Wyre Forest Study Group

Ant Hills at Lodge Hill Farm

ANN HILL

The purpose of the study was to find out more about the plant communities associated with the ant hills found in grasslands of the Wyre Forest National Nature Reserve. Ant hills, also known as ant mounds, are structures made by the Yellow Meadow Ant *Lasius flavus*, as a home for their colony. These vegetated long-lasting mounds make a distinctive contribution to grassland heterogeneity within the forest and is a habitat that the Wyre Forest Study Group had not studied to any great extent. The Study Group decided to undertake a survey to record baseline information on the vegetation and habitat that occur on the individual mounds.

Lodge Hill Farm was considered an ideal site for survey, Figure 1. It is situated within the Forest and has old pasture grassland fields with an abundance of ant hills. Access and survey permission was obtained from Natural England.

The survey site at Lodge Hill Farm was sampled in both 2024 and 2025. A day was set aside in the Study Group field meetings programme for members to undertake the baseline survey. Those members interested would survey the mounds whilst others would explore the surrounding landscape: meeting up for lunch at midday.

The first recording visit was in July 2024. Seven members of the study group spent the field meeting recording the habitat and vegetation of six ant hills in two adjacent fields. Recorders were Rosemary Winnall, Dave Barnett, Rosemary Hill, Ann Hill, Graham Hill, John Cox and Susan Limbrey. Our second recording visit was in June 2025. Only the mounds in the first of the 2024 fields were recorded. Recorders in 2025 were Rosemary Winnall, Dave Barnett, Ann Hill, Andrew Allott and Susan Limbrey with other study group members assisting with identification. Weather conditions were dry on both occasions.

The study measured and recorded the following information for each ant hill.

In 2024 all vascular plants, bryophytes and lichens present on a mound were recorded. The study was added to in 2025 by noting the cover abundance of every taxon present on the sample mound using the Domin scale, Table 1. Nomenclature follows Stace (2019) for scientific names of vascular plants, Kent (1992) for common names of vascular plants, Blockeel and Long (2012) for bryophytes. Several species could not be reliably identified to species and in these instances aggregates (agg.) are indicated. The plant communities of the ant hills are described using a combination of Frequency Classes (Rodwell, 1992) and Abundance Values (DOMIN scale) (Table 2). Frequency classes were assigned to species based on its occurrence on an ant hill irrespective of how much of that species was present on an ant hill.

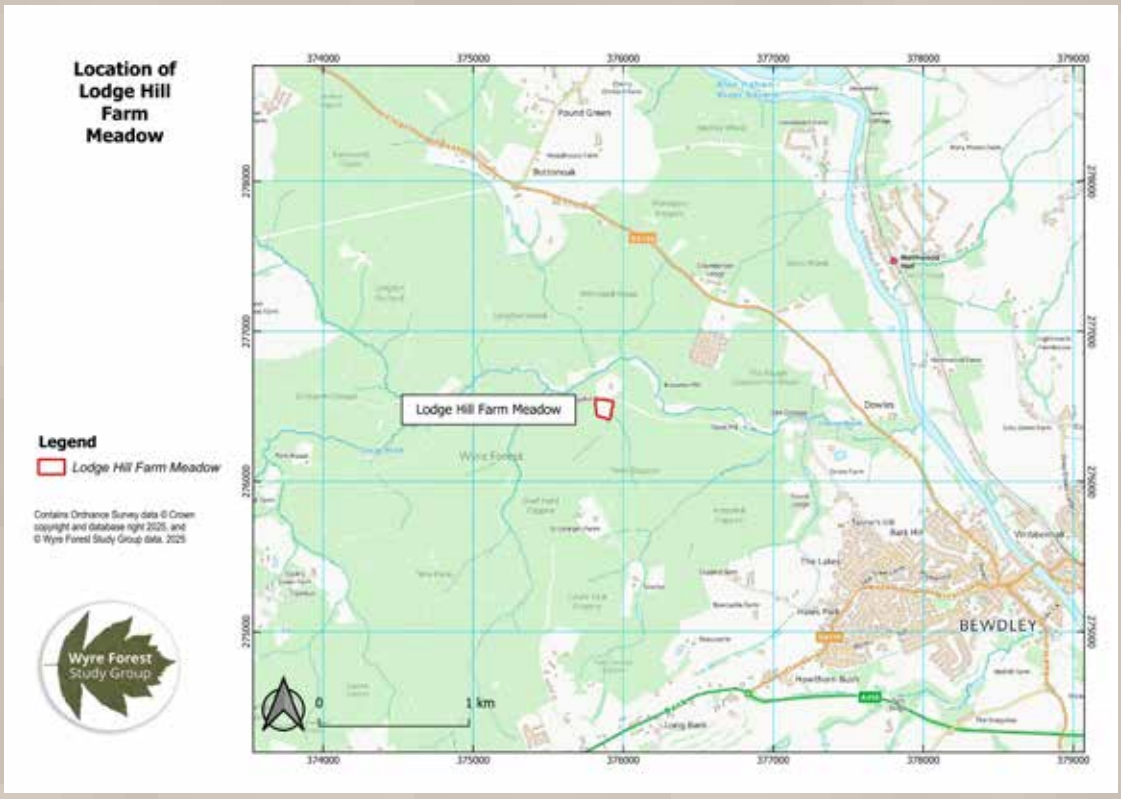


Figure 1. Map showing location of Lodge Hill Farm Meadow in the Wyre Forest National Nature Reserve.

Wyre Forest Study Group

Table 1: Domin Scale (Source: Rodwell, 1992).

Cover Abundance	Scale
<4% with few individuals	1
<4% with several individuals	2
<4% with many individuals	3
4-10%	4
11-25%	5
26-33%	6
34-50%	7
51-75%	8
76-90%	9
91-100%	10

Table 2. Frequency classes for species recorded on twelve ant hill mounds at Lodge Hill Farm Meadow in 2024 and 2025 (based on frequency classes as described by Rodwell, 1992).

Frequency Class	Percentage of Ant Hills	Number of Ant Hills
Constants	61-100%	8-12
Frequent	41-60%	5-7
Occasional	21-40%	3-4
Scarce	>0.05 - 20%	1-2

On each ant hill the percentage cover abundance of bare soil, herb cover and bryophyte cover was estimated by eye. The circumference, length, width, and main axis was measured and the mound shape recorded. The presence or otherwise of the Yellow Meadow Ant *Lasius flavus*, or other ant species within the mound, was recorded. The presence of animal grazing, droppings or damage was recorded.

In a few cases where it was not possible to identify the fauna and/or flora in the field, samples were collected for more detailed microscopical identification.

Equipment used included identification books, hand lenses, field notebook, tape measures, GPS units, compass, camera, a walking pole, objects to throw (a frisbee, a big yellow dice) and orange sports cones (to mark the surveyed mounds). In 2025, a long-stemmed digital probe thermometer was also included.

The sample ant hills were selected by randomly throwing an object into the field. The closest mound to the object was then sampled. The second mound was then selected by throwing the object from the location of the first sample mound, and so on and so on. This method is known as “haphazard” sampling. It is not true random sampling because the sample ant hills are spaced too evenly around the thrower and the previous sample mound.

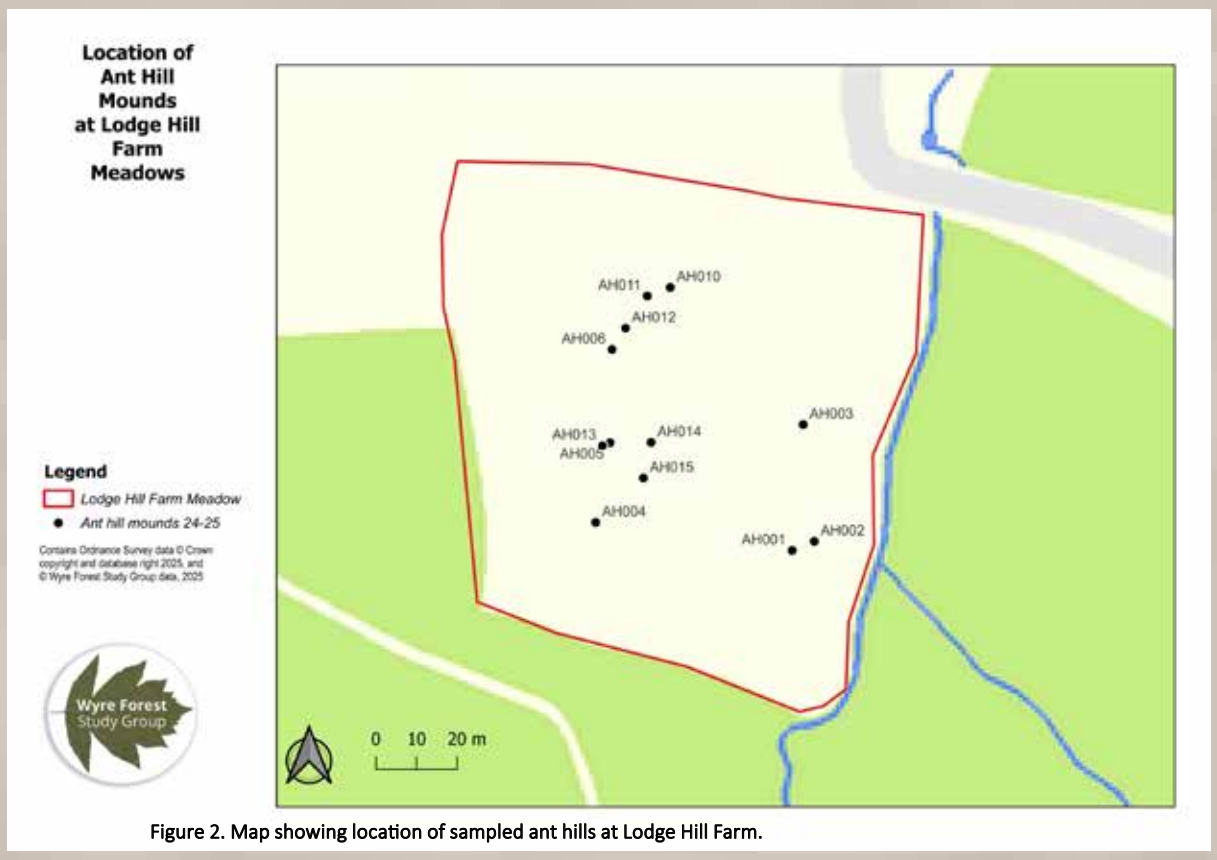


Figure 2. Map showing location of sampled ant hills at Lodge Hill Farm.

Wyre Forest Study Group

Twelve ant hills were studied in the two field meetings: six mounds each year. The location of all the sample ant hills is shown in Figure 2. Two adjacent fields were sampled in 2024. The eastern of the two fields was sampled in 2025.

Ten-figure grid references were taken of each sample mound in 2024 but because the fields were grazed no markers were left in situ. On the return survey visit in 2025, it had been hoped that it would be possible to return to the same ant hill we had studied in 2024, but it was realised that the GPS co-ordinates were not sufficiently accurate to be confident that we had found the same mound. Therefore, in 2025 we recorded a new set of sample mounds.

The study found that the ant hills were very variable with a wide range of sizes, shapes and frequency of plant cover, Table 3.

Mound height varied between 15cms and 42cms above the ground, with an average height of 27cms. The length of mounds was from 60cms to 165cms, and the mound width was between 45cms to 160cms. The mound circumferences at ground level ranged between 160cms and 360cms. There was a wide variety of mound shapes from regular to irregular shape, oval, round, flattened, one mound had a smaller joined extension mound. Overall, the mounds had a north-east / south-west orientation of the long axis.

Many mounds were occupied by ant colonies, but a few were in various stages of abandonment. The sample contained occupied mounds, abandoned mounds through to some collapsed mounds in the process of disappearing.

The Yellow Meadow Ant *Lasius flavus* was present on all six ant hills in 2024 but was only found in

Table 3. Measurements recorded in 2024 and 2025 of ant hills in grassland at Lodge Hill Farm, Wyre Forest National Nature Reserve (Key: DB = Microscopical determination by Dave Barnett).

Ant Hill Measurements 2024	AH1	AH2	AH3	AH4	AH5	AH6
	SO 75902 76457	SO 75907 76460	SO 75905 76488	SO 75853 76464	SO 75857 76484	SO 75857 76507
Field	East			West		
Max Height (cms):	31	42	30	21	25	23
Circumference at base (cms):	310	280	326	195	250	160
Length (cms):	100	90	106	65	80	60
Width (cms):	75	68	100	60	70	45
Main Axis (degrees):	20	10	31	7	329	3
General shape:	oval	oval	oval	round	round	round
Bare ground cover (Domin):	5	5	6	7	8	1
Herb cover (Domin):	8	8	7	8	8	10
Bryophyte cover (Domin):	8	8	7	4	4	3
Lasius flavus: presence/absence	Yes (DB)	Yes	Yes	Yes	Yes	Yes
Evidence of grazing	Rabbit & deer droppings					

Ant Hill Measurements 2025	AH10	AH11	AH12	AH13	AH14	AH15
	SO 75870 76517	SO 75864 76515	SO 75859 76507	SO 75853 76478	SO 75865 76478	SO 75863 76470
Max Height (cms):	15	23	30	21	22	41
Circumference at base (cms):	210	275	320	210	223	360
Length (cms):	65	95	90	67	165	150
Width (cms):	60	70	80	56	160	110
Main Axis (degrees):	71	45	86	60	90	38
General shape:	oval, flattened	oval flattened	irregular, flattened	oval, flattened	round, flattened	Extension
Bare ground cover (Domin):	5	0	2	7	4	2
Herb cover (Domin):	8	10	9	7	9	8
Bryophyte cover (Domin):	3	9	8	6	5	8
Lasius flavus: presence/absence	Yes (DB)	*Myrmica scabrinodis*	Yes (DB)	Yes	No evidence	No evidence
Evidence of grazing	No	No	Rabbit	Rabbit	Rabbit	No

Wyre Forest Study Group

three of the six ant hill mounds in 2025. In 2025, the weather conditions in the weeks preceding the survey work had been very hot and it was considered that the Yellow Meadow Ant may have moved deeper underground where habitat conditions (temperature and humidity) would have been cooler and more favourable. The southern side of one ant hill had been "frazzled" by the recent very hot weather. In 2025 the Common Red Ant *Myrmica scabrinodis* was found using a mound vacated by the Yellow Meadow Ant *L. flavus*.

All the grasslands appeared to have a similar grazing history with evidence of being grazed by Rabbit and to a lesser extent by Deer and Cattle. Some mounds had been damaged by poaching. Bramble was found on one mound, and oak seedlings were found on two mounds: possibly reflecting the degree of grazing pressure.

Forty herbaceous species, one lichen and fourteen moss species were recorded, a total of fifty-five species across the twelve ant hills in two recording years. A full list is given in Table 4.

Three grasses, six flowering plants, one sedge and two mosses were constantly recorded in 61-100% of the ant hills. The herbaceous species were *Agrostis capillaris* Common Bent, *Anthoxanthum odoratum* Sweet Vernal-grass, *Festuca rubra* Red Fescue, *Centaurea nigra* Common Knapweed, *Leontodon hispidus* Rough Hawkbit, *Pilosella officinarum* Mouse-ear-hawkweed, *Plantago lanceolata* Ribwort Plantain, *Potentilla erecta* Tormentil, two species Carex and Viola identified to genera only and two pleurocarpous mosses *Rhytidiadelphus squarrosus* Springy Turf-moss and *Pseudoscleropodium purum* Neat Feather-moss.

Eleven of the twelve mounds had some bare soil although on three mounds bare soil cover was <4%. The patches of bare soil and the fine crumbly earth around the mound surface provided regeneration sites for the small ruderal acrocarpous mosses, such as *Bryum capillare, B. rubens, Ceratodon purpureus, Dicranum tauricum* and *Weissia controversa* that colonised parts of the mounds. One mound was heavily vegetated with no bare soil.

Comparison of the number of species per plant group recorded on an individual ant hill shows that the number of flowering plants was greater than the number of grass species on all ant hills sampled, Figure 3.

The ant hills had 51% to 75% herbaceous cover although vegetation cover was very variable. The total number of plant species (herbaceous, mosses and lichens) recorded across all twelve samples was forty herbaceous plants, fourteen mosses (no liverworts) and one lichen. The total number of plant species (herbaceous, mosses and lichens) recorded on an individual ant hill ranged between fifteen and twenty-one plants. Herbaceous plant species recorded on an ant hill ranged between eleven and eighteen plants per mound. Mosses were recorded on all the mounds but at less cover abundance than that recorded by herbaceous plants. Mosses recorded on an ant hill ranged between two and six species. An unnamed lichen was recorded on two mounds.

Additional field notes made at the time of survey are given in Tables 5a and 5b.

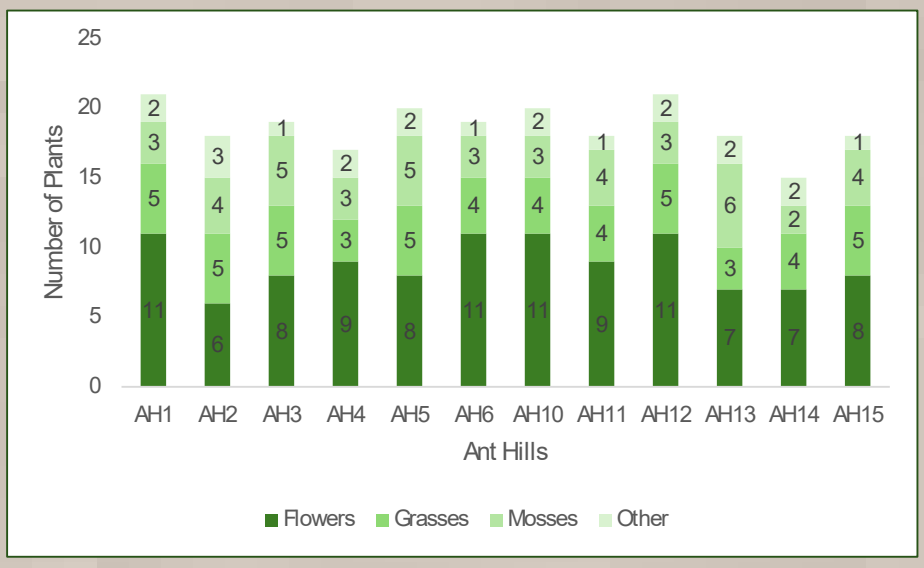


Figure 3. The assemblage composition per plant group recorded on twelve ant hills in grassland at Lodge Hill Farm, Wyre Forest National Nature Reserve (Note: Other = Lichen, woody species, sedge, fern).

Wyre Forest Study Group

Table 4. Plant species recorded in 2024 and 2025 on ant hills in grassland at Lodge Hill Farm, Wyre Forest National Nature Reserve. Frequency classes (2024 and 2025) and Abundance values (2025 only) are shown.

Species Name		2024						2025						Frequency Class
Taxon	Vernacular	AH1	AH2	AH3	AH4	AH5	AH6	AH10	AH11	AH12	AH13	AH14	AH15	
Achillea millefolium	Yarrow			1							1			Scarce
Agrostis capillaris	Common Bent	1	1	1	1	1	1		1	2			2	Constant
Ajuga reptans	Bugle				1			2						Scarce
Anthoxanthum odoratum	Sweet Vernal-grass	1	1	1	1	1	1	4	3	3	1	2	3	Constant
Arrhenatherum elatius	False Oat-Grass		1				1			2				Occasional
Briza media	Quaking-grass	1		1				2			1	2	2	Common
Carex agg.	Sedge agg.				1	1	1	2	1		2	4	3	Constant
Carex flacca	Glaucous Sedge			1	1							1		Occasional
Centaurea nigra	Common Knapweed	1		1	1	1	1		2	4		1		Constant
Cynosurus cristatus	Crested Dog's-tail		1											Scarce
Dactylis glomerata	Cock's-foot								1	1				Scarce
Danthonia decumbens	Heath-grass					1		2						Scarce
Dryopteris filix-mas	Male-fern		1											Scarce
Euphrasia agg.	Eyebright	1				1	1							Occasional
Festuca rubra	Red Fescue	1	1	1	1	1	1	6	9	6	4	4	5	Constant
Galium saxatile	Heath Bedstraw	1	1	1		1							2	Common
Galium verum	Lady's Bedstraw						1	4	2	4				Occasional
Holcus lanatus	Yorkshire-fog	1		1		1						3	1	Common
Leontodon hispidus	Rough Hawkbit					1	1	2	1	2	2	1	2	Constant
Lotus corniculatus	Common Bird's-foot-trefoil				1		1	1	1	3	2		1	Common
Luzula campestris	Field Wood-rush	1	1					2		1				Occasional
Pilosella officinarum	Mouse-ear-hawkweed	1	1	1	1	1				1	5	1	1	Constant
Plantago lanceolata	Ribwort Plantain	1			1		1	2	2	1	1	2	2	Constant
Polygalaserpyllifolia	Heath Milkwort											1		Scarce
Potentilla erecta	Tormentil	1	1	1	1		1	1	2	2	2	3	3	Constant
Potentilla reptans	Creeping Cinquefoil	1												Scarce
Potentilla sterilis	Barren Strawberry				1		1	1		2				Occasional
Prunella vulgaris	Selfheal					1	1	1						Occasional
Quercus seedling	Oak seedling	1	1											Scarce
Rubus fruticosus	Bramble									1				Scarce
Rumex acetosella	Sheep's Sorrel			1						1				Scarce
Senecio jacobaea	Common Ragwort								1					Scarce
Stellaria graminea	Lesser Stitchwort				1				1					Scarce
Succisa pratensis	Devil's-bit Scabious	1	1											Scarce
Thymus drucei	Wild Thyme	1	1											Scarce
Trifolium repens	White Clover							1						Scarce
Veronica chamaedrys	Germander Speedwell							1	2	1				Occasional
Veronica officinalis	Heath Speedwell	1			1	1	1						3	Common
Veronica serpyllifolia	Thyme-leaved Speedwell			1										Scarce
Viola agg.	Violet agg.	1	1	1		1	1	1		1	1	1	1	Constant
Cladonia agg.	Cladonia agg.					1					1			Scarce
Bryum capillare	Capillary Thread-moss					1					2			Scarce
Bryum rubens	Crimson-tuber Thread-moss					1								Scarce
Calliergonella cuspidata	Pointed Spear-moss				1		1	2		1	3		1	Common
Ceratodon purpureus	Redshank			1										Scarce
Dicranum tauricum	Fragile Fork-moss										3			Scarce
Hylocomium splendens	Glittering Wood-moss		1	1										Scarce
Hypnum cupressiforme	Cypress-leaved Plait-moss			1										Scarce
Oxyrrhynchium hians	Swartz's Feather-moss								1					Scarce
Plagiomnium affine	Many-fruited Thyme-moss								1	1				Scarce
Polytrichum formosum	Bank Haircap										4		7	Scarce
Polytrichum formosum	Bank Haircap	1	1	1										Occasional
Pseudoscleropodium purum	Neat Feather-moss	1	1	1	1	1	1	6	8	9	4	3	2	Constant
Rhytidiadelphus squarrosus	Springy Turf-moss	1	1		1	1	1	2	7		1	3	2	Constant
Weissia controversa	Green-tufted Stubble-moss					1								Scarce

Wyre Forest Study Group

Table 5a. Survey notes recorded in 2024 of ant hills in grassland at Lodge Hill Farm, Wyre Forest National Nature Reserve.

Site: Lodge Hill Farm, Wyre Forest	
Date: 20th July 2024	
Grid Reference: SO 75860 76524	
Recorders:	Rosemary Winnall, Dave Barnett, Rosemary Hill, Ann Hill, Graham Hill, John Cox, Susan Limbrey
Air Temperature:	19^0-20^0C
Weather:	Hot and humid with 100% cloud cover
Survey start: 10:40	**Survey finish**: 14:00
Field Notes 2024	
Trial run	
Two fields separated by a hollow-way	
Eastern field being invaded by scrub (Blackthorn, Bramble, Hawthorn, Oak) and coarse grasses.	
Ant Hill 1	Recent erosion by cow at north-east point Yellow Meadow Ant active at the southern end 5% active ant cover
Ant Hill 2	Active bare end = 33% Dormant end = 66% Hawthorn sapling overhanging ant hill
Ant Hill 3	More grassy than previous two ant hills Yellow Meadow Ant active at southern end Lower plant diversity compared to surrounding grassland
Western field had occasional fresh deer droppings	
Ant Hill 4	Not much ant activity. Yellow Meadow Ant more active towards the southern half of the ant hill
Ant Hill 5	Frequent rabbit droppings on ant hill; ant hill trampled Yellow Meadow Ant active on east side possibly because the mound has been dug out on the south
Ant Hill 6	Lady's Bedstraw dominates the vegetation Rabbit droppings on mound

Also noted in the meadow	
Arion subfuscus	Dusky Slug
Leptophyes punctatissim	Speckled bush-cricket
Phalangium opilio	Harvestman
Tyria jacobaeae	Cinnabar Moth Caterpillar

Wyre Forest Study Group

Table 5b. Survey notes recorded in 2025 of ant hills in grassland at Lodge Hill Farm, Wyre Forest National Nature Reserve.

Site: Lodge Hill Farm, Wyre Forest	
Date: 14th June 2025	
Grid Reference: SO 75940 76593	
Recorders:	Rosemary Winnall, Dave Barnett, Ann Hill, Andrew Allott and Susan Limbrey and others
Air Temperature:	19^0C - 22^0C
Survey weather:	Sunshine with light cloud and a gentle breeze
Survey start: 10:30	**Survey finish**: 14:15
Field Notes 2025	
Field grazed over the previous winter by Dexter Cattle: frequent evidence of rabbit grazing.	
Areas of rougher grassland with more rank grasses	
Ant Hill 10	The southern side of the mound was "frazzled" by the recent hot spell of weather. 50% of the vegetation on the mound appeared to be dead. A *Sphaerophoria* sp. hoverfly and an *Araniella* sp. cucumber spider noted.
Ant Hill 11	No bare soil and a deep layer of dead (and almost dead) grass "thatch" on the mound. No evidence of *Lasius flavus* Yellow Meadow Ant found but *Myrmica scabrinodis* Common Red Ant present.
Ant Hill 12	Mound surrounded by rough grasses and bramble in the sward. North-west side of mound had Green Woodpecker holes.
Ant Hill 13	Mound eroded on north-east side. No act activity: possibly too hot. Ambient air temperature on the mound was 21.2^0C and 100mm inside the mound was approximately 25.4^0C. Also noted on the mound were a bumble bee, a grasshopper and a juvenile *Misumena vatia* Crab Spider.
Ant Hill 14	Temperature 20mm inside the mound was approximately 23.5^0C.
Ant Hill 15	No evidence of *Lasius flavus* Yellow Meadow Ant activity. Two joined ant hills: the north-west side of the larger mound had a smaller mound attached. The mound had damp/wet hollows, steeper sides and tall vegetation.

Wyre Forest Study Group

In conclusion, the study has been an introduction to the biodiversity of the Yellow Meadow Ant *Lasius flavus* habitat in the Wyre Forest. The study to date has only a small sample size and so analysis of the findings with any degree of confidence is not possible. However, the study has generated ideas for further work. Amongst the possibilities are:

a. How does the sward composition of the surrounding grassland differ to that found on the ant hill mound?
b. What influence does the mound aspect have on plant species assemblage?
c. What is the relationship between aspect and plant species?

The study could also be developed to detect plant communities change over time if the sample ant hills were permanently marked in some way `and so could be re-surveyed year-on-year.

Finally, the mounds made by the Yellow Meadow Ant *Lasius flavus* are an impressive feature in the landscape and add to the ecological importance of the grasslands within Wyre – more survey work is needed.

References

Blockeel, T.L. & Long, D.G. (2012) *A check-list & census catalogue of British & Irish Bryophytes.* British Bryological Society, Cardiff.

Kent, D.H. (1992) *List of Vascular Plants of the British Isles.* London: Botanical Society of the British Isles.

Rodwell, J. S. (ed.) (1992) *British Plant Communities. Volume 3. Grassland and montane communities.* Cambridge University Press.

Stace, C. (ed.) (2019) *New flora of the British Isles, edition 4.* Cambridge University Press, Cambridge.



Recording an ant hill, Lodge Hill Meadows June 2026. Graham Hill



Ant Hill 4, Lodge Hill Meadows with GPS unit, July 2024. Graham Hill