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Final Report

Survey of *Formica candida* nests in the New Forest and at Roydon Woods 2016

AG00300016

Higher Level Stewardship Agreement

The Verderers of the New Forest

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Final Report

Survey of black bog ant (*Formica candida*) nests in the New Forest and at Roydon Woods, 2016

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CONTENTS

1. EXECUTIVE SUMMARY

This report describes the current distribution of black bog ant (*Formica candida* syn. *picea* syn. *Transkaucasica*) nests and reports on the habitat conditions of the sites surveyed as per specifications in the contract document. A total of 48 sites were surveyed, 42 within the HLS agreement area and six within Roydon Woods.

F. candida was observed to be widespread in the Burley area, with inhabited sites running in an arc across the Lymington River Basin area from the northern sites at Ridley, Harvest Slade and Dogwood around to the west to Cranes Moor and Vales Moor, and down to the upper part of the Avon Water basin at Wilverley Bog and Crab Tree Bog. Sites to the east of Burley, namely Matley passage, Shatterford, Bishop's Dyke, Denny Bog and Ferny Croft, appear to have lost their populations. *F. candida* is still widespread in the vicinity of Setley, south of Brockenhurst (Table 1).

Summary

- A total of 27 *F. candida* nests were found among 13 sites within the New Forest HLS agreement area.
- A total of 14 *F. candida* nests and one large colony were found among four sites within Roydon Woods.
- Across the New Forest HLS agreement area and Roydon Woods, a total of 33 sites were considered to have suitable habitat to support *F. candida* populations. Nests of *F. candida* were recorded at 17 of these sites. The total number of nests recorded across these 17 sites was 41.
- 36 nests were found with at least 20 % cover of *M. caerulea* within 1 m² of the nest.
- Nests were frequently located on the southern/eastern edge of *M. caerulea* tussock which afforded some degree of sunlight penetration.
- 37 nests were found to have 40 % or more tall plant cover within 2 m² of the nest.
- 37 nests were found to have at least 30 % *S. papillosum* cover within 1 m² of the nest.
- All nests were found in areas where some open ground (areas with short vegetation cover) was available; sites with very dense vegetation cover were avoided.
- Most nests had at least level 2 ground saturation and many were close to open standing water.
- No significant relationship was found between the coexistence of *F. candida* with other ant species.
- Across the 38 sites for which historical records were available, 12 showed a decrease in the number of nests recorded, six showed an increase and 20 demonstrated no change within the last 20 years.

Table 1: Location of *F. candida* nests within the New Forest HLS agreement area and at Roydon Woods. The first six columns match the information given in the invitation to quote.

No.	Location	NGR	North, 1998	North, 2000	EA, 1998	This study, 2016
1	Acres Down	SU267087	n/a	1	n/a	Not present
2	Akercome Bottom	SU198075	n/a	1	n/a	Not present
3	Avon Water near Wootton Bridge 1	SU231005	0	n/a	1951	Not present
4	Avon Water near Wootton Bridge 2	SZ245999	0	n/a	4 nests in 1984 and 4 in 1989	Not present
5	Avon Water	SU2201	0	n/a	1951, 1984	Not present
6	Backley Bottom	SU223086	4	n/a	n/a	Not present
7	Bishops Dyke 1	SU 339055	0	n/a	1954, not present in 1963	Not present
8	Bishops Dyke 2	SU348051	see above	see above	see above	Not present
9	Bratley	SU2308	0	n/a	n/a	Not present
10	Buckherd Bottom 1	SU217084	4	n/a	nests 1986	2 nests
11	Buckherd Bottom 2	SU213081	see above	n/a	see above	1 nest
12	Common Moor	SU205047	0	n/a	6 nests 1995	Not present
13	Crabtree Bog	SU266027	n/a	n/a	Several nests 1954. Not present in 1985 and 1 in 1987	2 nests
14	Cranes Moor	SU194024	1	n/a	2 worker ants 1982, 1 worker 1987, none later	1 nest
15	Denny Bog	SU336066	0	n/a	1 nest 1985	Not present
16	Denny Wood	SU3306	n/a	n/a	n/a – but nests recorded in	Not present

No.	Location	NGR	North, 1998	North, 2000	EA, 1998	This study, 2016
					2009	
17	Dibden Bottom	SU39240608	n/a	n/a	n/a – anecdotal evidence	Not present
18	Dogwood Bottom	SU 217063	0	1	SU209065 2 nests 1988	2 nests
19	Duckhole Bog	SU252025	n/a	1	1 worker captured 1999	Not present
20	Dur Hill Down	SU202013	0	n/a	One colony 1980	Not present
21	Ferny Croft	SU373055	n/a	1	n/a	Not present
22	Goatspen Plain	SU233009	0	n/a	n/a	Not present
23	Harvest Slade	SU213064	0	2	see below	2 nests
24	Harvest Slade Bottom	SU216070	0	n/a	7 nests 1956. None found 1988	4 nests
25	Hincheslea Bog	SU279003	n/a	n/a	n/a – but nests recorded in 2010	Not present
26	Holmsley Bog	SU225013	0	n/a	13 nests 1984. Several nests 1991	Not present
27	Matley Passage	SU333072	0	n/a	One nest in 1905, one nest in 1912. A few nests in 1914, more than 20 nests in 1918, several nests in 1922. One nest in 1926	Not present
28	Ogdens	SU18191164	0	n/a	n/a	Not present
29	Penny Moor 1	SU355047	0	n/a	n/a	Not present
30	Penny Moor 2	SU364047	n/a see above	n/a	One individual in 1998	Not present
31	Picket Post (near	SU190058	1	n/a	1953	Not present

No.	Location	NGR	North, 1998	North, 2000	EA, 1998	This study, 2016
	Foulford Bottom)					
32	Redhill Bog/Hincheslea Moor	SU2601	0	n/a	Several nests 1954. None found 1976	Not present
33	Ridley Bottom	SU199061	0	2	3 large nests 1984 within SU1905	2 nests
34	Ridley Plain (near Harvest Slade)	SU211066	6	n/a	n/a	1 nest
35	Shappen Bottom	SU217018	n/a	0 but suitable	n/a	Not present
36	Shatterford Bottom	SU342062	0	n/a	Many nests along valley 1969. None in 1979	Not present
37	Slufters Bog 1	SU222095	n/a	n/a	Just south of Slufters pond. 2 nests 1989	3 nests
38	Slufters Bog 2	SU223096	0	n/a	n/a	2 nests
39	Vales Moor	SU195045	0	1	n/a	3 nests
40	White Moor	SU275015	n/a	0 but suitable	n/a	Not present
41	Withybed Bottom	SU255105	n/a	0 but suitable	n/a	Not present
42	Wilverley Bog	SZ246998	n/a	4	n/a	2 nests
43	Roydon Woods 1	SU307002	n/a	n/a	28 nests in 1995 in Roydon Wood	Not present
44	Roydon Woods 2	SU308003	n/a	n/a	4 nests in 1991. 1-5 nests during 1992-1994	4 nests
45	Roydon Woods 3	SZ3094899973	n/a	n/a	28 nests in 1995 in Roydon	3 nests

No.	Location	NGR	North, 1998	North, 2000	EA, 1998	This study, 2016
					Wood	
46	Roydon Woods 4	SU3110500023	n/a	n/a	see above	3 nests
47	Roydon Woods 5	SU313001	n/a	n/a	see above	Not present
48	Roydon Woods 6	SZ3129599955	n/a	n/a	see above	4 nests

2. INTRODUCTION

The black bog ant (*Formica candida* syn. *picea* syn. *Transkaucasica*) is considered one of the rarest ants in Britain. It is categorised as 'Endangered' in the Red Data Book 1 and is also listed as a priority species of the UK Biodiversity Action Plan. The New Forest is a major centre for black bog ant with more recorded sites than anywhere else in England. Due to taxonomic ambiguity, recent and historic reports of *F. candida*, *F. picea* and *F. Transkaucasica* may refer to the same species of black bog ant. In this report we use *F. candida* to include any of the three pseudonyms.

During June-August 2016, 42 sites in the New Forest (Forestry Commission) and six sites at Roydon Woods (Hampshire and Isle of Wight Wildlife Trust), were surveyed to assess the current distribution and temporal population trends of *F. candida* within the last 20 years. Temporal trends were assessed by comparing the 2016 records with the records reported in North (1998, 2000) and Environment Agency (1998). Surveys were undertaken according to recognised invertebrate survey methods and protocols (JNCC, 2004; Rees, 2006) and were carried out by recording the number of *F. candida* nests found at each site. British sites for *F. candida* are characteristically *Sphagnum* mires/valley bogs where it is thought the species overwinter within boggy soil, or at the base of *Molinea caerulea*/*Myrica gale* tussocks. With the approach of warmer weather in the summer, *F. candida* workers construct a distinctive conical extension, built from vegetation fragments, within or around tussock grasses growing on drier mounds. Larvae are brought up into the nest, termed 'solaria', to incubate when air temperatures reach 14°C. The thermal properties of the solaria are considered to be important for larval development (Rees, 2006).

2.1 Aim and objectives

The aim of this project was to survey all historically known, and a sample of prospective, black bog ant sites within the New Forest HLS agreement area and at Roydon Woods. Kingston Great Common NNR was not included in this project. In addition to mapping the location of individual ant nests, the specific objectives were:

- To assess habitat characteristics, vegetation cover, height, structure and ground moisture at each survey site.
- To indicate where the species was present and absent during the field survey.
- To elucidate the habitat variables which determine suitability for *F. candida.*
- To provide notes on competing species.
- To provide an assessment of the current status of the population within the New Forest.
- To provide an analysis of historic trends by assessing potential change in distribution and population size within the New Forest.

3. METHODOLOGY

At each site, four 50 m transects running north, south, east and west were set up from a central point located in the wettest part of the bog. The vegetation in each 2 m² quadrat along each transect was searched for *F. candida* presence while vegetation height (minimum, average and maximum) and category type were recorded. Each quadrat was given a ground saturation level ranging from 0 - 5 depending on degree of humidity (Level 0: Dry; Level 1: Slightly damp; Level 2: Wet underfoot but no standing water; Level 3: Wet underfoot, seeping water with foot pressure; Level 4: Standing open water – under 5 cm and Level 5: Standing open water – over 5 cm).

Located *F. candida* nests were gently opened with a small garden fork to ascertain whether pupae were present before being gently closed to minimise damage to the nest or vegetation. Nest locations were recorded using a GPS (Garmin 60CSx), and the dimensions (height x width) of individual solaria noted. Vegetation cover and structure was ascertained by recording the percentage cover and height of each plant species within a 1 m² area around the nest. Cover provided by tall (>30 cm) vegetation was also noted within 2 m² of each nest. As nests are frequently grouped together (Fowles & Hurford, 1996; North, 2000), areas between transects where *F. candida* nests had been located were also searched. In order to assess *F. candida* habitat preference at each site, the same habitat characteristics were recorded in 25 null quadrats (absent of ants), for comparison. The null quadrats were randomly located along each transect and around the central point.

In order to assess the ant community in sites where *F. candida* nests were found, all ant nests/foragers were recorded and identified using recognised insect identification keys (Royal Entomological Society Handbook, 2012; Skinner and Allen, 1996). In situ identification of *F. candida* was possible, due to its distinctive black colouration, glossy abdomen and white pubescence of the thorax. Few other ant species were found on the sites surveyed and those that were present were easily distinguished from *F. candida. Formica fusca* (*F. fusca*), a similarly sized black ant known to forage in wet heathland, does not have the black gloss of *F. candida* but has a greyish matt abdomen with dense pubescence. *Lasius niger* (*L. niger*), a small black ant which exhibits a preference for nesting in moist soils (Brian 1977) can be differentiated by a combination of its dark brown colouration and its smaller size. Where doubt exists, examination of the propodeal spiracles on *L. niger* reveal a circular opening rather than an elongated one and *Lasius* spp. lack the double row of bristles found on the underside of *Formica* spp. legs. *Myrmica scabrinodis* (*M. scabrinodis*), a small reddish ant which commonly nests within *Sphagnum*, is easily distinguished by its smaller size, red colour and double-segmented waist, common only to *Myrmica* species. *M. scabrinodis* can be differentiated from other *Myrmica* species by the antennal scape which has no noticeable development at the angle and by the high, rectangular aspect of the postpetiole.

4. RESULTS

4.1 Survey site results

The following sections 4.1.1 – 4.1.48 provide site summaries, including the status of ant communities, a description of vegetation cover/structure and recommendations for future management. A comparison of New Forest sites where *F. candida* has been previously recorded is also included for historical context. Where National Grid Reference (NGR) coordinates are provided, these refer to the central point located in the wettest part of the bog where the four transects meet.

4.1.1 Acres Down

SU26717 08837

Ground Saturation Level: 1-5

***F. candida* not found, although area suitable**

Site Description

Fringed by deciduous woodland and scattered Scots pine on all sides, the mire heathland at the base of Acres Down ridge is dominated by dense *Molinia caerulea* in both grass and tussock form. Figure 1 shows the percentage cover of vegetation within 12 general categories. *Myrica gale* contributes to tussock formation. *Erica tetralix*, *Juncus acutifloris* and *Carex* spp. occur in pockets while an extensive *Sphagnum* carpet covered the wetter parts of the mire. The wettest areas (level 5) were recorded on the western side where the mire dips down towards woodland scrub. The mean height of vegetation at the site was 37.36 cm (±SD 55.22 cm). Some grazing was evident on the eastern and western sides of the mire and vegetation height was observed to increase towards the woodland scrub, which is beginning to encroach into the bog. *L. niger* and *M. scabrinodis* nests were found in the *Sphagnum* and within the *M. caerulea* tussocks but *F. candida* were absent. One disused solaria nest was found within an *M. caerulea* tussock at SU26670 08849. This may indicate the presence of *F. candida* in the past. This area was fairly dry (level 1) and was located less than two metres from an active *L. niger* nest. Historically, a single *F. candida* nest was reported from this site by North (2000).

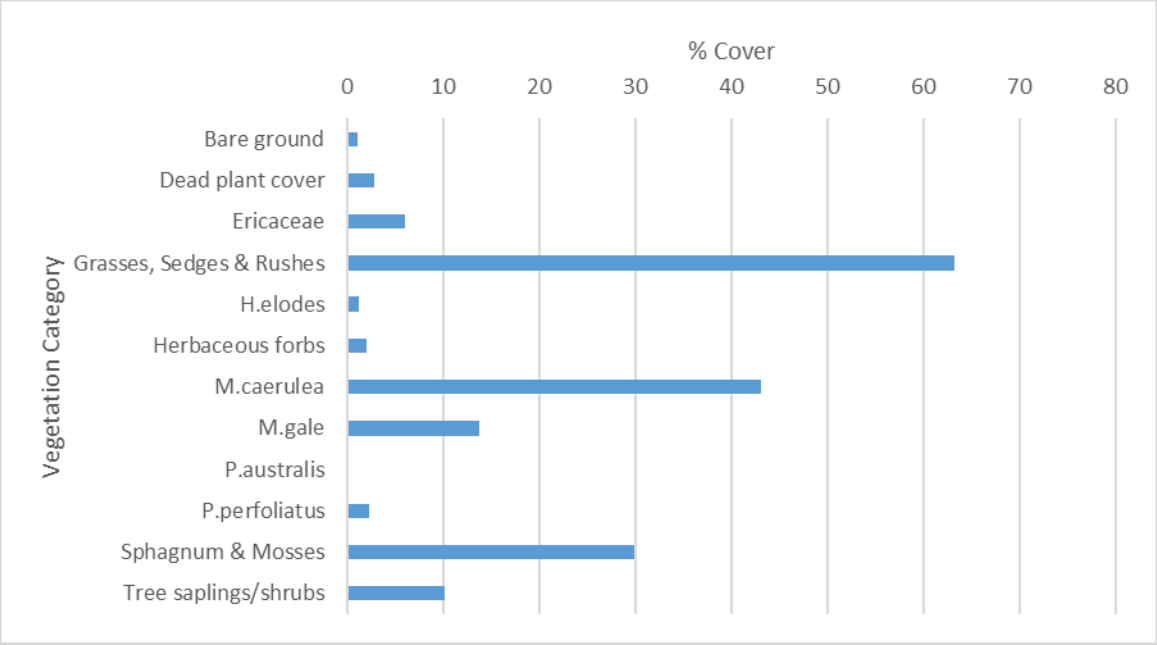

Figure 1 Mean vegetation % cover at Acres Down

Management Recommendations

- Control the encroachment of woodland scrub in the drier areas on the mire's perimeter to maintain open areas.
- Monitor ground saturation levels as the site is beginning to dry out in places.

4.1.2 Akercome Bottom

SU19713 07508

Ground Saturation Level: 0-5

***F. candida* not found; site unsuitable**

Site Description

This valley bog, adjacent and to the south-east of Pinnick Wood, is close to a stream running from Linford Brook which culminates in a small pond on the northern edge of the bog. Figure 2 shows the percentage cover of vegetation within 12 general categories. The vegetation community was comprised of short *M. caerulea* grass, *Carex* species, *M. gale*, *Eriophorum angustifolium* and *J. acutifloris*, with pockets of *Potamogeton perfoliatus*, *Sphagnum* spp. and *Hypericum elodes* also present in the wettest areas (level 5) to the west. There were few *M. caerulea* tussocks, while *Pteridium aquilinum* and *Calluna vulgaris* were observed to be beginning to intrude on the northern boundary. The mean height of vegetation measured across the four transects was 75.4 cm (±SD 122.3 cm). The driest areas (level 0-1) on the eastern side support some herbaceous forb cover in the form of *Potentilla erecta and Hydrocotyle vulgaris* and there was evidence of grazing by cattle and ponies, rabbit and deer. There was no evidence of *F. candida* occupation although *L. niger* with broods were found in the *Sphagnum.* The site may be unsuitable, as areas with ground saturation levels above level 2 were lacking tussocky grass cover.

Historically, a single *F. candida* nest was reported from this site by North (2000).

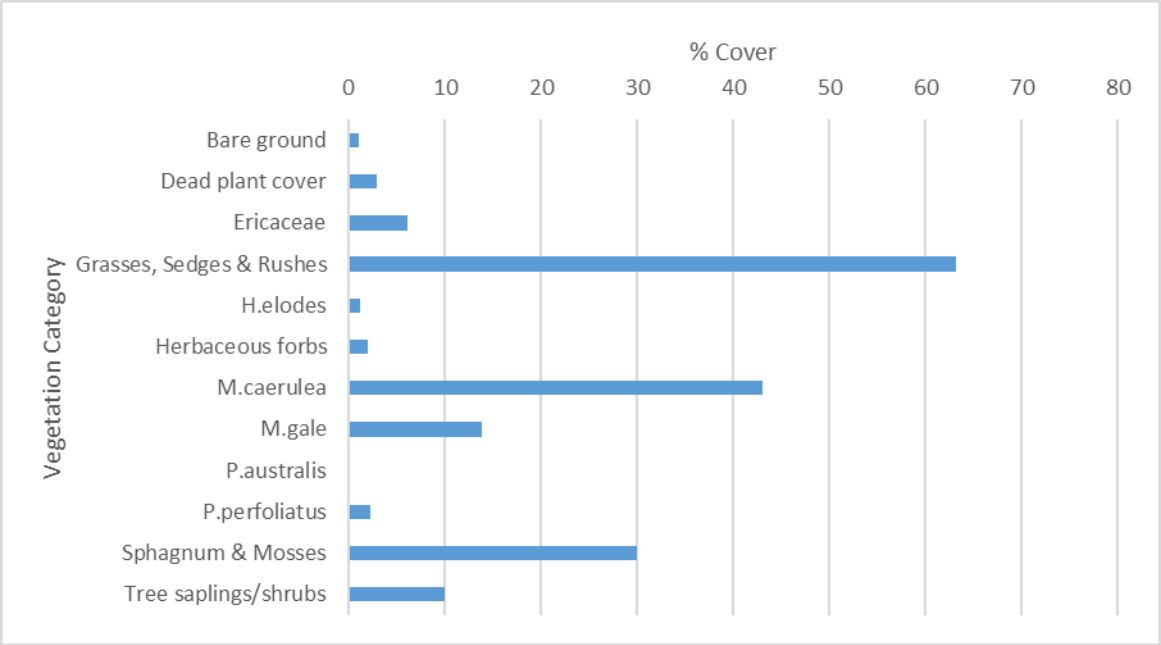

Figure 2 Mean vegetation % cover at Akercome Bottom

Management Recommendations

- Avoid drainage activities which could negatively affect the hydrology of this site.
- Monitor ground saturation levels.
- Restrict *P. aquilinum* on the northern side.

4.1.3 Avon Water (near Wootton Bridge) 1

SU23500 00398

Ground Saturation Level: 0-5

***F. candida* not found; site unsuitable**

Site Description

This predominantly dry site is separated from Avon Water to the north by a thin row of deciduous trees and bordered to the south by a fringe of *B. pendula* and *P. sylvestris*. Figure 3 shows the percentage cover of vegetation within 12 general categories. Short *Agrosti*s spp. dominate the mire with some *M. caerulea* short grass cover and pockets of *H. vulgaris, Ranunculus* spp. and *Lotus corniculatus*. Pony grazing was evident throughout, except for the mire's eastern edge which becomes waterlogged (level 5) for a band of several metres. *L. niger* nests were found in the grassland on the eastern side. There was no evidence of *F. candida* occupation which is concurrent with a dry site lacking *Sphagnum* or tussock cover. *F. candida* nests have been reported in the past; one in 1954 by Pontin (Environment Agency 1988) and four in 1984 (Halstead 1988). The site was reported to be overgrown in 1998 (Environment Agency 1998). The mean height of vegetation recorded at this site was 14.03 cm (±SD 12.33 cm).

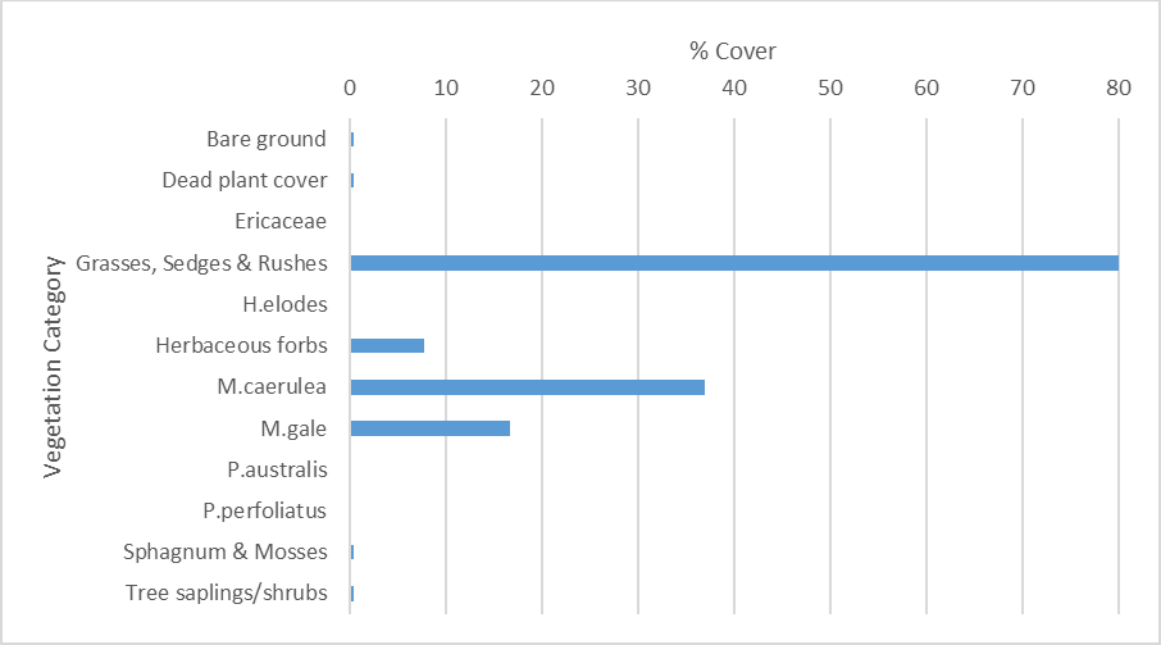

Figure 3 Mean vegetation % cover at Avon Water

Management Recommendations

- Avoid drainage activities which could impact on the hydrology of this site.
- Monitor ground saturation levels.
- Maintain grazing to retain open ground and control scrub growth.

4.1.4 Avon Water (near Wootton Bridge) 2

SZ24939 99752

Ground Saturation Level: 0-5

F. candida not found although site suitable

Site Description

This predominantly wet valley mire, to the north of Avon Water, is framed on the northern and southern sides by a line of deciduous woodland and *P. aquilinum*. Figure 4 shows the percentage cover of vegetation within 12 general categories. The wetter southern side (level 5) has a bank of *Phragmites australis* and some small *M. caerulea* tussocks, while the rest of the bog is dominated by shorter *M. caerulea* grass, *E. angustifolium, M. gale* and *Sphagnum* spp., with pockets of *Drosera* spp. and *E. tetralix* also present. The soakaway which runs along the northern side was observed to be dominated by *H. elodes*. The mean height of vegetation recorded at this site was 25.88 cm (±SD 29.08 cm). There was evidence of cattle and pony grazing which appears to limit grass height to under 10 cm throughout the centre of the bog. *F. candida* was not found at this site although the site seems suitable and nests have been previously reported in small *M. caerulea* tufts during surveys conducted in 1984 and 1989 (Environment Agency 1998). *F. candida* was not found to be present at this site in 1998 (North 1998).

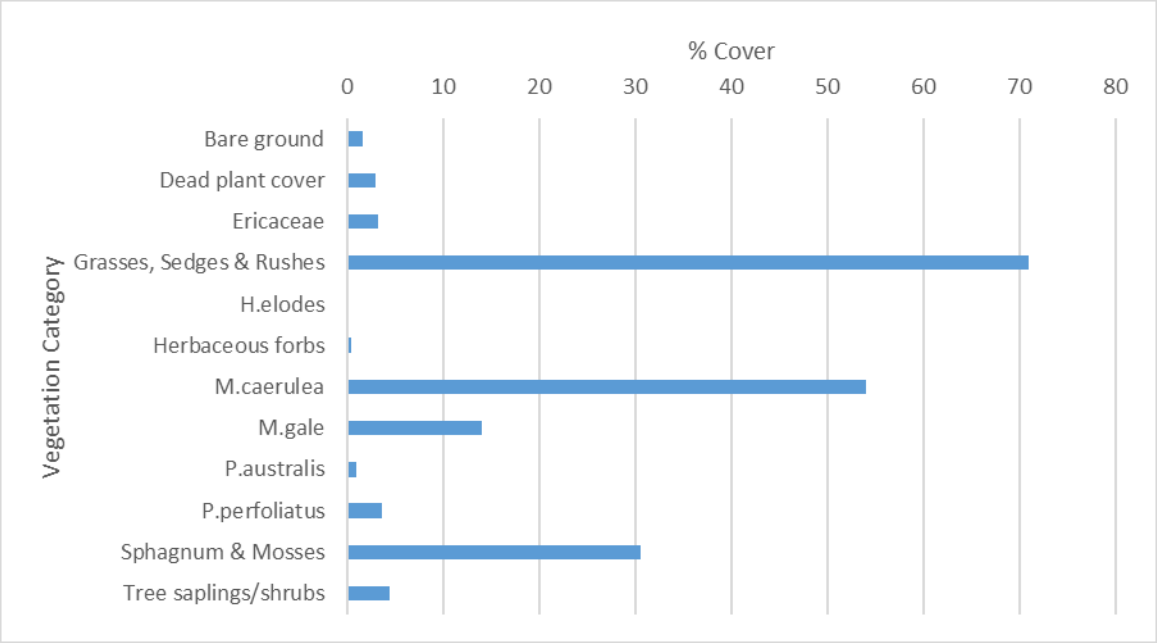

Figure 4 Mean vegetation % cover at Avon Water

Management Recommendations

- Avoid drainage activities which could negatively affect the hydrology of this site.

4.1.5 Avon Water

SU22106 01245

Ground Saturation Level: 1-4

***F. candida* not found; site unsuitable**

Site Description

This mire, to the south of Hincheslea Bog and Goatspen Plain, is bordered by Holmsley Inclosure on the southern side and by the Avon Water and a dismantled railway line to the north. The site is waterlogged in places, particularly on the northern and western sides, but is drier in the east and south. Figure 5 shows the dominance of dense *M. caerulea* grass*, E. angustifolium, Juncus spp.* and *M. gale*, with abundant *Sphagnum* cover and pockets of *P. perfoliatus* to the north. The mean height of vegetation was 25.1 cm (±SD 16.03 cm). The site shows evidence of pony grazing on the periphery, but the central and northern parts of the bog are ungrazed. There was no evidence of *F. candida* occupation, which may be explained by a lack of tussock cover limiting the habitat suitability of this. Although nests were reported in 1951 and 1984 (Environment Agency 1998), *F. candida* was recorded as absent by North in 1998.

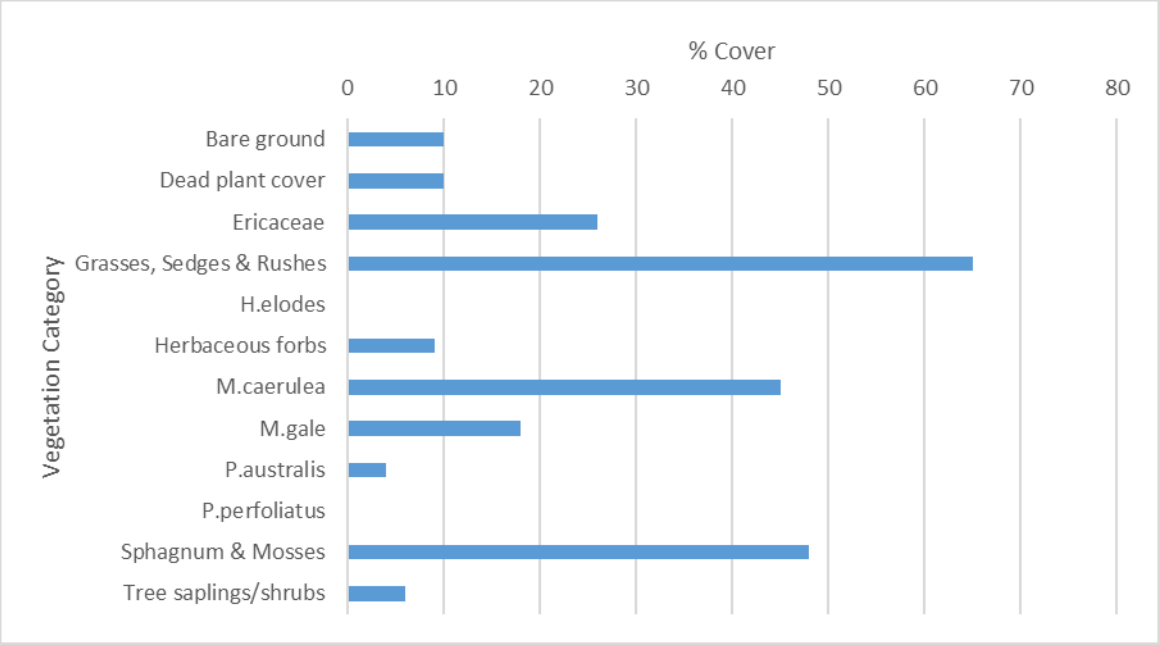

Figure 5 Mean vegetation % cover at Avon Water

Management Recommendations

- Avoid drainage activities which could negatively affect the hydrology of the site.
- Maintain grazing to control density of vegetation in the central part of the bog.

4.1.6 Backley Bottom

SU22292 08538

Ground Saturation Level: 0-1

F. candida not found; site unsuitable

Site description

Backley Bottom is a relatively dry site dominated by grazed *M. caerulea* grass and short *M. gale*. Figure 6 shows the composition of the vegetation within 12 general categories. Tussocks have formed in patches throughout the site and are primarily occupied by *Juncus* spp. with some associated straggly tall *M. caerulea* cover. The bog is lined on all sides by *P. aquilinum* and scrub which leads into woodland. *Sphagnum* cover is most prominent on the eastern side where *S. papillosum* hummocks were distributed in patches; elsewhere on the site *Sphagnum* cover is sparse. Four *F. candida* nests were found by North in 1998 but the site may now be too dry and lacks the *Sphagnum* cover and open ground which *F. candida* seem to favour. The mean height of vegetation across transects at this site was 18.2 cm (±SD 28.18 cm).

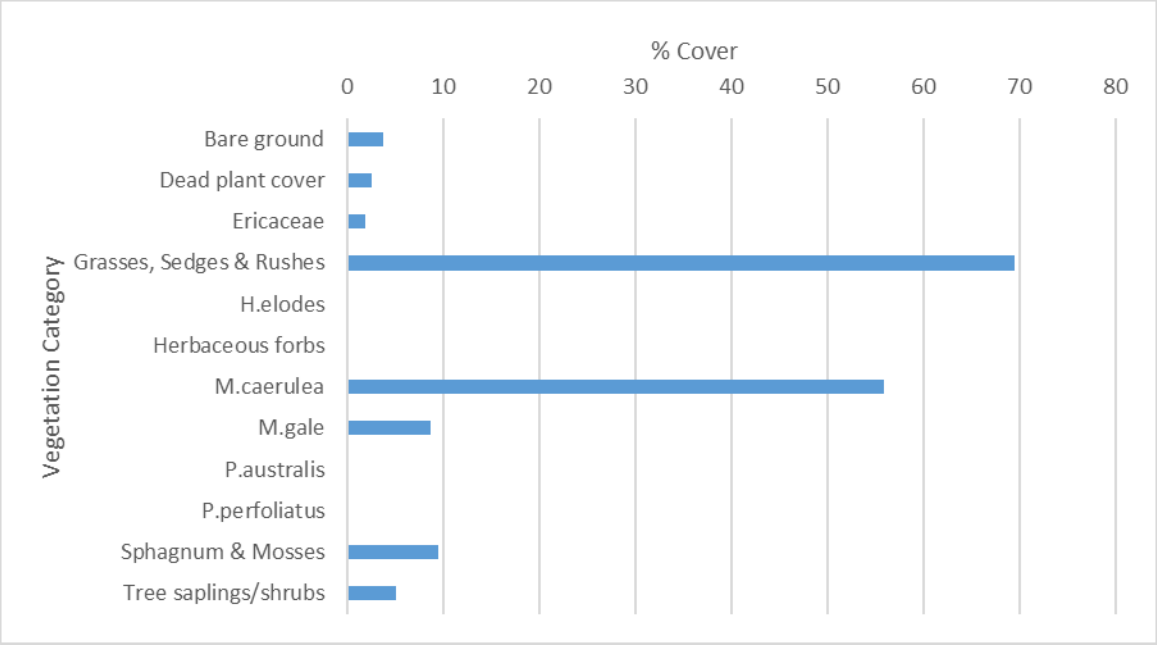

Figure 6 Mean vegetation % cover at Backley Bottom

Management Recommendations

- The site is now too dry and lacks the Sphagnum cover and open ground which *F. candida* favours. Restoring wetter conditions should be considered a priority if *F. candida* is to be occupied the site again.
- Control *P. aquilinum* and scrub growth which is beginning to intrude on the periphery.

4.1.7 Bishops Dyke 1

SU33997 05602

Ground Saturation Level: 1-3

***F. candida* not found although site suitable**

Site description

This bog at the bottom of the dyke, close to Denny Wood, is waterlogged on the northern and southern sides, but drier in the east and west where the ground is higher. Figure 7 shows the composition of the vegetation within 12 general categories. This site was dominated by short *M. caerulea* (in grass form), *Rhynchospora alba*, *M. gale* and *Sphagnum,* notably *S. palustre.* Tall tussocks of *M. caerulea* and *Calluna vulgaris* were recorded on the eastern side of the bog. Evidence of cattle grazing was limited within the drier areas of the site. Pockets of *E. tetralix* interspersed with *Narthecium ossifragum* where recorded in the centre, while scrub and *P. aquilinum* where observed to be beginning to encroach from Denny Wood on the peripheries. The mean height of vegetation across transects at this site was 20.2 cm (±SD 31.46 cm).

No ant species were found but the site does seem suitable for *F. candida* occupation, despite *S. papillosum* cover being less frequent than S*. palustre* and *S. subnitens*. *F. candida* was reported to be present in 1954 but was not recorded in 1963 (Environment Agency, 1998) or 1998 (North, 1998).

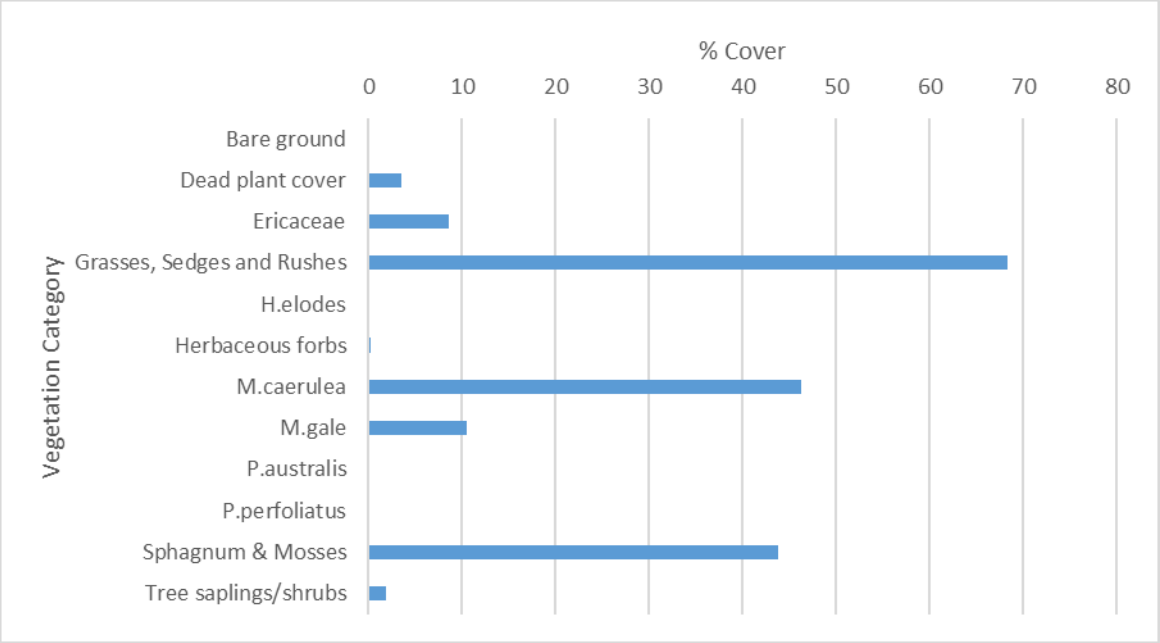

Figure 7 Mean vegetation % cover at Bishops Dyke 1

Management Recommendations

- Limit *P. aquilinum* and scrub growth which is beginning to intrude on the periphery.

4.1.8 Bishops Dyke 2

SU34001 05572

Ground Saturation Level: 1-2

***F. candida* not found; site unsuitable**

Site description

The Bishops Dyke site was dominated by tall tussocks of *M. caerulea*, *J. acutifloris* and *M. gale* and fringed by a bank of *P. australis* incorporating some *H. vulgaris* cover. Figure 8 shows the composition of the vegetation within 12 general categories. The site does not appear to be grazed and vegetation cover was observed to be dense with little bare ground. The mean height of vegetation across transects was 36.3 cm (±SD 37.62 cm).

The bog is close to a deep body of water which forms part of the ditch on the southern side; the majority of the site is muddy with a ground saturation level of 1-2. Pockets of *E. angustifolium* and *E. tetralix* incorporating some *Sphagnum* cover were recorded at the centre of the site. Some *Betula pendula* saplings are beginning to encroach throughout the site. One *M. scabrinodis* nest was found in the *Sphagnum* at SU34883 05138 but there was no evidence of *F. candida* occupation. *F. candida* was reported to be present in 1954 but not in 1963 (Environment Agency 1998) or in 1998 (North 1998).

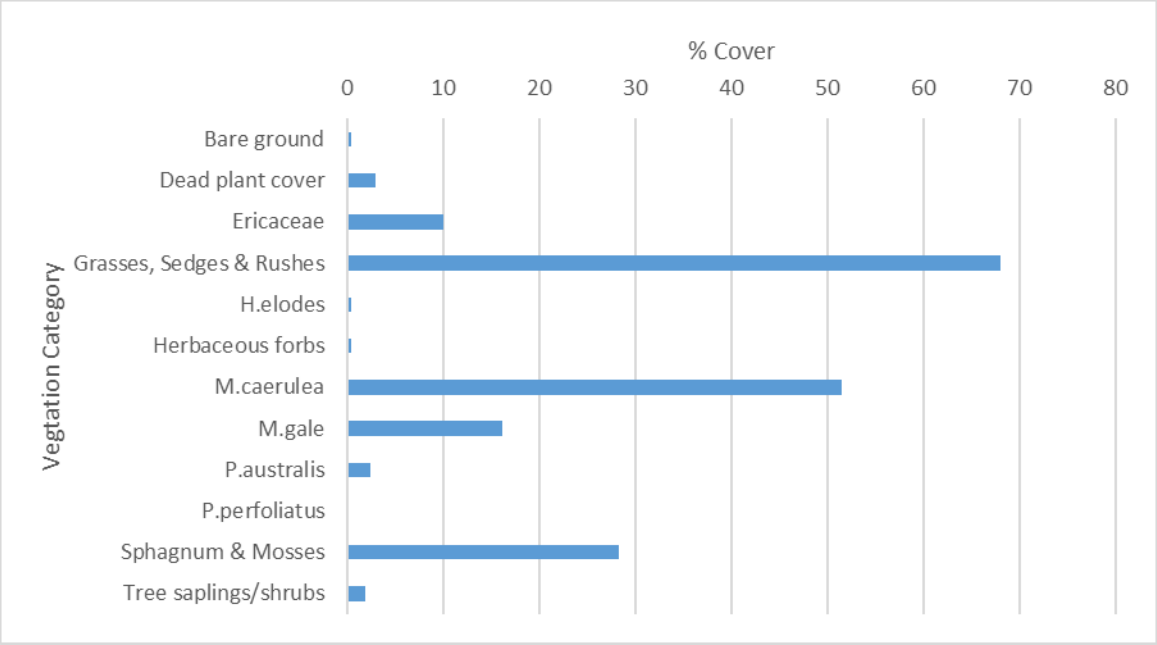

Figure 8 Mean vegetation % cover at Bishops Dyke 2

Management Recommendations

- Maintain grazing to control density of vegetation cover.
- Control *B. pendula* encroachment.

4.1.9 Bratley

SU22301 08574

Ground Saturation Level: 3-5

F. candida not found; site unsuitable

Site description

On the southern side of Bratley Wood and to the east of Backley Bottom, Bratley bog is waterlogged with a ground saturation level ranging from 3 to 5 throughout the main part of the site. *M. caerulea* (in grass and tussock form), *M. gale* and *J. acutifloris* dominate the vegetation community, with pockets of *E. tetralix* also present. *Sphagnum* cover was limited and rush cover was dense throughout the site (Figure 9). At the drier edges on the bog, *P. aquilinum* and tree saplings were observed to be beginning to intrude. The mean height of vegetation at the site was 14.8 cm (±SD 15.44 cm). There was some evidence of grazing on the western side, where maximum grass height was limited to 8 cm. No ant species were found on this site. Although the bog is wet enough to favour *F. candida* occupation, vegetation cover is possibly too dense and *Sphagnum* cover potentially too sparse. There are no records of *F. candida* populations at this site in the past.

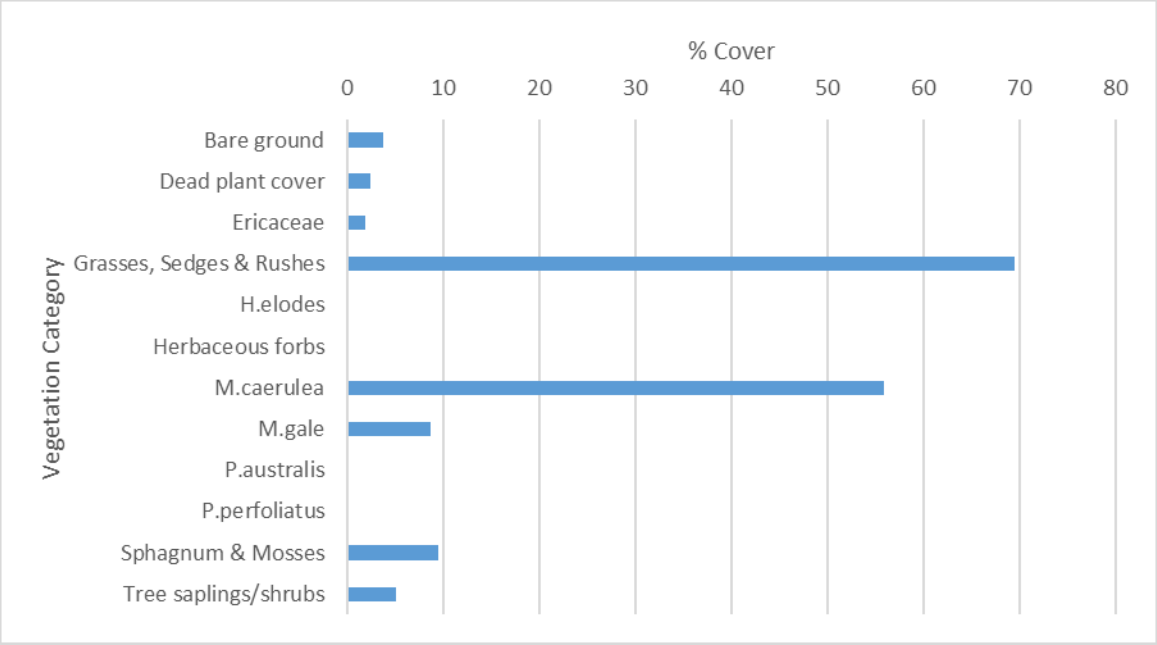

Figure 9 Mean vegetation % cover at Bratley

Management Recommendations

- Maintain grazing to control density of vegetation cover.
- Control successional woodland scrub cover.

4.1.10 Buckherd Bottom 1

SU21271 08142

Ground Saturation Level: 0-5

***F. candida* present**

Site description

Fringed by high banks of *P. aquilinum* and *Salix* spp. on every side, Buckherd Bottom dips down to a wet valley bog featuring *M. caerulea* tussocks interspersed with *M. gale*, *E. augustifolium* and *N. ossifragum*. Figure 10 shows the composition of the vegetation within 12 general categories. The wettest side to the west (closest to Linford Brook), supported the densest cover of *S. papillosum* which was interspersed with *H. elodes, P. perfoliatus* and straggly tussocks of tall *M. caerulea*. The mean height of vegetation at the site was 38.9 cm (±SD 37.27 cm).

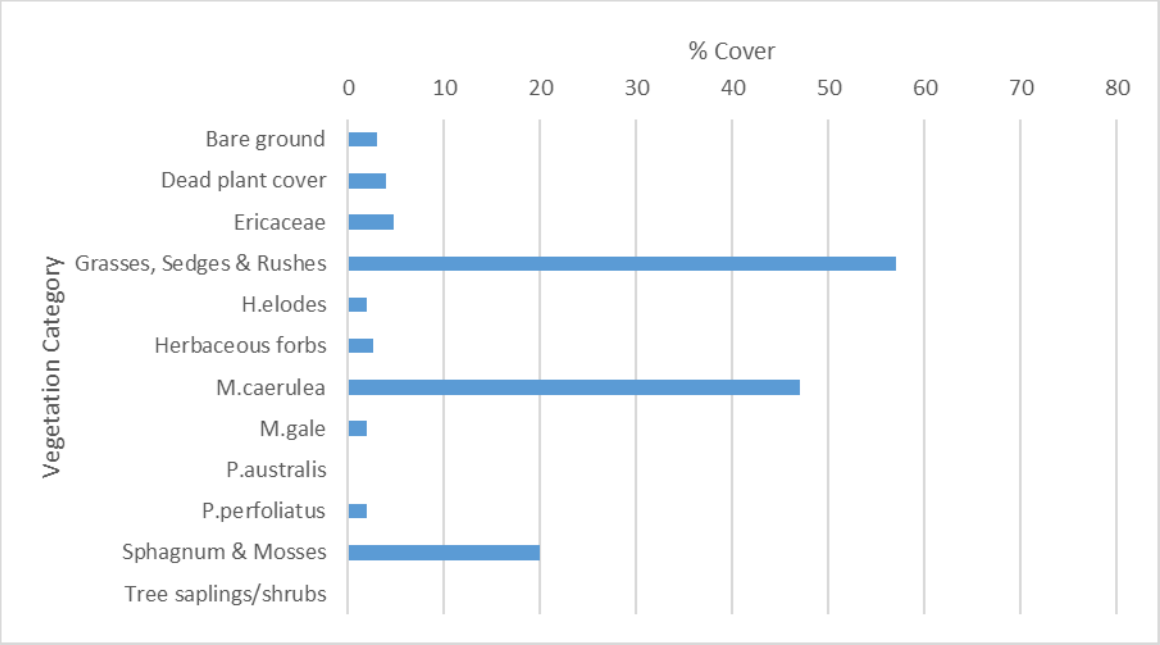

Figure 10 Mean vegetation % cover at Buckherd Bottom

F. candida nests were reported in 1986 and 1998 (North 1998). In the present survey, two nests were located on the western transect, one on the southern edge of a *M. caerulea* tussock and one within a *S. papillosum* hummock. Table 2 describes the nests' locations, while Figure 11 shows the species percentage cover within 1m² of each nest. Both nests appeared to benefit from tall plant shelter to the north of the nests. The bog became much drier towards the edges and limited cattle grazing was evident on all sides except the west. Table 3 describes the ant community found at this site.

Table 2: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1m² of nest
1	SU21247 08166	Nest in *S. papillosum* hummock within 1m² of wettest area in west. *P. perfoliatus*, *H.elodes* and *M. caerulea* enclose nest.	4	80	8.0
1	SU21271 08113	Vegetation cone with brood 10 cm x 8 cm within *M. caerulea* tussock.	2	65	11.9

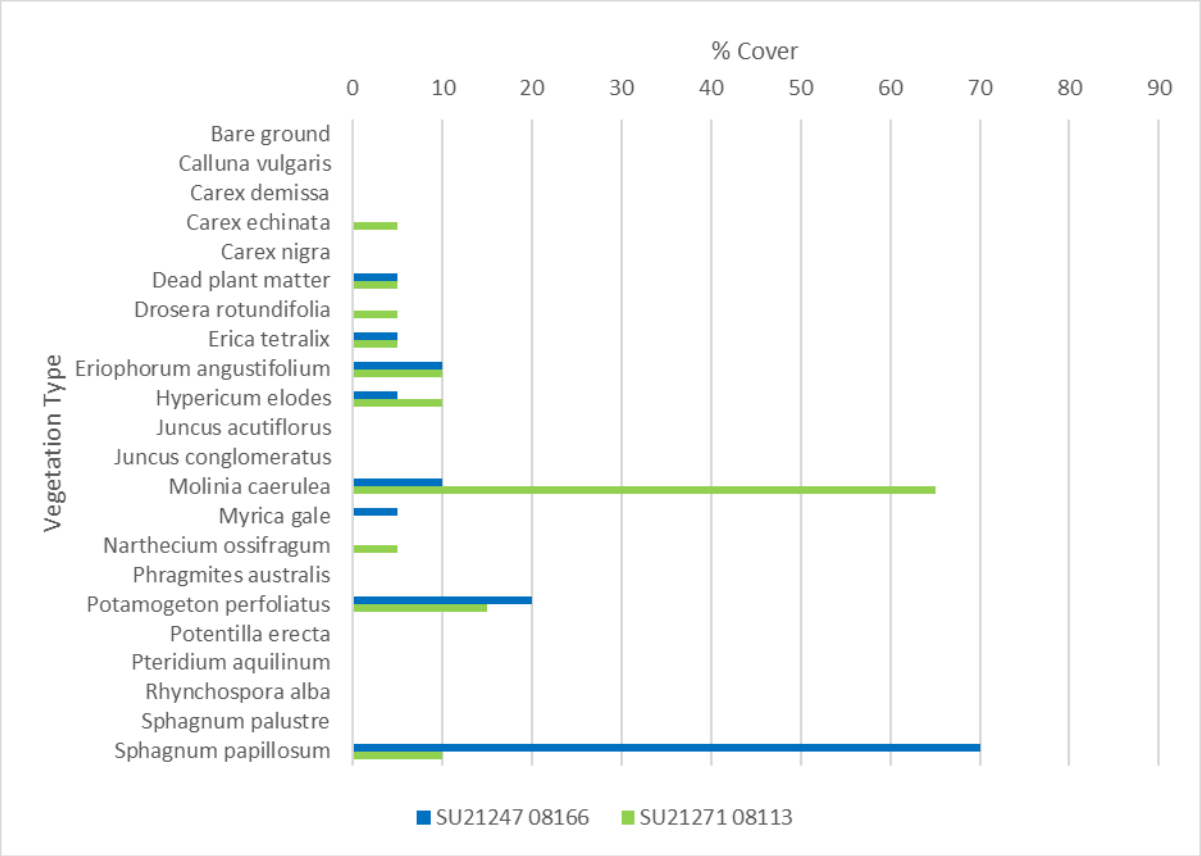

Figure 11 Percentage cover of each species within 1 m² of nest

Table 3: Other ant species found at Buckherd Bottom 1

Species	Habitat
Lasius niger	Nest and foragers found on southern transect SU21247 08126 where water rating 0.
Myrmica scabrinodis	Nest with brood in *Sphagnum* SU21252 08152.

Management Recommendations

- Monitor hydrological conditions to maintain favourable conditions.

4.1.11 Buckherd Bottom 2

SU21669 08367

Ground Saturation Level: 0-5

***F. candida* present**

Site Description

Framed to the east and west by high *P. aquilinum* banks with some *C. vulgaris*, Buckherd Bottom runs down to a waterlogged, tree-lined ditch on the western side towards Linford Brook. Figure 12 shows the domination of the bog by *M. caerulea* in tussock and grass form, interspersed with *M.*

gale, Carex spp., *E. tetralix, E. Augustifolium, S. papillosum* and the occasional *D. rotundifolia*. The mean height of vegetation at this site was 49.2 cm (±SD 54.19 cm). There was some evidence of grazing by cattle, ponies and deer, but taller vegetation towards the south of site suggested no evidence of grazing in this area.

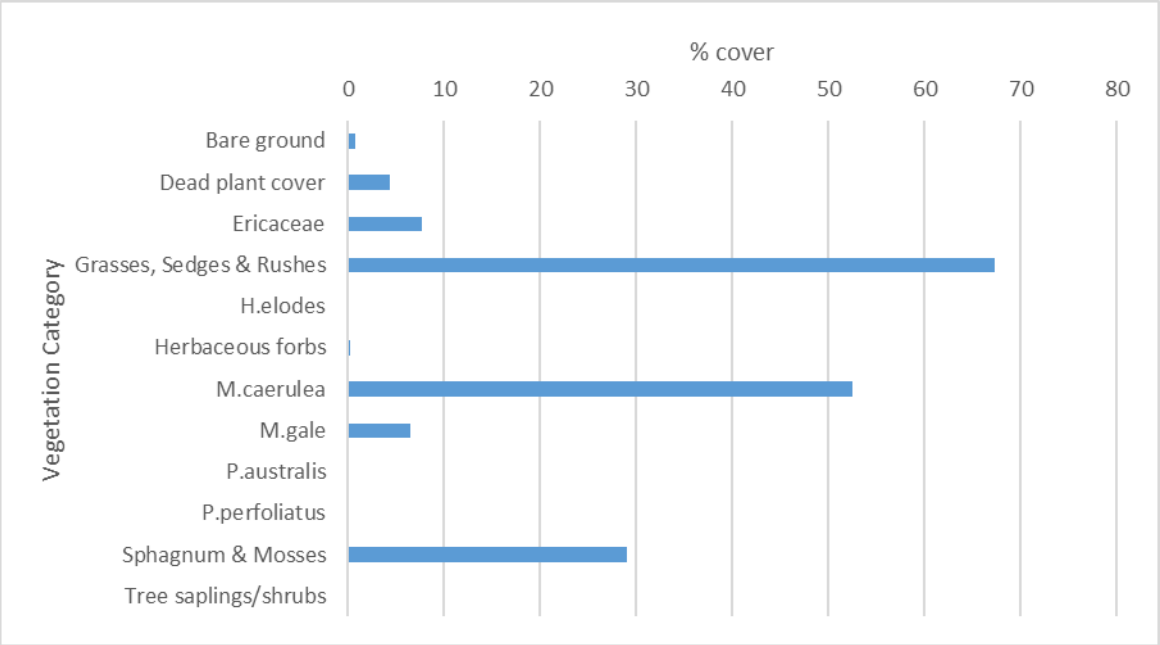

Figure 12 Mean vegetation % cover at Buckherd Bottom 2

F. candida nests were recorded at this site in 1986 (Environment Agency 1998) and 1998 (North 1998). During the present survey, one nest was found on the edge of a straggly *M. caerulea/E. tetralix* tussock amongst dense *S. papillosum*. Table 4 describes the nest's location while Figure 13 depicts species percentage cover within 1 m² of the nest. Table 5 gives details of the ant community found at Buckherd Bottom 2. Foraging *L. niger* ants were found within the bracken and several *M. scabrinodis* nests were found on the western transect amongst dense *Sphagnum* spp.

Table 4: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1m² of nest
1	SU21529 08388	Vegetation cone nest 5 cm x 10 cm with brood. Located within *M. caerulea* and *E. tetralix* tussock amongst *S. papillosum*.	3	40	11

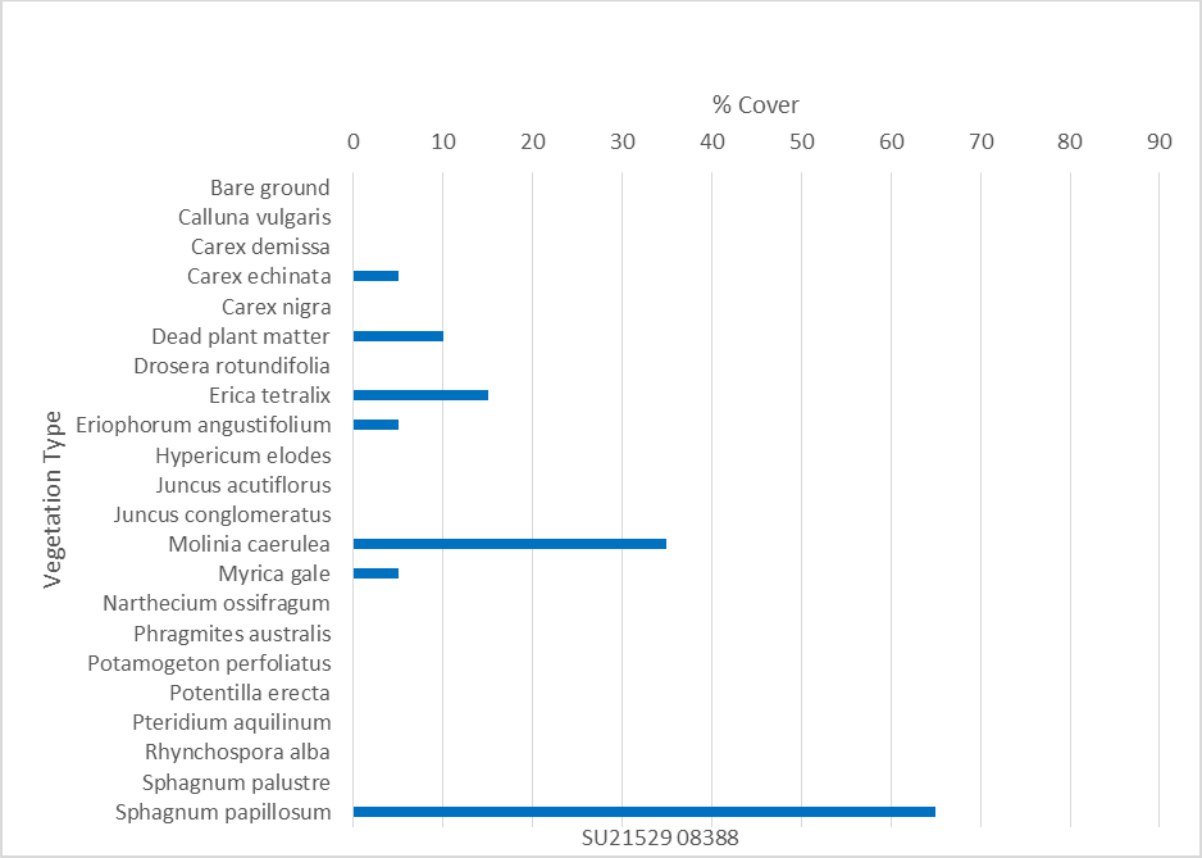

Figure 13 Percentage cover of each species within 1 m² of nest

Table 5: Other ant species found at Buckherd Bottom 2

Species	Habitat
Myrmica scabrinodis	Solaria nest with brood constructed from earth fragments SU21577 08407. Nests in *Sphagnum* found on western transect at plots 6, 8, 9, 11 and 25.
Lasius niger	Foragers on southern transect at plots 20-25. Closest to *P. aquilinum*.

Management Recommendations

- Monitor hydrological conditions to maintain favourable conditions.
- Maintain grazing to control density and height of tussock cover.

4.1.12 Common Moor

SU20516 04467

Ground Saturation Level: 0-5

***Formica candida* not found but site considered suitable on southern side**

Site description

Situated between several residential properties at Burley Street, Common Moor is a small site surrounded by woodland on all sides. On the southern side, towards the stream which runs under Forest Road, the moor is waterlogged (Level 5) but elsewhere the moor is relatively dry (Levels 0-2). Figure 14 shows the domination of the site by small tussocks of *M. caerulea* and *M. gale,* while the lower, wetter areas feature an abundance of *R. alba, E. angustifolium* and *Sphagnum,* interspersed with *N. ossifragum* and *D. rotundifolia.* The mean height of vegetation across all transects was 18.8 cm (±SD 29.50 cm). Grazing by deer and cattle was evident on the southern side of the moor, restricting grass height to 6 cm in some areas. Patches of bare ground on the western and northern sides were observed to feature clumps of *C. vulgaris* in mature and degenerate stages. A single *L. niger* nest within an earth fragment cone, potentially a disused *F. candida* nest, was found on the northern side of the moor amidst a dry *Sphagnum* bed. Despite failing to record the presence of *F. candida*, the southern side of the moor was considered to provide suitable habitat. Indeed, six nests were reported from this site in 1995 (Environment Agency 1998) but none were found by North in 1998.

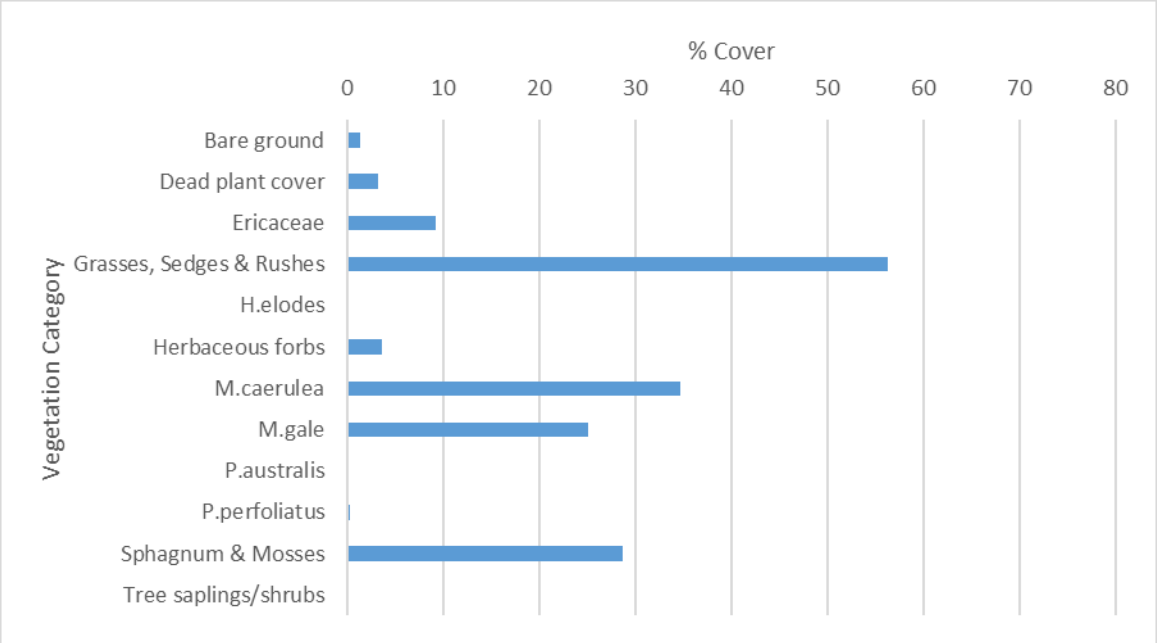

Figure 14 Mean vegetation % cover at Common Moor

Management Recommendations

- Monitor ground saturation levels as site is predominantly dry.
- Maintain grazing to control density of *M. gale/M. caerulea* tussocks.

4.1.13 Crab Tree Bog

SU26879 02709

Ground Saturation Level: 1-4

***F. candida* present**

Site description

West of Brockenhurst, Crab Tree Bog is situated in a shallow valley before the land rises to the dry heathland on Holm Hill. The eastern side, closest to Silver Stream was observed to be the wettest part of the bog (Level 4), while the rest of the site ranged from levels 1-2. Figure 15 shows the percentage cover of vegetation at the site; *M. caerulea* and *M. gale* (in tall tussocks) dominate the plant community, while the dips between tussocks feature pockets of *E. tetralix, E. angustifolium* and *N. ossifragum* within carpets of *Sphagnum*. The northern and southern aspects of the bog were drier with banks of *P. aquilinum* and scrub with woodland on the bog's periphery. The mean height of vegetation at the site was 40.2 cm (±SD 37.79 cm) over the four 50 m transects across the wettest part of the mire. The high standard deviation associated with mean vegetation height is due to the spatial contrast of tall tussock grasses growing on the northern side, while grazing towards the east and west limited vegetation height.

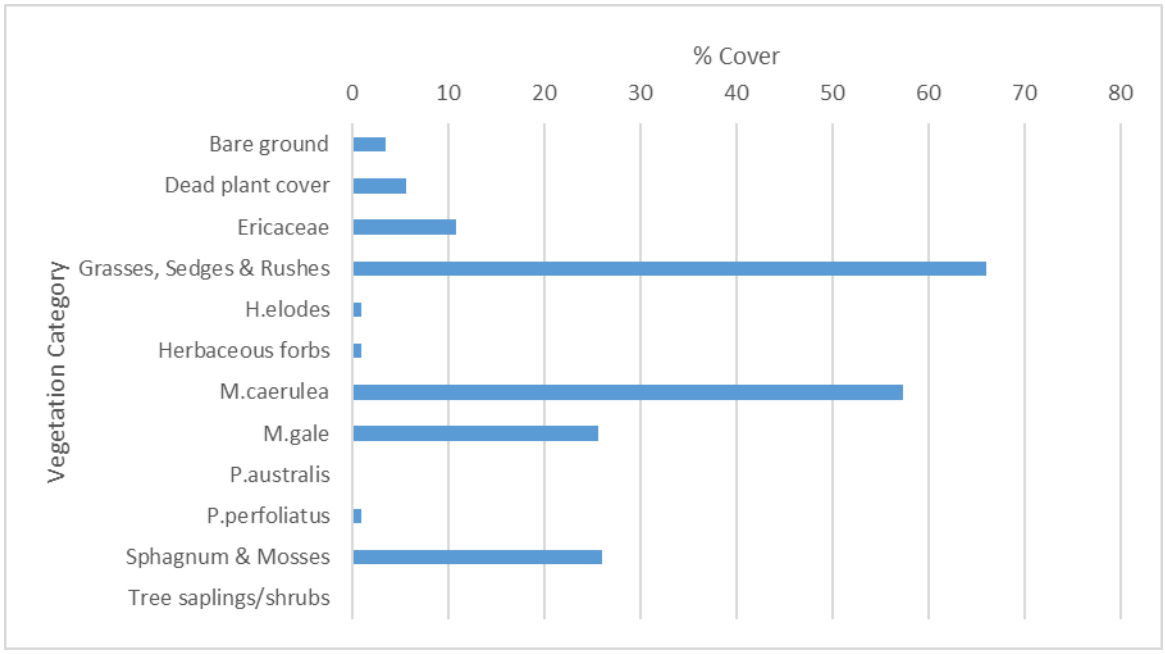

Figure 15 Mean vegetation % cover at Crab Tree Bog

Two *F. candida* nests were found at the edge of *M. caerulea/M. gale* tussocks where sunlight was able to penetrate the nests. Table 6 describes the nests' locations while Figure 16 shows species percentage cover within 1 m² of each nest. Table 7 gives details of the ant community found at the site. *M. scabrinodis* nests were found within the *Sphagnum* and *F. fusca* foragers were found in the bracken. Despite only a single *F. candida* being recorded in 1987, several nests were recorded in 1954 (Environment Agency 1998).

Table 6: Description of *F. candida* nest locations

No. of *F. candida* nests	Nest Grid Reference	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU26883 02707	Cone nest (4 cm x 8 cm) with brood in Sphagnum dip at base of *M. caerulea/M. gale* tussock.	3	50	13
1	SU26835 02721	Nest with brood in Sphagnum in dip between *M. caerulea* tussocks.	3	65	15

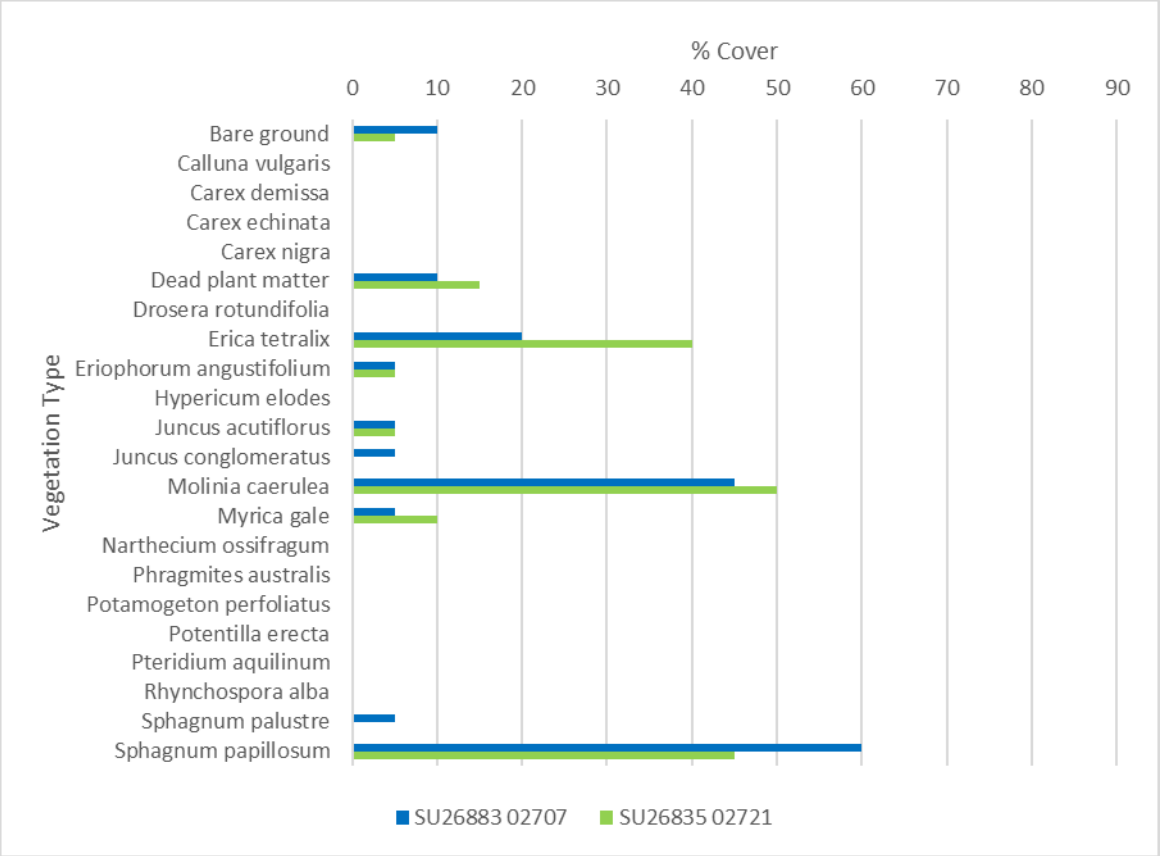

Figure 16 Percentage cover of each species within 1 m² of *F. candida* nests

Table 7: Other ant species found at Crab Tree Bog

Species	Habitat
Myrmica scabrinodis	Nests found in *Sphagnum* on eastern transect (plot 25) and on northern transect (plot 1).
Formica fusca	Foragers found on northern transect at plots 20 and 23 – close to dry heath and bracken bank.

Management Recommendations

- Control woodland scrub encroachment to maintain open areas within the bog.
- Maintain grazing to control density and height of *M. caerulea/M. gale* tussocks.

4.1.14 Cranes Moor

SU19405 02469

Ground Saturation Level: 0-4

***F. candida* present**

Site Description

Fringed by forest and woodland to the north and west, Cranes Moor is a wet valley mire dominated by small, dense tussocks of *M. caerulea* and *M. gale* (Figure 17). The waterlogged northern side of the mire (level 4) has abundant cover of *R. alba*, *E. angustifolium*, S. *palustre* and *S. papillosum* which are interspersed by tall *M. caerulea/M. gale* tussocks. The mire's southern and eastern sides are drier (predominantly level 1) and *C. vulgaris, Ulex and clumps of Cladonia* spp. were observed to be present on the mire's periphery. The mean height of vegetation across the four transects at this site was 25.4 cm (±SD 25.32 cm). With the exception of the northern side, there was some evidence of pony grazing throughout the site.

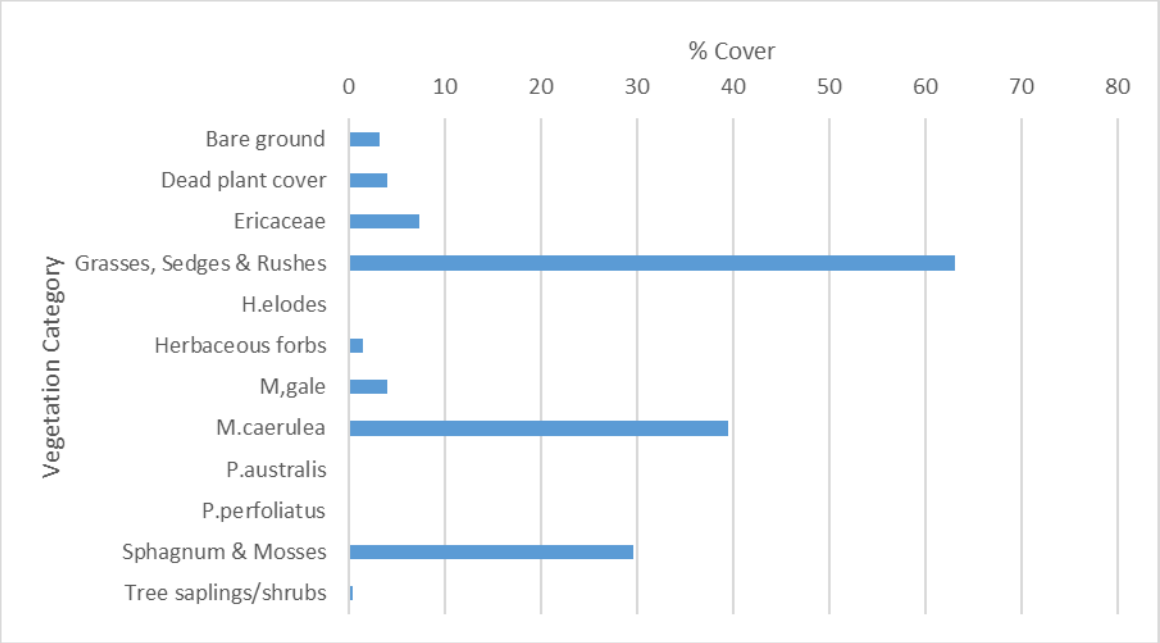

Figure 17: Mean vegetation % cover at Cranes Moor

The sole *F. candida* nest found at this site was located within a *S. papillosum* hummock growing from a *M. caerulea* tussock and was open to the sun on the southern side. Table 8 gives details of the vegetation surrounding the nest, while Figure 18 shows species percentage cover within 1m² of each nest. *F. candida* foragers were also found on the western side of the mire within *Sphagnum* pockets. Table 9 gives details of the ant community on the site. One *M. scabrinodis* nest was found within the

Sphagnum at SU19405 02507. *F. candida* workers have been found in the past (1982 and 1987 Environmental Agency) and one nest was recorded by North (1998).

Table 8: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU19397 02522	Nest with brood in Sphagnum hummock within straggly *M. caerulea*/*E. tetralix* tussock. Surrounded on three sides by tall *M. gale*/*M. caerulea* tussocks.	3-4	75	14

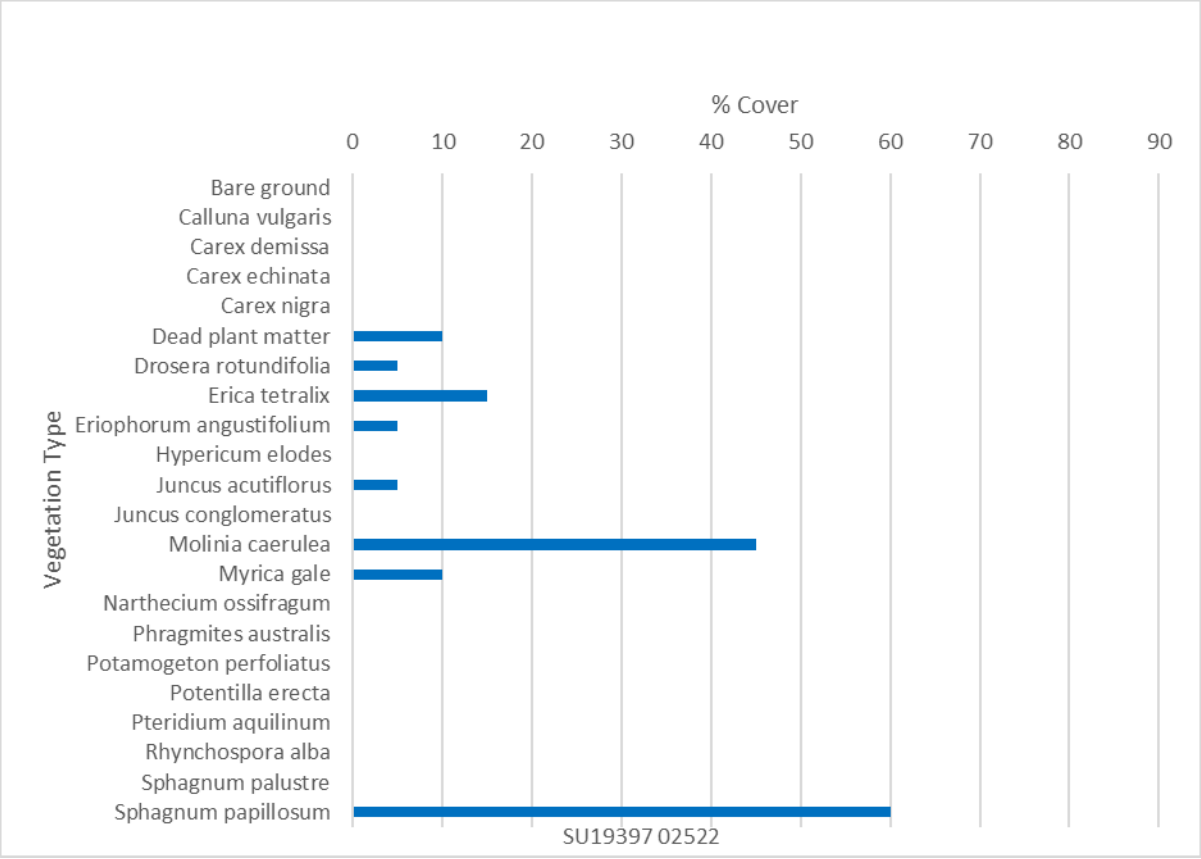

Figure 18 Percentage cover of each species within 1 m² of *F. candida* nests

Table 9: Other ant species found at Cranes Moor

Species	Habitat
Myrmica scabrinodis	Nest within *Sphagnum* at SU19405 02507.

Management Recommendations

- Maintain grazing to restrict *M. caerulea* density on the northern side and maintain open areas within the bog.

4.1.15 Denny Bog

SU33748 06608

Ground Saturation Level: 0-2

***F. candida* not found; site unsuitable**

Site description

Denny Bog, to the east of Denny Inclosure/Woods and to the west of Denny Campsite, is a relatively dry heathland mire, with wetter areas limited only to the centre of the site. Figure 19 shows the composition of the vegetation within 12 general categories. *M. caerulea* grass and *E. angustifolium* dominated the middle of the site with small pockets of *R. alba* and *Sphagnum* interspersed with *D. rotundifolia* and *J. acutiflorus*. The eastern side currently supports some clumps of mature and degenerate *C. vulgaris* with mats of dried *Sphagnum* and dried plant matter. The mean height of vegetation at the site was 15.8 cm (±SD 24.02 cm). There was evidence of cattle and pony grazing throughout the bog which has resulted in vegetation height not exceeding 12 cm in many places.

One *F. candida* nest was found on this site in 1985 (Environment Agency, 1998) but no nests were found in 1998 or during the present survey. This site is currently considered to be too dry (level 2) and lacks tussock-forming *M. caerulea*. Pontin (1954) as cited by Environment Agency, (1998) states that the site has become too enriched, possibly by the activities of the nearby campsite. It is likely that the creation of artificial drainage ditches in the 1960s (North 1998) has undermined the water table potentially causing the area to gradually dry out.

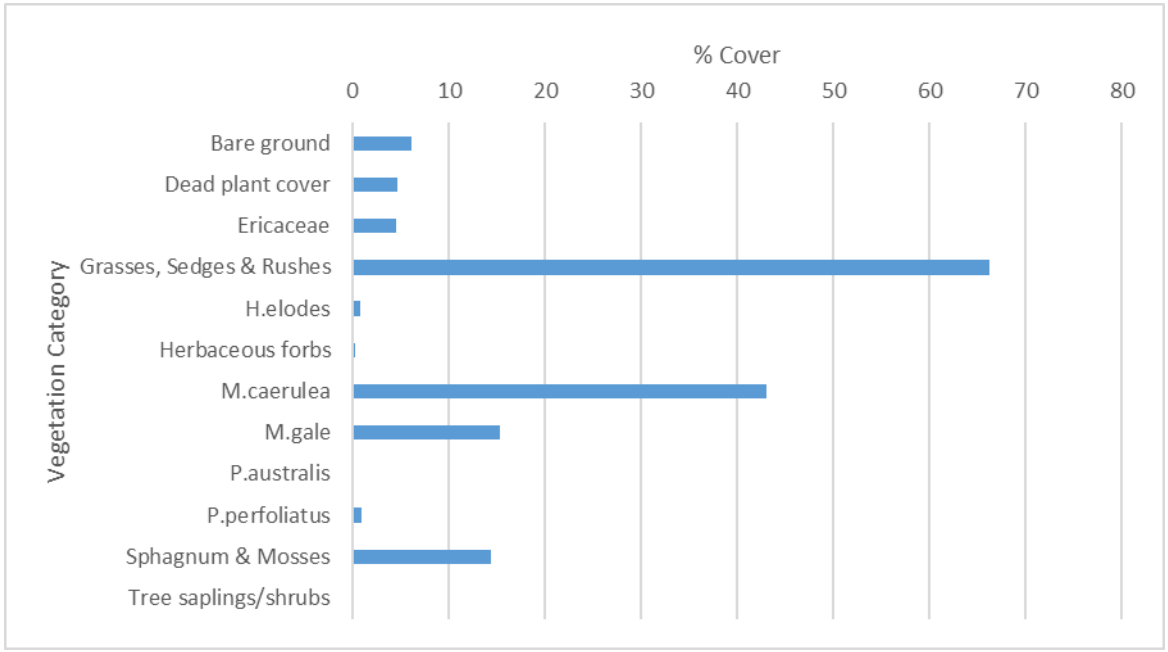

Figure 19 Mean vegetation % cover at Denny Bog

Management Recommendations

- Avoid drainage activities which could dry the site out further.
- Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site.

4.1.16 Denny Wood

SU33709 05912

Ground Saturation Level: 0-1

***F. candida* not found; site considered unsuitable**

Site description

Situated to the north of Bishops Dyke, Denny Wood is primarily a woodland site enclosing a small heathland mire. At the time of the present survey this site was dominated by short *M. caerulea* (in grass form) with patchy tussocks of *M. caerulea* and *M. gale* present around the mire's periphery. Pockets of *E. tetralix* and *C. vulgaris* were also recorded in places with some *Sphagnum* and bryophyte cover. *B. pendula*, *Ulex europaeus*, *Salix* spp., *P. sylvestris* and *P. aquilinum* are beginning to encroach on the heath and some tree saplings are establishing throughout the mire. The site is fairly dry throughout, except in the muddier centre, with areas of dried *Sphagnum*, dead plant matter and fallen tree branches. This site was considered too dry for *F. candida* occupation and lacks sufficient *M. caerulea* cover (in tussock form). *Formica fusca* and *L. niger* foragers were found within drier areas on the *P. aquilinum* bank.

Across transects, the mean height of vegetation at this site was 39.2 cm (±SD 28.62 cm). Some deer and pony grazing was evident on the periphery of the site.

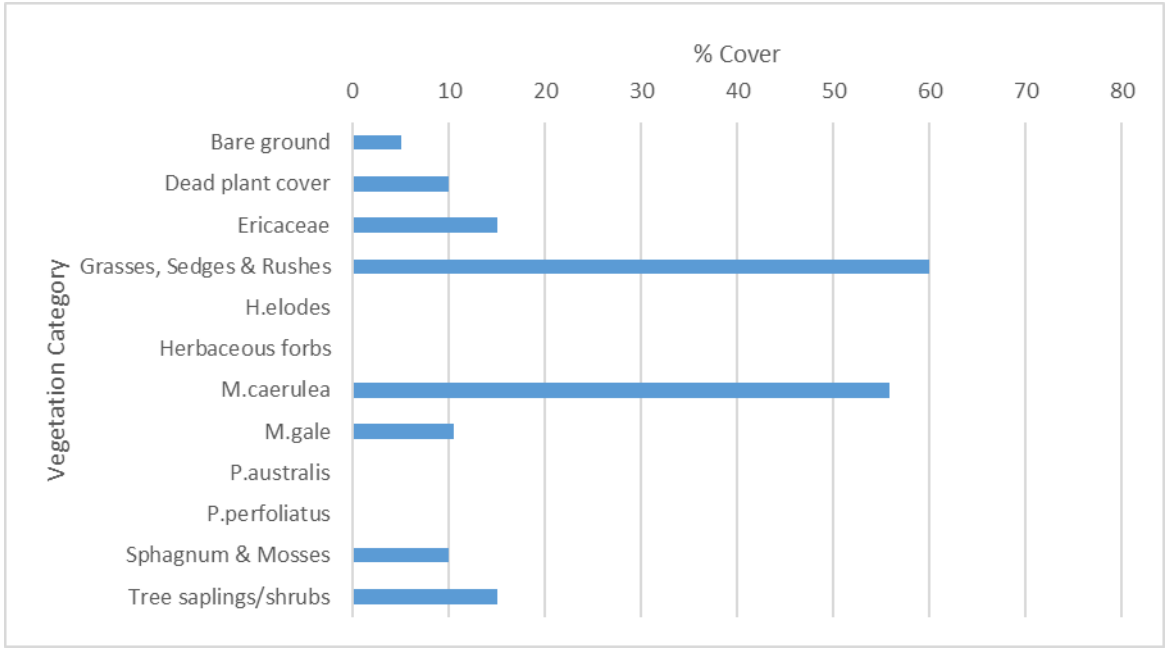

Figure 20 Mean vegetation % cover at Denny Wood

Management Recommendations

- Control scrub/woodland which is beginning to encroach on the edges of the mire.
- Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site.

4.1.17 Dibden Bottom

SU38928 06697

Ground Saturation Level: 1-4

***F. candida* not found; site suitable**

Site description

This waterlogged valley has several areas of open water to the west and a stream which runs along the eastern border between the site and the road. Most of the bog was waterlogged (levels 3 and 4) with drier areas (levels 1 and 2) on the periphery. The site was dominated by tussocks of *M. gale* and *M. caerulea* (Figure 21), while the lower ground featured *Carex* spp., *E. angustifolium*, *R .alba*, *E. tetralix* and *Sphagnum* cover. Scrub and tree sapling growth is beginning to intrude on the northern side but most of the site remains open without shade. The mean height of vegetation at the site was 32.6 cm (±SD 18.09 cm).

Based on habitat characteristics, this site seems suitable for *F. candida*. *S. papillosum* and *S. palustre* were recorded in the dipped areas between the more straggly *M. caerulea* tussocks and there was evidence of pony and cattle grazing in places. *L. niger* and *M. scabrinodis* were both found to have nests in the *Sphagnum* dips.

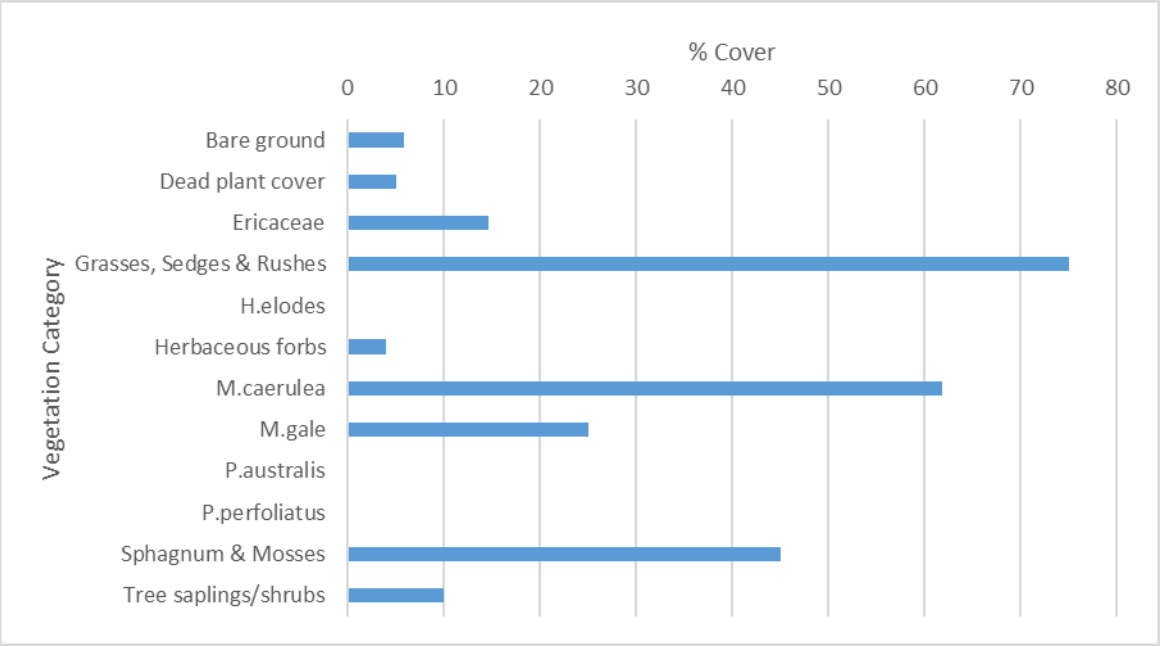

Figure 21 Mean vegetation % cover at Dibden Bottom

Management Recommendations

- Monitor hydrological conditions to ensure no change to favourable conditions.

4.1.18 Dogwood Bottom

SU21474 06661

Ground Saturation Level**:** 0-5

***F. candida* present**

Site description

Dogwood Bottom is a waterlogged bog situated to the east of Harvest Slade and north of Berry Wood. SU217 063 is a generally dry, higher area adjacent to Dogwood Bottom while the bog itself is located at SU215 063. The site was dominated by tall tussocks of *M. caerulea* and *M. gale,* (Figure 22), while the lower areas were composed of *E. angustifolium*, *R. alba*, *E. tetralix J. acutiflorus, Juncus conglomeratus, Potentilla erecta* and *Sphagnum* cover. *D. rotundifolis* and *P. perfoliatus* were also recorded from the wettest parts on the south western side. This bog supports some areas of open water, although the northern side begins to dry out as the land rises and *Ulex europaeus* and *C. vulgaris* cover has established. The mean height of vegetation at the site was 40.7 cm (±SD 45.58 cm). There was some evidence of cattle grazing in the drier areas but the vegetation within the centre of the bog had a mean height of 40 cm.

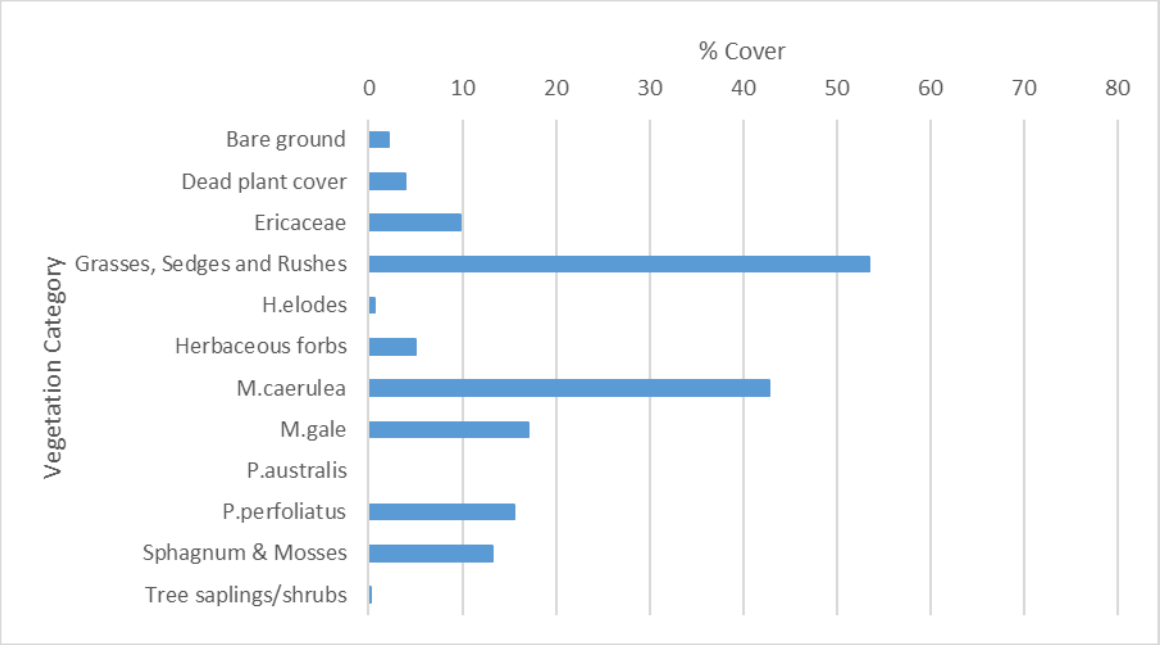

Figure 22 Mean vegetation % cover at Dogwood Bottom

Table 10 gives details of a disused *F. candida* nest found on the bog's drier perimeter (at SU21508 06636) and of an occupied nest found at SU21467 66636, close to the wettest part of the bog. Two nests were reported in 1988 (Environment Agency 1998) and one was found in 2000 (North 2000). Figure 23 illustrates the percentage cover of vegetation species associated with each nest. Table 11 outlines the ant community found at Dogwood Bottom; three *M. scabrinodis'* nests were found; one

of which was located within an earth fragment cone nest within an *M. caerulea* tussock on the eastern side. It is possible the solaria was constructed in a disused *F. candida* nest as there is currently no evidence to suggest that *M. scabrinodis* build their own cone solaria.

Table 10: Description of *F. candida* nest locations

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU21508 06656	Disused cone nest on eastern edge of *M. caerulea/M. gale* tussock. Ground very dry. Grasses height 60 cm with dense cover.	0	80	20
1	SU21467 06636	Vegetation cone 8 cm high x 5 cm wide within *M. caerulea* in *Sphagnum* dip. Surrounded by *Sphagnum papillosom* carpet. On wettest transect (east).	4	65	9.8

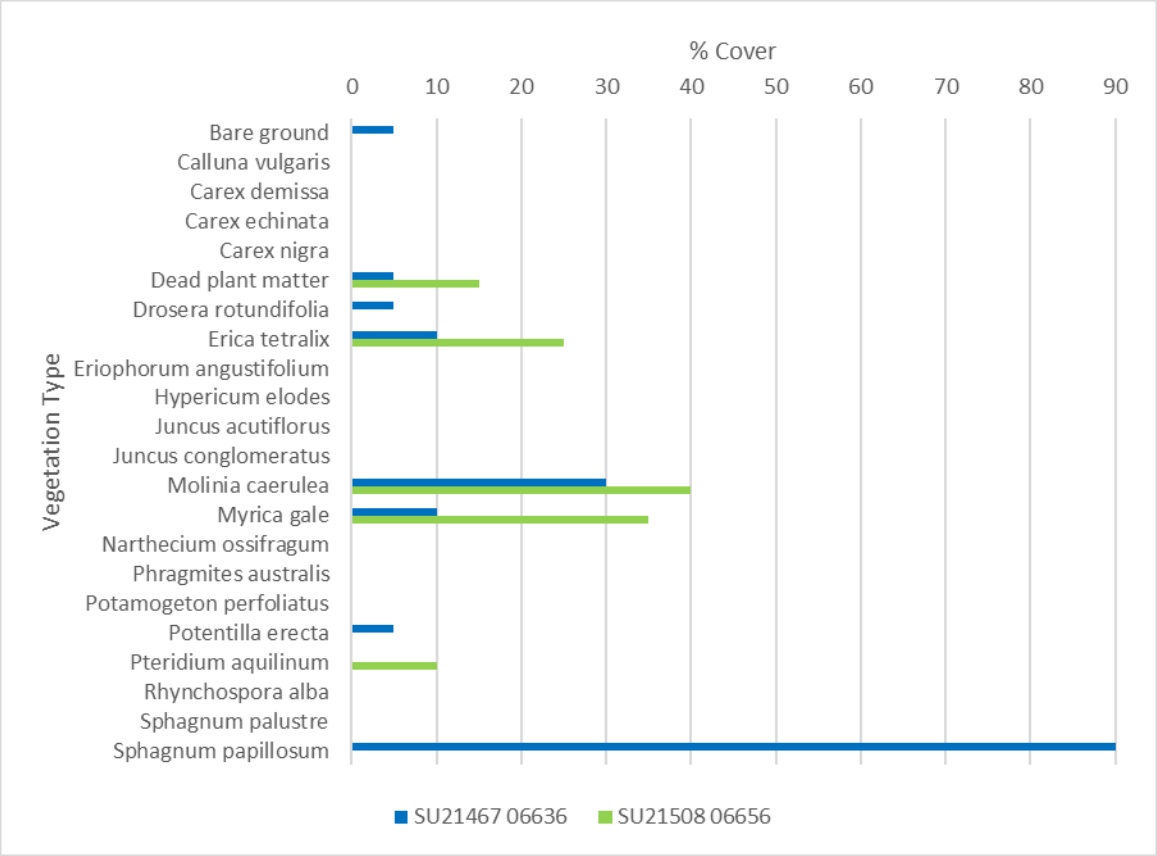

Figure 23 Percentage cover of each species within 1 m² of *F. candida* nests

Table 11: Other ant species found at Dogwood Bottom

Species	Habitat
Myrmica scabrinodis	One nest in earth fragment solaria within *M. caerulea* on east transect, plot 21. Two *Sphagnum* nests on northern transect plots 6 and 15.

Management Recommendations

- Maintain grazing to control density of vegetation cover.

4.1.19 Duckhole Bog

SU25249 02345

Ground Saturation Level**:** 1-4

***F. candida* not found, site considered suitable**

Site description

Located to the east of Markway Inclosure, this rather exposed bog becomes more waterlogged on the northern side as it dips down towards the stream. Other areas within the bog have a consistent ground saturation level between 1 and 2. Grasses, particularly *M. caerulea* along with *M. gale* and *Sphagnum*, dominate the site (Figure 24), while pockets of *E. tetralix* and *Dactylorhiza praetermissa* occur frequently throughout. The mean height of vegetation at the site was 29.3 cm (±SD 29.66 cm). Some grazing was apparent in places, although the average height of vegetation for the majority of the site is 30 cm.

No evidence of *F. candida* inhabitation was found during this survey although one *F. candida* worker ant was captured in 1999 and one nest was recorded in 2000 (North 2000). This site is considered suitable although most of the *M. caerulea* cover was observed to be in grass rather than tussock form. An exception to this general observation was a line of cover close to the stream where *L. niger* and *M. scabrinodis* colonies were found within the *Sphagnum.*

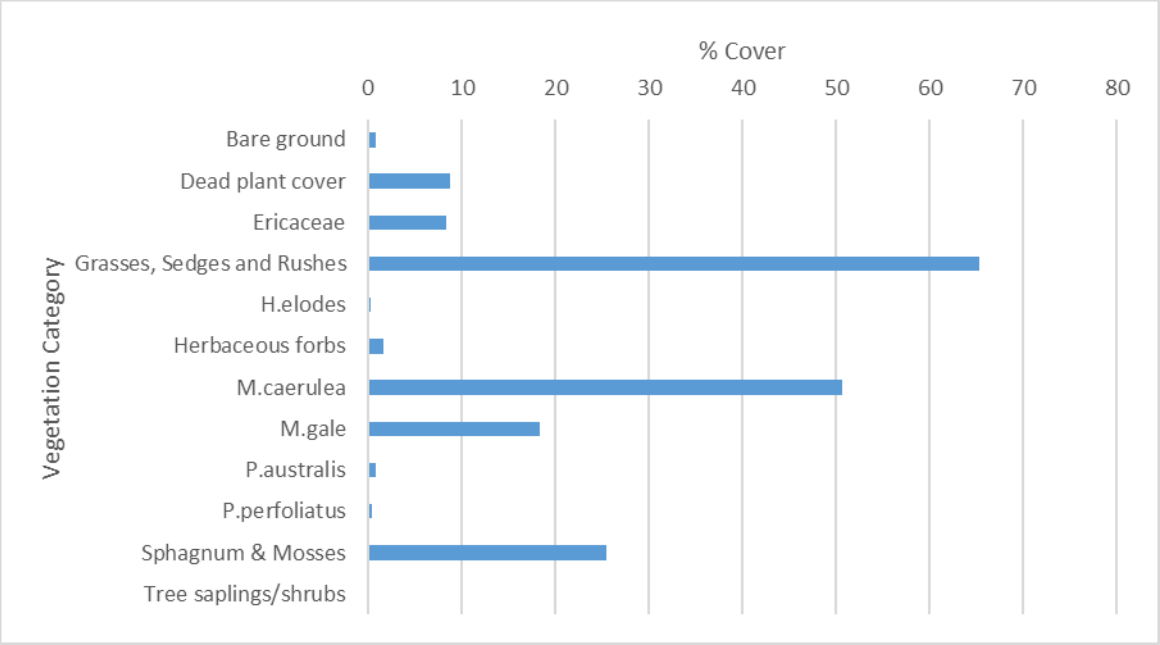

Figure 24 Mean vegetation % cover at Duckhole Bog

Management Recommendations

- Maintain site in existing condition as habitat was considered suitable for *F. candida*.

4.1.20 Dur Hill Down

SU20207 01338

Ground Saturation Level: 0

***F. candida* not found; site not suitable**

Site description

Located south of Burley, this site appears to have been considerably wetter in the past but is now very dry. Figure 25 shows the composition of the vegetation within 12 general categories. Evidence of typical mire vegetation such as *D. rotundifolia* and *J. acutiflorus* can still be found in the slightly damp, sandy channel which runs through the site to Whiten Pond but elsewhere the area is dominated by *C. vulgaris*, *Cladonia spp*, short *Agrostis spp*. and *Tricophorum cespitosum* with some short *M. caerulea* and patches of *E. tetralix*. Bryophytes were observed but there was no evidence of *Sphagnum* cover. The mean height of vegetation at the site was 17.6 cm (±SD 16.90 cm) over the four 50 m transects running north to south and east to west across the wettest part of the mire. There was evidence of extensive pony grazing throughout the site. Individual *F. fusca* foragers were found on the *C. vulgaris* stems on the western side. One *F. candida* colony was found in 1980 (Environment Agency, 1998) but none were found by North in 1998.

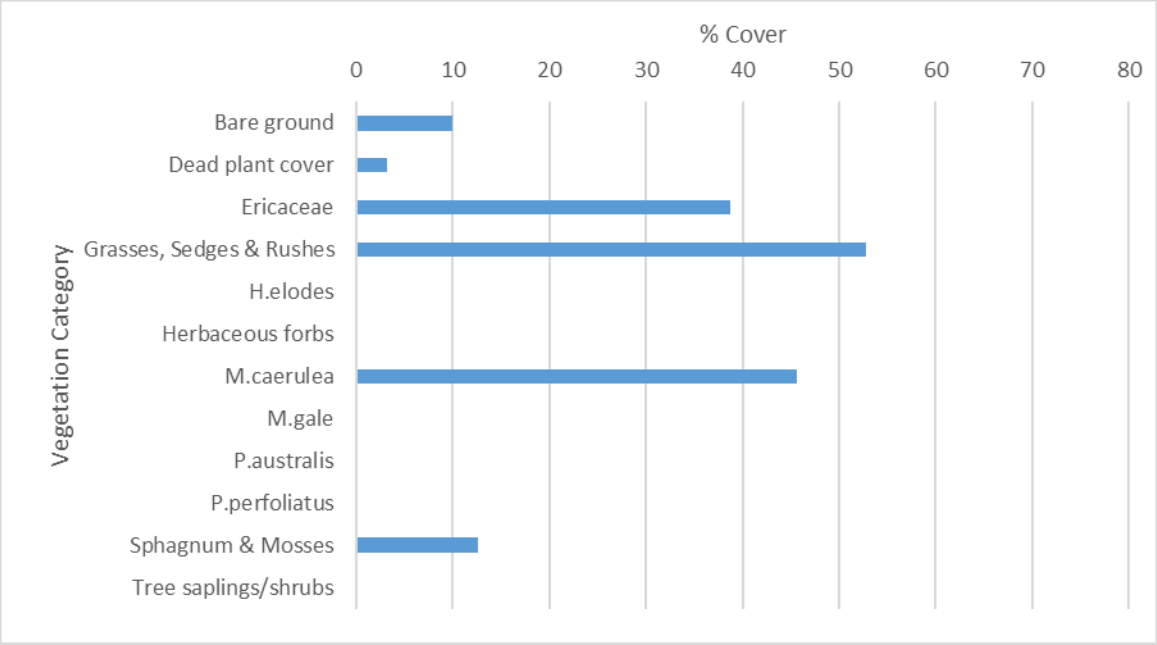

Figure 25 Mean vegetation % cover at Dur Hill Down

Management Recommendations

- Improve ground saturation levels as site predominantly dry if *F. candida* is to recolonize the site.

4.1.21 Ferny Croft

SU37355 05671

Ground saturation level: 1-5

***F. candida* not found; site potentially suitable**

Site description

This waterlogged site, close to Beaulieu River, is framed by dense woodland to the west, banks of *C. vulgaris* and *P. aquilinum* to the south and areas of open water to the east. The southern and western aspects of Ferny Croft are very wet (level 5) while the northern and eastern sections are drier. Figure 26 illustrates dominance by dense tussocks of tall *M. caerulea* and *M. gale* with carpets of *Sphagnum*, *E. angustifolium* and *R. alba* in the lower-lying dips between tussocks. There were pockets of *Juncus spp*. and *H. vulgaris,* with *N. ossifragum* and *D. rotundifolia* also frequent. The mean height of vegetation at Ferny Croft was 63.4 cm (±SD 100 cm).

M. scabrinodis nests were found in the *Sphagnum* on the western and eastern sides but there was no evidence of *F. candida* occupation. One nest was found at this site by North in 2000 but it is possible that the *M. caerulea/M. gale* tussocks are now too dense, restricting sunlight. There was no evidence of this site being grazed.

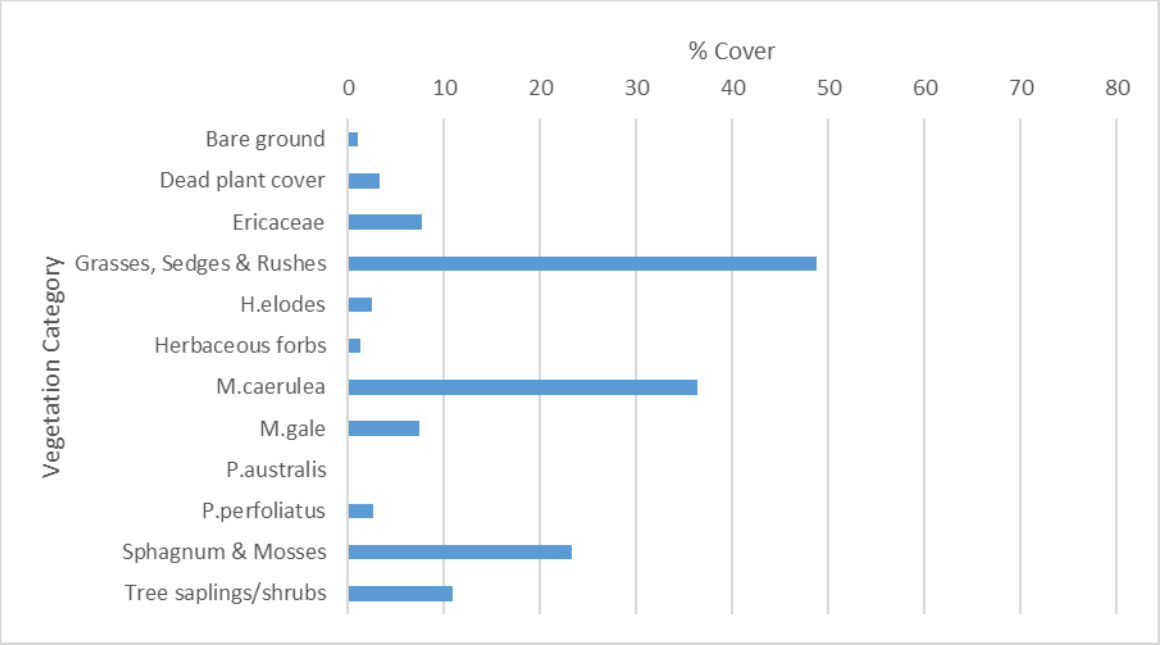

Figure 26 Mean vegetation % cover at Ferny Croft

Management Recommendations

- Consider controlled winter burns to reduce height/density of *M. caerulea* and *M. gale* in most abundant areas.

4.1.22 Goatspen Plain

SU23305 00893

Ground Saturation Level: 1-4

***F. candida* not found; site suitable**

Site description

Located to the south of Burley and adjacent to Holmsley Bog, Goatspen Plain is a well-grazed, predominantly waterlogged bog, with abundant cover of *H. elodes* and some pockets of *P. perfoliatus*. Figure 27 shows the composition of the vegetation within 12 general categories. Mini tussocks of *M. caerulea*/*M. gale*, *E. tetralix* and *J. conglomeratus* characterise the slightly drier areas, while swathes of *R. alba* and *Sphagnum* grow in the tussock dips and in the more open centre. *N. ossifragum* and *D. rotundifolia* are frequent and banks of *P. aquilinum* and *U. europaeus* line the plain's southern side running up to the road. The mean height of vegetation at the site was 12.06 cm (±SD 14.24 cm).

Despite the suitability of habitat, *F. candida* was not recorded during the present survey. It is possible that trampling may make the site undesirable to *F. candida* as large numbers of cattle and ponies favour the site.

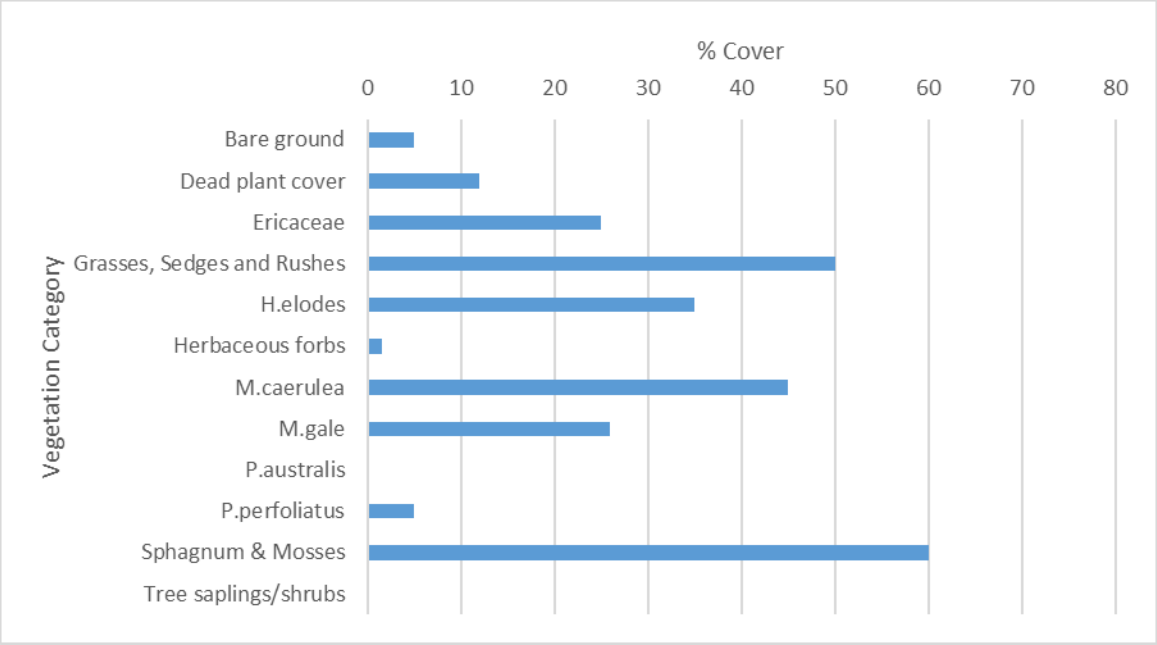

Figure 27 Mean vegetation % cover at Goatspen Plain

Management Recommendations

- Consider reducing grazing pressure to limit trampling of the site which may make the site undesirable to *F. candida*.

4.1.23 Harvest Slade

SU21300 06411

Ground Saturation Level: 1-4

***F. candida* present**

Site description

This site, north of Burley, is part of a large network of open mire, framed by Harvest Slade Bottom to the east and Ridley Plain to the west. Harvest Slade has some waterlogged areas towards the northeast of the site but is primarily a damp mire (level 2). The vegetation community was characterised by *M. caerulea* in both tussock and grass form with dense cover of *M. gale* and *E. angustifolium* with straggly clumps of *J. acutiflorus* also present (Figure 28). Across transects, the mean height of vegetation was 19.8 cm (±SD 25.56 cm). Cattle, pony and deer grazing was evident on the mire's periphery.

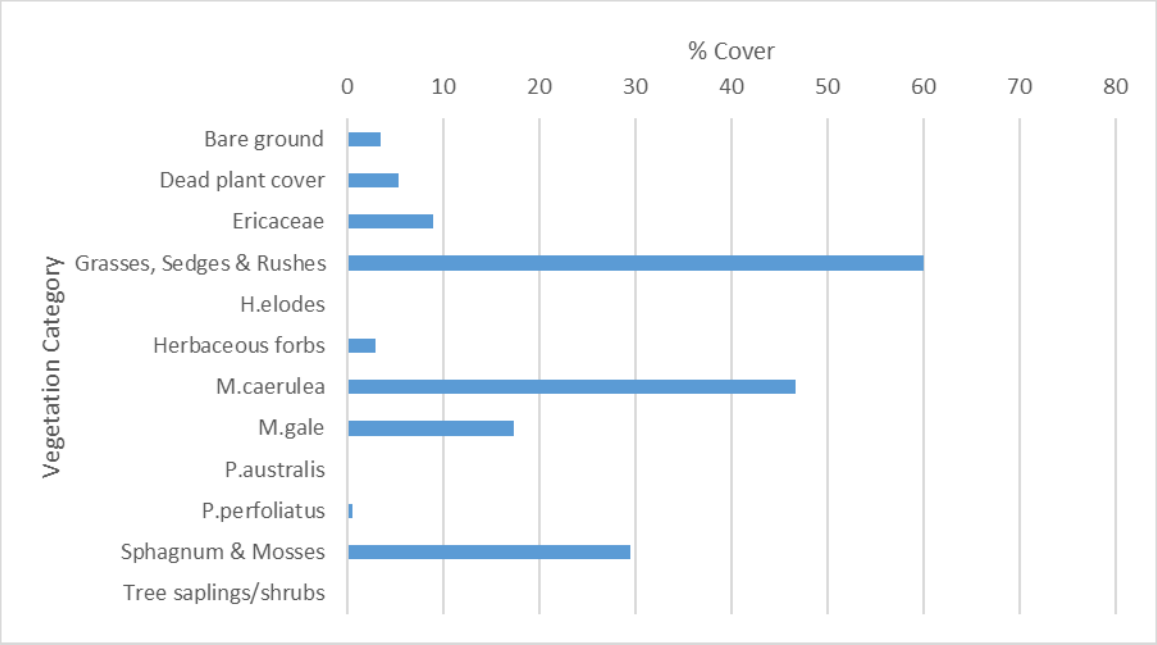

Figure 28 Mean vegetation % cover at Harvest Slade

There is an extensive carpet of *Sphagnum* in the centre and to the east where two *F. candida* nests were located. Table 12 describes the location of the nests while Figure 29 show the species percentage cover within 1m² of each nest. Table 13 gives details of the ant community found at Harvest Slade. Two *F. candida* nests were also located by North in 2000.

Table 12: Description of *F. candida* nest locations

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU21299 06453	Nest within *Sphagnum* with brood. *Sphagnum* in dip at base of *M. caerulea* tussock.	2	50	7.5
1	SU21305 06459	Vegetation cone 6cm high and 8cm wide -made from dried *Sphagnum* and plant fragments and located in straggly *M. caerulea* and *M. gale* tussock. Tussock within *Sphagnum* dip. No brood inside.	2	55	7.2

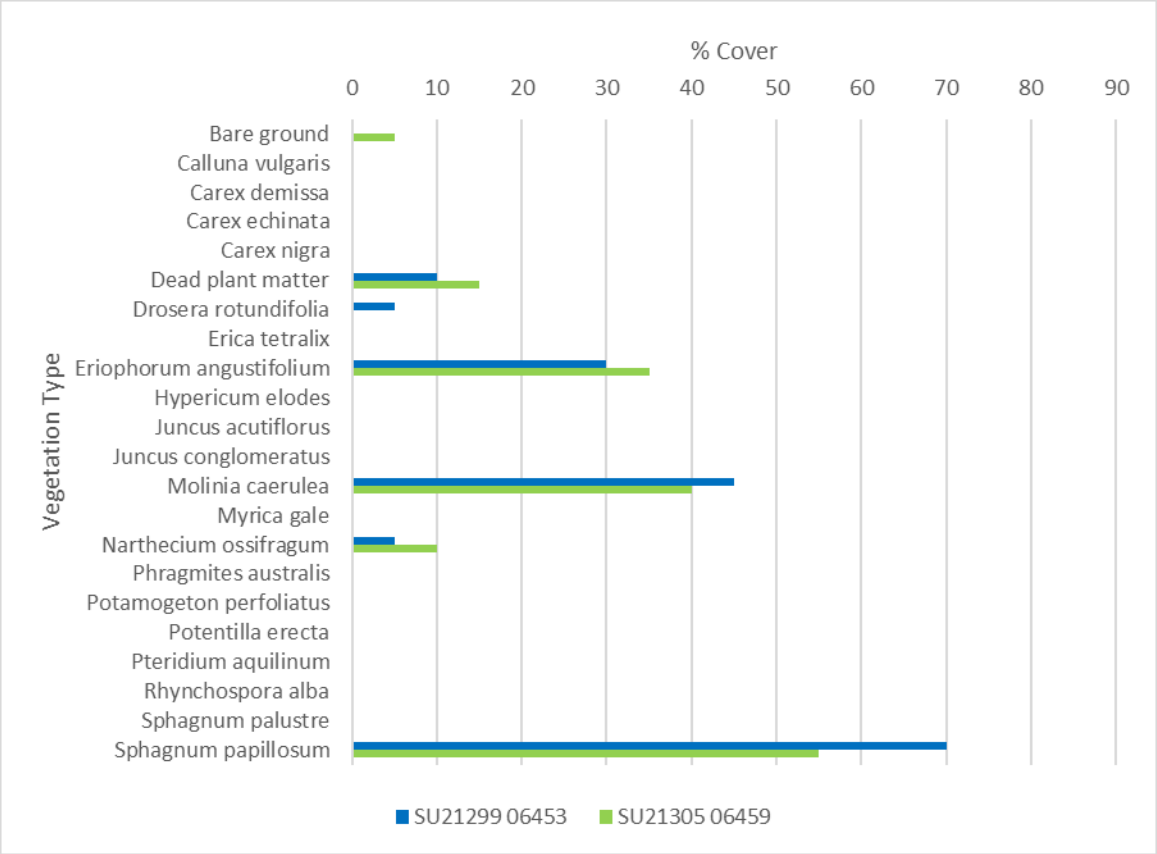

Figure 29 Percentage cover of each species within 1m² of *F. candida* nests

Table 13: Other ant species found at Harvest Slade

Species	Habitat
Myrmica scabrinodis	Nesting in *Sphagnum* hummock on eastern transect in dip area. With brood.
Lasius niger	Nesting in *Sphagnum* hummock on southern transect. With brood.

Management Recommendations

- Monitor hydrological conditions to ensure no change to favourable conditions.

4.1.24 Harvest Slade Bottom

SU21620 07070

Ground Saturation Level: 1-5

***F. candida* present**

Site description

This site, north of Burley, is part of a large network of open mire framed by a line of woodland to the east and Ridley Wood to the west. Harvest Slade Bottom is a wet bog ranging from level 1 on the northern side to a waterlogged level 5 on the southern and western sides. The vegetation

community is characterised by *M. caerulea/M. gale* tussocks (Figure 30), in addition to dense cover of *Juncus* spp. and *Carex* spp. incorporating pockets of *Eleocharis multicaulis, Eleocharis palustris* and *D. rotundifolia.* Vast carpets of S*. papillosum, S. capillifolium, S. palustre* and *S. subnitens* cover much of the bog's centre while the adjacent heathland supports *C. vulgaris*, *E. tetralix* and *M. caerulea* grass cover. Across the four transects, mean height of vegetation at this site was 22.8 cm (±SD 25.03 cm). Grazing by deer was clearly evident although cattle/pony grazing appeared to be limited.

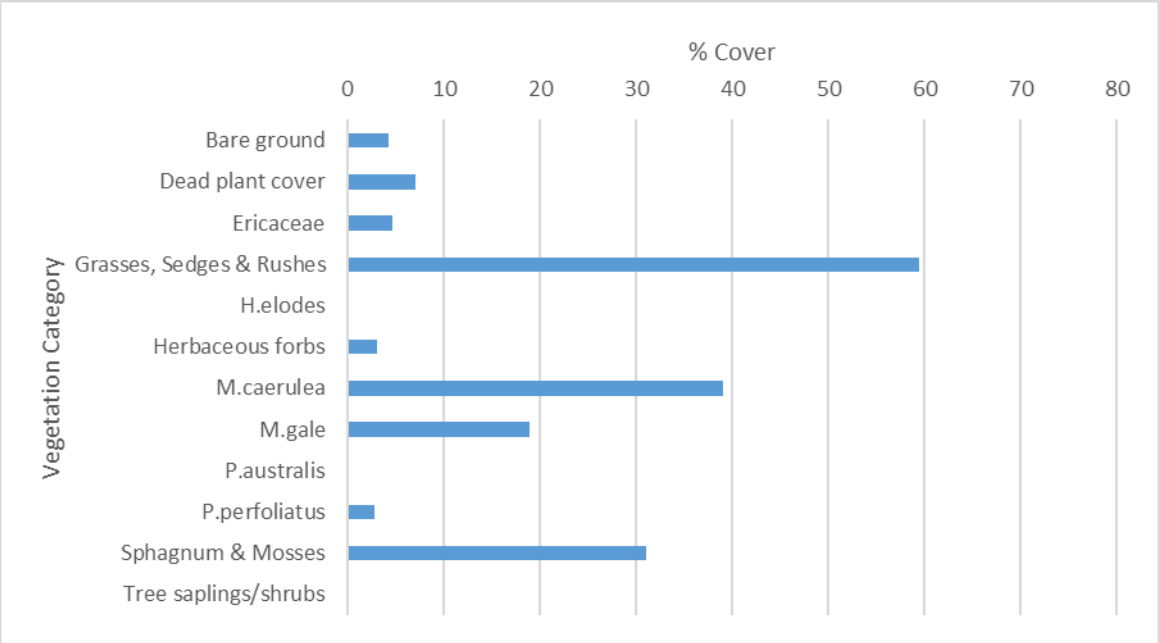

Figure 30 Mean vegetation % cover at Harvest Slade Bottom

Seven *F. candida* nests were found in 1956 (Environment Agency, 1998) but none were found in either 1988 or by North in 1998. In this survey four *F. candida* nests were found within the *Sphagnum*/*M. caerulea*. *L. niger* and *M. scabrinodis* nests and foraging *F. fusca* members were also recorded. Table 14 describes the nests' locations while Figure 31 shows the species percentage cover within 1 m² of each nest. Table 15 gives details of the ant community found at the site.

Table 14: Description of F. candida nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU21607 07040	Nest within *Sphagnum* with brood. *Sphagnum* in dip at base of *M. caerulea* tussock.	3	40	20

1	SU21607 07041	Vegetation cone 6cm high and 8cm wide -made from dried Sphagnum and plant fragments and located in straggly *M. caerulea* and *M. gale* tussock. Tussock within *Sphagnum* dip. No brood inside.	3	45	19
1	SU21620 07070	Nest within *Sphagnum* with brood. At base of *M. caerulea* and *M. gale* tussock.	3	50	15
1	SU21632 07127	Vegetation cone 8 cm high and 6 cm wide - made from dried *Sphagnum* and plant fragments and located in straggly *M. caerulea* tussock. Within 1 m of deeper water at level 5.	3	60	13

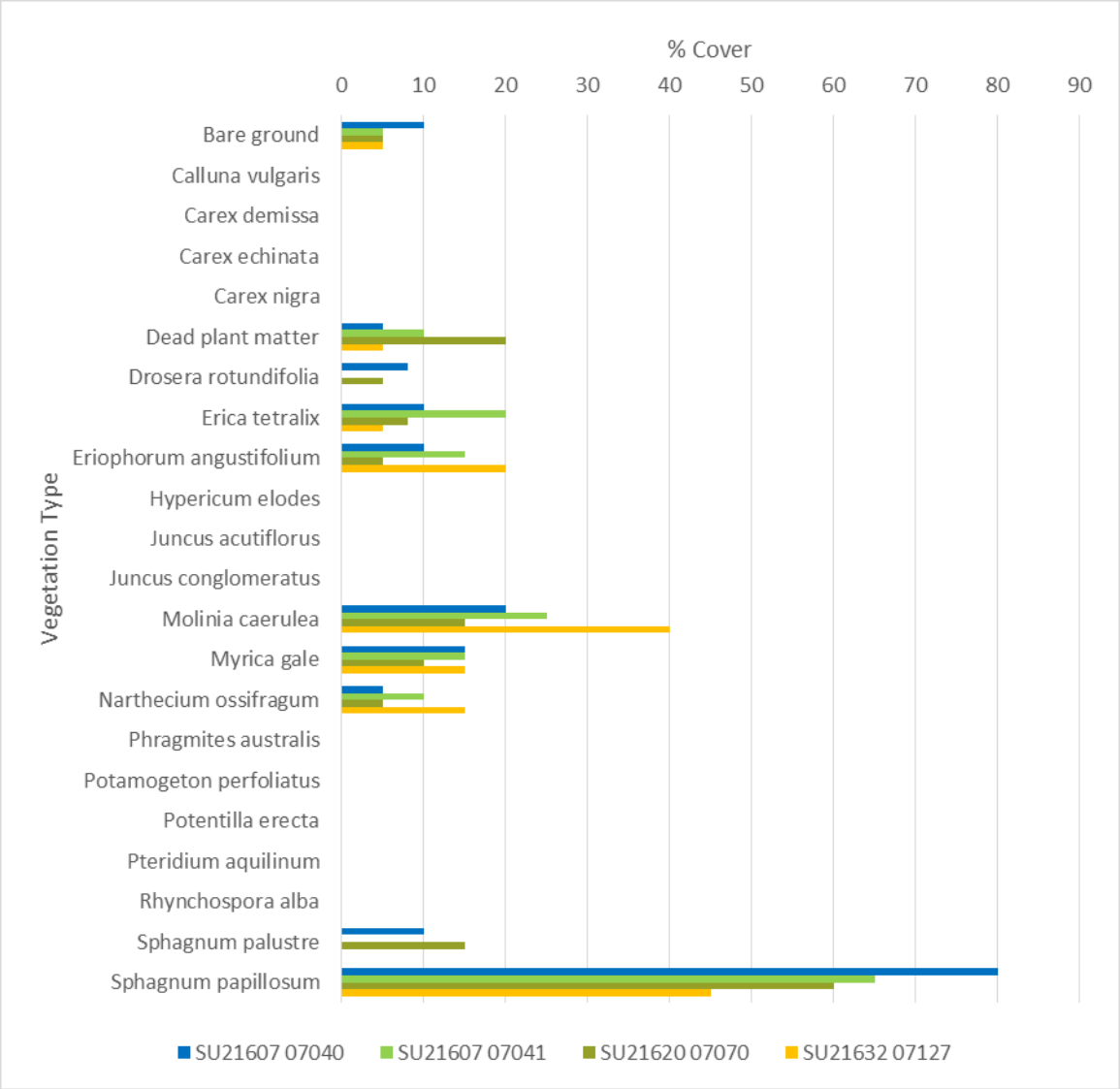

Figure 31 Percentge cover of each species within 1 m² of *F. candida* nests

Table 15: Other ant species found at Harvest Slade Bottom

Species	Habitat
Myrmica scabrinodis	Building/repairing solaria at base of *M. caerulea* in plot 17 of eastern quadrat SU21675 07094.
Lasius niger	Nesting in *Sphagnum* SU21615 07072.
Formica fusca	Forager SU21616 07042.

Management Recommendations

- Maintain grazing to control density of vegetation cover.

4.1.25 Hincheslea Bog

SU27412 00469

Ground Saturation Level: 3-5

***F. candida* not found; site suitable**

Site description

This rather wet bog, located to the southeast of Burley, is bordered to the north by Hincheslea Wood and to the southwest, by caravan sites. The site is dominated by dense *M. caerulea* and *M. gale* (Figure 32), with some *B. pendula* scrub on the north and western sides. The more waterlogged areas to the east were observed to support an abundance of *Sphagnum* cover with pockets of *P. perfoliatus*. The mean height of vegetation at the site was 38 cm (±SD 34.99 cm). Grazing by ponies appears to be spatially restricted to the southern side with most of the bog ungrazed. *M. scabrinodis* and *L. niger* foragers were found within the *Sphagnum* in the *M. caerulea* tussocks, but there was no evidence of *F. candida* occupation. The dense cover of the tussocks in the drier areas may have made the site unfavourable to this species.

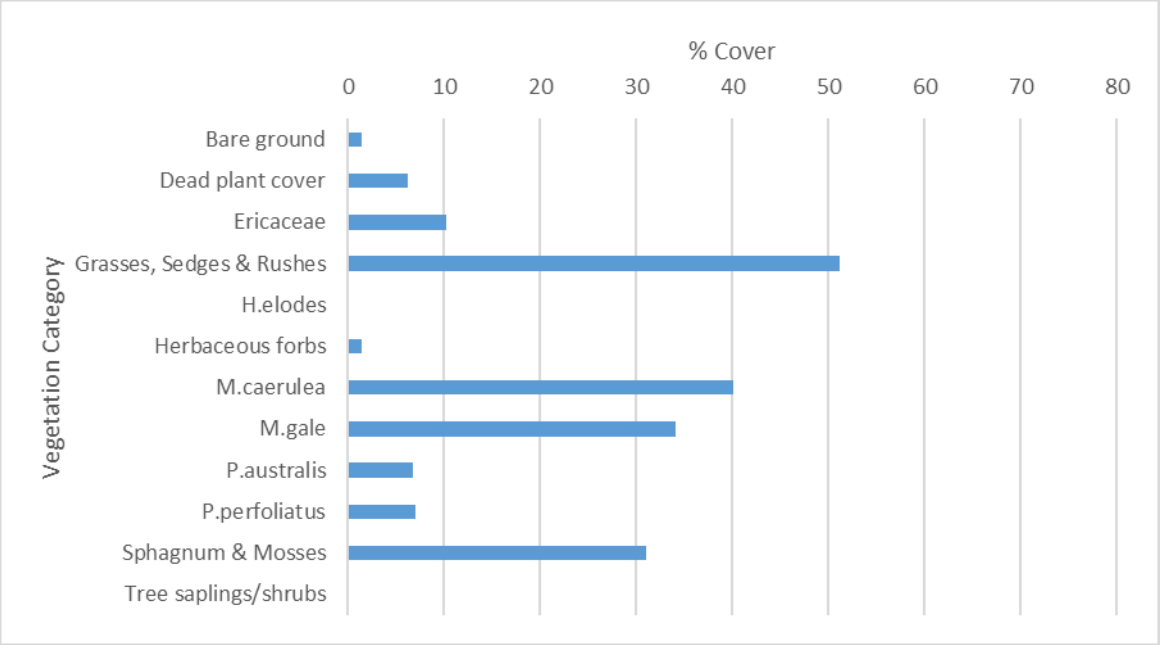

Figure 32 Mean vegetation % cover at Hincheslea Bog

Management Recommendations

- Maintain grazing to control density of vegetation cover.
- Control *B. pendula* woodland encroachment.

4.1.26 Holmsley Bog

SU22506 01849

Ground Saturation Level: 0-4

***F. candida* not found but site suitable**

Site description

This small valley mire, located to the south of Burley, runs alongside a disused railway line. The site is dominated by tall tussocks of *M. caerulea* and *M. gale*, while *E. angustifolium, E. tetralix*, *S. papillosum* and *S. palustre* occupy the central areas (Figure 33). The mean height of vegetation at the site was 35.8 cm (±SD 35.51 cm) over the four 50 m transects running north to south and east to west across the wettest part of the mire.

The bog was observed to be drier on the periphery and to the north while the southern side was waterlogged (level 4). Several *M. scabrinodis* nests were found in the *Sphagnum* and two colonies of *L. niger* were located in the *M. caerulea* tussocks. Despite this site supporting favourable habitat, no *F. candida* nests were recorded during the present survey. Historically, 13 nests were recorded in 1984 and several in 1991 (Environment Agency, 1998), yet no nests were recorded by North in 1998. There were several areas of open water at the time of the survey and signs of pony grazing were limited to the perimeter. Much of the mire was open with straggly *M. caerulea* cover allowing sunlight to reach the ground.

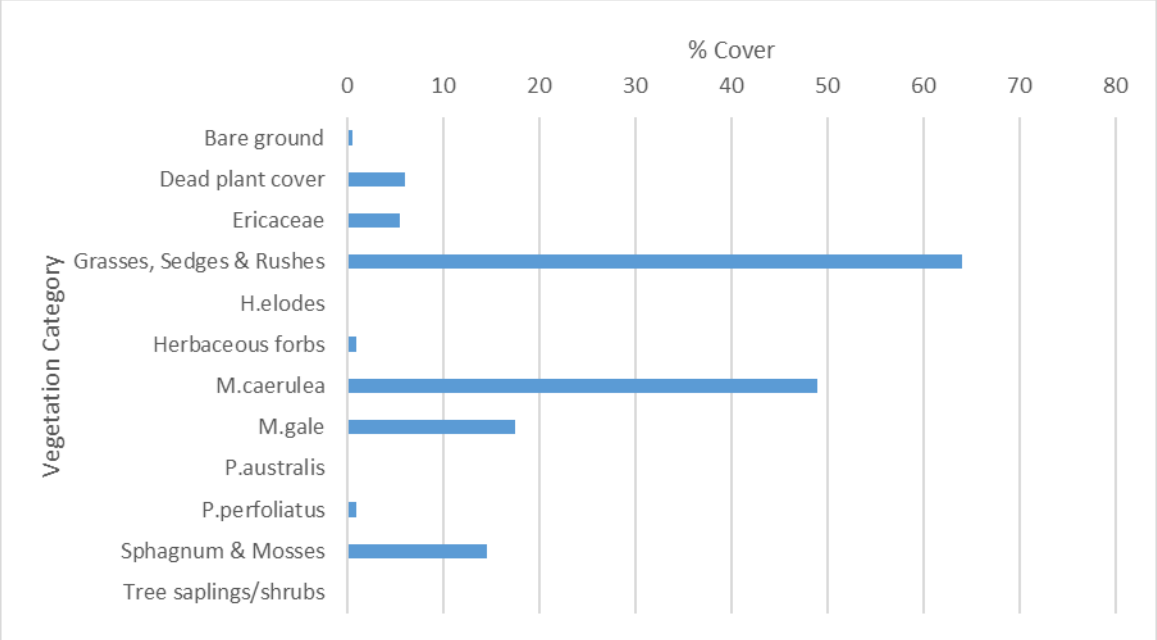

Figure 33 Mean vegetation % cover at Holmsley Bog

Management Recommendations

- Maintain grazing to control density of vegetation cover.

4.1.27 Matley Passage

SU33353 07247

Ground Saturation Level: 0-2

***F. candida* not found; site unsuitable**

Site description

This dry mire, south of Lyndhurst, is bordered by small streams to the north and east with woodland to the south and west. Two sites were surveyed at Matley Passage/Matley Bog (SU33395 07228 and SU33120 07213) but there was no evidence of *F. candida* presence in either area. Both sites were predominantly dry (level 0-1) except for a thin strip of mire immediately adjacent to the streams. *M. gale* and *M. caerulea* grass, along with some *Agrostis* spp. dominated the mire (Figure 34), but there was little tussock cover. Pockets of *E. tetralix* and *C. vulgaris* were recorded and there was some *Sphagnum* cover in the strip closest to the stream. Much of the *Sphagnum* was however dry. *U. europaeus* and *B. pendula* scrub was beginning to encroach on the edges of both sites. The mean height of vegetation at site 1 was 6.4 cm (±SD 8.13 cm), and at site 2, 19.4 cm (SD 38.19 cm). There was extensive evidence of grazing by cattle, ponies and deer. Taller vegetation, specifically small clumps of *J. acutifloris,* was closely associated with the stream and areas of scrub.

This site is considered potentially too dry to be desirable to *F. candida*. Nests were found between 1905 and 1926 (Environment Agency 1998) but there have been no records since. Foraging *F. fusca* ants were found at the edge of the woodland.

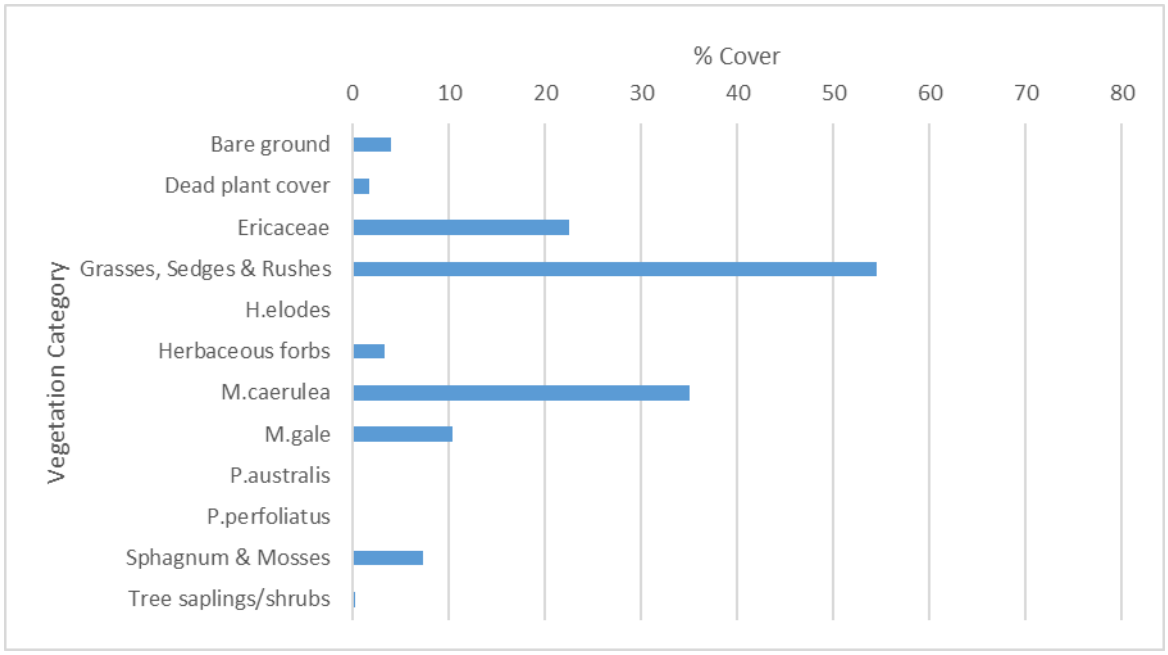

Figure 34 Mean vegetation % cover at Matley Passage

Management Recommendations

- Restoring water table height should be considered a priority if *F. candida* is to recolonize the site.

4.1.28 Ogdens

SU18190 11640

Ground Saturation Level: 0-2

***F. candida* not found; site unsuitable**

Site description

This small mire is located to the east of Dorridge Hill and is bordered by the valley bottoms of Brogenslade and Great Bottom to the south and Dockens Water to the south east. The mire is predominantly dry with a few pockets of boggier ground (level 2). The site was dominated by *M. caerulea* and *M. gale (*Figure 35*),* while *E. tetralix* cover is interspersed with *Carex* spp. and *T. cespitosum*. There was some *Sphagnum* cover in the wetter pockets while bryophytes and *Cladonia* spp. were observed to be associated with *C. vulgaris* in the drier zones. The mean height of vegetation at the site was 13.1 cm (±SD 11.14 cm). Some grazing was evident in the drier areas.

The site is considered too dry for *F. candida* occupation and lacks the tussock grass cover favoured by the species to shelter nests from the wind.

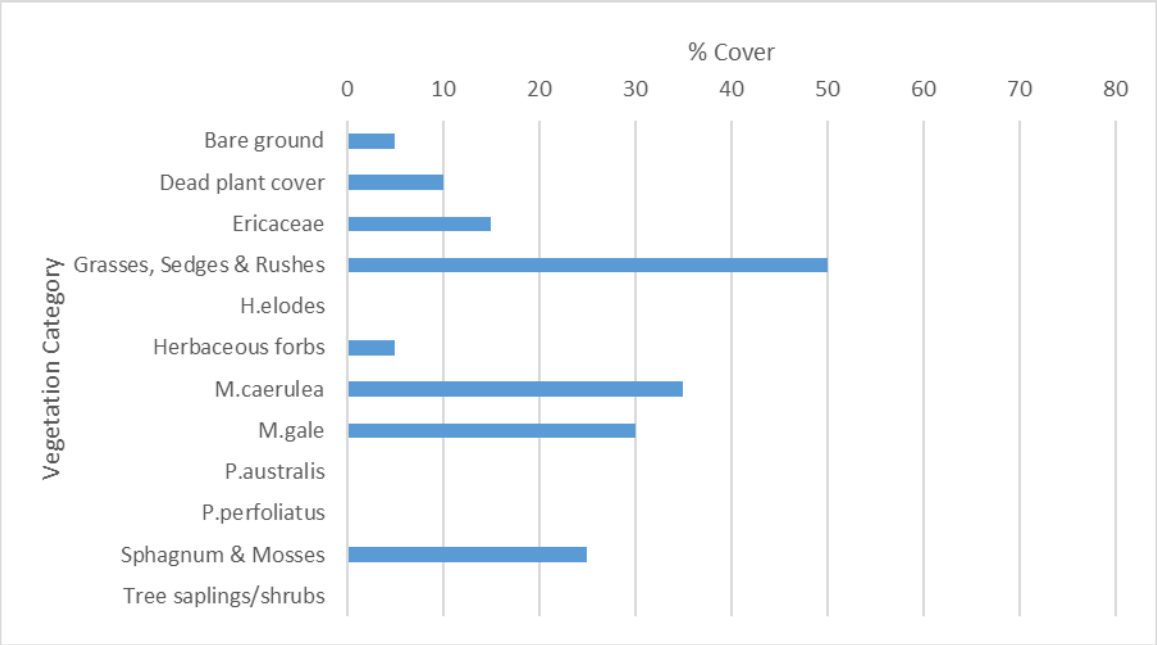

Figure 35 Mean vegetation % cover at Ogdens

Management Recommendations

- Restoring the water table height should be considered a priority if *F. candida* is to colonize the site.

4.1.29 Penny Moor 1

SU35532 04802

Ground Saturation Level: 2-5

***F. candida* not found; site suitable**

Site Description

Penny Moor is a wet valley mire bounded by a railway track to the west and Bishop's Dyke to the east. Rowbarrow stream runs along the south of the site while the north is bounded by deciduous woodland and scrub. Figure 36 shows the composition of the vegetation within 12 general

categories. The mire was dominated by *R. alba*, *E. angustifolium* with tall tussocks of *M. caerulea*, *J. acutiflorus* and *M. gale* also present. The dips between tussocks supported some *Sphagnum* and *P. perfoliatus* cover, while *E. tetralix* and pockets of *N. ossifragum* were observed to occupy the slightly drier areas to the north. There was little evidence of grazing at Penny Moor; possibly due to the waterlogged nature of the site and dense growth of tussocks. The mean height of vegetation at the site was 44.19 cm (±SD 45.93 cm).

The mire seems unsuitable for *F. candida* occupation due to the density of vegetation cover but there is one extensive area of *Sphagnum* hummocks within a large, open water area which may have potential to support the target species. No ants, of any species, were found at this site.

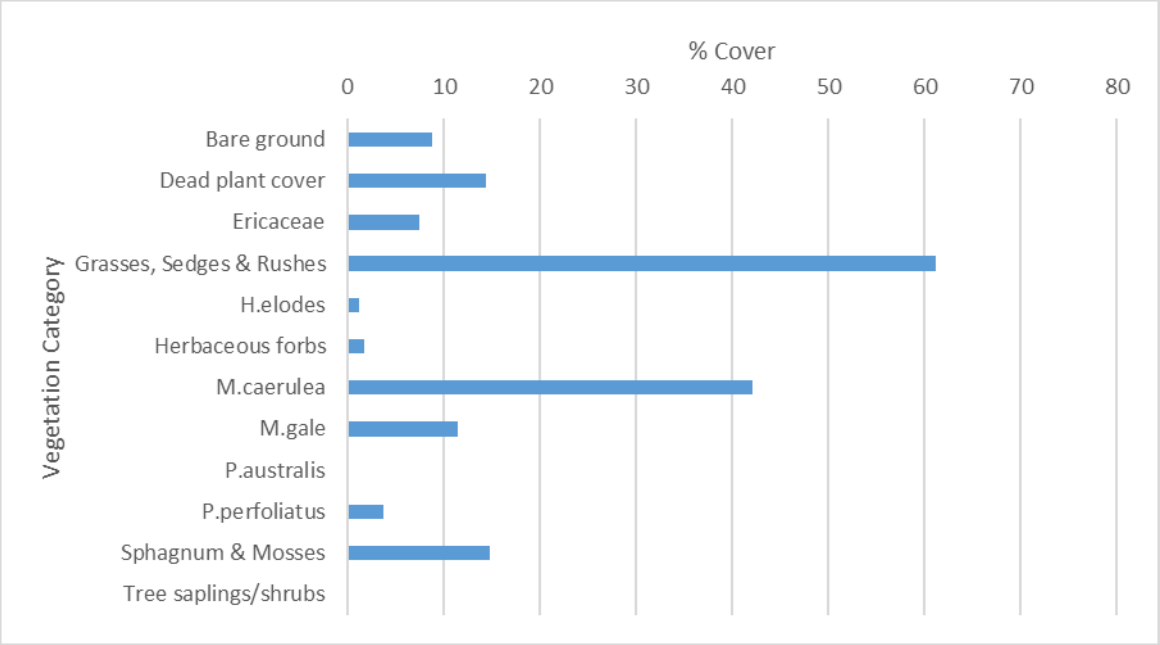

Figure 36 Mean vegetation % cover at Penny Moor 1

Management Recommendations

- Maintain grazing to control density of vegetation cover.
- Consider controlled winter burns to reduce height/density of vegetation cover.

4.1.30 Penny Moor 2

SU36461 04693

Ground Saturation Level: 3-5

***F. candida* not found; site unsuitable**

Site Description

Located to the east of Penny Moor 1, this site is bordered on the north east by a line of trees and a woodland path leading to Pig Bush car park. The southern end leads into dense, deciduous woodland while the east is framed by a bank of *B. pendula* scrub and *P. aquilinium*. The mire is dominated by *R. alba, Juncus* spp, *Carex* spp and *M. gale* with some short *M. caerulea* cover. The wettest areas were located towards the southern side, where open water runs parallel to the trees.

Sphagnum cover was extensive, as illustrated in Figure 37, and dominated by *S. papillosum, S. subnitens* and *S. capillifolium*. There was limited tussock formation and there was evidence of quite extensive cattle grazing in places. The mean height of vegetation at the site was 18 cm (±SD 23.29 cm).

F. candida was not found at this site, which lacks sheltering *M. caerulea/M. gale* tussocks. It is possible that the site was more waterlogged than usual for July following very heavy rain on the morning of the survey. One *F. candida* worker was recorded at this site in 1998 (Environment Agency 1998) but there are no other records of *F. candida* presence.

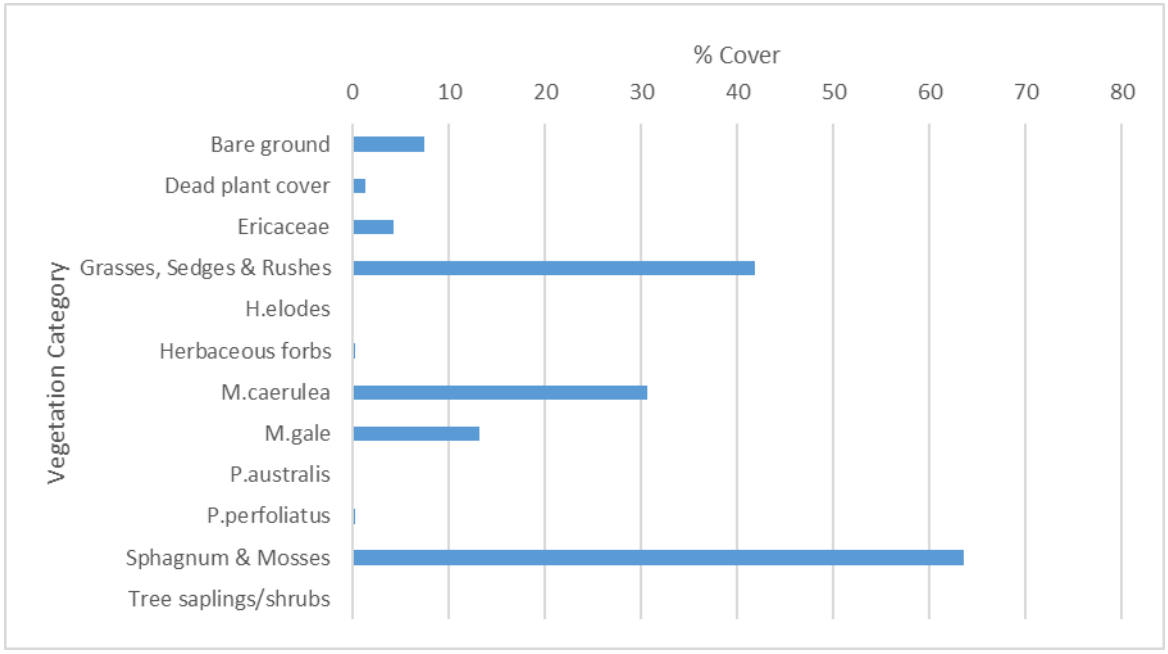

Figure 37 Mean vegetation % cover at Penny Moor 2

Management Recommendations

- Monitor hydrological conditions to establish whether the site is to wet to support *F. candida*.

4.1.31 Picket Post (near Foulford Bottom)

SU18924 05796

Ground Saturation Level : 0-4

***F. candida* not found; site suitable**

Site Description

This valley mire is bounded on the southern and western sides by a stream which runs through Foulford Bottom. To the east, dry heathland leads up to Picket Plain while the northern side is banked by dense cover of *P. aquilinum.* The site is characterised by short *M. caerulea* grass, *E. angustifolium* and *R. alba* interspersed with *E. tetralix*, *D. rotundifolia, D. intermedia* and *N. ossifragum* (Figure 38). *Sphagnum* cover is constant throughout the site but was observed to be most abundant in the wettest areas to the south (level 4), where cover of *P. perfoliatus* was limited.

Pony grazing was evident on the site and the mean height of vegetation recorded across transects was 22.66 cm (±SD 28.44 cm).

F. candida was not found but the *M. caerulea* tussocks growing on the southern side between hummocks of *Sphagnum*, did appear to provide suitable habitat for the species. Historically, a single nest was recorded at this site in 1953 (Environment Agency 1998) and by North in 1998. During the present survey, several *L. niger* colonies and two *M. scabrinodis* nests were found in the *Sphagnum* on the southern side of the site.

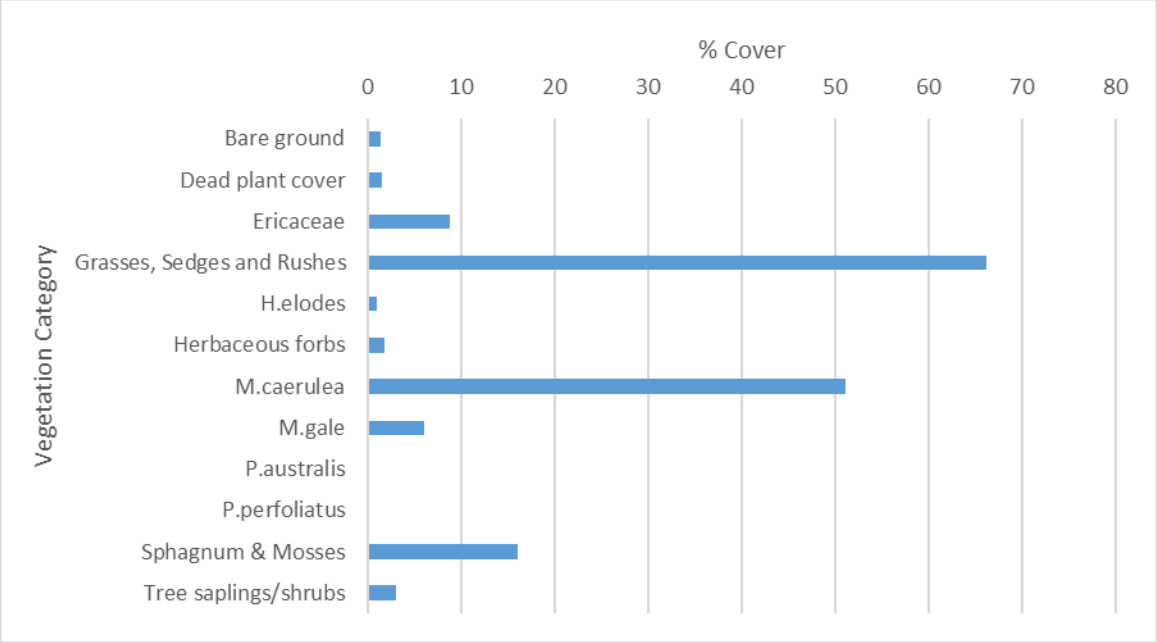

Figure 38 Mean vegetation % cover at Picket Post

Management Recommendations

- Maintain grazing to control density of vegetation cover.

4.1.32 Redhill Bog/Hincheslea Moor

SU26911 01887

Ground Saturation Level: 2-5

***F. candida* not found; site suitable**

Site Description

Redhill Bog lies to the northwest of Hincheslea Wood and is bordered to the north by Silver Stream which runs along from Ober Water. To the east and west the site is waterlogged (level 4-5) while the northern and southern sides are drier, predominantly at level 2, with pockets of deeper water. The northern side runs into a dense *P. australis* bank while the remaining site is dominated by *M. caerulea*, *M. gale* with some *H. elodes* and *P. perfoliatus* cover (Figure 39). *Sphagnum* hummocks were observed to be abundant in all areas and characterised by *S. papillosum, S. palustre, S. subnitens* and *S. capillifolium*. Evidence of cattle grazing was limited to the periphery of the bog. The mean height of vegetation at the site was 36.6 cm (±SD 37.78 cm).

Several M. scabrinodis and *L. niger* nests were found within the *Sphagnum*, while *F. fusca* foragers were found on the perimeter of the site. Several *F. candida* nests were reported by Pontin in 1954 however the site was severely grazed during the 1976 drought and the species has not been recorded here since (Environment Agency 1998). It is possible that *F. candida* has not been able to recover from this intense grazing pressure while trampling can also be an issue during solaria construction.

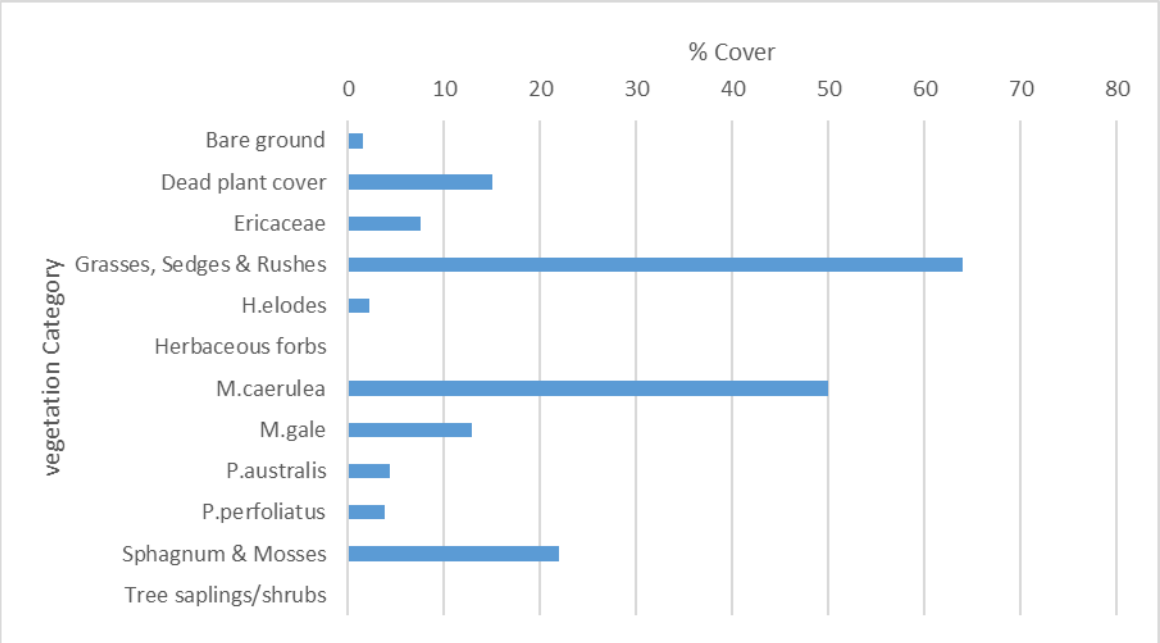

Figure 39 Mean vegetation % cover at Redhill Bog

Management Recommendations

- Maintain grazing to keep current density of vegetation cover.

4.1.33 Ridley Bottom

SU19853 06466

Ground Saturation Level: 1-5

***F. candida* present**

Site description

Ridley Bottom, a rather waterlogged bog to the east of Picket Post becomes much drier on all sides within two metres of the central ditch where Mill Lawn Brook runs through the site. Figure 40 shows the composition of the vegetation within 12 general categories. During the present survey, water depths as high as 60 cm were recorded where tall tussocks *of M. caerulea, J. acutiflorus, E. angustifolium* and *M. gale* were interspersed with *P. perfoliatus, M. trifoliata* and *Sphagnum* cover. The mean height of vegetation at the site was 49.4 cm (±SD 42.27 cm). Some grazing by ponies and deer was in evidence in the drier parts of the bog.

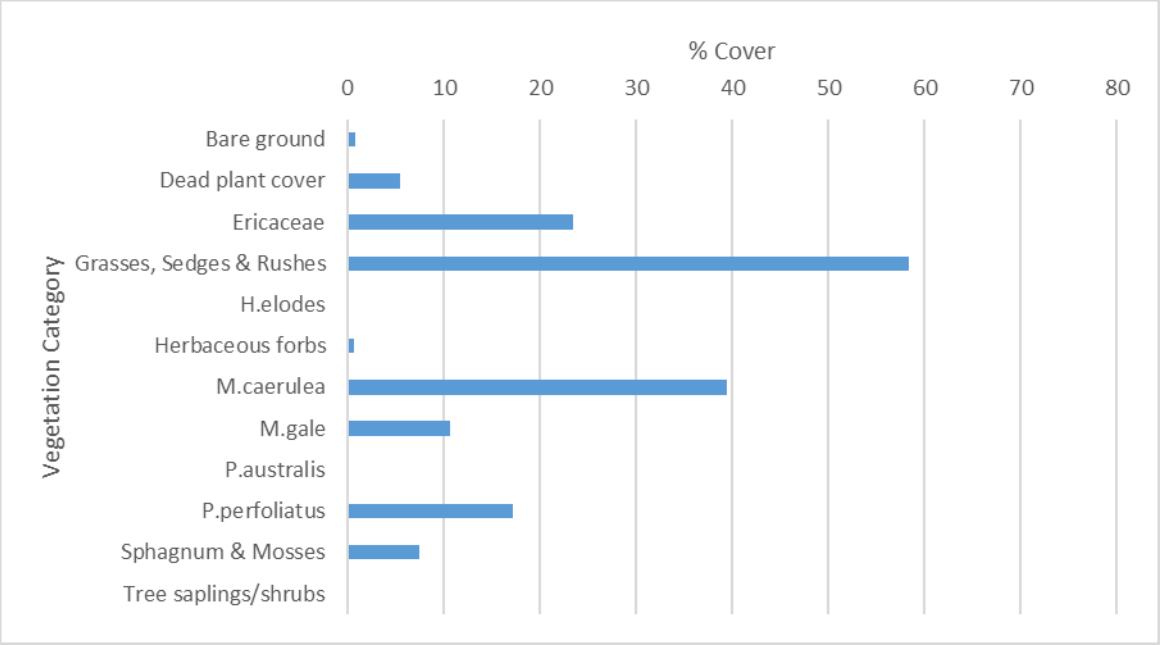

Figure 40 Mean vegetation % cover at Ridley Bottom

Three large *F. candida* nests were found in 1984 (Environment Agency) and two were found by North in 2000. Table 16 describes the location of the two nests recorded during this survey while Figure 41 shows the vegetation height and species percentage cover within 1 m² of each nest. No other ant species were found at this site.

Table 16: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU19852 06473	Vegetation cone 6 cm high and 8 cm wide located within dead *M. caerulea* and *M. gale* tussock. Surrounded by water at level 5 and *Sphagnum* on 3 sides. No brood inside.	5	10	13
1	SU19871 06466	Vegetation cone 10 cm high and 5cm wide -made from dried *Sphagnum* and plant fragments and located in straggly *M. caerulea* tussock. Surrounded by water at level 5 on 3 sides.	5	25	8.6

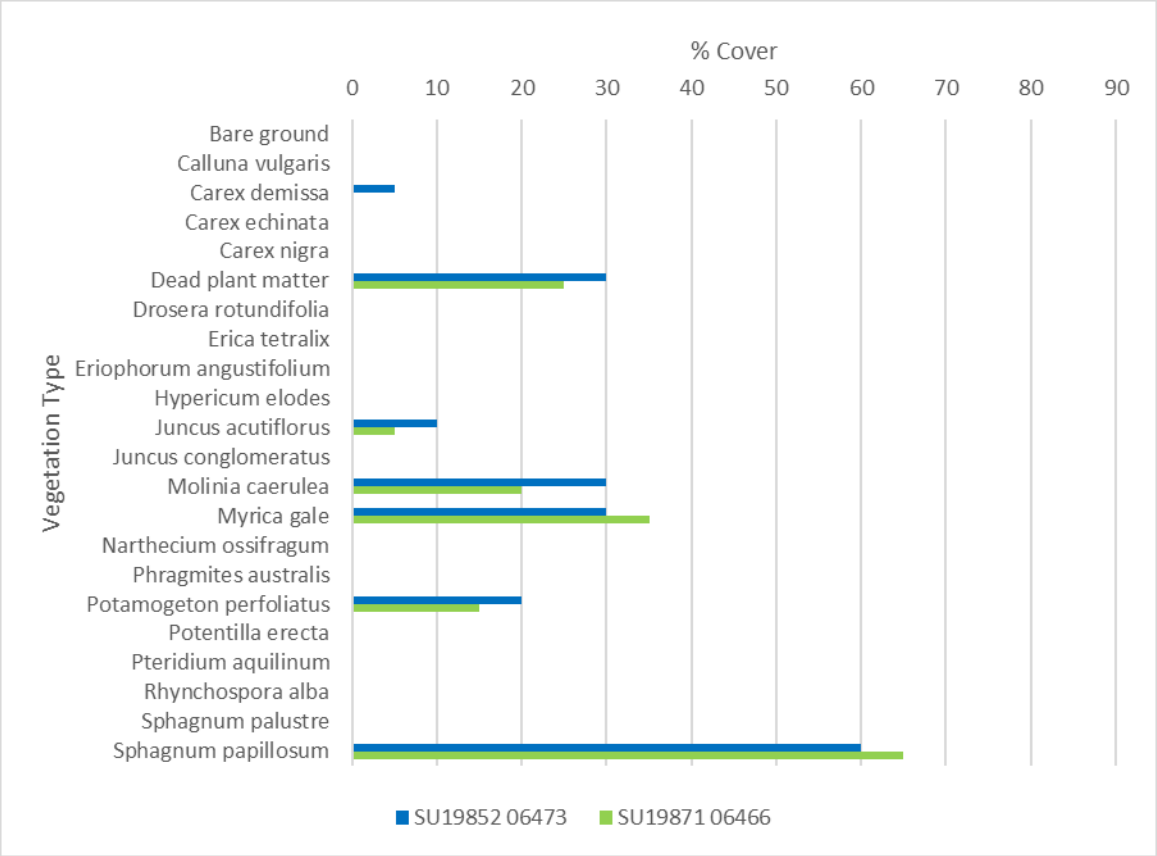

Figure 41 Percentage cover of each species within 1 m² of *F. candida* nests

Management Recommendations

- Maintain grazing to control density of *M. gale/M. caerulea* tussocks.

4.1.34 Ridley Plain (near Harvest Slade)

SU21191 06639

Ground Saturation Level: 1-3

***F. candida* present**

Site Description

Situated to the north of Burley, this site is part of a large mire network and is framed by Harvest Slade to the southeast, Ridley Bottom to the southwest and dry heathland leading up to the A31 to the north. Ridley Plain is primarily a damp mire (level 2) although the southern end was found to be wetter (level 3). This site is characterised by *M. caerulea* in both tussock and grass form with dense cover of *M. gale, Carex spp.* and *E. angustifolium* interspersed with clumps of *J. acutiflorus* (Figure 42). *Sphagnum* hummock and carpet cover the wetter parts of the mire towards the south and tree saplings and scrub have started to encroach on the northern perimeter. Across the transects the mean height of vegetation was 39.5 cm (±SD 41.09 cm). Grazing by cattle and ponies was evident throughout the site.

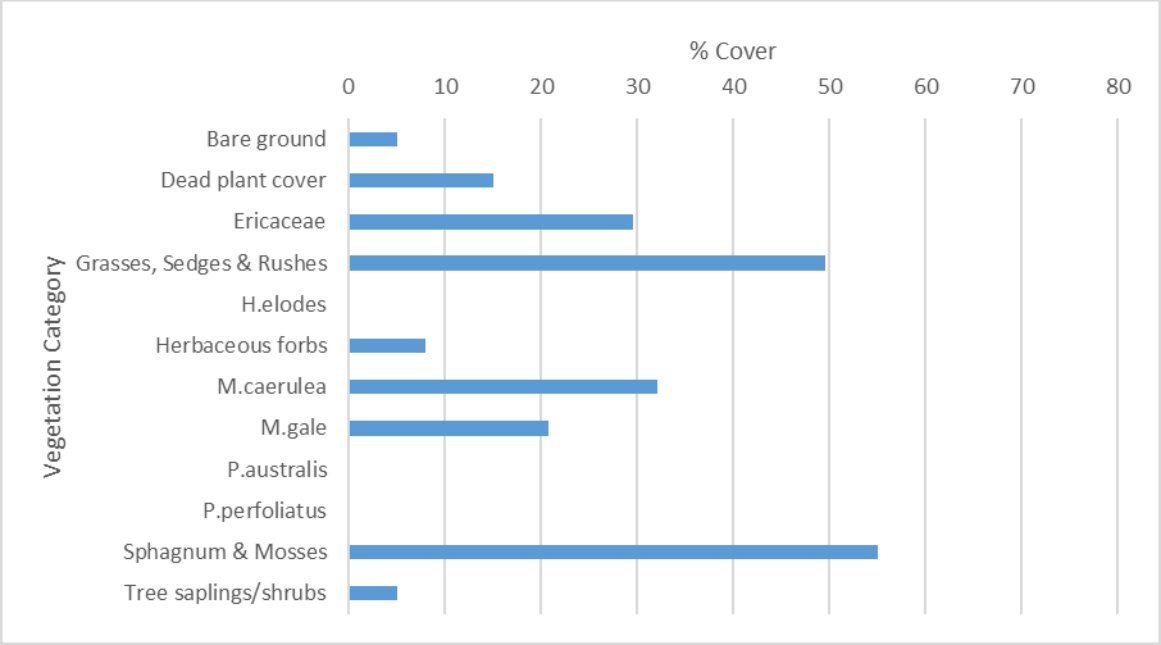

Figure 42 : Mean vegetation % cover at Ridley Plain

A single *F. candida* nest was recorded during the present survey. This was located within a tall tussock of *M. caerulea* and *M. gale* growing on the eastern side of the mire. Table 17 describes the nest's location while Figure 43 shows the species percentage cover within 1 m² of the nest. Historically, six nests were recorded at this site by North in 1998. No other ant species were found at this site.

Table 17: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU21139 06662	Vegetation cone 7cm high and 5cm wide located at base of *M. caerulea* and *M. gale* tussock. Brood found inside.	2	55	16

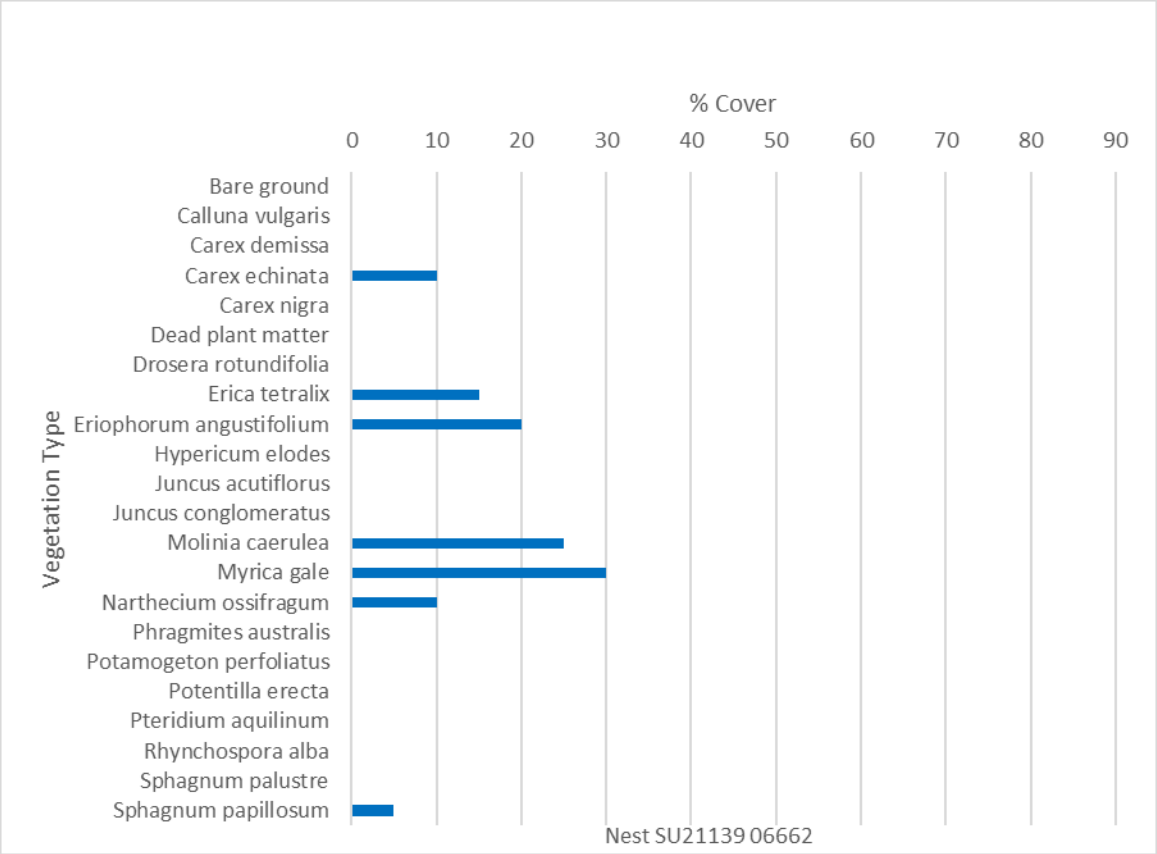

Figure 43 Mean height of vegetation within 1 m² of *F. candida* nests

Management Recommendations

- Control growth of intruding woodland scrub on northern side of bog.

4.1.35 Shappen Bottom

SU21721 01771

Ground Saturation Level: 1-4

***F. candida* not found; site suitable**

Site description

Situated to the south of Burley, this long, thin valley mire extends east of Shappen Hill and to the north of a disused railway line. Figure 44 shows the composition of the vegetation within 12 general categories. The wettest area (level 4) was located between the centre of the mire and its southern edge where a stream runs along the boundary of the mire. To the south of the stream, there is a dense band of woodland and scrub which supports a plant community of *B. pendula*, *U. europaeus*, *P. aquilinum*, *Salix* spp. *Cratageous monogyna* and *Lonicera periclymenum*. The mire itself was observed to be dominated by short *M. caerulea* grass, *R. alba* and clumps of *J. acutiflorus* with limited *E. tetralix* and *C. vulgaris* cover with pockets of *N. ossifragum*. There is a consistent cover of *Sphagnum* throughout the site characterised by *S. magellanicum, S. papillosum* hummocks and *S. capillifolium* and where straggly grass tussocks have formed, there was very little water around

them. The mean height of vegetation at the site was 24.4 cm (±SD 32.17cm). There was extensive evidence of grazing by ponies and deer at this site.

F. candida was not recorded during the present survey and there are no past records of habitation. This is despite the habitat having high potential to support the target species. *L. niger* colonies were found on the southern side of the site within *Sphagnum*/*M. caerulea* cover.

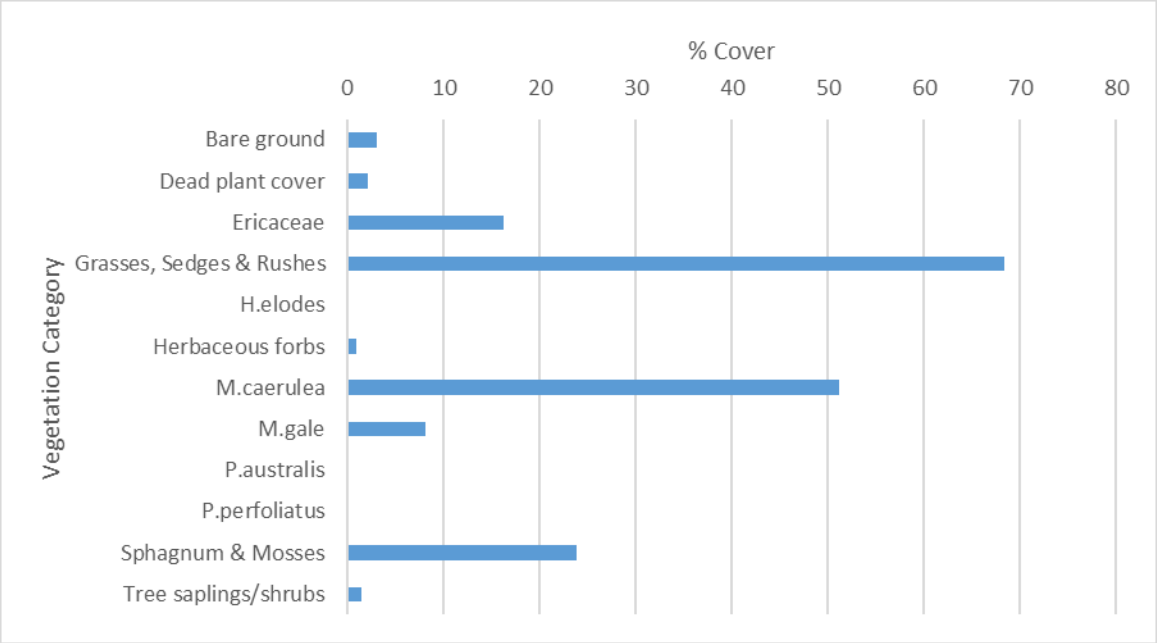

Figure 44 Mean vegetation % cover at Shappen Bottom

Management Recommendations

- Control successional *B. pendula* woodland scrub as it begins to encroach on the site.
- Monitor grazing impact on vegetation density.

4.1.36 Shatterford Bottom

SU34162 06163

Ground Saturation Level: 0-1

***F. candida* not found; site not suitable**

Site Description

Situated to the west of Beaulieu Road Station, this valley mire lies to the north of Bishop's Dyke and to the east of Denny Wood/Denny Inclosure. Figure 45 shows the composition of the vegetation within 12 general categories. The eastern side of the site was dominated by dense *M. caerulea/M. gale* tussocks with abundant *E. angustifolium* but little *Sphagnum*. This contrasts with the wetter centre of the mire where *P. perfoliatus* and *M. trifoliata* cover is interspersed with mats of *Sphagnum*. The western side of the site was dominated by *R. alba* and *M. caerulea* grass with occasional patches of bare ground. Dried *Sphagnum* and *Cladonia* spp. were also evident throughout the site. The northern side was characterised by tall tussocks of *Juncus* spp in addition to *M. gale* and *M. caerulea*. The mean height of vegetation at the site was 27.9 cm (±SD 38.71 cm).

There was no evidence of *F. candida* occupation during the present survey. This is likely to be due to the site being too dry and tussock formation too dense. Limited grazing was evident on the fringes of the site. One *L. niger* nest was found within *Sphagnum* at the base of an *M. caerulea* tussock on northern side of mire.

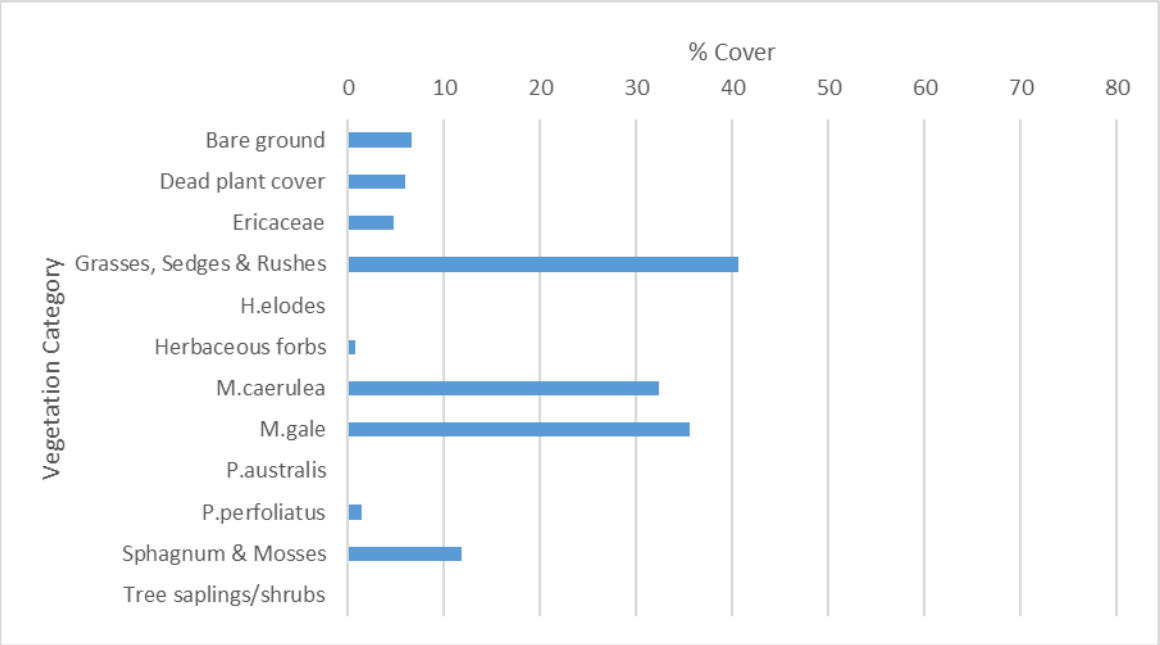

Figure 45 Mean vegetation % cover at Shatterford Bottom

Management Recommendations

- Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site.

4.1.37 Slufters Bog 1

SU22254 09466

Ground Saturation Level: 1-4

***F. candida* present**

Site Description

Slufters Bog is a small valley mire to the southeast of Slufters Pond. The site is at its driest on the northern side (level 1) but ranges to level 4 on the eastern side as it runs downhill to the fenced forest of Slufters Inclosure. The mire is dominated by *M. caerulea* grass, *Juncus* spp., *E. tetralix* and vast hummocks of *Sphagnum* (Figure 46). There are a few scattered trees with *P. aquilinum* on the edges of the site but the main body of the bog is open to sunlight. Occasional *D. rotundifolia, N. ossifragum* and *D. praetermissa* were observed and grazing was apparent across the site. Across transects, the mean height of vegetation at the site was 12.1 cm (±SD 12.15 cm).

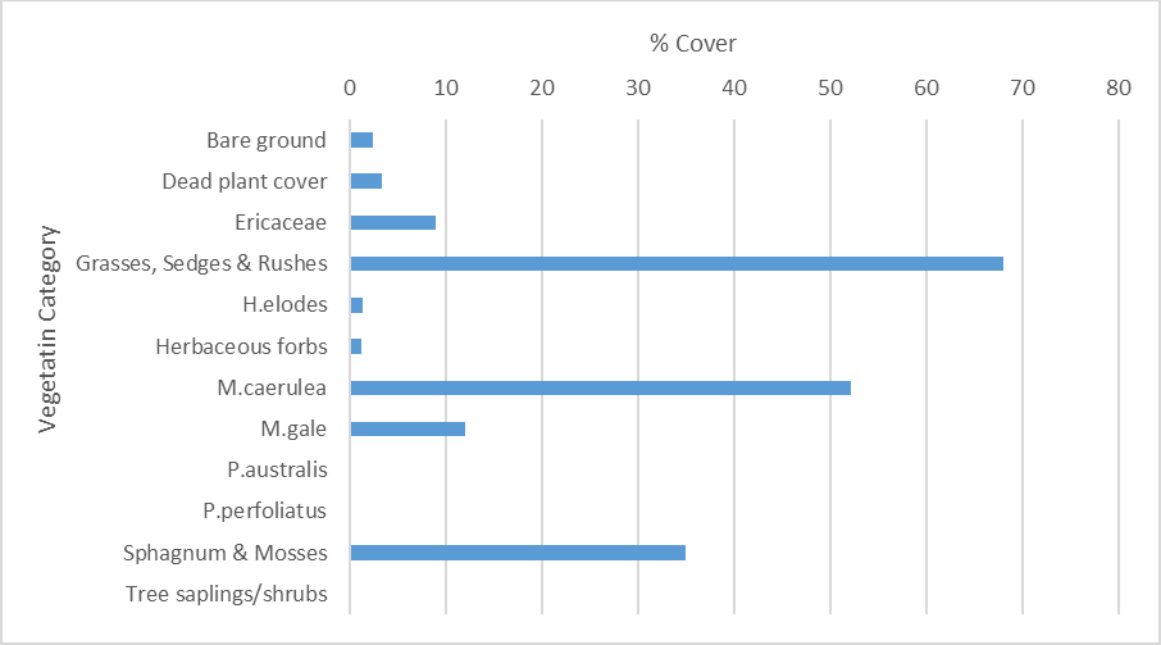

Figure 46 Mean vegetation % cover at Slufters Bog 1

Three *F. candida* nests were found during the present survey; all within *S. papillosum* at the base of straggly *M. caerulea/M. gale* tussocks. Table 18 describes the nests' locations while Figure 47 shows the species percentage cover within 1 m² of each nest. Each nest was found close to the wettest part of the mire and was open to the sunlight on at least two sides. One cone nest appeared to be under construction possibly due to the timing of the visit in early June. Table 19 describes the ant community found at this site.

Table 18: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU22229 09444	Nest with brood in *Sphagnum* dip at base of *M. caerulea/M. gale* tussock.	3	60	16
1	SU22262 09456	Vegetation and dried *Sphagnum* cone 3 cm high and 3cm wide under construction. Located within dead *M. caerulea* and *M. gale* tussock. No brood inside.	3	55	9.3
1	SU22276 09452	Nest with brood in *Sphagnum* dip. Water on three sides and *M. caerulea /M. gale* screen to north.	3	50	13

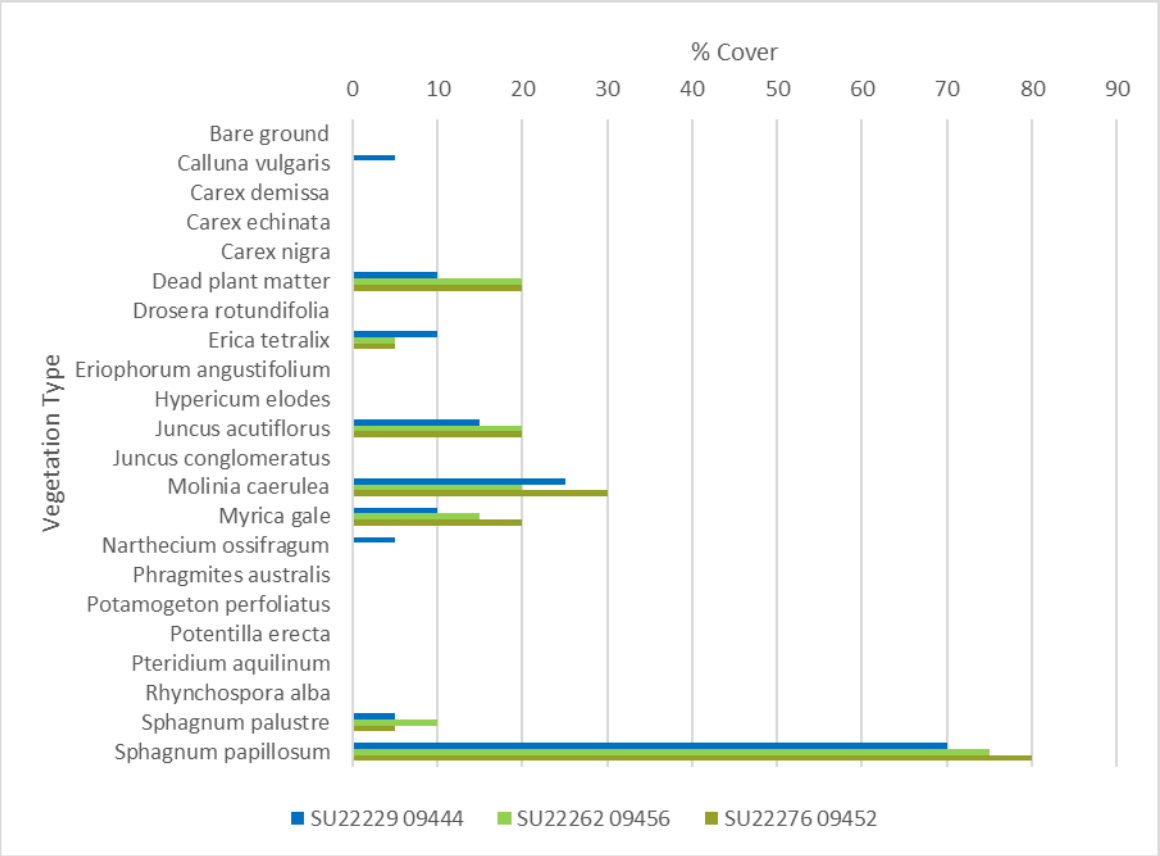

Figure 47 Percentage cover of each species within 1 m² of *F. candida* nests

Table 19: Other ant species found at Slufters Bog 1

Species	Habitat
Myrmica scabrinodis	Nest with brood found in *Sphagnum* on western transect.
Lasius niger	Nest in *Sphagnum* and foragers found on western transect.

Management Recommendations

- Monitor hydrological conditions to ensure no change to favourable conditions.

4.1.38 Slufters Bog 2

SU22254 09466

Ground Saturation Level: 2-4

***F. candida* present**

Site description

Slufters Bog is a small valley mire to the southeast of Slufters Pond. This site is located slightly further east than the previous site (Slufters Bog 1) and was found to be slightly wetter throughout,

with abundant growth of *M. caerulea* in both grass and tussock form (Figure 48). *M. gale, J. acutiflorus, Carex* spp., *E. tetralix,* and *C. vulgaris* were observed to be growing in patches on the edges of the mire, where scattered trees and *P. aquilinum* are beginning to encroach on the bog. Across transects, the mean height of vegetation at this site was 11.1 cm (±SD 21.03 cm).

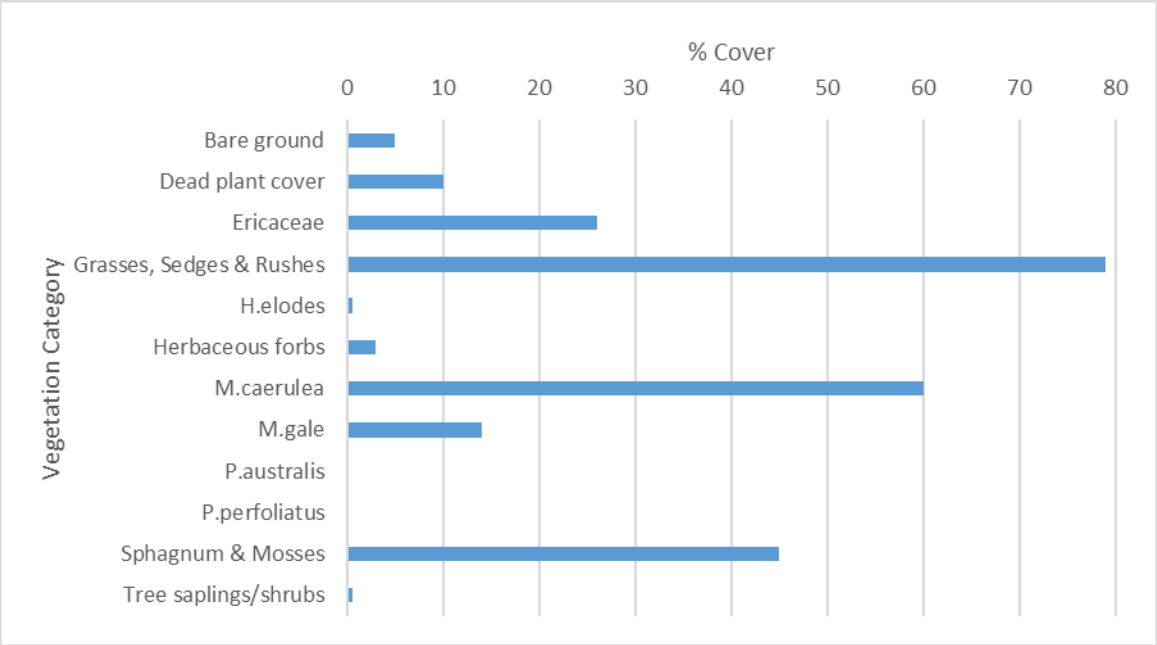

Figure 48 Mean vegetation % cover at Slufters Bog 2

Two *F. candida* nests were found during the present survey and both were located in *S. papillosum* hummocks at the base of *M. caerulea* tussocks. Table 20 describes the nests' locations while Figure 49 show the species percentage cover within 1 m² of each nest. Both nests were open to sunlight and partially sheltered by tussock vegetation with a small patch of bare ground nearby. Table 21 describes the ant community found at this site.

Table 20: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU22371 09611	Nest with brood in *S. papillosum* hummock - at base of *M. caerulea* tussock. Water level 4 on western side.	4	55	16
1	SU22371 09588	Nest with brood in S. *papillosum* hummock – at base of straggly *M. caerulea* tussock.	3	70	12

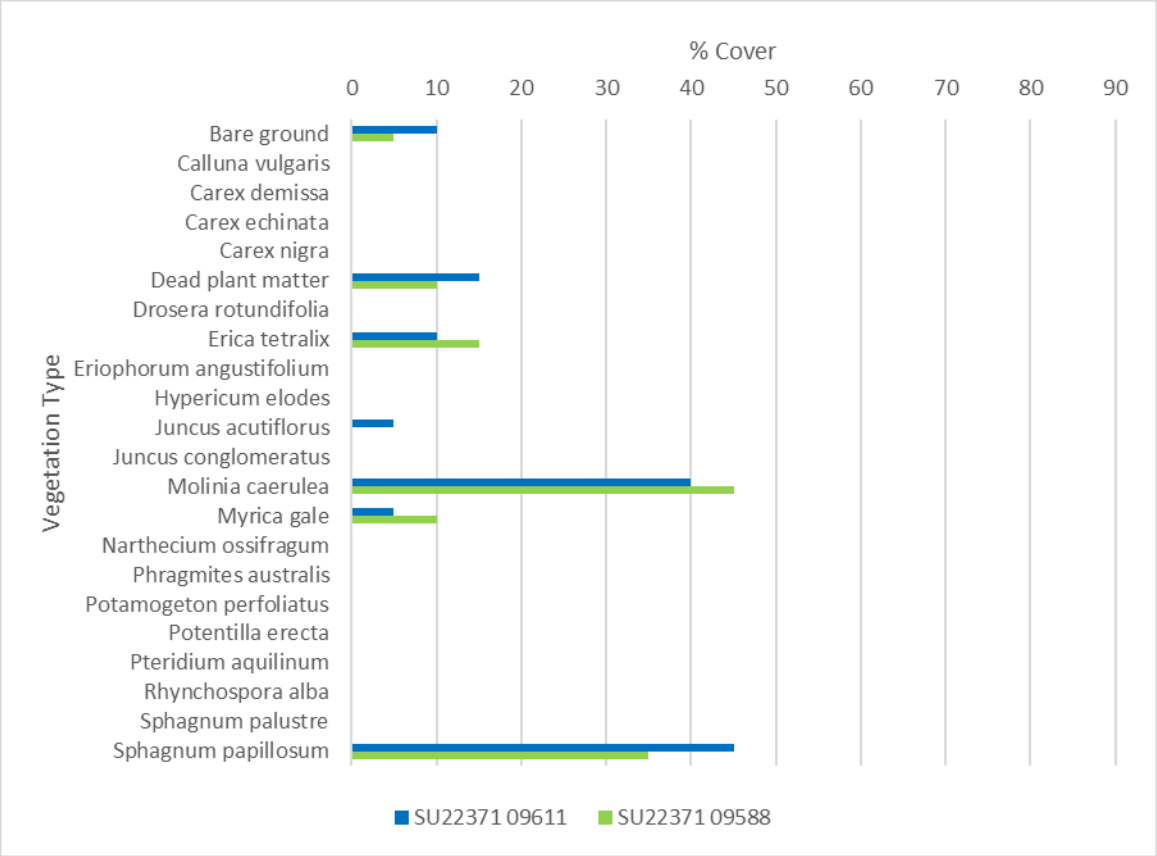

Figure 49 Percentage cover of each species within 1m² of *F. candida* nests

Table 21: Other ant species found at Slufters Bog 2

Species	Habitat
Myrmica scabrinodis	Two nests found in *Sphagnum* on western transect. With brood.
Lasius niger	Foragers found on eastern transect close to *Pteridium aquilinum.*

Management Recommendations

- Monitor hydrological conditions to ensure no change to favourable conditions.

4.1.39 Vales Moor

SU19256 04611

Ground Saturation Level: 0-4

***F. candida* present**

Site Description

This, primarily waterlogged valley mire is situated close to an open body of water which is frequented as a drinking hole by New Forest ponies. Bounded by high banks of *P. aquilinum* and *U. europaeus*, Vales Moor is dominated by short *M. caerulea* grass with carpets of *Sphagnum* and swathes of *M. trifoliata* and *R. alba* (Figure 50). The eastern and western sides were drier with

tussocks of *M. caerulea/M. gale* cover while the northern and southern areas have shorter, grazed vegetation. The mean height of vegetation at the site was 35.2 cm (±SD 23.26 cm).

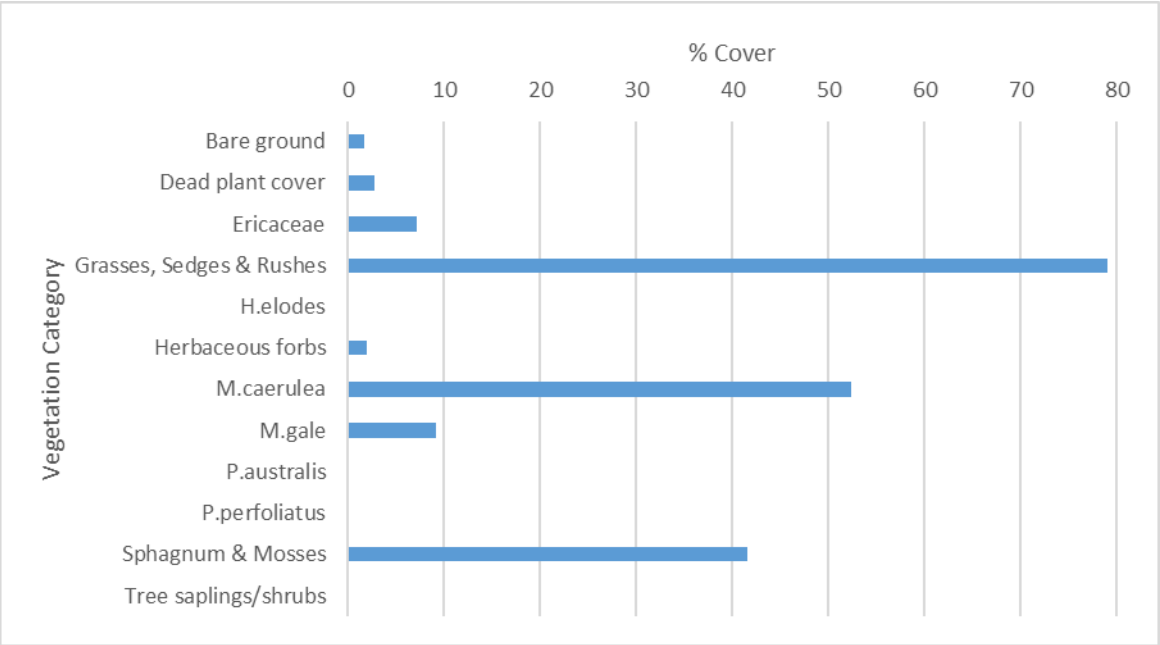

Figure 50 Mean vegetation % cover at Vales Moor

Three *F. candida* nests were recorded during the present survey, one of which was disused. Table 22 describes the nests' locations while Figure 51 show the species percentage cover within 1 m² of each nest. The disused cone nest was found within a *M. caerulea/M. gale* tussock on a drier dip (level 1) on the eastern side, surrounded by *Carex* spp. and *J. acutiflorus.* The two active nests were both found in wetter parts of the mire within *S. papillosum/M. caerulea* cover. No other species of ant were found here, possibly because the bog is very wet in places.

Table 22: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU19237 04609	Disused vegetation cone nest (10 cm x 8 cm) in tall *M. caerulea* tussock (100 cm) with some *R. alba* cover and tall strands of *J. actufloris*.	1	80	15
1	SU19257 04609	Nest with brood in large *S. papillosum* dip. Close to dense *R.alba/M. caerulea* cover.	2	45	12

1	SU19263 04660	Nest with brood in *Sphagnum* and with small vegetation cone (3 cm x 5 cm) at *M. caerulea* base.	3	55	9.2

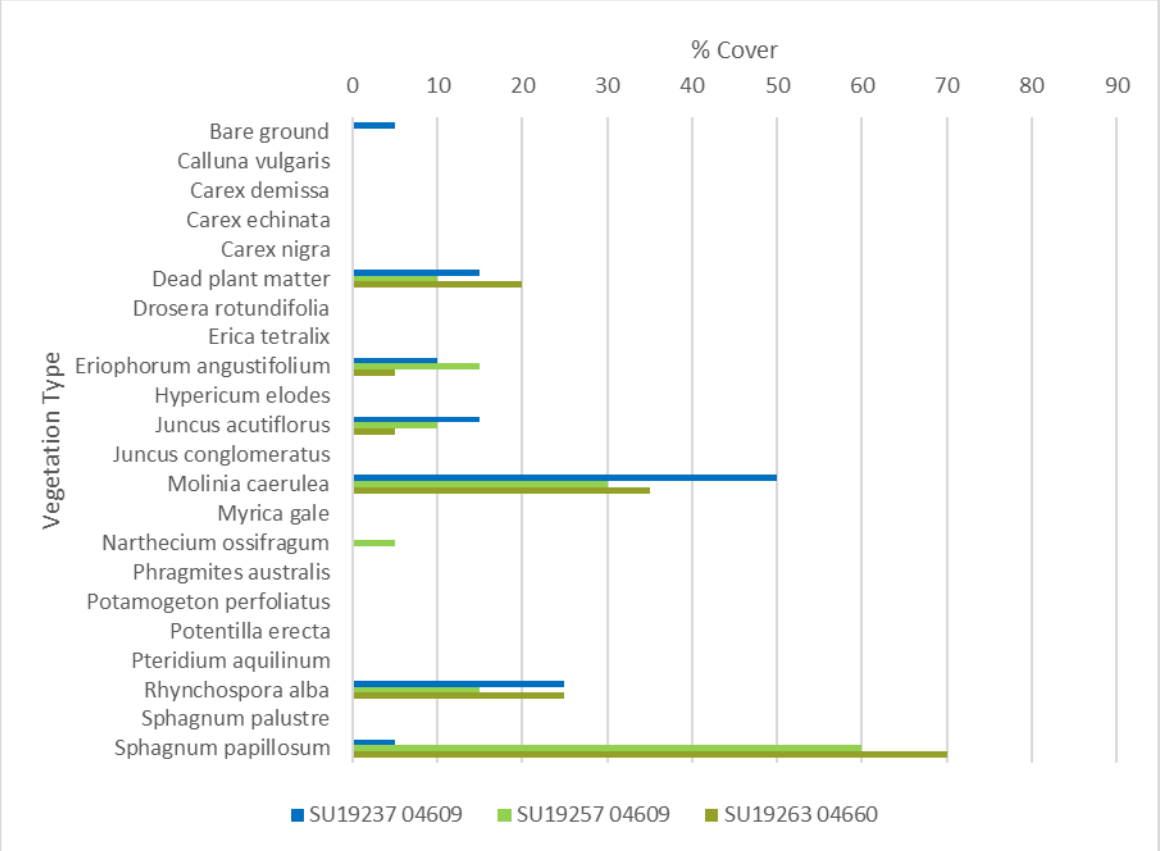

Figure 51 Percentage cover of each species within 1m² of *F. candida* nests

Management Recommendations

- Monitor hydrological conditions to ensure no change from favourable conditions.

4.1.40 White Moor

SU27539 01582

Ground Saturation Level**:** 0-5

***F. candida* not found; site suitable**

Site Description

This valley mire is situated north of Hincheslea Wood and to the east of a range of mires including Redhill Bog, Crab Tree Bog and Hincheslea Moor. Figure 52 shows the composition of the vegetation within 12 general categories. This site was predominantly wet (level 5) on the western and southern sides and drying out to levels 2-3 in the north and east. The mire is characterised by tall tussocks of *M. caerulea* and *M. gale* with extensive hummocks of *S. papillosum, S. palustre* and *S. subnitens* in

the tussock dips. There was some *P. perfoliatus* cover in the wettest areas where standing water and pockets of *D. praetermissa, D. rotundifolia* and *N. ossifragum* were observed throughout the site. The mean height of vegetation at the site was 48 cm (±SD 43.05 cm). There was some evidence of deer grazing on the edges of the mire but the central area was undisturbed.

Despite this site providing suitable habitat, *F. candida* was not recorded during the present survey and has not been recorded historically. Several *M. scabrinodis* colonies were found in the *Sphagnum* but no brood were seen. Two *L. niger* nests were found on the eastern side.

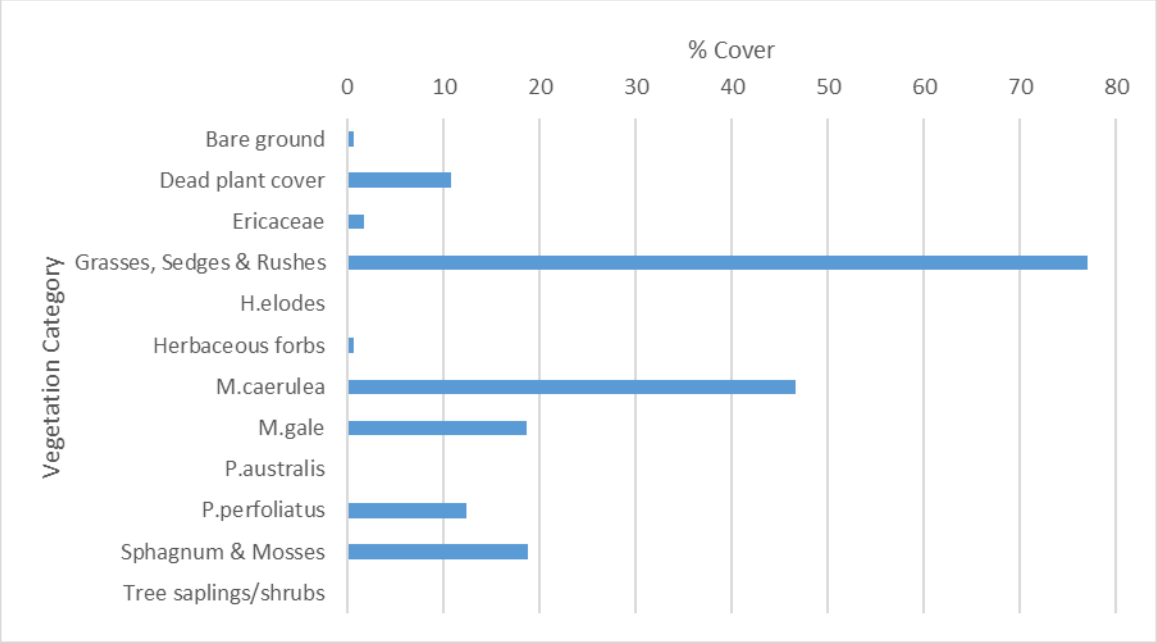

Figure 52 Mean vegetation % cover at White Moor

Management Recommendations

- Maintain grazing to control density and height of *M. gale/M. caerulea* tussocks.
- Consider controlled winter burns to reduce height/density of *M. caerulea* and *M. gale*.

4.1.41 Withybed Bottom

SU25563 10528

Ground Saturation Level**:** 3-4

***F. candida* not found; site suitable**

Site description

This valley mire, to the southeast of Long Brook, is consistently wet throughout (levels 3-4). The vegetation was dominated by *M. gale*, short *M. caerulea* with occasional straggly tussock forms, *J. acutiflorus, P. perfoliatus*, *H. elodes*, *E. tetralix* and *H. vulgaris* (Figure 53). *N. ossifragum, Carex* spp. and *P. erecta* were also abundant with vast cushions of *Sphagnum* cover. Clumps of *Salix* spp., *P. aquilinium* and *Rubus fruticosus* were recorded in several areas within the mire, especially on the southern side. Evidence of grazing by ponies and cattle was recorded and there were several deer

tracks running through the scrub. The mean height of vegetation at the site was 18.9 cm (±SD 12.33 cm).

Despite this site providing suitable habitat, *F. candida* was not recorded during the present survey and has not been recorded historically. Several *M. scabrinodis'* colonies were found within the *Sphagnum* lawn.

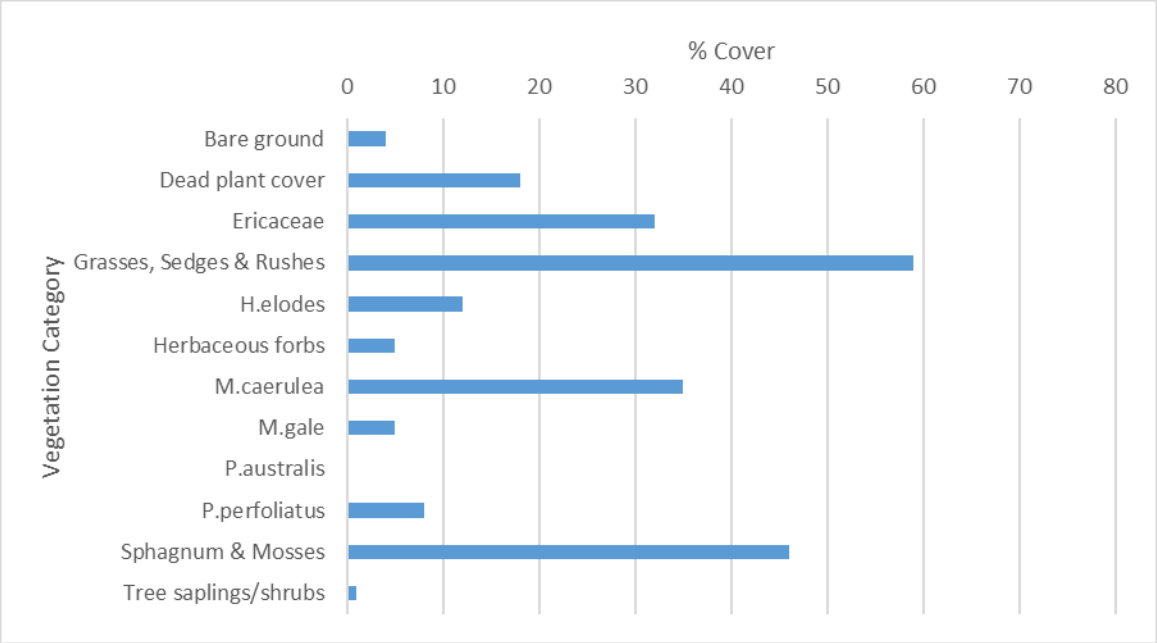

Figure 53 Mean vegetation % cover at Whitybed Bottom

Management Recommendations

- Avoid drainage activities which could negatively affect the hydrology of this site.
- Maintain grazing to control *M. gale/M. caerulea* density cover.

4.1.42 Wilverley Bog

SZ24614 99952

Ground Saturation Level**:** 1-4

***F. candida* present**

Site Description

This bog is framed by woodland and a large reed bed to the south and dry heathland to the north and east. The site changes quite abruptly from damp ground (level 1) to very wet areas on the west and southern sides. This site was characterised by short tussocks of *M. caerulea* and frequent cover of *E. tetralix, M. gale, E. angustifolium* and *Juncus* spp. (Figure 54). *M. caerulea* (in grass form) was abundant and wetter areas frequently supported patches of *H. elodes, M. trifoliata* and *P. perfoliatus*. Cushions of *Sphagnum*, specifically *S. papillosum*, were distributed throughout the site. Scattered *B. pendula* and *P. sylvestris* saplings are present on the northern side at the junction with the adjacent heathland. Grazing by deer, cattle and ponies was evident in all areas except the north, where the vegetation is taller. The mean height of vegetation at the site was 30 cm (±SD 29.64 cm)

over the four 50 m transects running north to south and east to west across the wettest part of the mire.

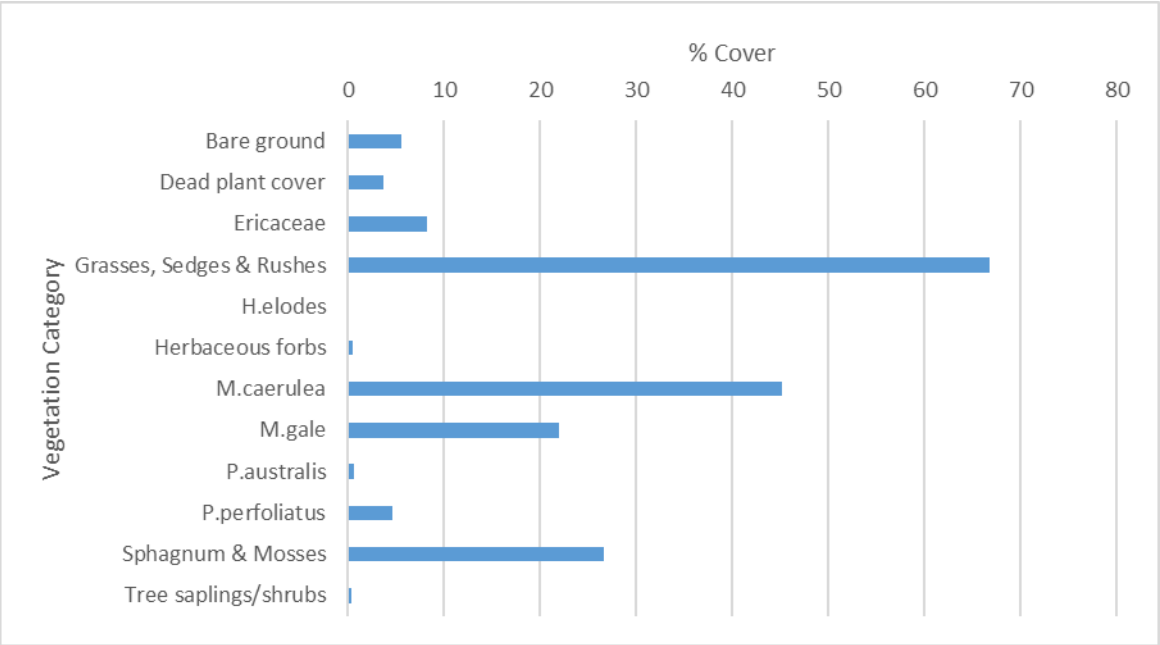

Figure 54 Mean vegetation % cover at Wilverley Bog

Two *F. candida* nests were found during the present survey; both within *M. caerulea* mini-tussocks. Table 23 describes the nests' locations while Figure 55 shows the species percentage cover within 1 m² of each nest. One nest appeared to be under construction which may have been due to the timing of the visit in mid-June. The air temperature in the New Forest struggled to reach 15°C in the early summer which may have slowed solaria formation. Four nests were found in 2000 at this site (North 2000). Table 24 describes the other ant community found at this site.

Table 23: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SZ24560 99943	Nest with brood in *S. papillosum* at base of *M. caerulea* tussock.	3	20	10
1	SZ24562 99942	Vegetation and dried *Sphagnum* cone 3 cm x 2 cm under construction at base *M. caerulea* short tussock. No brood inside.	3	15	8.5

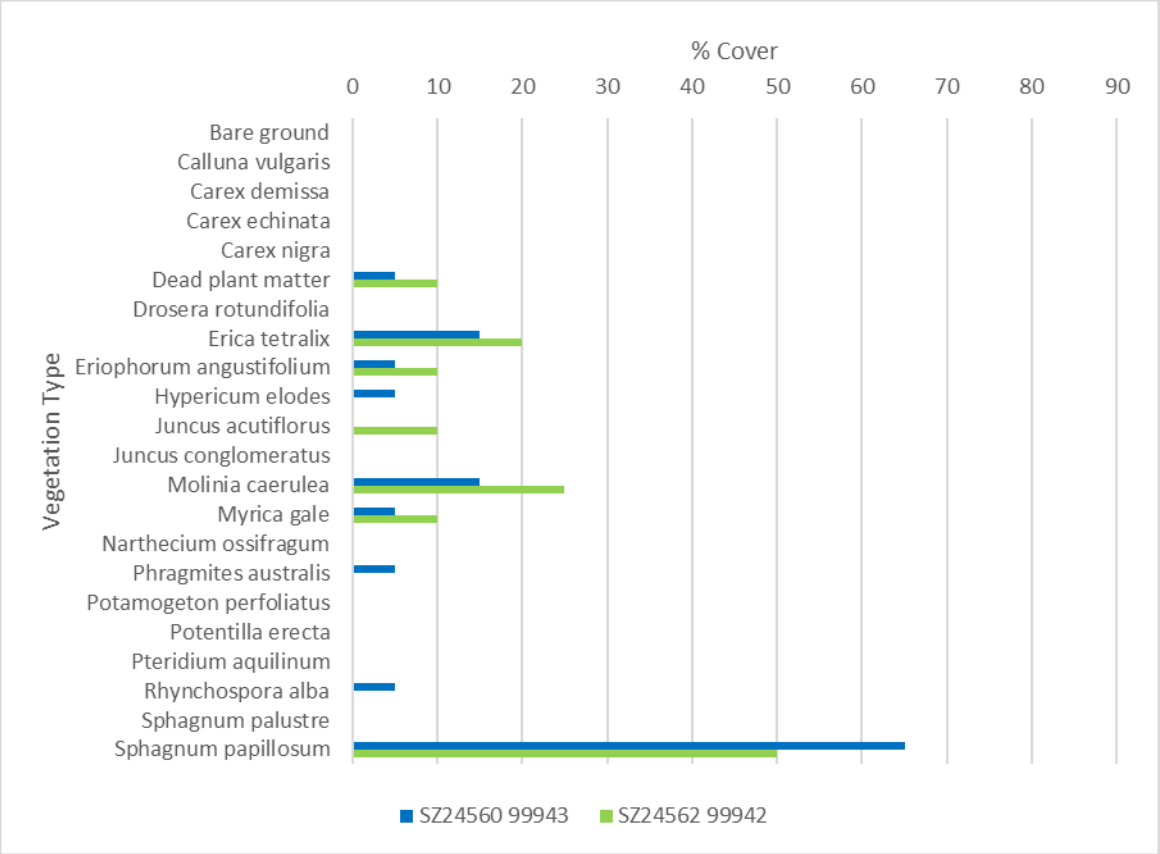

Figure 55 Percentage cover of each species within 1 m² of *F. candida* nests

Table 24: Other ant species found at Wilverley Bog

Species	Habitat
Myrmica scabrinodis	Nest in *Sphagnum* 424644 99885. 5 more *Sphagnum* nests found on northern transect at plots 5, 7, 8, 9 and 17.
Lasius niger	Foragers on eastern transect at plot 19.
Formica fusca	Foragers on eastern transect at plot 19.

Management Recommendations

- Monitor hydrological conditions to ensure no change to favourable conditions.

4.1.43 Roydon Woods 1

SU30719 00040

Ground Saturation Level: 0-1

***F. candida* not found; site unsuitable**

Site description

This fenced area at Setley is fringed by *B. pendula* woodland to the north and east and a bank of *P. aquilinum* and *P. sylvestris* to the south. The site is predominantly dry with a wetter strip to the east

where there is a line of wet woodland. Dense and tall *M. gale* and *M. caerulea* tussocks currently dominate the landscape. These are interspersed with pockets of *E. tetralix* and some dry *Sphagnum* within tussock dips (Figure 56). *P. aquilinum* and *B. pendula* saplings are now beginning to intrude in places and there are some bare patches of ground on the southern side of the site. The mean height of vegetation at the site was 38.9 cm (±SD 44.31 cm). There was some evidence of deer grazing, with several tracks and wallows also observed.

F. candida nests were not found here although 28 nests were recorded by Halstead in 1995 (Environment Agency, 1998). No other ant species were found at this site.

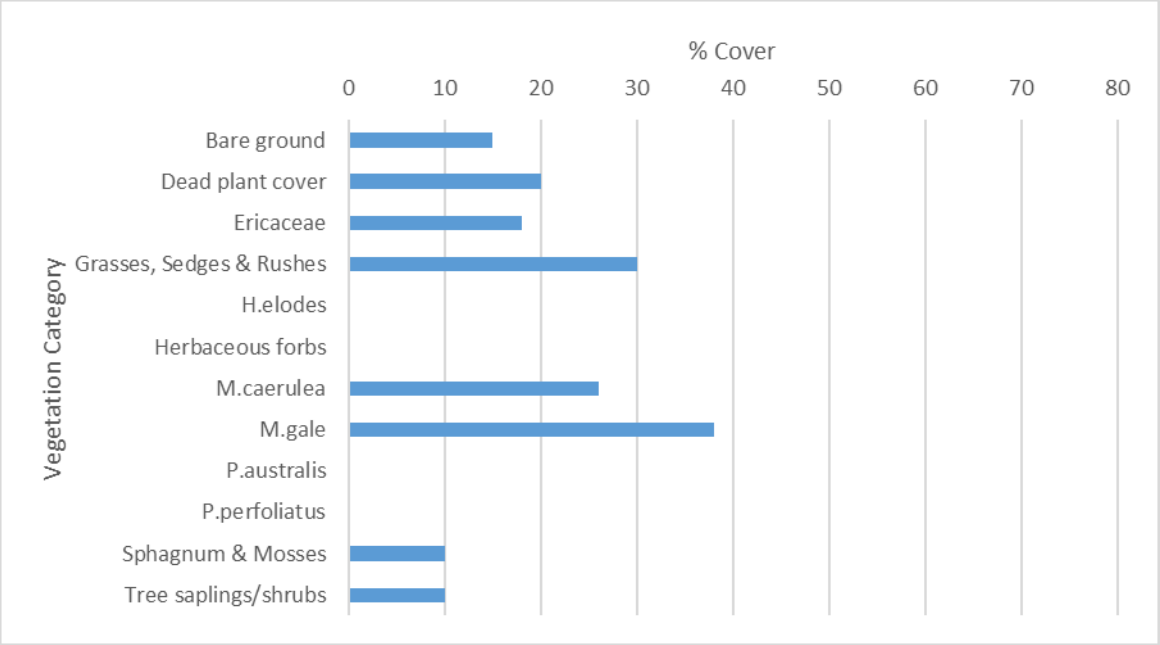

Figure 56 Mean vegetation % cover at Roydon Woods 1

Management Recommendations

- Restoring the water table height should be considered a priority if *F. candida* is to colonize the site.
- Control intrusion of successional woodland scrub cover.

4.1.44 Roydon Woods 2

SU30848 00057

Ground Saturation Level: 1-3

***F. candida* present**

Site description

This wet site is fringed by woodland (*B. pendula* and *Salix* spp.) to the north and a tall bank of *U. europaeus* and *P. aquilinum* to the south, which leads into wet woodland and the pond near Setley Common. The mire is fairly wet (level 2) on the edges but is wetter in the centre and on the southern

side (level 3). This site was dominated by tussocks of *M. gale*, *J. acutiflorus* and *M. caerulea* with vast hummocks of *S. papillosum* in the tussock dips (Figure 57). The centre of the bog, where all four nests were found, had sparser tussock cover with more abundant *Sphagnum*, some bare ground, shorter *M. caerulea* and *Agrostis* spp. grasses with pockets of *E. tetralix*. The mean height of vegetation at the site was 10.2 cm (±SD 7.24 cm). Evidence of deer grazing was recorded along with several deer wallows and tracks throughout the mire.

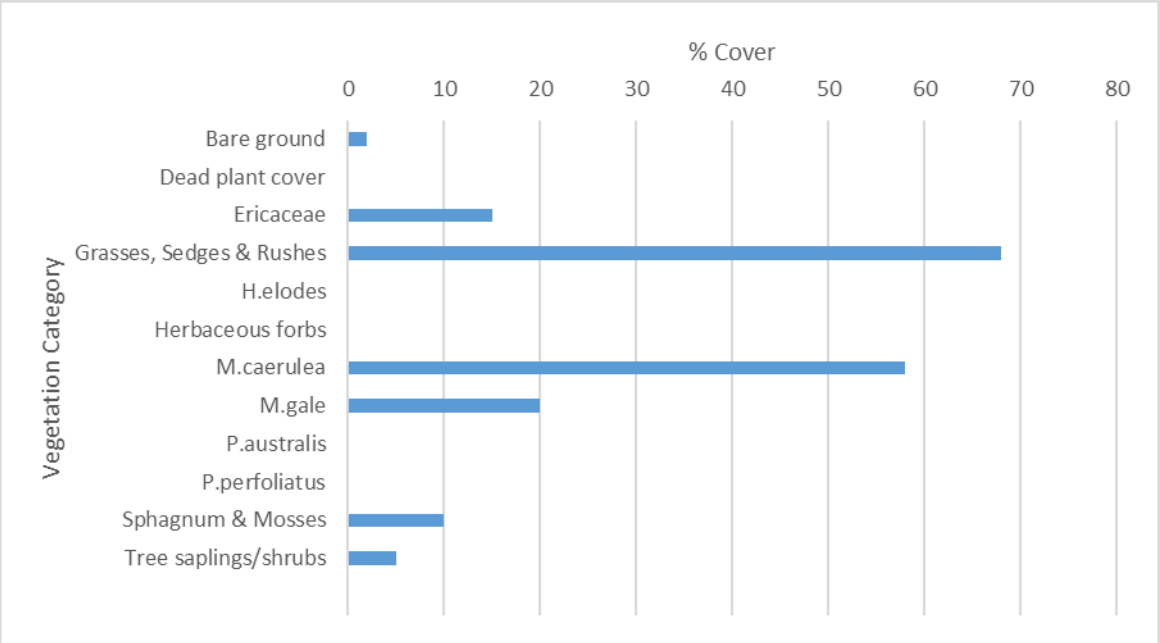

Figure 57 Mean vegetation % cover at Roydon Woods 2

F. candida workers were found foraging in the *Sphagnum* close to the nests but no other ant species were seen. Table 25 describes the locations of the nests and the workers found at this site while Figure 58 shows the species percentage cover within 1 m² of each nest. No other ant species were found at this site.

Table 25: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU30841 00038	Vegetation cone 6 cm high and 7 cm wide -made from dried Sphagnum and plant fragments and located northern side of straggly *M. caerulea* and *M. gale* tussock. No brood inside.	2	60	11

1	SU30851 00055	Crumbling vegetation cone 6 cm high and 6 cm wide - made from dried *Sphagnum* and plant fragments at base of *M. caerulea* tussock. Brood inside.	2	55	5.3
1	SU30849 00057	Vegetation cone 8 cm high and 5 cm wide -made from dried *Sphagnum* and plant fragments and beginning to crumble. Located in middle of *M. caerulea* tussock. Brood inside.	3	60	10
	SU30850 00058	*F. candida* workers found foraging in *Sphagnum* at base *of M. caerulea* tussock.	2	45	5.3
1	SU30866 00031	Vegetation cone 7 cm high and 5 cm wide at base of *M. caerulea* tussock. Brood inside.	2	60	8.3
	SU30871 00042	*F. candida* workers found in *Sphagnum* at base of *M. caerulea* and *M. gale* tussock.	3	40	15

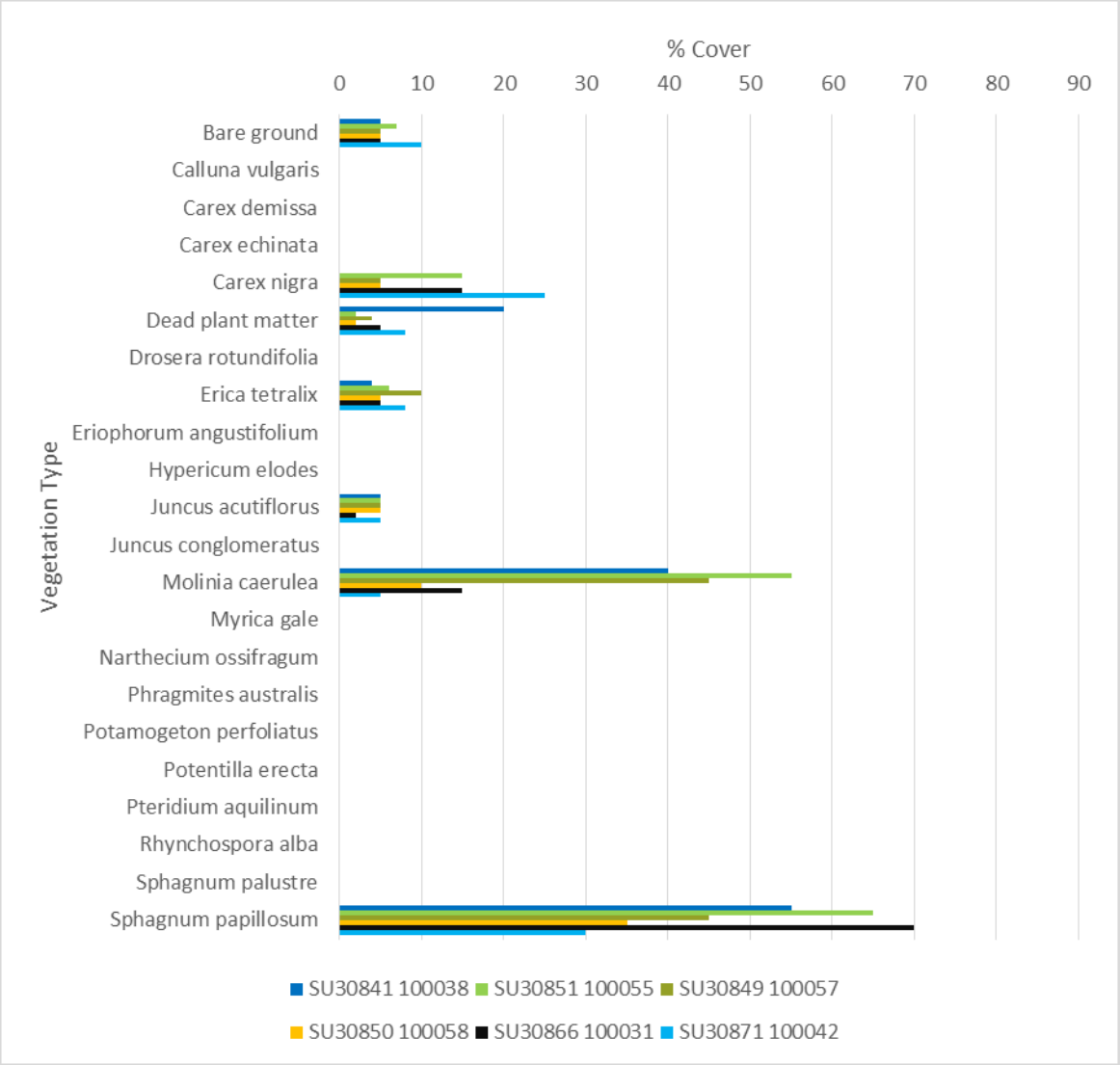

Figure 58 Percentage cover of each species within 1 m² of *F. candida* nests/workers

Management Recommendations

- Maintain cattle grazing policy to control density and height of *M. gale/M. caerulea* tussocks.
- Monitor ground saturation levels to ensure favourable hydrology is maintained.
- Control potential invasion of woodland scrub.

4.1.45 Roydon Woods 3

SZ30948 99973

Ground Saturation Level: 1-4

***F. candida* present**

Site Description

This is primarily a waterlogged bog which has a body of open water to the south and is bounded by wet woodland to the north and west. The bog, as illustrated in Figure 59, is characterised by tall

straggly *M. caerulea* and *J. acutiflorus* tussocks with an abundance of *Sphagnum* in the tussock dips. *B. pendula*, *P. sylvestris* and *P. aquilinum* are beginning to encroach on the bog's perimeter but the central areas have some bare ground and are quite open without vegetation shade. The mean height of vegetation at the site was 24.4 cm (±SD 32.17 cm).

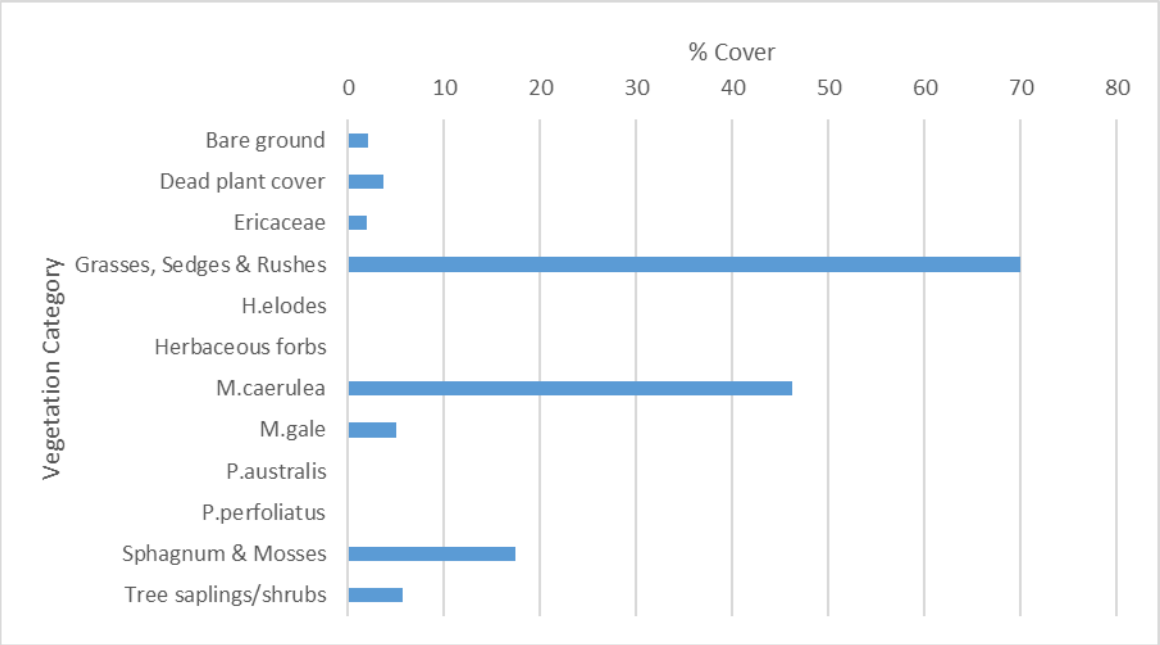

Figure 59 Mean vegetation % cover at Roydon Woods 3

All three *F. candida* nests found were on the southern side of the bog closest to the most waterlogged areas. Table 26 describes the nests' locations while Figure 60 shows the species percentage cover within 1 m² of each nest. Nest cones were constructed inside straggly *M. caerulea* tussocks close to more open areas with *S. papillosum* cover. *L. niger* nests were also found on this site; one in an apparently abandoned *F. candida* cone nest. Table 27 describes the ant community found at this site.

Table 26: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SZ30912 99964	Vegetation cone 8 cm high and 9 cm wide -made from dried *Sphagnum* and plant fragments and located on southern edge of straggly *M. caerulea* and *M. gale* tussock. Brood inside	4	55	18

1	SZ30934 99971	Vegetation cone 6 cm high and 6 cm wide -made from dried *Sphagnum* and plant fragments and located in straggly *M. caerulea* tussock. Brood inside.	4	50	19
1	SZ30942 99973	Vegetation cone 5 cm high and 6 cm wide -made from dried *Sphagnum* and plant fragments and beginning to crumble. Located in *M. caerulea* tussock with straggly *M. gale*. Brood inside.	3	60	12

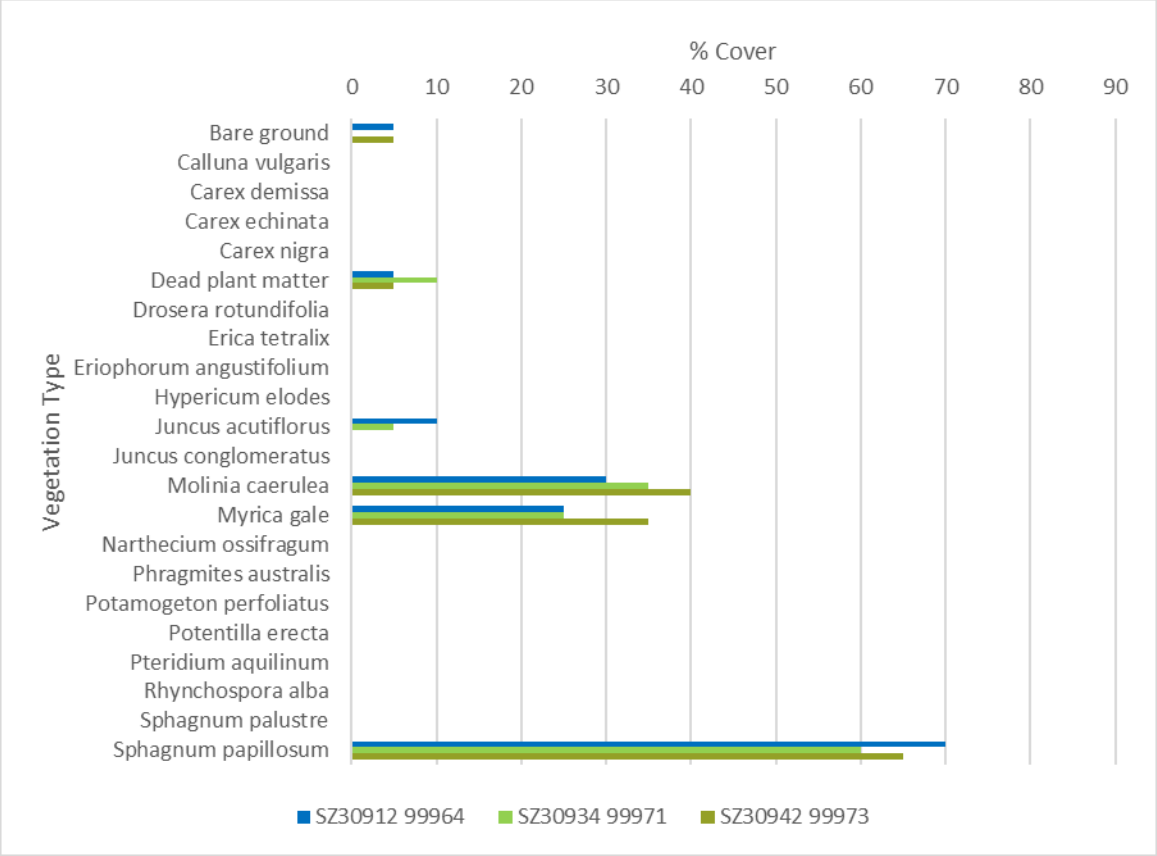

Figure 60 Percentage cover of each species within 1 m² of *F. candida* nests

Table 27: Other ant community found at Roydon Woods 3

Species	Habitat
Lasius niger	Nest under logs within *Sphagnum* dip : SZ30936 99972
Lasius niger	Inhabiting seemingly discarded *F. candida* cone nest within *M. caerulea* tussock : SZ30942 99973

Management Recommendations

- Maintain cattle grazing policy to control density of vegetation.
- Monitor ground saturation levels to ensure favourable hydrology is maintained.
- Control potential invasion of woodland scrub.

4.1.46 Roydon Woods 4

SU31105 00023

Ground Saturation Level: 0-3

***F. candida* present**

Site Description

This relatively dry valley mire is bordered by a stream to the west, a fenced woodland area to the north and a tall line of *P. aquilinum* and *Salix* spp. to the east. The site was characterised by tall, dense tussocks of *M. caerulea* and *M. gale* with pockets of *E. tetralix, Carex nigra, E. angustifolium* and *J. acutiflorus* (Figure 61). *Sphagnum* cover was occasional and dried up in several places on the north of the site. Deer grazing was evident in patches and the mean height of vegetation at the site was 20.5 cm (±SD 14.03 cm).

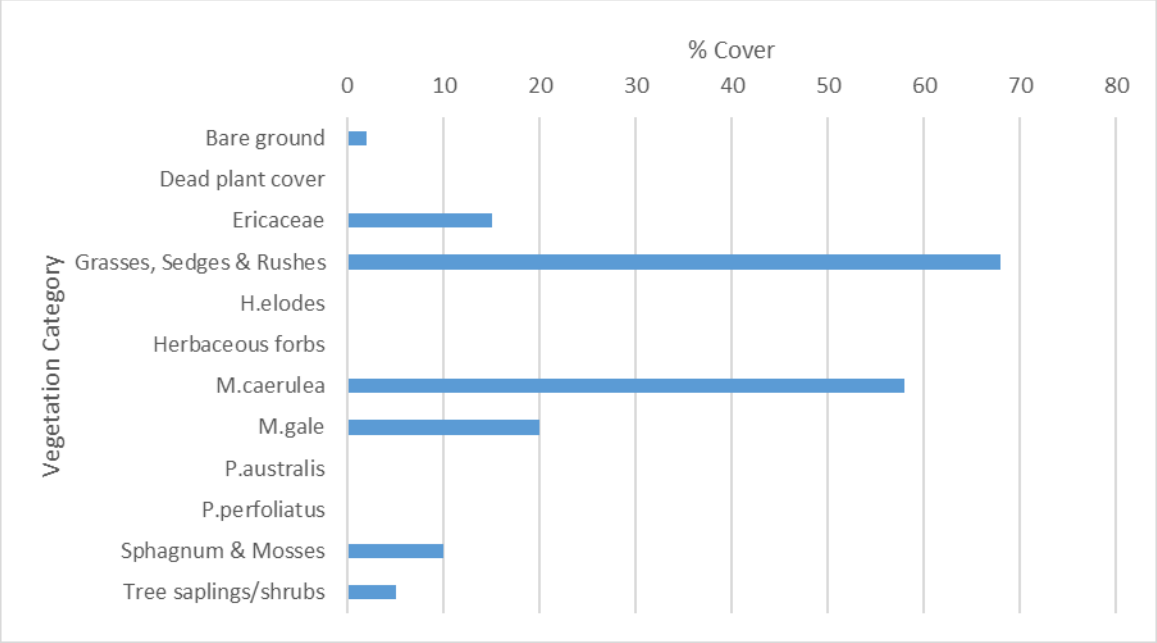

Figure 61 Mean vegetation % cover at Roydon Woods 4

Three *F. candida* nests were found at the base of *M. caerulea* tussocks in the wettest areas of the mire. Table 28 describes the nests' locations while Figure 62 shows the species percentage cover within 1 m² of each nest. Table 29 describes the ant community at this site.

Table 28: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SU31104 00020	Vegetation cone 20 cm high and 22 cm wide -made from dried *Sphagnum* and plant fragments and located in centre of *M. caerulea* tussock and *M. gale* tussock. Brood inside.	3	60	11
1	SU31106 00021	Vegetation cone 10 cm high and 11 cm wide -made from dried *Sphagnum* and plant fragments and located in straggly *M. caerulea* and *M. gale* tussock. Tussock within *Sphagnum* dip. No brood inside.	3	55	13
1	SU31108 00029	Vegetation cone 8 cm high and 5 cm wide - made from dried *Sphagnum* and plant fragments Located at edge of *M. caerulea* tussock. Brood inside.	3	85	7

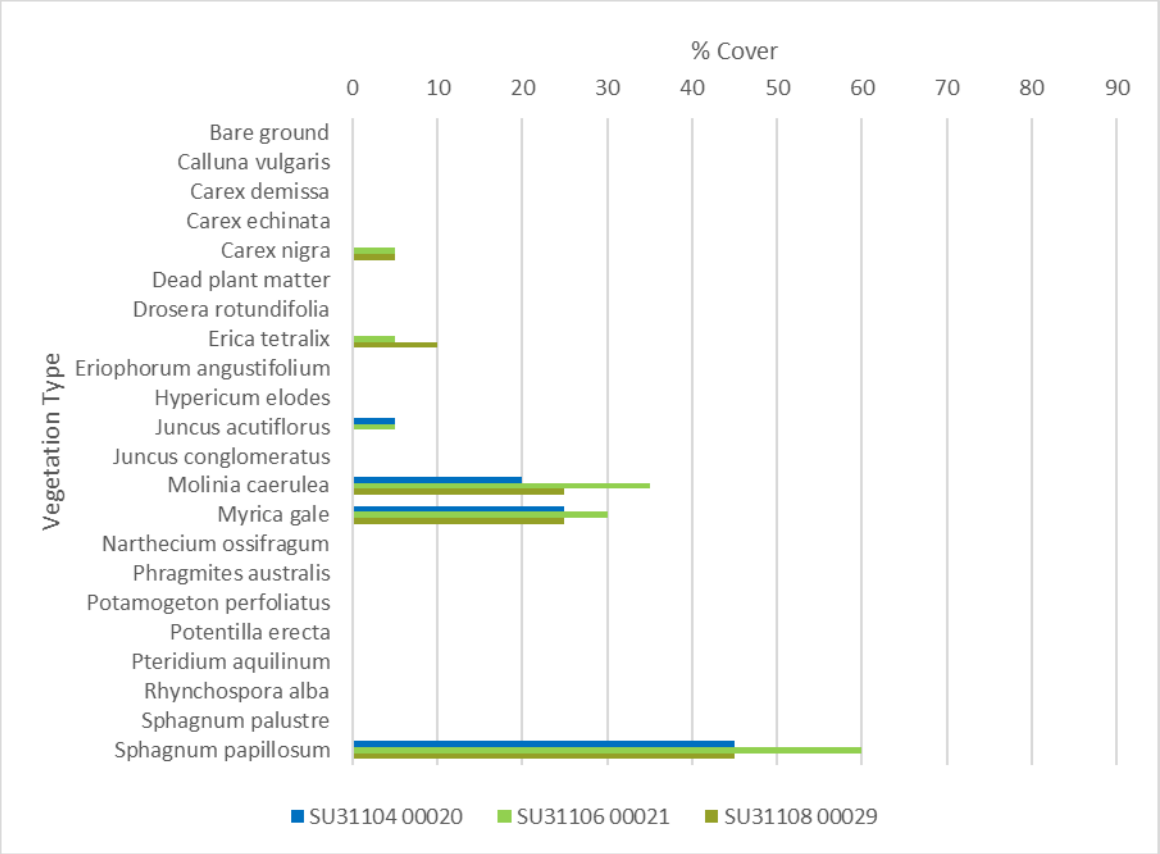

Figure 62 Percentage cover of each species within 1 m² of *F. candida* nests

Table 29: Other ant community found at Roydon Woods 4

Species	Habitat
Myrmica scabrinodis	Several workers found foraging at base of *M. caerulea* on southern transect (SZ31150 99971).

Management Recommendations

- Control *P. aquilinum* and woodland scrub from encroaching on mire edges.

4.1.47 Roydon Woods 5

SU31286 00251

Ground Saturation Level: 0-1

***F. candida* not found; site unsuitable**

Site Description

This dry mire is bounded by woodland on three sides which is now beginning to encroach on the bog. There was very little *Sphagnum* cover here, as illustrated in Figure 63, and the site was dominated by *Agrostis* spp., *M. caerulea* grass and *E. tetralix*. On the eastern and northern sides, tall and dense *M. caerulea/J. acutiflorus* tussocks have developed and pockets of *J. conglomeratus* and

M. gale were recorded. Across all transects, the mean height of vegetation at this site was 33.2 cm (±SD 39.5 cm).

F. candida was not found here and the site is currently considered to be too dry (level 0-1) to support this species. No other ant species were found on this site. There was no evidence of grazing.

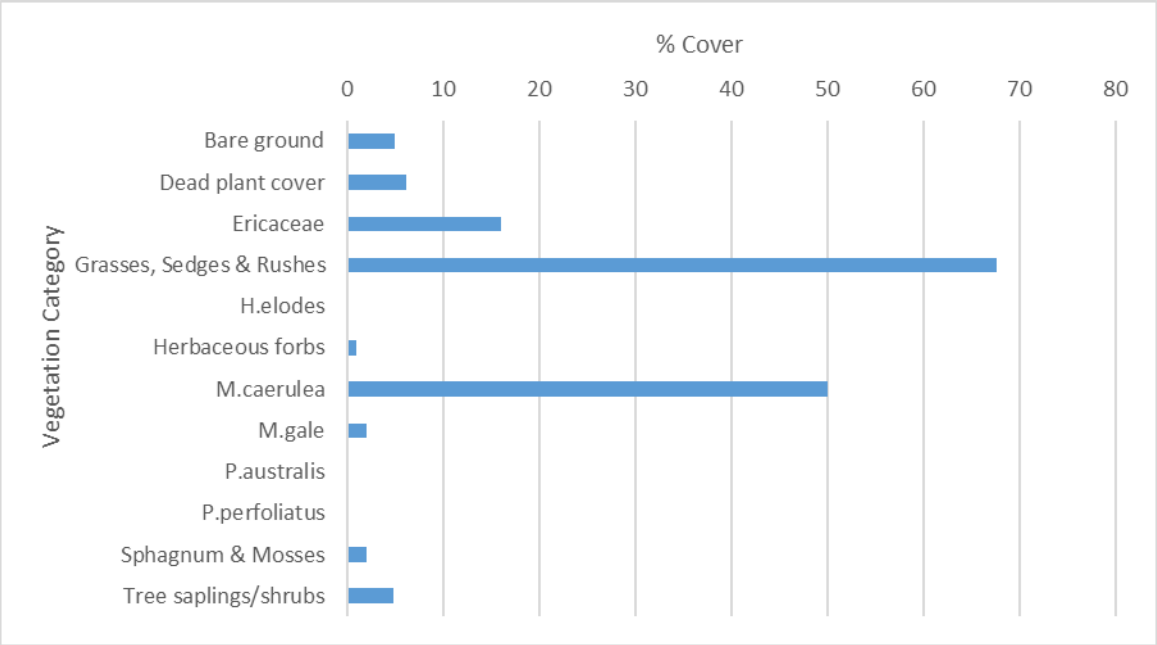

Figure 63 Mean vegetation % cover at Roydon Woods 5

Management Recommendations

- Restoring the water table height should be considered a priority if *F. candida* is to colonize the site.
- Control the encroachment of woodland scrub on the mire's perimeter to maintain open areas.

4.1.48 Roydon Woods 6

SZ31295 99955

Ground Saturation Level: 0-2

F. candida present

Site description

Located to the east of Setley Pond, this valley mire is adjacent to the stream which runs along the border. Figure 64 shows the composition of the vegetation within 12 general categories. The centre of the site was characterised by short *M. gale* and *E. tetralix* with swathes of *E. angustifolium* and *Sphagnum* hummocks. The occasional broad bank of *P. aquilinum* separates the two main parts of the site and the southern side is framed by *P. sylvestris* and *B. pendula* woodland. Much of the area is quite dry but there are pockets of wetter areas (level 2). The mean height of vegetation at the site was 23 cm (±SD 23.48 cm).

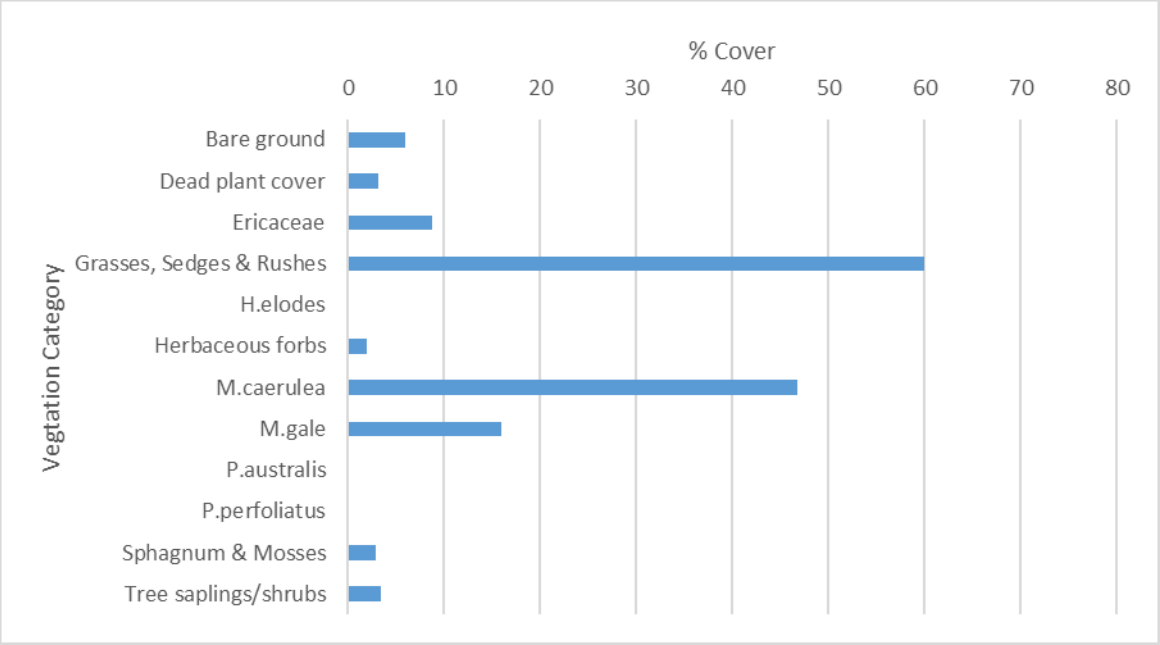

Figure 64 Mean vegetation % cover at Roydon Woods 6

Four *F. candida* nests and one large colony were found during the present survey. These were located in the more open areas where the ground saturation level reached level 2. Table 30 describes the nests' locations while Figure 65 shows the species percentage cover within 1 m² of each nest. Table 31 describes the ant community found at this site.

Table 30: Description of *F. candida* nest location

No. of *F. candida* nests	Nest National Grid	Description of nest/activity	Water rating 0-5	Tall plant (> 30 cm) shelter within 2 m² of nest %	Mean height of vegetation within 1 m² of nest (cm)
1	SZ31291 99961	Vegetation cone 5 cm high and 4 cm wide -made from dried *Sphagnum* and plant fragments and located at base of *M. caerulea* and *M. gale* tussock. Brood inside.	2	55	17
1 colony and nest	SZ31294 99960	Vegetation cone 6 cm high and 10 cm wide 6 cm-made from dried *Sphagnum* and plant fragments in centre of *M. caerulea* and *M. gale* tussock. Brood inside. Large colony in 6 *Sphagnum* hummocks surrounding cone nest.	2	60	18

1	SZ31288 99945	Vegetation cone 5 cm high and 6 cm wide -made from dried *Sphagnum* and plant fragments. Located on southern side of *M. caerulea* tussock. Brood inside.	2	45	13
1	SZ31276 99938	Vegetation cone 8 cm high and 7 cm wide -made from dried *Sphagnum* and plant fragments. Located on at base of *M. caerulea* tussock. Many workers within *Sphagnum* surrounding tussock.	2	60	12

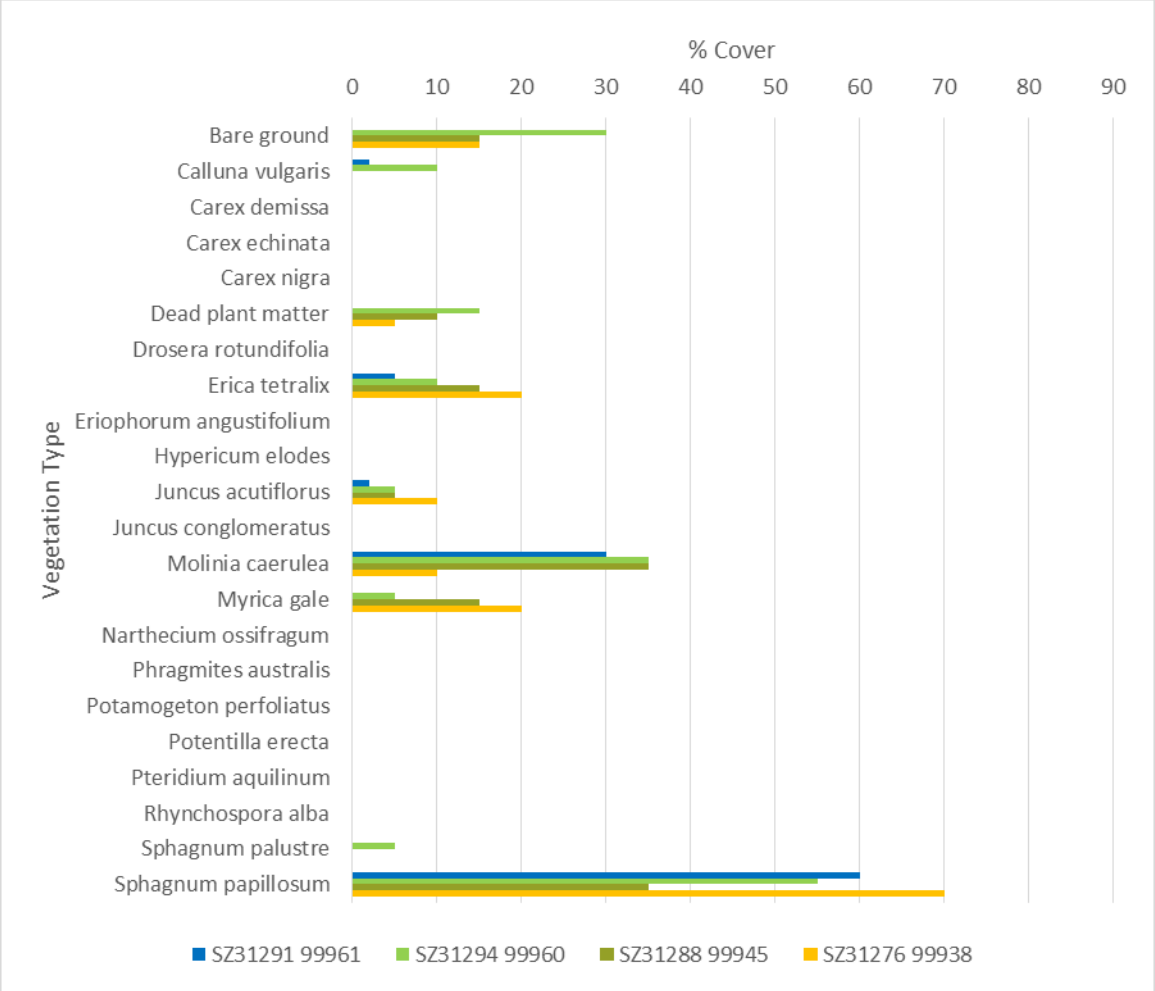

Figure 65 Percentage cover of each species within 1 m² of *F. candida* nests

Table 31: Other ant community found at Roydon Woods 6

Species	Habitat
Myrmica scabrinodis	Found within *Sphagnum* with brood.

Management Recommendations

- Control *P. aquilinum* growth where it begins to encroach on the site.
- Monitor hydrological conditions to ensure site remains favourable for *F. candida*.

4.2 Current status of the population within the New Forest

4.2.1 Distribution and habitat suitability overview

Across the 42 sites within the New Forest HLS agreement area, 29 sites (69%) were considered to have suitable habitat to support *F. candida* populations. Out of the 29 sites, *F. candida* nests were recorded in 13 sites (45%). The mean number of nests recorded at each site was 2.1 (± SD 0.86). Across the six sites at Roydon Woods, four sites (66%) were considered to have suitable habitat for *F. candida*. *F. candida* nests were recorded in all of the suitable sites (100%). The mean number of nests recorded at each site was 3.51 (± SD 0.58) (Table 32 and Figure 66).

Across the New Forest HLS agreement area and Roydon Woods, 33 sites (69%) were considered to have suitable habitat to support *F. candida* populations. *F. candida* nests were recorded in 17 sites of these sites. The total number of nests recorded was 41 (mean 2.4 ± SD 1.00) (Table 32 and Figure 66).

Table 32: Location, habitat suitability and number of *F. candida* nests recorded at each site within the New Forest HLS agreement area and at Roydon Woods. NGR coordinates refer to the wettest point of each site where the four survey transects meet

No.	Location	NGR			Habitat suitability	No. nests recorded
1	Acres Down	SU	26717	08837	Y	0
2	Akercome Bottom	SU	19713	07508	N	0
3	Avon Water	SU	22106	01245	N	0
4	Avon Water near Wootton Bridge 1	SU	23500	00398	N	0
5	Avon Water near Wootton Bridge 2	SZ	24939	99752	Y	0
6	Backley Bottom	SU	22292	08538	N	0
7	Bishops Dyke 1	SU	33997	05602	Y	0
8	Bishops Dyke 2	SU	34001	05572	N	0
9	Bratley	SU	22301	08574	N	0
10	Buckherd Bottom 1	SU	21271	08142	Y	2
11	Buckherd Bottom 2	SU	21669	08367	Y	1
12	Common Moor	SU	20516	04467	Y	0
13	Crab Tree Bog	SU	26879	02709	Y	2
14	Cranes Moor	SU	19405	02469	Y	1
15	Denny Bog	SU	33748	06608	N	0
16	Denny Wood	SU	33709	05912	N	0
17	Dibden Bottom	SU	38928	06697	Y	0
18	Dogwood Bottom	SU	21474	06661	Y	2

No.	Location	NGR			Habitat suitability	No. nests recorded
19	Duckhole Bog	SU	25249	02345	Y	0
20	Dur Hill Down	SU	20207	01338	N	0
21	Ferny Croft	SU	37355	05671	Y	0
22	Goatspen Plain	SU	23305	00893	Y	0
23	Harvest Slade	SU	21300	06411	Y	2
24	Harvest Slade Bottom	SU	21620	07070	Y	4
25	Hinchelsea Bog	SU	27412	00469	Y	0
26	Holmsley Bog	SU	22506	01849	Y	0
27	Matley Passage	SU	33353	07247	N	0
28	Ogdens	SU	18190	11640	N	0
29	Penny Moor 1	SU	35532	04802	Y	0
30	Penny Moor 2	SU	36461	04693	N	0
31	Picket Post	SU	18924	05796	Y	0
32	Redhill Bog	SU	26911	01887	Y	0
33	Ridley Bottom	SU	19853	06466	Y	2
34	Ridley Plain	SU	21191	06639	Y	1
35	Shappen Bottom	SU	21721	01771	Y	0
36	Shatterford Bottom	SU	34162	06163	N	0
37	Slufters Bog 1	SU	22254	09466	Y	3
38	Slufters Bog 2	SU	22340	09602	Y	2
39	Vales Moor	SU	19256	04611	Y	3
40	White Moor	SU	27539	01582	Y	0
41	Whitybed Bottom	SU	25563	10528	Y	0
42	Wilverley Bog	SZ	24614	99952	Y	2
43	Roydon Woods 1	SU	30719	00040	N	0
44	Roydon Woods 2	SU	30848	00057	Y	4
45	Roydon Woods 3	SZ	30948	99973	Y	3
46	Roydon Woods 4	SU	31105	00023	Y	3
47	Roydon Woods 5	SU	31286	00251	N	0
48	Roydon Woods 6	SZ	31295	99955	Y	4

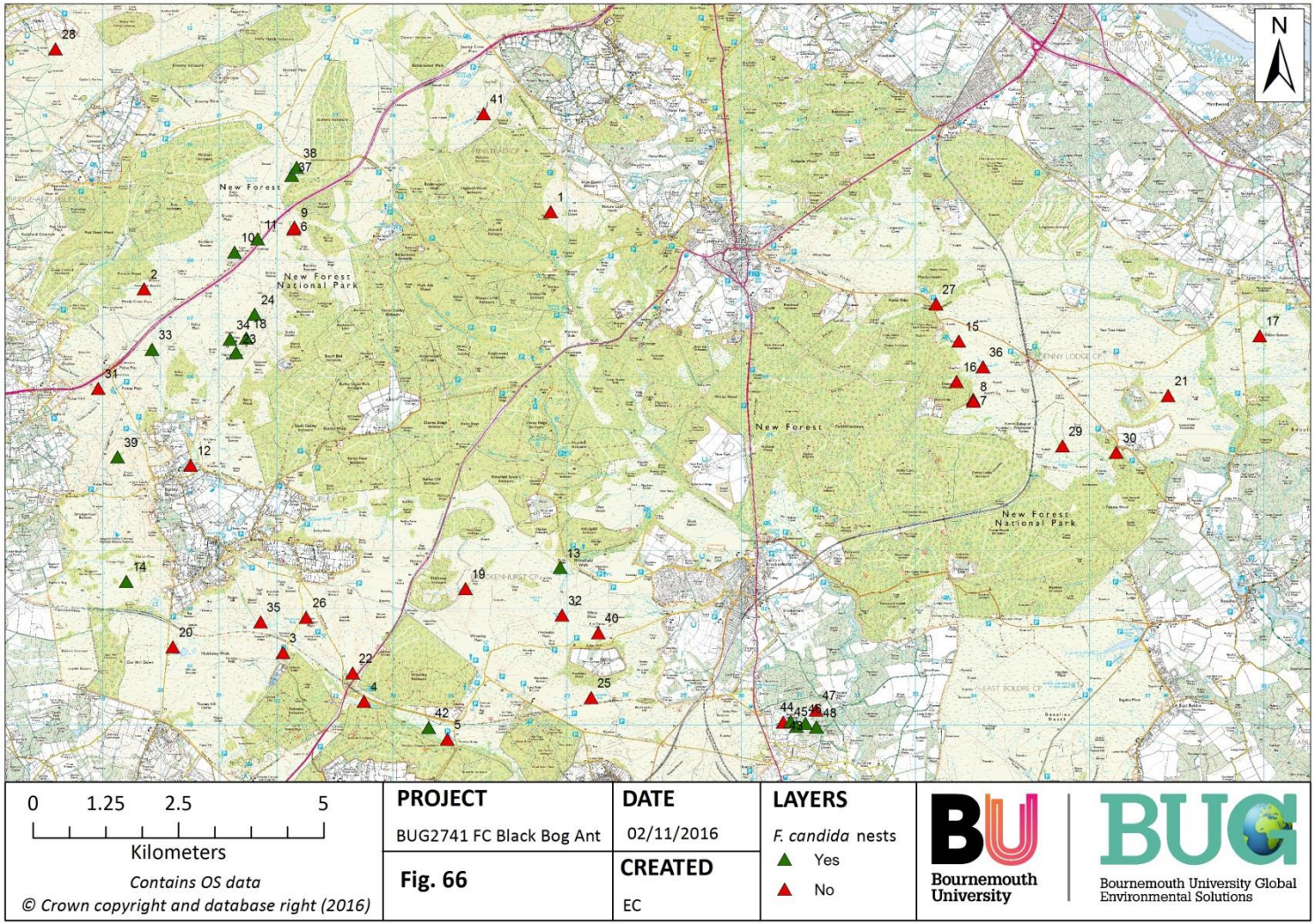

Figure 66 Map of the 48 sites where the *F. candida* survey was undertaken. Green and red triangles indicate *F. candida* nests presence and absence, respectively

Molinia caerulea cover

F. candida nests were primarily found at the base of *M. caerulea* tussocks with 36 of the 41 nests recorded in areas within 1 m² of the tussock grass. Results from a Mann Whitney U test did not show a significant difference in *M. caerulea* percentage cover between quadrats with *F. candida* nests and null quadrats (absent of *F. candida* nests). The null quadrat group had a mean of 30.17 (SD 17.05) and the nest group, a mean of 32.80 (SD 12.45) (Figure 67). *M. caerulea* height was also found not to differ significantly between the two groups. This is likely to be due to the dominance of *M. caerulea*, in grass and tussock form, across all of the sites with presence of *F. candida* nests. 25 of the 41 solaria located were constructed either in the middle or on the southern/eastern edge of *M. caerulea* tussocks often in areas surrounded by open water. 14 of these 25 were also built in straggly *M. caerulea* tussocks where light was able to penetrate easily. 16 solaria were constructed at the base of *M. caerulea* tussocks; 12 of these 16 were found at the base of straggly *M. caerulea* tussocks. Outlier 2 (Buckherd Bottom 1) had slightly higher *M. caerulea* percentage cover (65 %) but low *S. papillosum* cover (10 %).

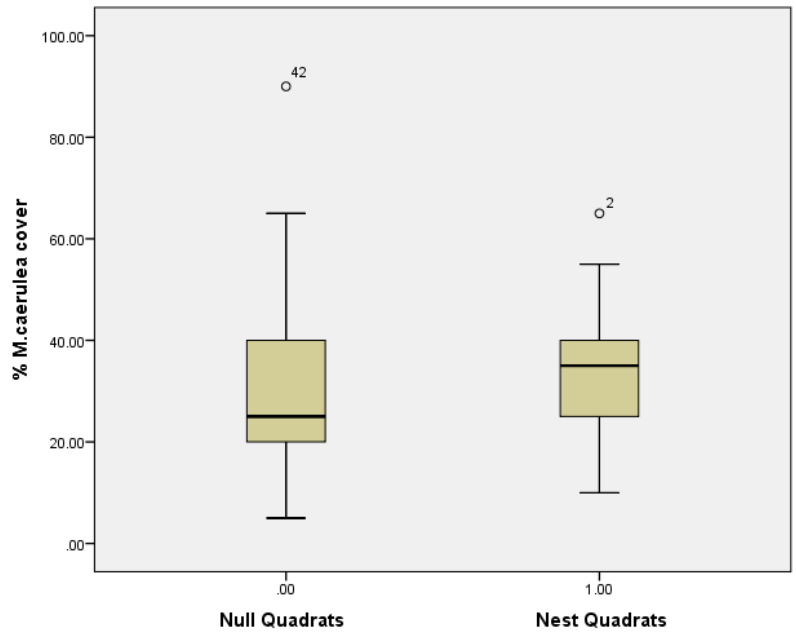

Figure 67 *M. caerulea* percentage cover in *F. candida* nest quadrats vs. null quadrats

Tall plant shelter

Most nest sites were situated within 2 m of banks of tall (> 30 cm) vegetation often on the north or eastern side. More specifically, 37 of the 41 solaria were found to have 40% or more tall plant cover within a 2 m² area. A Mann Whitney test was performed to compare the percentage of tall plant cover within 2 m² of nest sites and null quadrat sites. Figure 68 shows a significant difference between the two groups ($P<.05$). It is possible that these banks are being used as shelter from the wind. Figure 68 shows four low outlier nests, 15 and 16 at Ridley Bottom which was particularly wet at level 5 and nests 40 and 41 at Wilverley Bog which was characterised by short *M. caerulea* tussocks throughout the site.

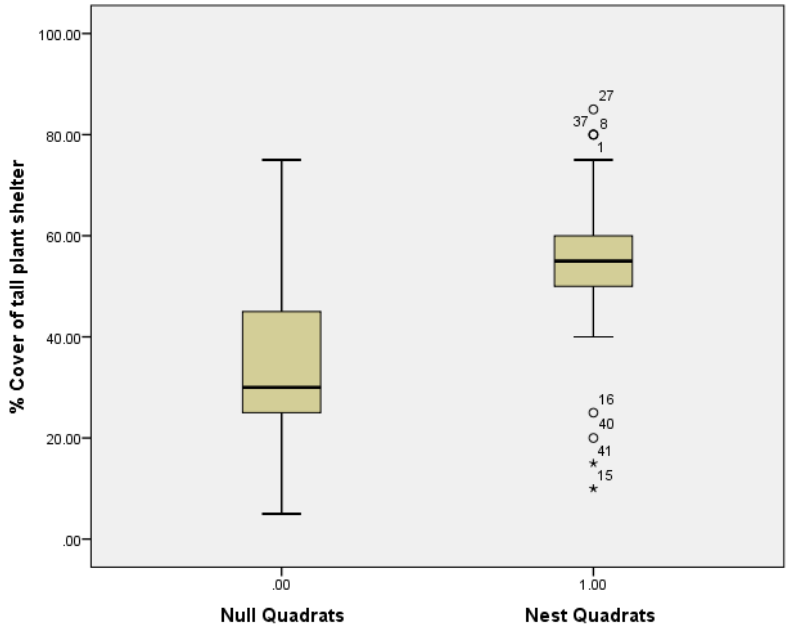

Figure 68 Tall plant shelter percentage cover in *F. candida* nest quadrats vs. null quadrats

Sphagnum papillosum

F. candida solaria were found in a range of New Forest sites including valley bogs, soakaways and *M. caerulea* mires. Although the vegetation communities associated with these habitats differ, *F. candida* nests were generally found within 1 m² of *S. papillosum* cover. A Mann Whitney U test was performed to compare the percentage cover of *S. papillosum* in *F. candida* nest quadrats with the null quadrats. Figure 69 illustrates the significant difference found between the score for the *F. candida* nest quadrats (Mean 55.12, SD 20.44) and the null quadrats (Mean 18.58, SD 15.42; *P*<.05).

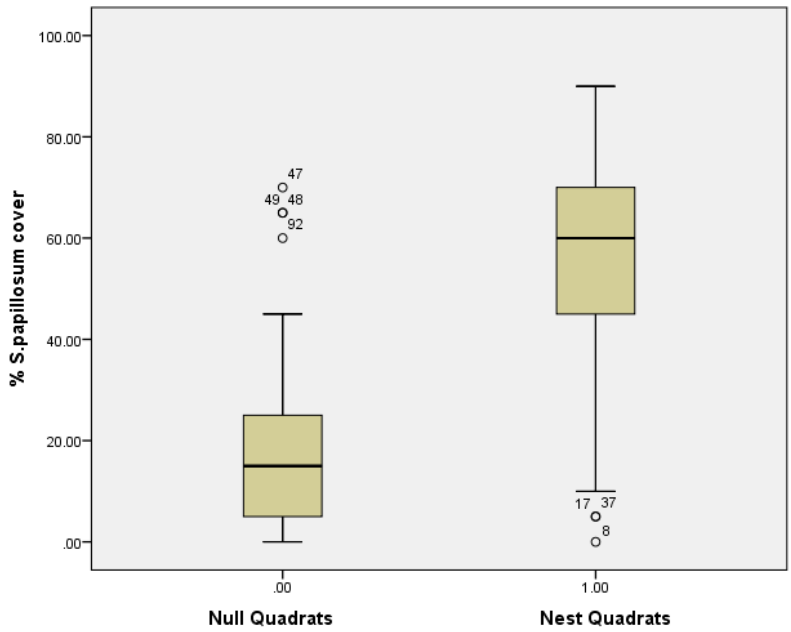

Figure 69 *S. papillosum* percentage cover in *F. candida* nest quadrats vs. null quadrats

37 of the 41 nests located were constructed in areas where there was at least 30 % *S. papillosum* cover within 1 m² of the nest whereas no particular association was found with other *Sphagna* in the mires. Figure 69 shows shows three outlier nests at 8 (Dogwood Bottom) and 37 (Vales Moor) which were both disused cone nests and at 17 (Ridley Plain) where the nest was located within an intertwined *M. caerulea* and *M. gale* tussock. The peat-building *S. papillosum* is one of the most robust and largest of the common bog mosses with swollen branches and concave leaves which overlap one another. It forms low hummocks (British Bryological Society, 2010) rather than lawns or carpets and is thus extended slightly above ground water levels even in tussock dips which could make it more attractive to bog nesting species.

Open Ground

All nests were found in areas where some open ground was available; sites with very dense vegetation cover were avoided. Open ground has been used to refer to areas with short vegetation cover such as short grass or *Sphagnu*m rather than bare ground. A Mann Whitney test was performed to compare the percentage cover of open ground within a 2 m² area around *F. candida* nests with a 2 m² area around the null quadrats. Figure 70 illustrates the significant difference found between the two groups (*P*<.05).

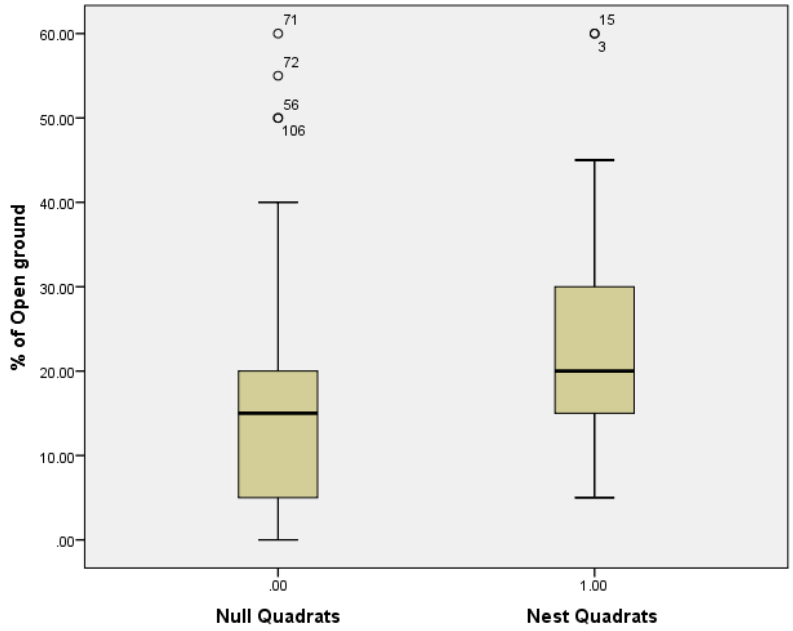

Figure 70 Open ground percentage cover in *F. candida* nest quadrats vs. null quadrats

Hydrological Requirements

F. candida nests were generally found in areas where ground saturation levels reached at least level 2. A Mann Whitney U test was performed to compare the ground saturation levels within the *F. candida* nest quadrats with the null quadrats. Figure 71 illustrates the significant difference which was found between the two groups (*P*<.05).

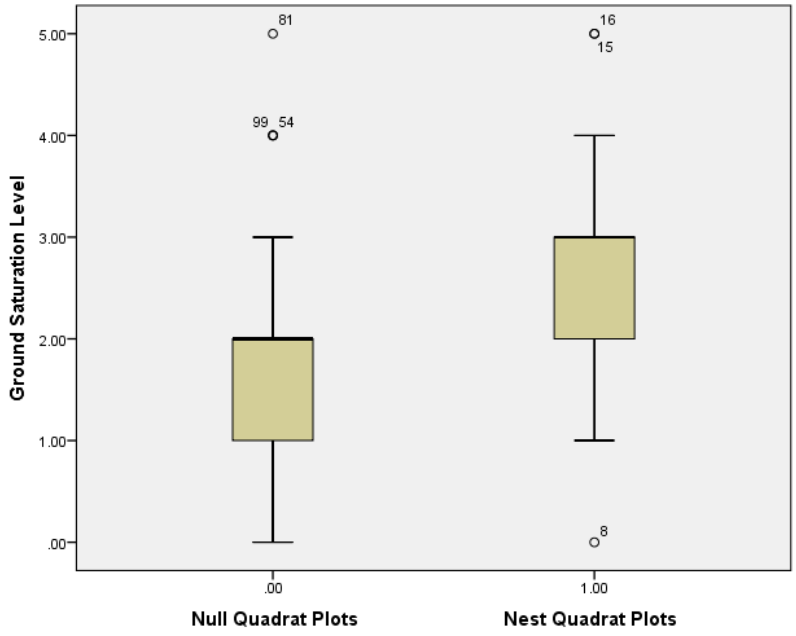

Figure 71 Ground saturation levels in *F. candida* nest quadrats vs. null quadrats

Figure 71 shows that ground saturation levels were higher in the areas where *F. candida* nests were found. The low outlier at nest 8 (Dogwood Bottom) was a disused nest (SU21508 06636) in a dry part of the mire. The species appear well-adapted to the wettest parts of the mire; at several sites *F. candida* were found, with brood, in water-logged *Sphagnum* within a ditch of standing water. When disturbed, the ants disappeared beneath the *Sphagnum* hummocks, and are apparently able to tolerate submersion for long periods. It has been suggested that *F. candida* inhabit the wettest parts of the mire to avoid competition with other species.

Other ant species

In the sites where *F. candida* nests were recorded, only three other ant species were found: *L. niger* at five sites, *M. scabrinodis* at ten sites (Figure 72), and *F. fusca* foragers at three sites. *F. fusca* is known to nest under stones and in tree stumps often in uncultivated land (Skinner and Allen 1996) and notably no *F. fusca* nests were found at any of the sites. While coexistence in foraging territory is claimed to be rare in Hymenoptera (Czechowski and Vepsalainen 2009), Brian (2007) describes *F. fusca* as a lone forager which frequently hunts in the territories of other ant species, escaping attack through its agility and size. *M. scabrinodis* and *L. niger* nests were found in *F. candida* sites often in close proximity to one another, while *F. candida* nests at the same site were usually more remote, with no neighbouring nests from competitors. One exception was found at Roydon Woods 3 where a *L. niger* nest was found in the same 1 m² quadrat as a *F. candida* nest. Statistical tests did not reveal a significant correlation between the number of *F. candida* nests and the number of nests of other ant species.

Occasionally, cone nests found in *M. caerulea* tussocks were inhabited by either *L. niger* or *M. scabrinodis.* It is likely that these nests were former *F. candida* nests which have been abandoned and are now providing a suitable nesting site for other ant species. The cone nest at Buckherd

Bottom 2 appeared to be under repair by the inhabiting *M. scabrinodis* who were observed carrying fragments of dried *Sphagnum* and vegetation into the nest.

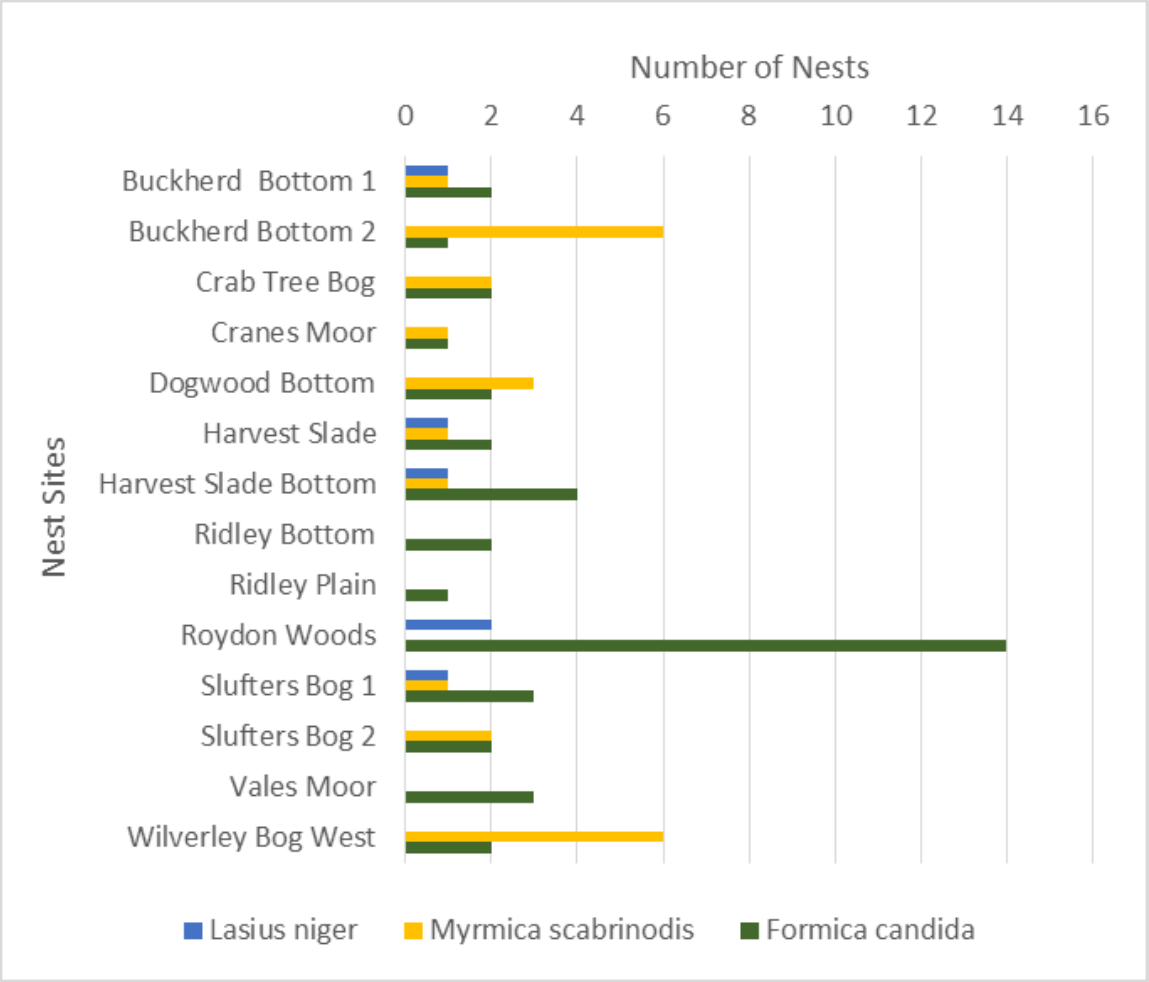

Figure 72 Nests of *F. candida* and other ant species

4.2.2 Historic trends

In 1998 North systematically searched 26 sites and confirmed *F. candida* at 6 locations, 5 of these within the Forestry Commission managed area (the Crown lands) in the New Forest (North, 1998). According to English Nature (2000), North (1998, 1999) identified 11 sites with viable colonies in the valley mires of the New Forest. *F. candida* has been recorded at 17 sites in the past 20 years, based on North (1998, 2000) and Environment Agency (1998) (Table 33). Out of the 38 sites for which historical records are available, 12 showed a decreased in the number of nests recorded, 6 showed an increase and 20 demonstrated no change within the last 20 years (Figure 73).

Sites north and west of Burley

Sites to the north of Burley were well-occupied in the valley bog areas on both sides of the A31. On the western side of the road, three nests were found in two areas at Buckherd Bottom while five nests were found in two areas at Slufters Bog (Map 2). Buckherd Bottom appears to show a slight reduction from the four nests found by North in 1998 while Slufters Bog shows an increase as no nests have been recorded since 1989 when two were found south of Slufter's Pond. One nest was

recorded by North (2000) at Akercome Bottom, to the west of Buckherd Bottom, but was not recorded during this survey. Four *F. candida* nests were found by North in 1998 at Backley Bottom, but the site is no longer suitable. One *F. candida* nest was also reported by North (2000) at Acres Down, but the species was absent during this survey.

Sites on the southern side of the A31 have retained their populations (Map 3). Two nests were found at Dogwood Bottom which corresponds with the nests recorded by the Environment Agency in 1998 and is a slight increase from the single nest found by North in 2000. Two nests were found at Harvest Slade which corresponds with North's findings in 2000; while Harvest Slade Bottom had four nests, a slight reduction from the seven nests found in 1956 but an increase from the absence of nests recorded in 1988. Ridley Bottom was found to have two nests corresponding with North's results in 2000 while Ridley Plain showed a reduction from six nests found by North in 1998 to one nest found during this survey.

Vales Moor (Map 4), to the west of Burley, has increased its population from the one nest recorded by North in 2000 to three nests. Cranes Moor (Map 5), slightly further south than Vales Moor, was found to have one nest which corresponds with North's records in 1998. Picket Post (near Foulford Bottom) was the only site in this area to show no sign of *F. candida* presence. One nest was found by North in 1998 and there are records of occupation from 1953 (Environment Agency 1998).

Six nests were reported in 1995 (Environment Agency 1998) at Common Moor but none were found in this survey.

Sites to the south of Burley

Sites directly south of Burley still show no sign of *F. candida* presence. Dur Hill Down had a recorded colony in 1980 but has no record of habitation since, while Goatspen Plain and Shappen Bottom have had no records of *F. candida* presence at any time. No nests were found in the Avon Water areas to the southeast of Burley which corresponds with North's findings in 1998 and 2000 but contrasts with the populations found during 1951, 1984 and 1989 (Environment Agency, 1998).

Sites to the east of Burley

Sites to the south east of Burley were more diverse with a slight decrease at Wilverley Bog West (Map 6) to two nests from the four recorded by North in 2000 and an increase to two nests from an earlier single nest (1987) at Crab Tree Bog (Map 7). The single nest located at Duckhole Bog by North in 2000 was not found during this survey, and no nests were found at Redhill Bog/Hincheslea Bog, corresponding with North's findings in 2000 but contrasting with findings in 1954 when several nests were found (Environment Agency, 1998).

Sites east of Lyndhurst/west of Beaulieu Heath

No *F. candida* nests were found at any of the sites between Lyndhurst and Beaulieu Heath. This corresponds with North's records in 1998 and 2000 and appears to confirm that the populations found at Denny Bog (1985), Matley Passage (up to 1926), Penny Moor (SU355047, 1998), Shatterford Bottom (up to 1979) and Bishop's Dyke (1954) have been lost. The single nest located by North (2000) at Ferny Croft was not found and the anecdotal record of presence at Dibden Bottom was not confirmed. White Moor continues to show no evidence of *F. candida* occupation.

Roydon Woods

14 nests were found in four areas at Roydon Woods. Four nests were located at site 2 which corresponds with the four nests found during 1991. Three nests were found at sites 3 and 4 while four nests were found at site 6. No nests were located at sites 1 or 5. 28 nests were recorded throughout a number of sites at Roydon Wood in 1995. The populations appear to be thriving in many areas where ground saturation levels have remained stable and grazing has prevented *M. gale/M. caerulea* invasion.

Table 33: Comparison of *F. candida* nests number recorded within the last 20 years based on North (1998, 2000) and Environment Agency (1998), with records collected during this survey (2016)

No.	Location	Nest no. (last 20 years)	Nests no. 2016	Change no.	Trend
1	Acres Down	1	0	-1	decrease
2	Akercome Bottom	1	0	-1	decrease
3	Avon Water	0	0	0	no change
4	Avon Water near Wootton Bridge 1	0	0	0	no change
5	Avon Water near Wootton Bridge 2	0	0	0	no change
6	Backley Bottom	4	0	-4	decrease
7	Bishops Dyke	0	0	0	no change
8	Bratley	0	0	0	no change
9	Buckherd Bottom	4	3	-1	decrease
10	Common Moor	6	0	-6	decrease
11	Crab Tree Bog	0	2	2	increase
12	Cranes Moor	1	1	0	no change
13	Denny Bog	0	0	0	no change
14	Dogwood Bottom	2	2	0	increase
15	Duckhole Bog	1	0	-1	decrease
16	Dur Hill Down	0	0	0	no change
17	Ferny Croft	1	0	-1	decrease
18	Goatspen Plain	0	0	0	no change
19	Harvest Slade	2	2	0	no change
20	Harvest Slade Bottom	0	4	4	increase

No.	Location	Nest no. (last 20 years)	Nests no. 2016	Change no.	Trend
21	Holmsley Bog	0	0	0	no change
22	Matley Passage	0	0	0	no change
23	Ogdens	0	0	0	no change
24	Penny Moor 1	0	0	0	no change
25	Penny Moor 2	1	0	-1	decrease
26	Picket Post	1	0	-1	decrease
27	Redhill Bog	0	0	0	no change
28	Ridley Bottom	2	2	0	no change
29	Ridley Plain	6	1	-5	decrease
30	Shappen Bottom	0	0	0	no change
31	Shatterford Bottom	0	0	0	no change
32	Slufters Bog 1	0	3	3	increase
33	Slufters Bog 2	0	2	2	increase
34	Vales Moor	1	3	2	increase
35	White Moor	0	0	0	no change
36	Withybed Bottom	0	0	0	no change
37	Wilverley Bog	4	2	-2	decrease
38	Roydon Woods	28	14	-14	decrease

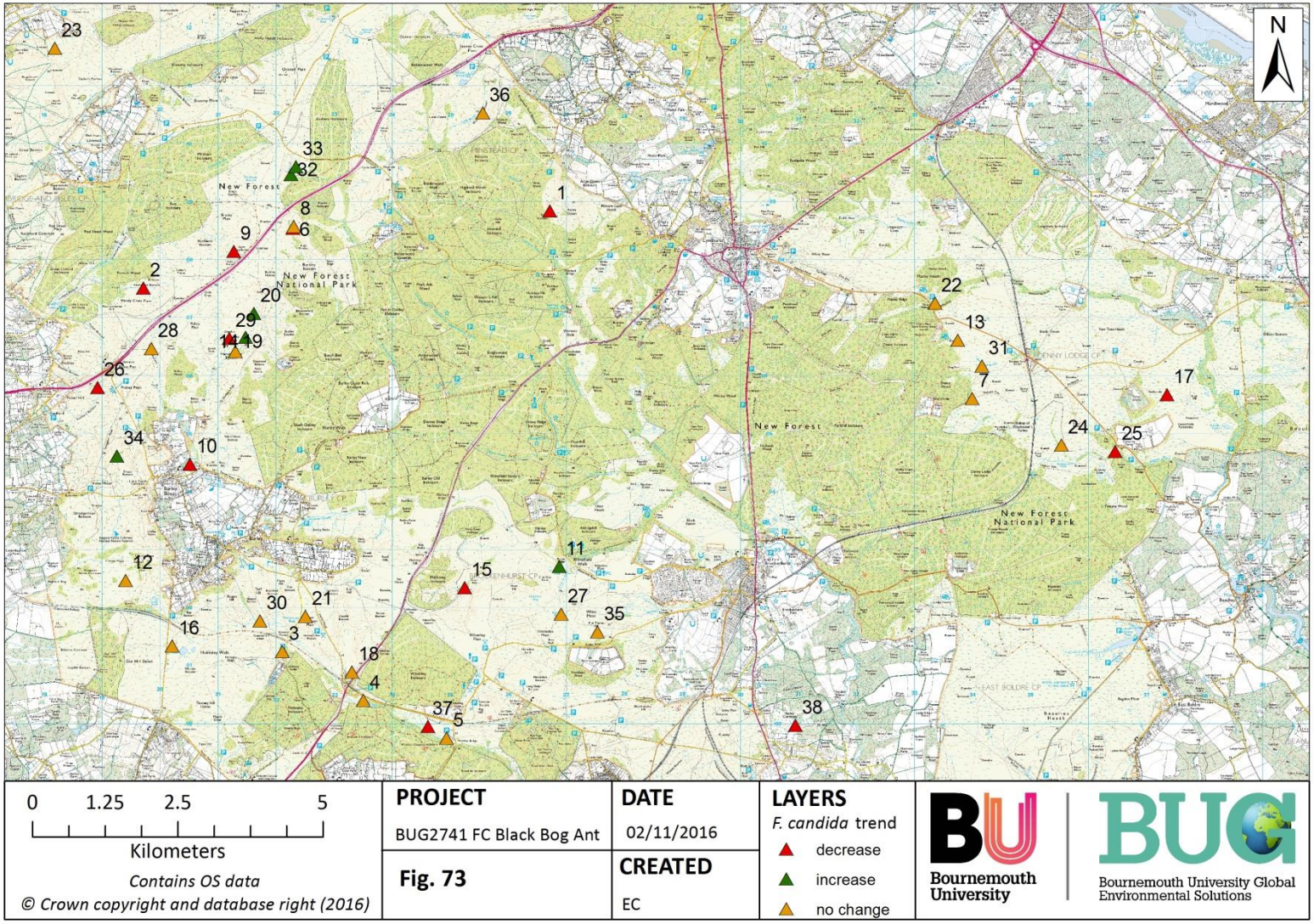

Figure 73 Historical trend in *F. candida* nests within the last 20 years

4.2.3 Recommendations for future work and actions

The main threats to populations of *F. candida* include: the drying out of mire habitats, natural ecological succession, heathland fires, hot summers, changes to local grazing regimes, and nutrient enrichment (Environment Agency 1998, Mabelis and Chardon 2005). Once lost from a site, the ability of *F. candida* to recolonize is compromised due to the limited spatial range of mating and dispersal flights (Mabelis and Chardon 2005). To increase the probability of species persistence at individual sites, management should concentrate on maintaining or creating suitable habitat in the immediate neighbourhood of occupied areas (Rees et al. 2010). In addition to the site management recommendations (Table S1), opportunities for future work and actions are as follows:

- Undertake regular monitoring of all occupied and suitable sites. In particular, suitable sites should be resurveyed within 12 months to confirm presence/absence of *F. candida*;
- Monitor temporal range and stability of water table height at all sites using appropriate in-situ depth loggers;
- Undertake a desktop feasibility study for the restoration of *F. candida*, including re-introduction and translocations to suitable sites from which the species has been lost.

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6. APPENDIXES

Table S1 summaries the locations surveyed, NGR, presence/absence of *F. candida*, habitats suitability and management recommendations.

Map 1 (scale 1:60,000) shows all of the *F. candida* nests.

Maps 2-8 (scale 1:10,000) show *F. candida* nests in seven separate groups.

List of shapefiles provided

- BlackBogAnt_sites_surveyed2016.shp (contains NGR coordinates of the central point located in the wettest part of the site where the four transects meet);
- BlackBogAnt_nests2016.shp (contains NGR coordinates of *F. candida* nests recorded).

Table S1: Summary of locations surveyed, NGR, presence/absence of *F. candida*, habitat suitability and management/monitoring recommendations grouped into seven categories (R1, control woodland encroachment; R2, control bracken spread; R3, monitor ground saturation levels; R4, avoid drainage activities; R5, consider controlled winter burns to reduce tussock height; R6, maintain or decrease grazing; R7, restore wetter conditions if in line with the management of the site).

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
Acres Down	SU26717 08837	Not present	Suitable	• Control the encroachment of woodland scrub in the drier areas on the mire's perimeter to maintain open areas (R1). • Monitor ground saturation levels as the site is beginning to dry out in places (R3).
Akercome Bottom	SU19713 07508	Not present	Unsuitable	• Avoid drainage activities which could negatively affect the hydrology of this site (R4). • Monitor ground saturation levels (R3). • Restrict *P. aquilinum* on the northern side (R2).
Avon Water near Wootton Bridge 1	SU23500 00398	Not present	Unsuitable	• Avoid drainage activities which could impact on the hydrology of this site (R4). • Monitor ground saturation levels (R3). • Maintain grazing to retain open ground and control scrub growth (R6).
Avon Water near Wootton Bridge 2	SZ24939 99752	Not present	Suitable	• Avoid drainage activities which could negatively affect the hydrology of this site (R4).
Avon Water	SU22106 01245	Not present	Unsuitable	• Avoid drainage activities which could negatively affect the hydrology of the site (R4). • Maintain grazing to control density of vegetation in the central part of the bog (R6).

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
Backley Bottom	SU22292 08538	Not present	Unsuitable	• The site is now too dry and lacks the *Sphagnum* cover and open ground which *F. candida* favours. Restoring wetter conditions should be considered a priority if *F. candida* is to recolonize the site again (R7). • Control *P. aquilinum* and scrub growth which is beginning to intrude on the periphery (R1-R2).
Bishops Dyke 1	SU33997 05602	Not present	Suitable	• Limit *P. aquilinum* and scrub growth which is beginning to intrude on the periphery (R1-R2).
Bishops Dyke 2	SU34001 05572	Not present	Unsuitable	• Maintain grazing to control density of vegetation cover (R6). • Control *B. pendula* encroachment (R1).
Bratley	SU22301 08574	Not present	Unsuitable	• Maintain grazing to control density of vegetation cover (R6). • Control successional woodland scrub cover (R1).
Buckherd Bottom 1	SU21247 08166 SU21271 08113	2 nests	Suitable	• Monitor hydrological conditions to maintain favourable conditions (R3).
Buckherd Bottom 2	SU21529 08388	1 nest	Suitable	• Monitor hydrological conditions to maintain favourable conditions (R3). • Maintain grazing to control density and height of tussock cover (R6).
Common Moor	SU20516 04467	Not present	Suitable (on southern side)	• Monitor ground saturation levels as site is predominantly dry (R3). • Maintain grazing to control density of *M. gale/M. caerulea* tussocks (R6).

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
Crab Tree Bog	SU26883 02707 SU26835 02721	2 nests	Suitable	• Control woodland scrub encroachment to maintain open areas within the bog (R1). • Maintain grazing to control density and height of *M. caerulea/M. gale* tussocks (R6).
Cranes Moor	SU19397 02522	1 nest	Suitable	• Maintain grazing to restrict *M. caerulea* density on the northern side and maintain open areas within the bog (R6).
Denny Bog	SU33748 06608	Not present	Unsuitable	• Avoid drainage activities which could dry the site out further (R4). • Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site (R7).
Denny Wood	SU33709 05912	Not present	Unsuitable	• Control scrub/woodland which is beginning to encroach on the edges of the mire (R1). • Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site (R7).
Dibden Bottom	SU38928 06697	Not present	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).
Dogwood Bottom	SU21508 06656 SU21467 06636	2 nests	Suitable	• Maintain grazing to control density of vegetation cover (R6).
Duckhole Bog	SU25249 02345	Not present	Suitable	• Maintain site in existing condition as habitat was considered suitable for *F. candida*.
Dur Hill Down	SU20207 01338	Not present	Unsuitable	• Improve ground saturation levels as site predominantly dry if *F. candida* is to recolonize the site (R7).

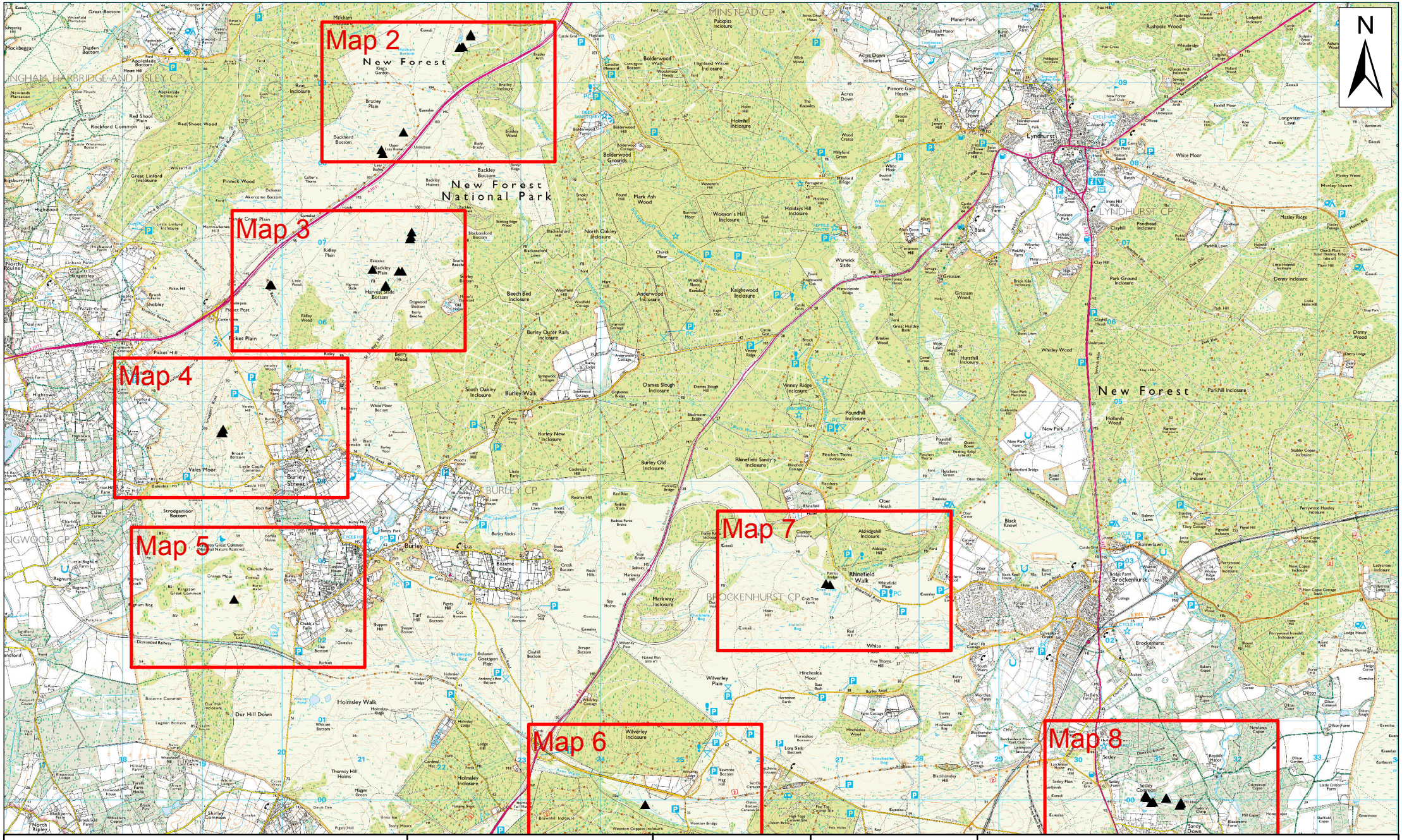
Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
Ferny Croft	SU37355 05671	Not present	Potentially Suitable	• Consider controlled winter burns to reduce height/density of *M. caerulea* and *M. gale* in most abundant areas (R5).
Goatspen Plain	SU23305 00893	Not present	Suitable	• Consider reducing grazing pressure to limit trampling of the site which may make the site undesirable to *F. candida* (R6).
Harvest Slade	SU21299 06453 SU 21305 06459	2 nests	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).
Harvest Slade Bottom	SU21607 07040 SU21607 07041 SU21620 07070 SU21632 07127	4 nests	Suitable	• Maintain grazing to control density of vegetation cover (R6).
Hincheslea Bog	SU 27412 00469	Not present	Suitable	• Maintain grazing to control density of vegetation cover (R6). • Control *B. pendula* woodland encroachment (R1).
Holmsley Bog	SU 22506 01849	Not present	Suitable	• Maintain grazing to control density of vegetation cover (R6).
Matley Passage	SU33353 07247	Not present	Unsuitable	• Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site (R7).
Ogdens	SU 18190 11640	Not present	Unsuitable	• Restoring the water table height should be considered a priority if *F. candida* is to colonize the site (R7).
Penny Moor 1	SU 35532 04802	Not present	Suitable	• Maintain grazing to control density of vegetation cover (R6). • Consider controlled winter burns to reduce

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
				height/density of vegetation cover (R5).
Penny Moor 2	SU36461 04693	Not present	Unsuitable	• Monitor hydrological conditions to establish whether the site is to wet to support *F. candida* (R3).
Picket Post (near Foulford Bottom)	SU18924 05796	Not present	Suitable	• Maintain grazing to control density of vegetation cover (R6).
Redhill Bog/Hincheslea Moor	SU26911 01887	Not present	Suitable	• Maintain grazing to keep current density of vegetation cover (R6).
Ridley Bottom	SU19852 06473 SU1987106466	2 nests	Suitable	• Maintain grazing to control density of *M. gale/M. caerulea* tussocks (R6).
Ridley Plain (near Harvest Slade)	SU 21139 06662	1 nest	Suitable	• Control growth of intruding woodland scrub on northern side of bog (R1).
Shappen Bottom	SU21721 01771	Not present	Suitable	• Control successional *B. pendula* woodland scrub as it begins to encroach on the site (R1). • Monitor grazing impact on vegetation density (R6).
Shatterford Bottom	SU34162 06163	Not present	Unsuitable	• Restoring the water table height should be considered a priority if *F. candida* is to recolonize the site (R7).
Slufters Bog 1	SU22229 09444 SU22262 09456 SU22276 09425	3 nests	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).
Slufters Bog 2	SU22371 09611 SU22371 09588	2 nests	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
Vales Moor	SU19237 04609 SU19257 04609 SU19263 04660	3 nests	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).
White Moor	SU27539 01582	Not present	Suitable	• Maintain grazing to control density and height of *M. gale/M. caerulea* tussocks (R6). • Consider controlled winter burns to reduce height/density of *M. caerulea* and *M. gale* (R5).
Withybed Bottom	SU25563 10528	Not present	Suitable	• Avoid drainage activities which could negatively affect the hydrology of this site (R4). • Maintain grazing to control *M. gale/M. caerulea* density cover (R6).
Wilverley Bog	SZ24560 99943 SZ24562 99942	2 nests	Suitable	• Monitor hydrological conditions to ensure no change to favourable conditions (R3).
Roydon Woods 1	SU30719 00040	Not present	Unsuitable	• Restoring the water table height should be considered a priority if *F. candida* is to colonize the site (R7). • Control intrusion of successional woodland scrub cover (R1).
Roydon Woods 2	SU30841 00038 SU30851 00055 SU30849 00057 SU30866 00031	4 nests	Suitable	• Maintain cattle grazing policy to control density and height of *M. gale/M. caerulea* tussocks (R6). • Monitor ground saturation levels to ensure favourable hydrology is maintained (R3). • Control potential invasion of woodland scrub (R1).
Roydon Woods 3	SZ30912 99964 SZ30934 99971 SZ30942 99973	3 nests	Suitable	• Maintain cattle grazing policy to control density of vegetation (R6). • Monitor ground saturation levels to ensure favourable hydrology is maintained (R3).

Site Name	NGR	Status (*F. candida* present/ absent)	Habitat (Suitable/unsuitable)	Management Recommendations
				• Control potential invasion of woodland scrub (R1).
Roydon Woods 4	SU31104 00020 SU31106 00021 SU31108 00029	3 nests	Suitable	• Control *P. aquilinum* and woodland scrub from encroaching on mire edges (R1-R2).
Roydon Woods 5	SU31286 00251	Not present	Unsuitable	• Restoring the water table height should be considered a priority if *F. candida* is to colonize the site (R7). • Control the encroachment of woodland scrub on the mire's perimeter to maintain open areas (R1).
Roydon Woods 6	SZ31291 99961 SZ31294 99960 SZ31288 99945 SZ31276 99938	4 nests	Suitable	• Control *P. aquilinum* growth where it begins to encroach on the site (R2). • Monitor hydrological conditions to ensure site remains favourable for *F. candida* (R3).

F. candida not present but suitable habitat	*F. candida* present



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Kilometers

Contains OS data

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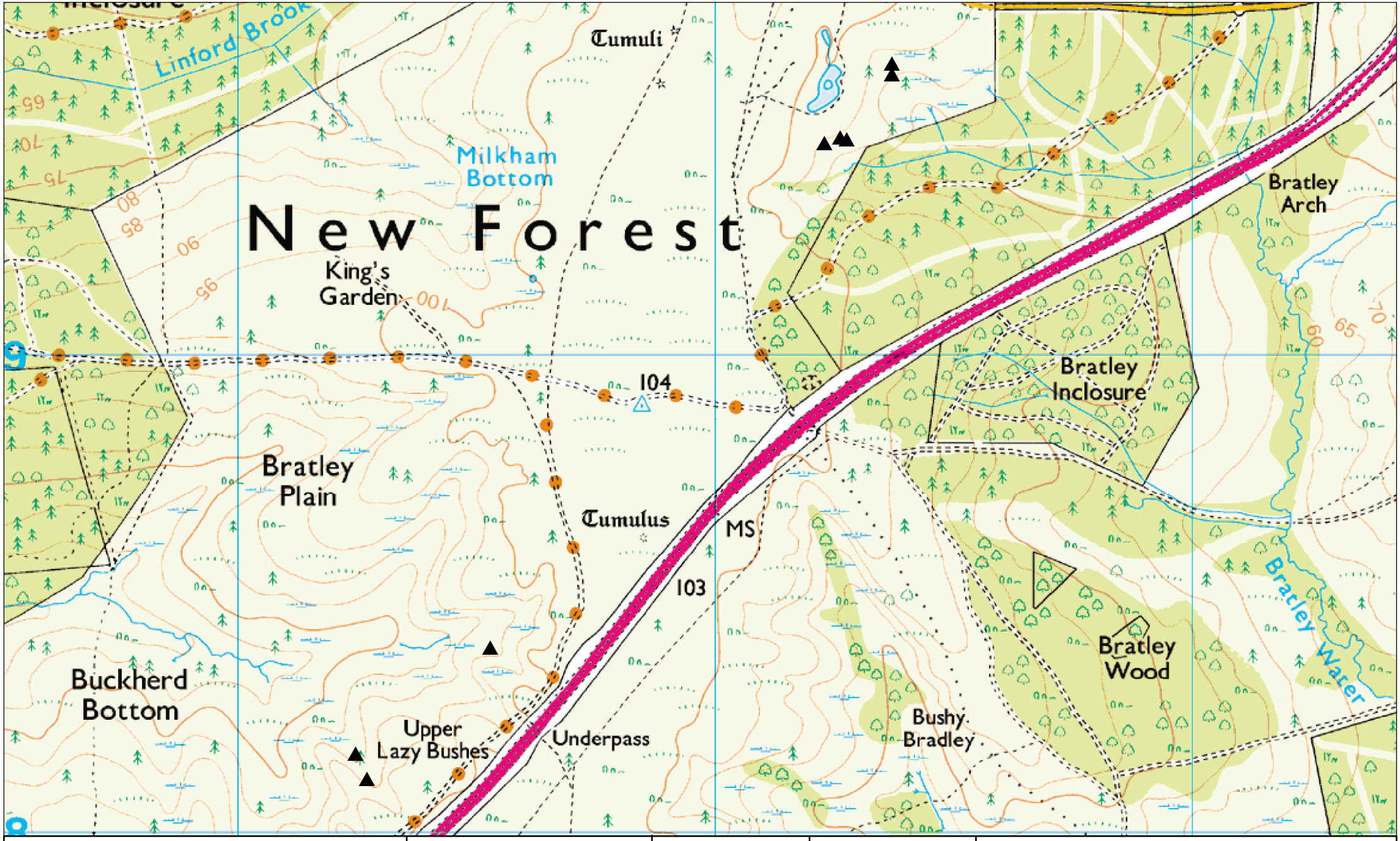
LAYERS

F. candida nests ▲

Bournemouth University

Bournemouth University Global Environmental Solutions



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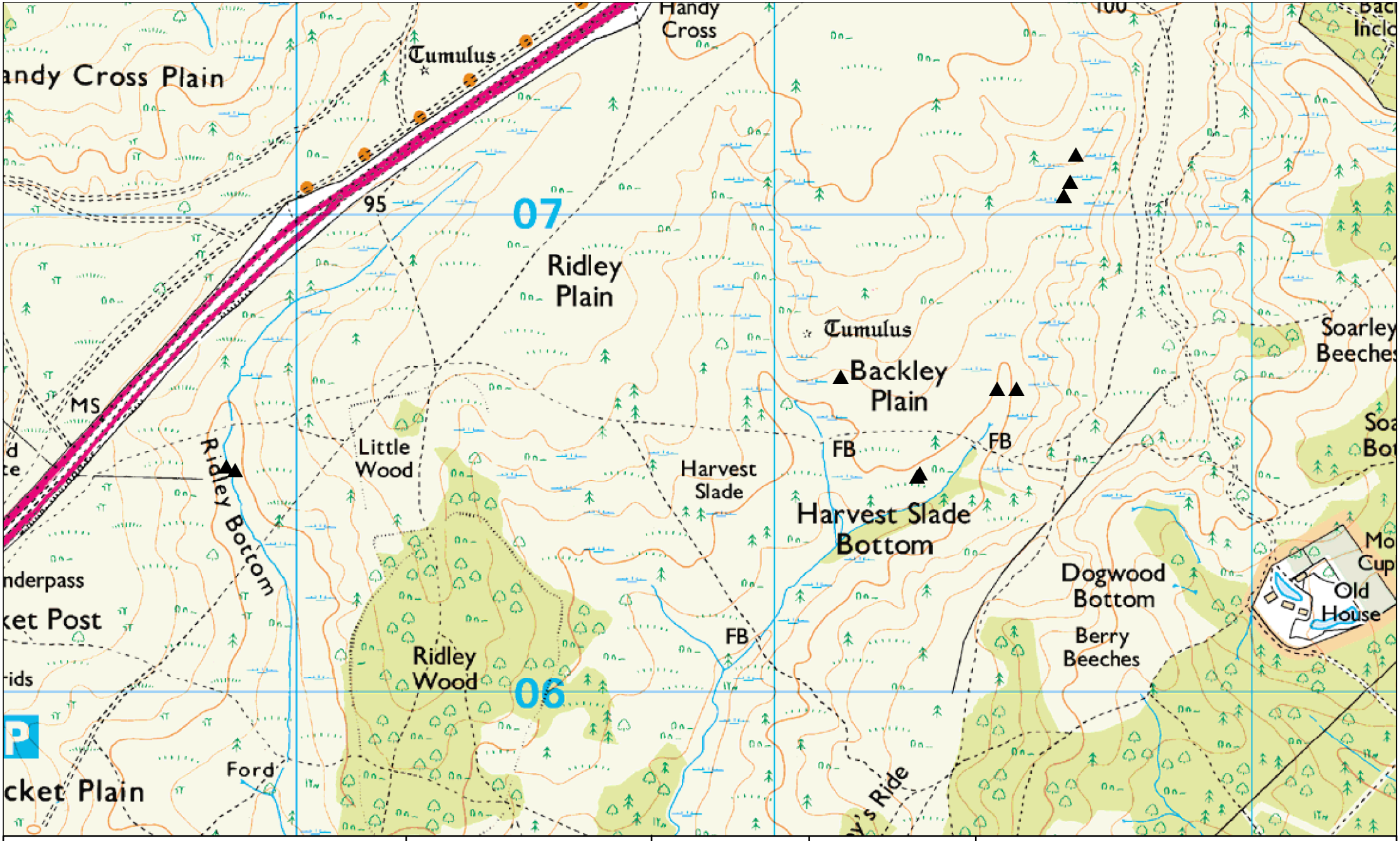
Bournemouth University

Bournemouth University Global Environmental Solutions



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Kilometers

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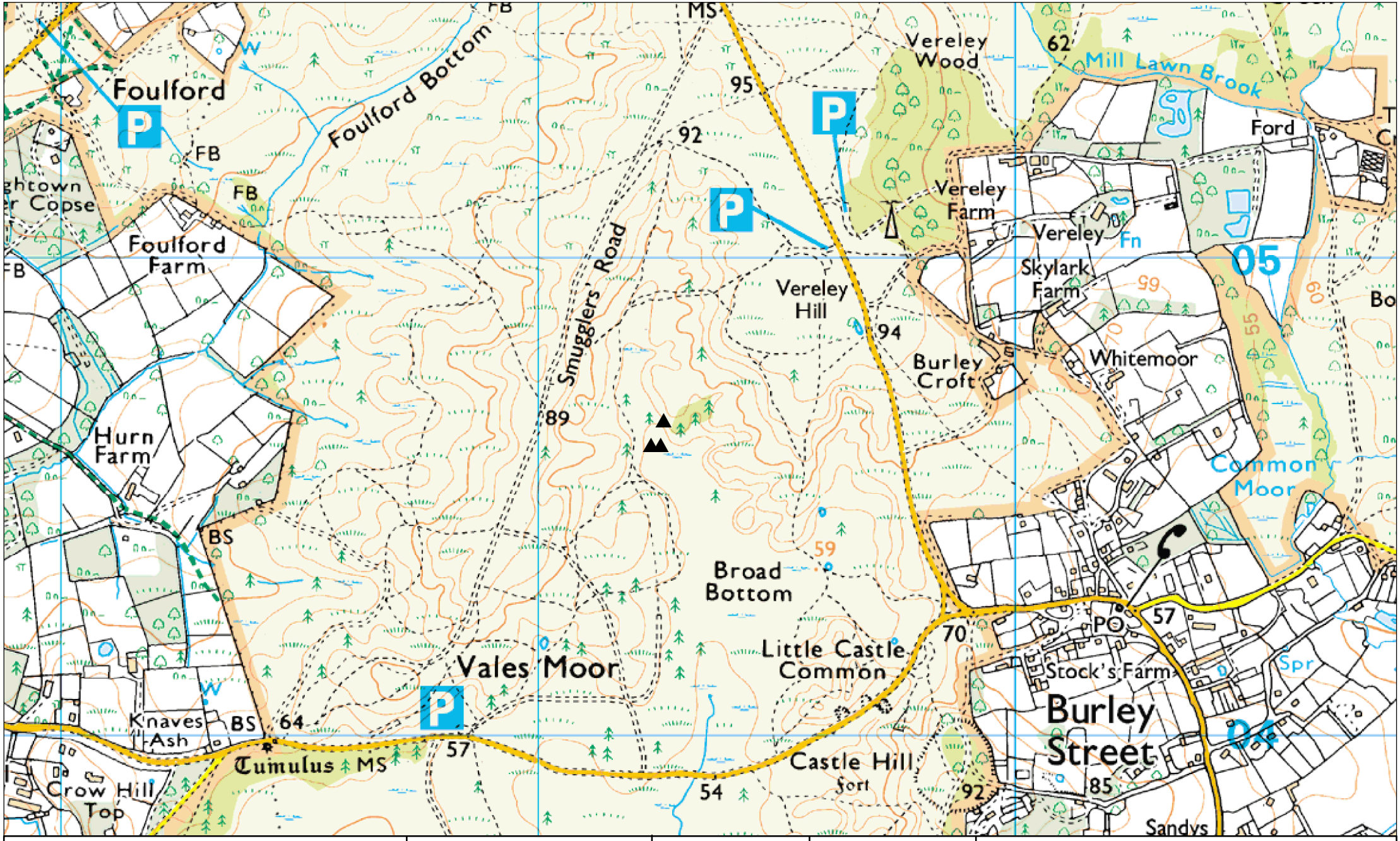
3	EC

LAYERS

▲ *F. candida* nests

Bournemouth University

Bournemouth University Global Environmental Solutions



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Kilometers

Contains OS data

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PROJECT	**DATE**
BUG2741 FC Black Bog Ant	01/11/2016
MAP NO.	**CREATED**
4	EC

LAYERS

▲ *F. candida* nests

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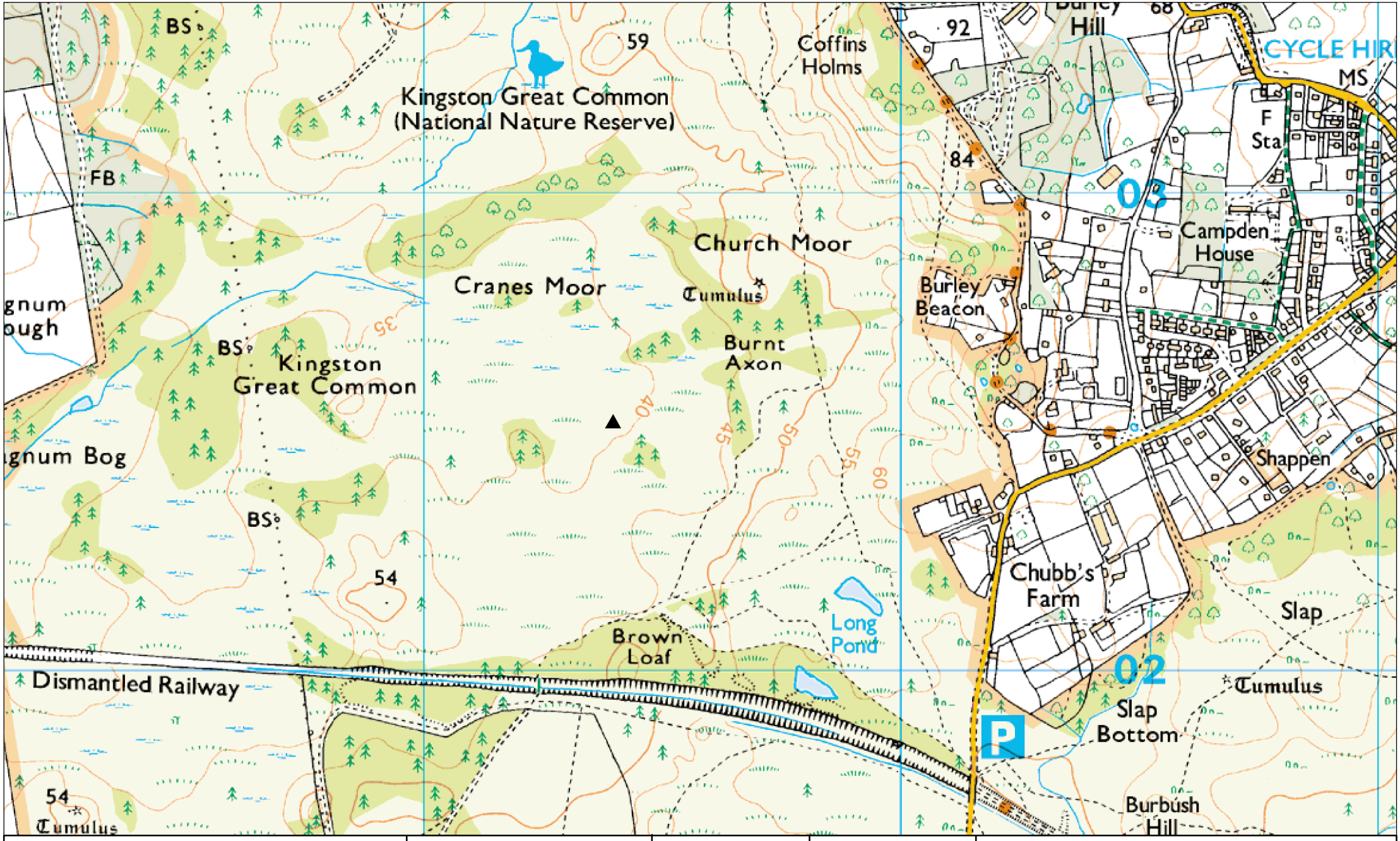

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Kilometers

Contains OS data

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PROJECT	DATE
BUG2741 FC Black Bog Ant	01/11/2016
MAP NO.	**CREATED**
5	EC

LAYERS

▲ *F. candida* nests

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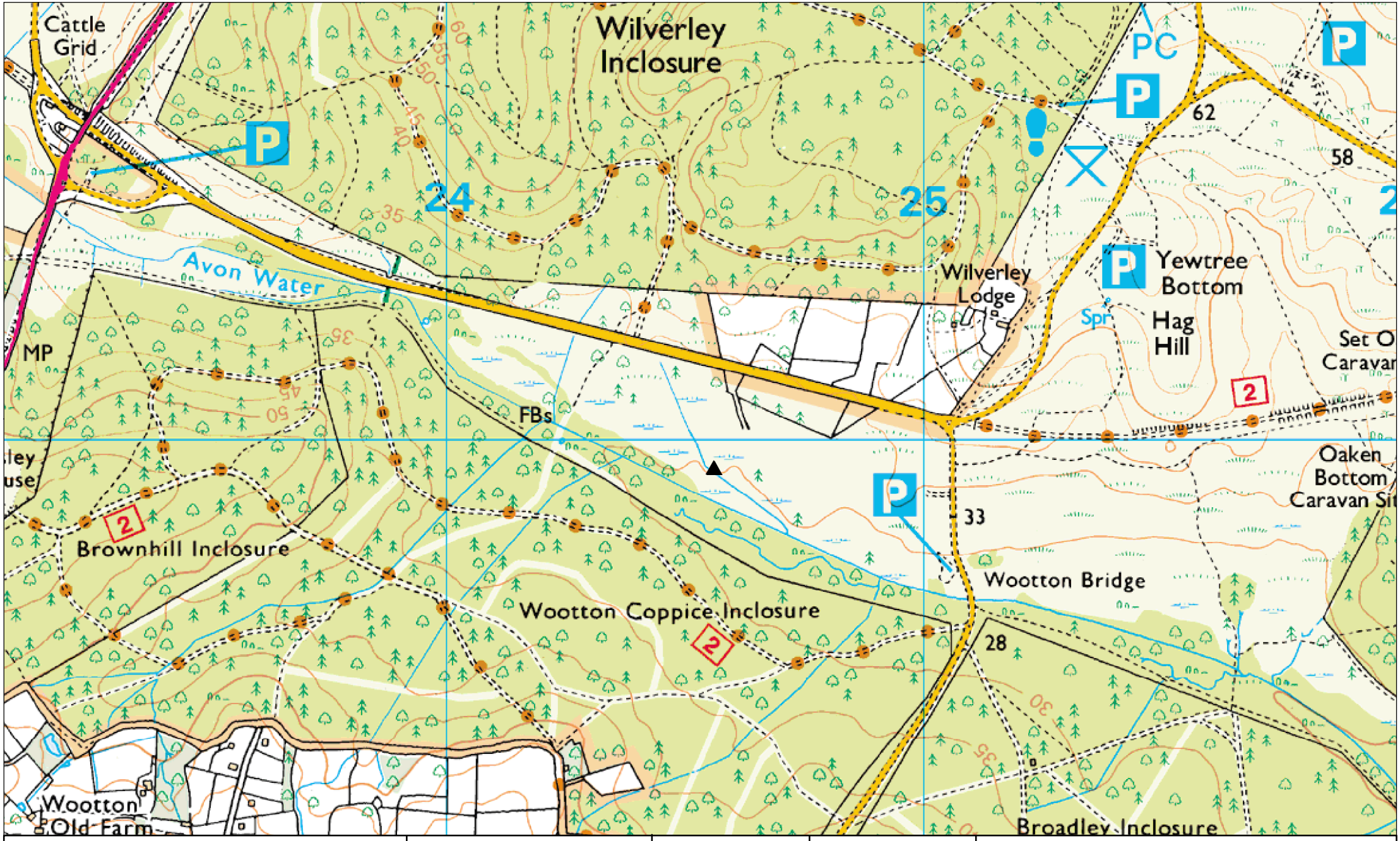

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Kilometers

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LAYERS

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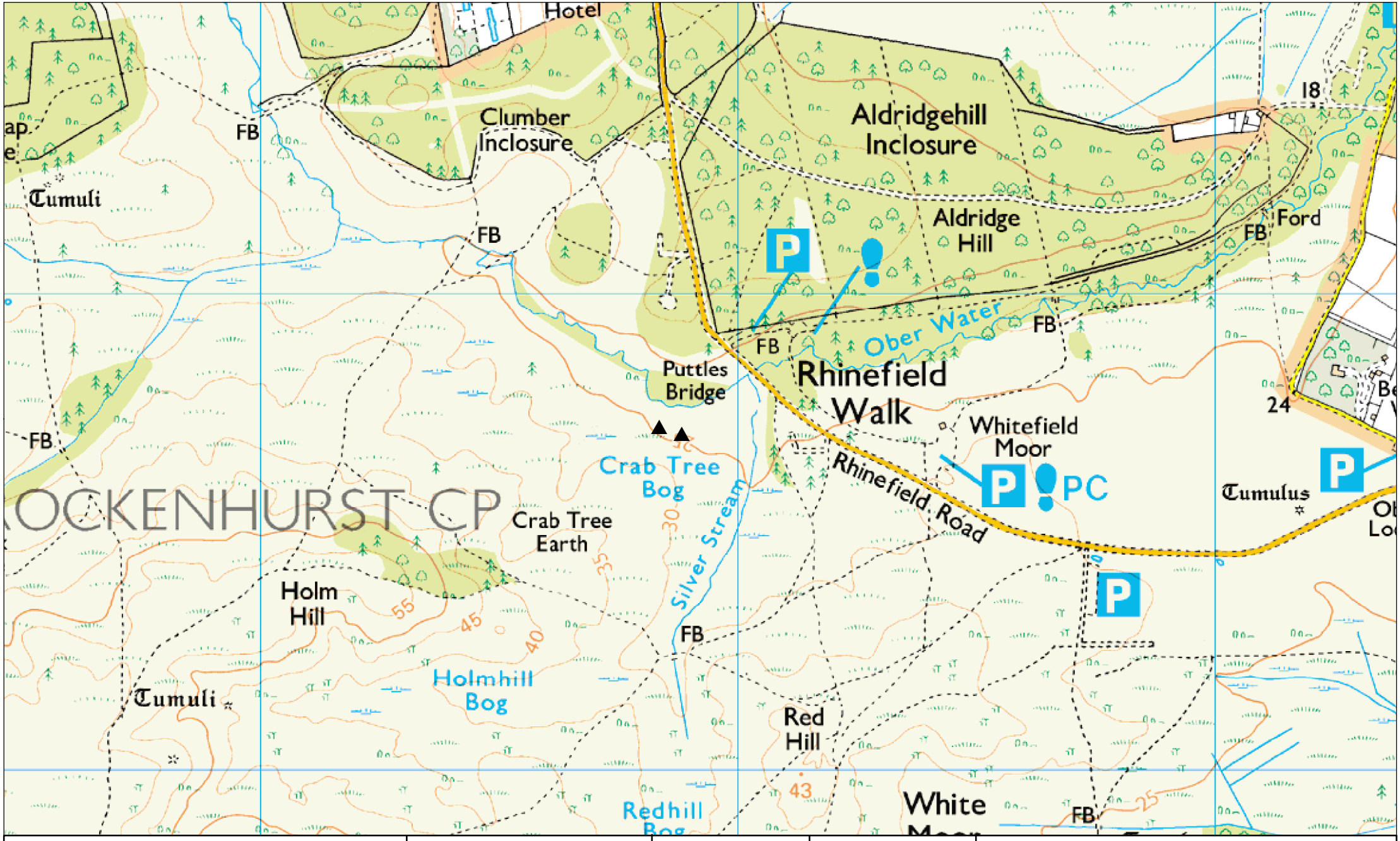

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Kilometers

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7	EC

LAYERS

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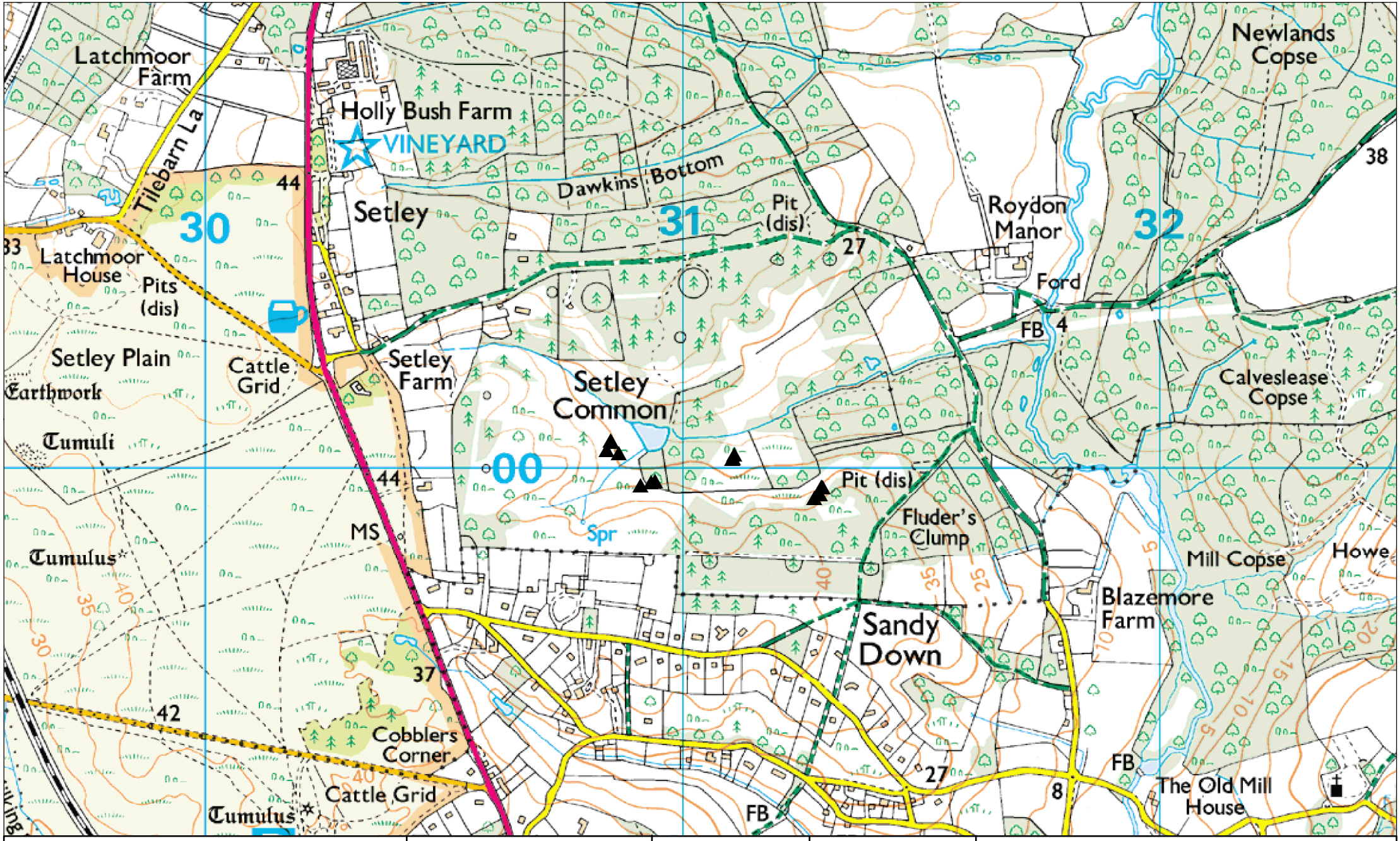

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Kilometers

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MAP NO.	**CREATED**
8	EC

LAYERS

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