In a population of *P. obscura* near Virton, Belgium, visited in 1994, grew many species also associated with *P. obscura* in Suffolk (see Table 2).

4. "A species which is commonly cultivated is more likely to become naturalised than one which is rarely cultivated." Several species of lungwort have striking foliage or flowers and have been occasionally or frequently cultivated either as decorative plants or for their medicinal properties which are associated with their patterned leaves (which supposedly resemble diseased lungs)

TABLE 2. WOODLAND MANAGEMENT AND PLANT COMMUNITIES ASSOCIATED WITH ONE BELGIAN AND THREE SUFFOLK POPULATIONS OF *PULMONARIA OBSCURA*

Location	Bois de Grandcourt Virton, Belgium		Burgate Wood Suffolk, U.K.		Stubbing's Wood Suffolk, U.K.		Gittin Wood Suffolk, U.K.	
Woodland management	Coppice with standards		Recently coppiced with standards after years of neglect		None; formerly coppice with standards		None; formerly coppice with standards	
N.V.C. Community	W12a		W8a		W8b**		W8b	
Species	Domin	Constancy	Domin	Constancy	Domin	Constancy	Domin	Constancy
Trees/shrubs:								
<i>Acer campestre</i> *	0-1	I	1-8	V	0-7	-	7	-
<i>Acer platanoides</i>	0-1	I	0	0	0	-	0	-
<i>Acer pseudoplatanus</i>	4	I	0	0	0	-	0	-
<i>Betula pubescens</i>	0	0	4	I	0	-	0	-
<i>Carpinus betulus</i>	0	0	0-1	II	0	-	0	-
<i>Corylus avellana</i> *	2-9	V	5-8	V	2-9	-	7	-
<i>Crataegus laevigata</i>	0-5	IV	0	0	0-5	-	4	-
<i>Crataegus monogyna</i>	0	0	1-2	V	0	-	0	-
<i>Daphne mezereum</i>	0-1	I	0	0	0	-	0	-
<i>Euonymus europaeus</i>	0	0	0-2	IV	0	-	2	-
<i>Fagus sylvatica</i>	5-8	V	0	0	0	-	0	-
<i>Fraxinus excelsior</i>	0-7	I	5-7	V	0-9	-	8	-
<i>Malus sylvestris</i>	0	0	0	0	0	-	1	-
<i>Populus tremula</i>	0	0	4	I	0	-	0	-
<i>Quercus robur</i> *	0-6	III	0-5	V	1	-	4	-
<i>Ribes uva-crispa</i>	0-2	II	0	0	0	-	0	-
<i>Rosa</i> sp.	0-1	II	0	0	0	-	0	-
<i>Sambucus nigra</i>	0	0	0-2	II	0	-	0	-
<i>Salix caprea</i>	0	0	0-6	I	0	-	0	-
<i>Viburnum lantana</i>	0-1	II	0	0	0	-	0	-
<i>Viburnum opulus</i>	0	0	1	I	0	-	0	-
Herbs:								
<i>Agrostis stolonifera</i>	0	0	0	0	7	-	0	0
<i>Ajuga reptans</i> *	0-2	II	0-1	I	0-1	-	0-4	IV
<i>Allium ursinum</i>	0	0	0	0	0	-	0-1	I
<i>Anemone nemorosa</i> *	1-4	V	0	0	0-1	-	2-8	V
<i>Arctium minus</i> *	0-1	I	0	0	0-1	-	0	0
<i>Arum maculatum</i> *	0-2	V	0-1	II	0-1	-	0-2	III
<i>Brachypodium sylvaticum</i> *	0-2	I	0-1	I	0	-	0	0
<i>Calamagrostis epigejos</i>	0	0	0	0	0-2	-	0	0
<i>Carex hirta</i>	0	0	0	0	0-1	-	0	0
<i>Carex sylvatica</i> *	0-5	V	0-1	III	1-2	-	0-1	II
<i>Circaea lutetiana</i>	0	0	0-2	II	0-2	-	0-2	III
<i>Cirsium arvense</i>	0	0	0	0	0-2	-	0	0
<i>Cirsium palustre</i>	0	0	0	0	0-1	-	0	0
<i>Clematis vitalba</i>	0-1	I	0	0	0	-	0	-
<i>Dactylis glomerata</i>	0	0	0	0	0-2	-	0	0
<i>Dactylorhiza fuchsii</i>	0	0	0	0	0	-	0-1	I
<i>Deschampsia cespitosa</i> *	0-1	I	1	I	0-3	-	0	0
<i>Dryopteris filix-mas</i>	0	0	0	0	0	-	0	0
<i>Epilobium obscurum</i>	0	0	0	0	0-1	-	0	0
<i>Euphorbia amygdaloides</i>	0-4	II	0	0	0	-	0	0
<i>Filipendula ulmaria</i>	0	0	0-1	II	0	-	0	0
<i>Fragaria vesca</i> *	0-1	I	0	0	0-1	-	0-5	III
<i>Galium aparine</i> *	0-2	I	0	0	0-2	-	0-2	III
<i>Galium odoratum</i>	0-2	III	0	0	0	-	0	0

TABLE 2. *continued*

Species	Domin	Constancy	Domin	Constancy	Domin	Constancy	Domin	Constancy
<i>Geranium robertianum</i>	0-3	IV	0	0	0	-	0	0
<i>Geum urbanum</i> *	0-1	II	0-2	III	0-1	-	0-2	III
<i>Glechoma hederacea</i>	0	0	0-4	IV	0-1	-	0-4	III
<i>Hedera helix</i> *	2-5	V	0	0	0	-	0-1	I
<i>Holcus lanatus</i>	0	0	0	0	0	-	0-1	I
<i>Hyacinthoides non-scripta</i>	0	0	0	0	0	-	0-5	III
<i>Hypericum hirsutum</i> *	0-1	I	0	0	0-1	-	0	0
<i>Hypericum tetrapterum</i>	0	0	0	0	0-1	-	0	0
<i>Juncus effusus</i>	0	0	0	0	0-1	-	0	0
<i>Lamiastrum galeobdolon</i> *	0-4	IV	0-4	III	0	-	0-4	III
<i>Lamium album</i>	0-1	I	0	0	0	-	0	0
<i>Listera ovata</i>	0	0	0-1	II	0	-	0-1	I
<i>Lonicera periclymenum</i>	0	0	0-2	III	0-2	-	2	0
<i>Luzula pilosa</i>	0	0	0	0	0	-	0-1	I
<i>Lychnis flos-cuculi</i>	0	0	0	0	0-1	-	0	0
<i>Melica uniflora</i>	0-2	I	0	0	0	-	0	0
<i>Mercurialis perennis</i> *	0-3	IV	1-9	V	0-2	-	0	0
<i>Orchis mascula</i> *	0-2	I	0-1	I	0	-	0-1	I
<i>Paris quadrifolia</i>	0	0	1	I	0	-	0-1	II
<i>Poa trivialis</i> *	0-1	I	0-7	IV	7	-	0-4	V
<i>Potentilla sterilis</i> *	0-1	I	0-1	II	0-2	-	0-2	III
<i>Primula elatior</i>	0-1	V	0	0	0	-	0	0
<i>Primula vulgaris</i>	0	0	0-1	I	0-1	-	0-1	I
<i>Prunella vulgaris</i>	0	0	0	0	0-1	-	0	0
<i>Ranunculus auricomus</i>	0-1	I	0	0	0	-	0	0
<i>Ranunculus ficaria</i> *	0-2	III	0	0	0	-	0-2	III
<i>Ranunculus repens</i> *	0-2	I	0	0	0	-	0	0
<i>Rubus caesius</i>	0	0	0	0	0	-	0-1	I
<i>Rubus fruticosus</i> agg.*	0-4	IV	0-1	II	0-2	-	0-8	IV
<i>Rumex sanguineus</i>	0	0	0	0	0-2	-	0-1	II
<i>Sanicula europaea</i>	0	0	0	0	0	-	0-2	IV
<i>Stachys sylvatica</i> *	0-1	I	0	0	0-1	-	0-1	I
<i>Stellaria media</i>	0	0	0-1	II	0-1	-	0	0
<i>Taraxacum officinale</i> agg.*	0-1	I	0	0	0	-	0-1	I
<i>Urtica dioica</i> *	0-4	I	0-1	II	0-1	-	0-4	I
<i>Veronica chamaedrys</i> *	0-1	I	0-2	II	0-1	-	0-1	I
<i>Vicia sepium</i> *	0-2	II	0	0	0	-	0-1	I
<i>Viola reichenbachiana</i> *	0-1	II	0-2	III	0-1	-	0-3	III
Bryophytes:								
<i>Atrichum undulatum</i>							X	
<i>Brachythecium rutabulum</i> *	X		X				X	
<i>Calliergon cuspidatum</i>			X					
<i>Eurhynchium praelongum</i> *	X		X		X		X	
<i>Fissidens taxifolius</i> *	X		X				X	
<i>Plagiomnium undulatum</i> *	X		X				X	
<i>Rhynchostegium confertum</i>	X							
<i>Thamnobryum alopecurum</i> *	X		X				X	
<i>Thuidium tamariscinum</i>			X					

Nomenclature follows Stace (1991) for vascular plants and Watson (1981) for bryophytes.

For explanation of "Domin" and "Constancy" values see Rodwell (1991). N.V.C. Communities (Rodwell 1991):

W8a - *Fraxinus excelsior-Acer campestre-Mercurialis perennis* Woodland, sub-community *Primula vulgaris-Glechoma hederacea*

W8b - *Fraxinus excelsior-Acer campestre-Mercurialis perennis* Woodland, sub-community *Anemone nemorosa*

W12a - *Fagus sylvatica-Mercurialis perennis* Woodland, sub-community *Mercurialis perennis*

* Species associated with *P. obscura* in both Belgium and Suffolk.

** the lungwort in Stubbing's Wood occurs on recently created woodland rides, a transitional community which is difficult to classify; the adjacent woodland is W8b.

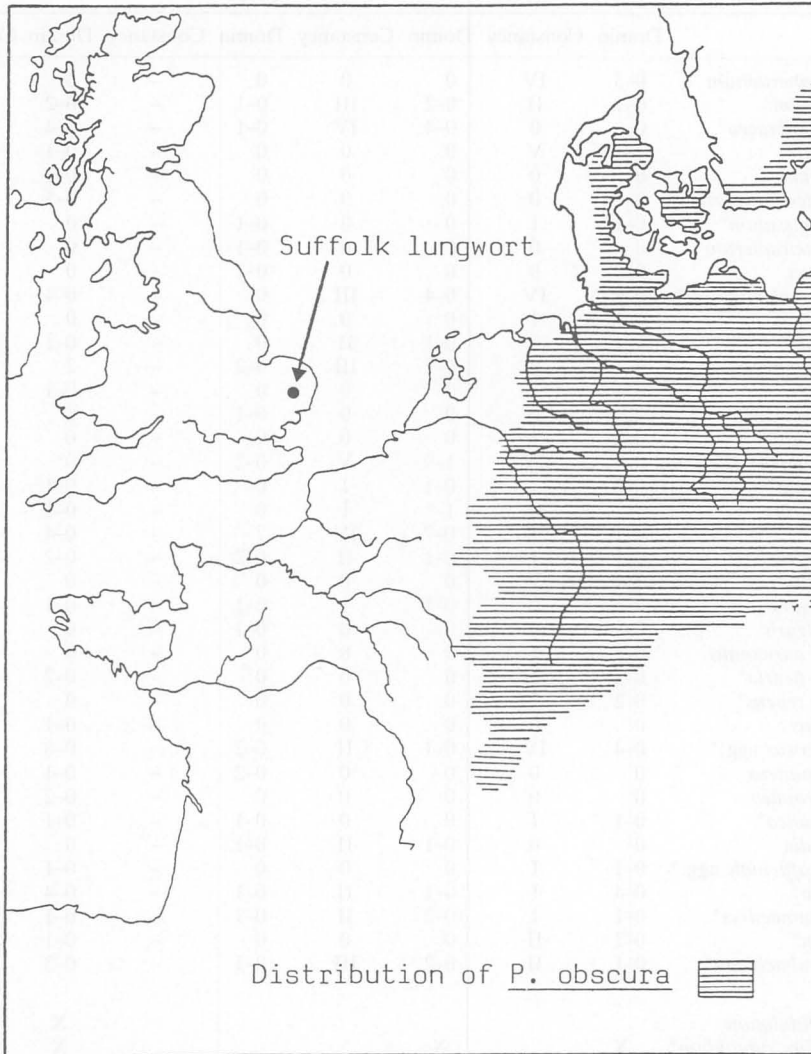


FIGURE 3. Distribution of *Pulmonaria obscura* as an accepted native in North West Europe (adapted from Bolliger 1978).

(Grieve 1980). On occasion these species have become naturalised. However, *P. obscura* lacks patterned foliage, its flowers are dull, and it seems to have been rarely cultivated (although, on occasion, plants collected from Burgate Wood have been grown by botanists). Several taxa of lungwort are included in early British books on horticulture (e.g. Parkinson 1629; Gerard 1633; Miller 1768), but none of these can be identified definitely as *P. obscura*. Parkinson (1629) listed three lungworts: *Pulmonaria maculosa*, *Pulmonaria altera non maculosa* and *Pulmonaria angustifolia*. According to the descriptions, *Pulmonaria maculosa* is synonymous with *P. officinalis*, and *Pulmonaria angustifolia* with *P. longifolia* (Bast.) Boreau, but *Pulmonaria altera non maculosa* could refer to any of several lungwort species with unspotted leaves. Gerard (1633) listed and illustrated three lungwort taxa (note that in Johnson's edition of this work the illustrations are disordered (Wilmott 1917)). These are synonymous with *P. officinalis*, *P. saccharata* Miller and, on the basis of their elliptical, unspotted leaves and blue flowers, *P. angustifolia*. Miller (1768) listed six

TABLE 3. CHARACTERISTICS OF THE SUFFOLK LUNGWORT (*PULMONARIA OBSCURA*) POPULATION, APRIL 1994

Location	No. clumps	Total area (m ²)	No. flowering stems	No. clumps with seedlings	Morphs
Burgate Wood	12	7	20	4	pin+thrum
Stubbing's Wood	4	5	77	2	pin+thrum
Gittin Wood	11	6	c. 470	5	pin+thrum
Totals	27	18	c. 567	11	

lungwort taxa none of which is referable to *P. obscura*, but Miller & Martyn (1807) included "*Pulmonaria non maculosa folio* L. *Sp. Pl.* p. 135 (1753)" which is synonymous with *P. obscura*. However, this publication is a dictionary for gardeners and botanists and includes many taxa which were not cultivated. Present-day horticultural accounts of the genus *Pulmonaria* exclude *P. obscura* (e.g. Stuart 1990; Bloom 1994; Griffiths 1994) or, when mentioned, state that it is not cultivated (e.g. Mathew 1982). *P. obscura* appeared in *The plant finder* for the first time in 1992 (Philip 1992). Monksilver Nursery, Cambridgeshire, which stocked this material, had obtained it from a wild, foreign population.

Although Burgate Wood contains earthworks showing that part of the wood was settled, the lungworts do not grow in this area (Rackham 1979). No other garden escapes are associated with the lungwort except for *Ribes rubrum* L., a species dispersed widely by birds.

P. obscura is heterostylous with pin and thrum morphs. It is unusual to find both morphs in garden populations because typically it is introduced to the garden as a division from a single monomorphic clump. Therefore, further evidence against a garden origin for the Suffolk plants is the presence of both morphs in all three populations.

5. "A species is more likely to be native if it reproduces by seed rather than solely by vegetative means." In April 1985, Pigott (pers. comm.) recorded seedlings around adult plants in Burgate Wood and, in April 1994, seedlings were recorded around adult plants in all three woods.

CURRENT POPULATION AND CONSERVATION

In April 1994, the three known *P. obscura* populations were surveyed to estimate the number of clumps in each (clumps were defined as groups of plants separated by more than 1 m from other groups), the area they occupied, the number of flowering stems, the number of clumps with associated seedlings, and the presence of pin and thrum morphs. The results are presented in Table 3. All the lungwort colonies reported by Rackham (1979) in Burgate Wood are extant and had a similar total area to that reported by him. All the known plants in Stubbing's Wood grow on two recently created, wide, periodically mown, woodland rides, a habitat which will probably prove unsuitable for this species in the long term.

Although no quantitative data are available, the comments of Ashfield (1862) and Simpson (1982) suggest that during the last century and at the start of this century, *P. obscura* was more abundant in Burgate Wood and Stubbing's Wood than at present. Its decline is probably related to the decline and cessation of coppicing during the twentieth century. Currently, Stubbing's Wood and Gittin Wood are not coppiced, but recently, coppicing of Burgate Wood has recommenced. It is recommended that the effect of coppicing on the lungwort population of Burgate Wood is monitored and if favourable, this management should be applied to the other sites.

Burgate Wood, Stubbing's Wood and Gittin Wood are within 1 km of each other. Burgate Wood is a site of special scientific interest but the other two sites have no legal protection although they are on the register of county wildlife sites. *P. obscura* is to be included in the third edition of the *British red data book* for vascular plants (Wigginton, in prep.).

There is no public access to Burgate Wood, Stubbing's Wood or Gittin Wood and permission to enter must be obtained from the owners before any visit. Plants of *P. obscura* originating from Burgate Wood can be seen in Cambridge University Botanic Garden.

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