Habitat Survey Report:

An assessment of acid grassland and lowland heathland plant-pollinator networks at Troopers Hill Local Nature Reserve, Bristol, and recommendations for improvement

University of the West of England | Applied Wildlife Conservation MSc
Advanced Ecosystem Conservation in Practice
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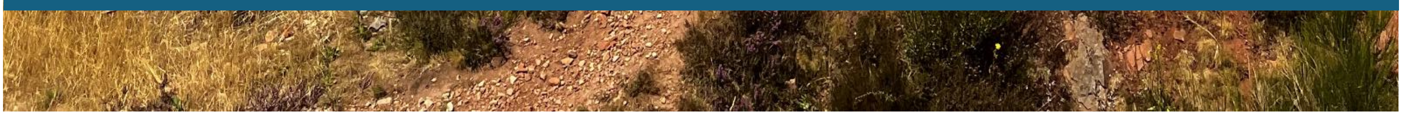

Executive summary

Troopers Hill Local Nature Reserve in Bristol contains two UK priority habitats: acid grassland and lowland heathland. This study surveyed their plant-pollinator networks using the Flower-Insect Timed count survey method. Habitat community composition was assessed, and bipartite analysis was performed to investigate network structure, functioning, and resilience. There were distinct differences in community assemblages and network characteristics between the two habitats: acid grassland supported a diverse, compartmentalised, and robust network, while lowland heathland contained a more generalist, less diverse, and lower resilience system. The ecological and management implications of these findings are discussed.

Introduction

Pollination is a critical ecosystem function across terrestrial ecosystems, with insects supporting the reproductive cycle of 89% of angiosperm families (Stephens *et al*., 2023). It is therefore concerning for both wild plant diversity and crop farming that insect pollinators are threatened by habitat loss and fragmentation, agricultural intensification, invasive alien species, and climate-change induced range and phenological shifts (Gérard *et al.,* 2020; Potts *et al*., 2010). In the UK, these pressures have resulted in an 18% decline in the distribution of pollinating insects between 1970-2023 (Burns *et al*., 2023), with rarer species experiencing the greatest losses (Powney *et al*., 2019).

Plant-pollinator networks represent the interactions between an ecosystem's floral communities and their insect pollinators. Assessing community composition and network statistical indices can provide valuable insight into key ecosystem attributes such as the importance of keystone species and network resilience, in turn helping guide the effective management of these habitats (Monteiro *et al*., 2025).

Troopers Hill (TH) local nature reserve (51.45618, -2.53507) comprises 8.4 ha of land in the St George area of Bristol. Owned by Bristol City Council and managed alongside the Friends of Troopers Hill (FOTH), the site contains locally significant areas of lowland heathland (LH) and acid grassland (AG), both of which are UK priority habitats (JNCC, 2024; Wessex Ecological Consultancy (WEC), 2020). Both the site's management plan (WEC, 2020) and the FOTH (2025) website highlight TH's importance for invertebrates, however, no plant-pollinator surveys have been published to date.

This study aimed to assess the community composition of these habitats' plant pollinator networks, as well as investigate their structure, functioning, and resilience to produce habitat-specific management recommendations that would benefit local biodiversity and ecosystem functioning. Three main objectives were identified:

1. Provide baseline plant-pollinator community data for future reference.
2. Assess AG and LH plant-pollinator network structure, functioning, and resilience.
3. Identify areas of concern regarding network sustainability, and provide management recommendations.

Methods

Survey approach:

Plant-pollinator networks were surveyed using the Flower-Insect Timed (FIT) count approach developed by the UK Pollinator Monitoring Scheme (PoMS, 2025). Within a 50 x 50 cm quadrat, flowering species and their inflorescence frequencies were recorded. During a 10-minute observation window, the first instance of an insect landing on a flower within the plot was recorded (including both plant and pollinator IDs); subsequent visits by the same individual to other flowers were not counted. Pollinators were identified according to the FIT count's classifications: Bumblebees, Honeybees, Solitary bees, Wasps, Hoverflies, Other Flies, Butterflies and moths, Beetles >3mm, Small insects <3mm, or Other insects.

Repeats and conditions:

Ten quadrat surveys were conducted for both AG and LH, with the survey order having been randomised to avoid temporal autocorrelation. Quadrat positions (Figure 1) were selected using a simple random approach; after identifying an area of habitat, two 5 m tape measures were laid down at a right angle, and 'coordinates' randomly generated. Randomly selected plots with no flowers were reselected. Surveys occurred on the 16th of July 2025 between 10:00 and 15:45 under consistent weather conditions (clear skies, temperatures ≥23 °C, no rain or strong winds) in line with FIT count guidance (PoMS, 2025).

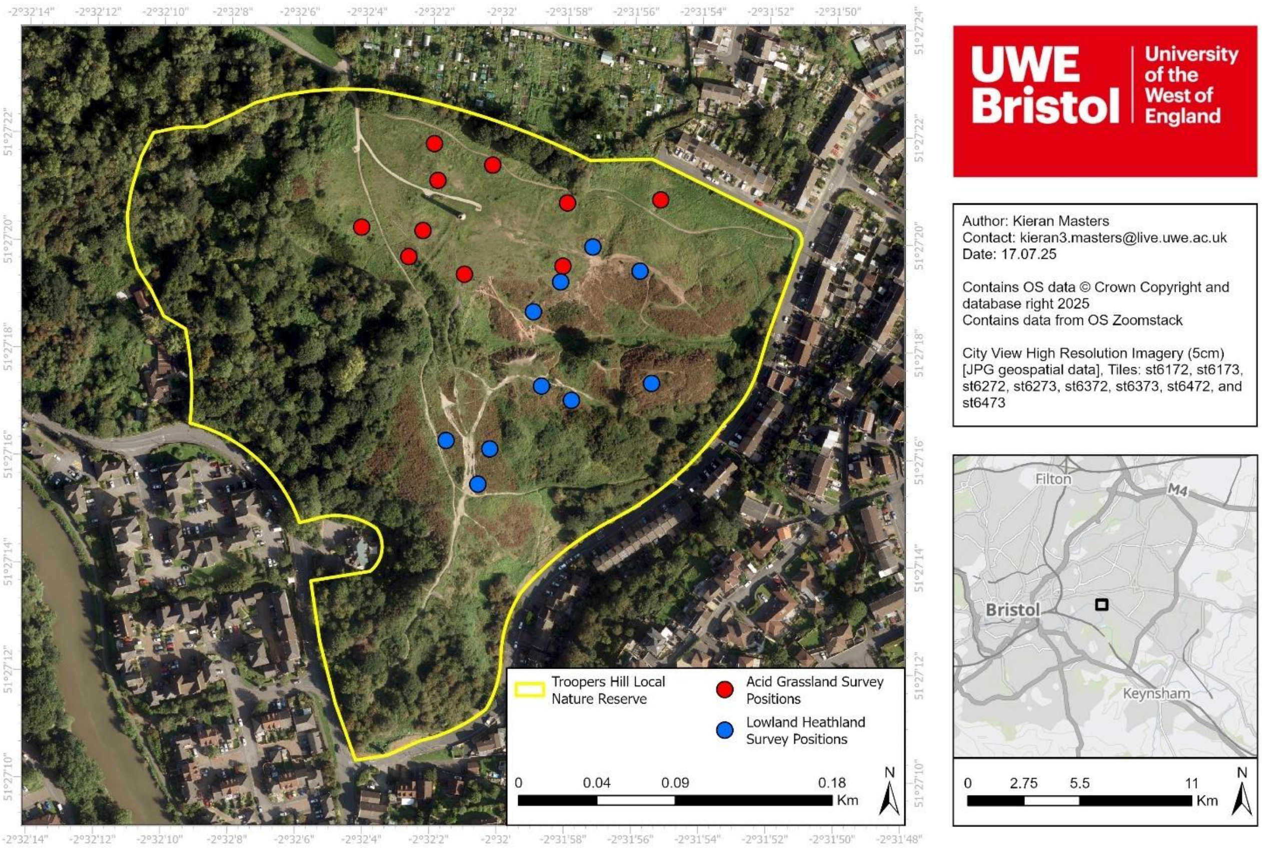

Figure 1. Quadrat survey positions at Troopers Hill; perimeter based on management plan (WEC, 2020), aerial imagery from Edina (2025). Produced using ArcGIS Pro 2.3.0 (Esri, 2023).

Data analysis:

Habitats' species diversity and interaction frequencies were compared in RStudio (2025.05.1+513) (Posit Team, 2025) using Mann-Whitney U tests given data were non-normal. Bipartite analysis was conducted using the dplyr (1.1.4) (Wickham *et al.,* 2025) and bipartite (2.21) (Dormann, Gruber, and Fründ, 2008) packages to produce relevant network indices (Table 1). Given individual quadrats' low diversity and interaction frequencies, data were pooled to produce a single network for either habitat. While this prevented statistical comparisons of indices between habitats, the metrics still provided valuable insight into the networks' structure and functioning.

Table 1. Calculated network indices; definitions based on Dormann *et al.*, 2025

Network topic	Index	Description
Structure	Shannon	Diversity of plant-pollinator network interactions
	H2	Network-level measure of specialisation
	Modularity Q	Indicator of network compartmentalisation
Functioning	Plant niche overlap	Mean similarity in interaction patterns between plants
	Pollinator niche overlap	Mean similarity in interaction patterns between pollinators
Resilience	Plant robustness	Resilience to random loss of pollinator species (area below secondary extinction curve)
	Pollinator robustness	Resilience to random loss of plant species (area below secondary extinction curve)

Results

Across 20 quadrat samples, 11 species of flowering plants were identified. The focal habitats' floral communities differed greatly, with AG having greater species richness (8) compared to LH (4). This difference in species composition was mirrored in the diversity of recorded inflorescences, with AG's most dominant species, red clover (*Trifolium pratense*), only accounting for 39.89% of inflorescences, while bell heather (*Erica cinerea*) comprised 82.35% of LH observations (Figure 2). The average number of plant species recorded within a quadrat at either AG (1) or LH (2) did not differ significantly (W = 28.5, p-value = 0.07331).

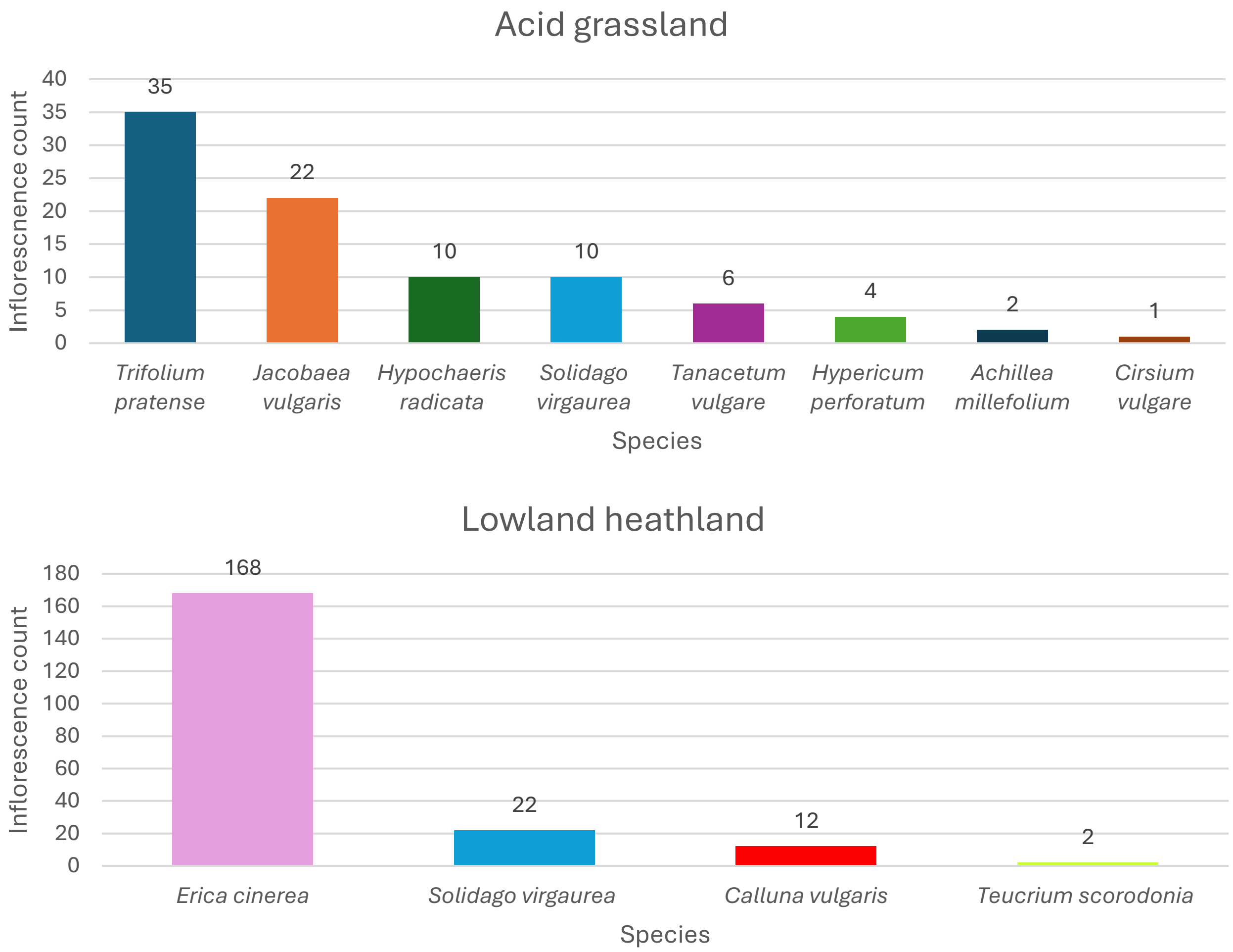

Figure 2. Sampled inflorescence counts within Troopers Hill acidic grassland (n=90) and lowland heathland (n=204).

A total of 114 plant-pollinator interactions were recorded across both habitats: 60 within AG, 54 within LH. While 8 different pollinator groups were observed in either habitat, there were clear differences between their communities, with flies (hoverflies and other flies) dominating AG, accounting for 56.66% of observed pollinators, while LH pollinators primarily consisted of bees (honeybees and bumblebees), which were involved 70.37% of interactions (Figure 3). No moths or wasps were observed at either habitat throughout the study. The average number of pollinator groups observed in individual AG (2) and LH (3) quadrats did not differ significantly (W = 51, p-value = 0.97), and neither did the median number of interactions observed in AG (4.5) and LH (5) (W = 51, p-value = 0.97).

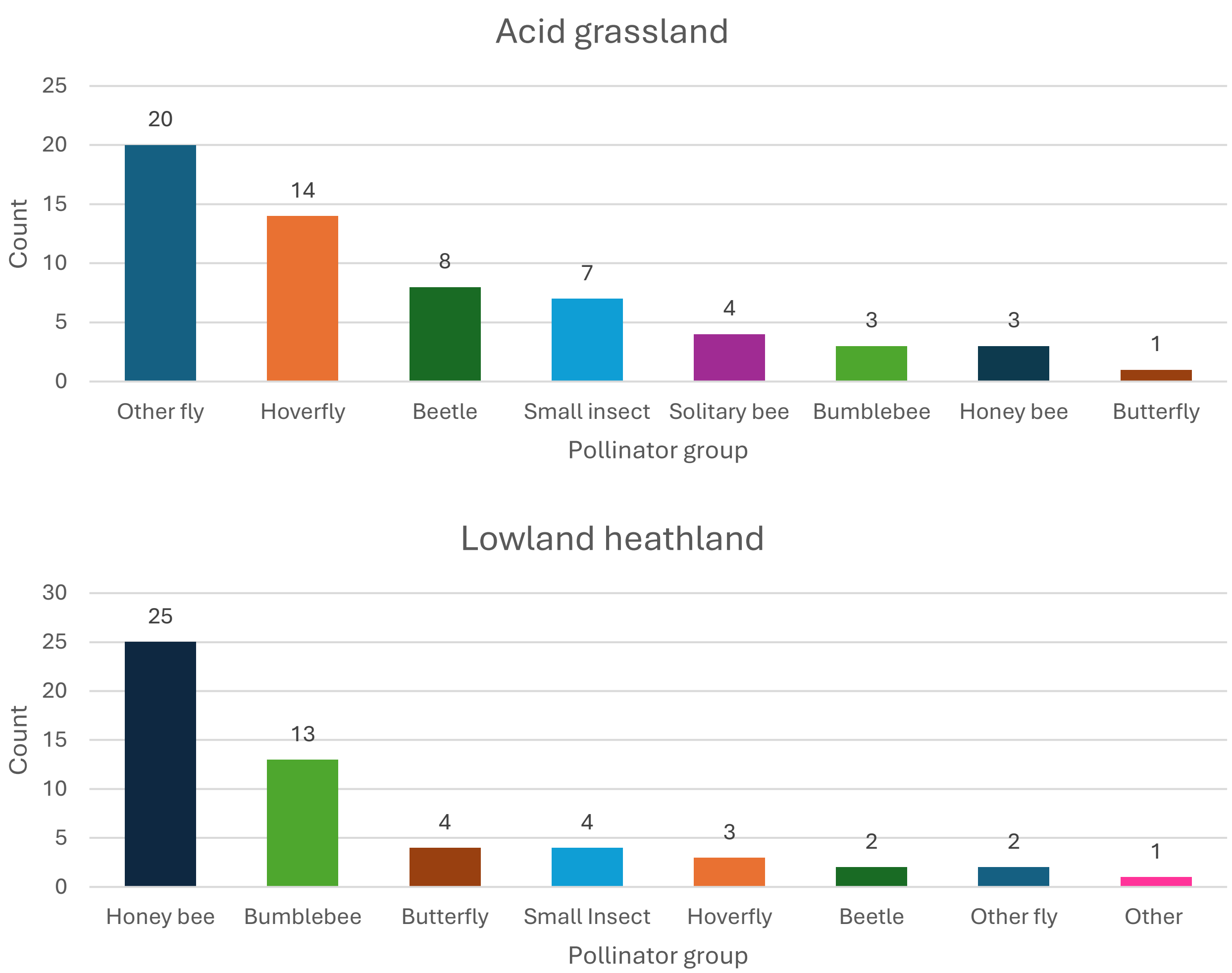

Figure 3. Sampled pollinator group counts within Troopers Hill acidic grassland (n=60) and lowland heathland (n=45).

Bipartite analysis identified 21 unique plant-pollinator interactions within AG, and 11 within LH. Network visualisations were produced for both AG (Figure 4) and LH (Figure 5). Plants were displayed in green, pollinators in yellow, with connection sizes representing the relative frequency of interactions. Network-level indices were calculated for both habitats (Table 2).

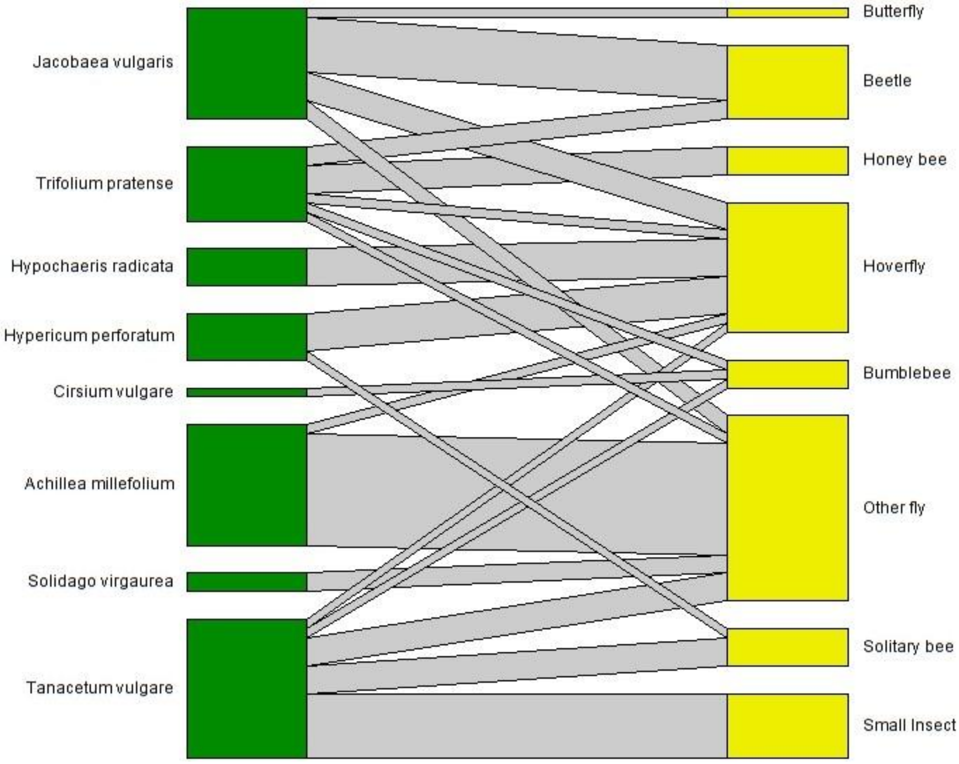

Figure 4. Troopers Hill acid grassland plant-pollinator network.

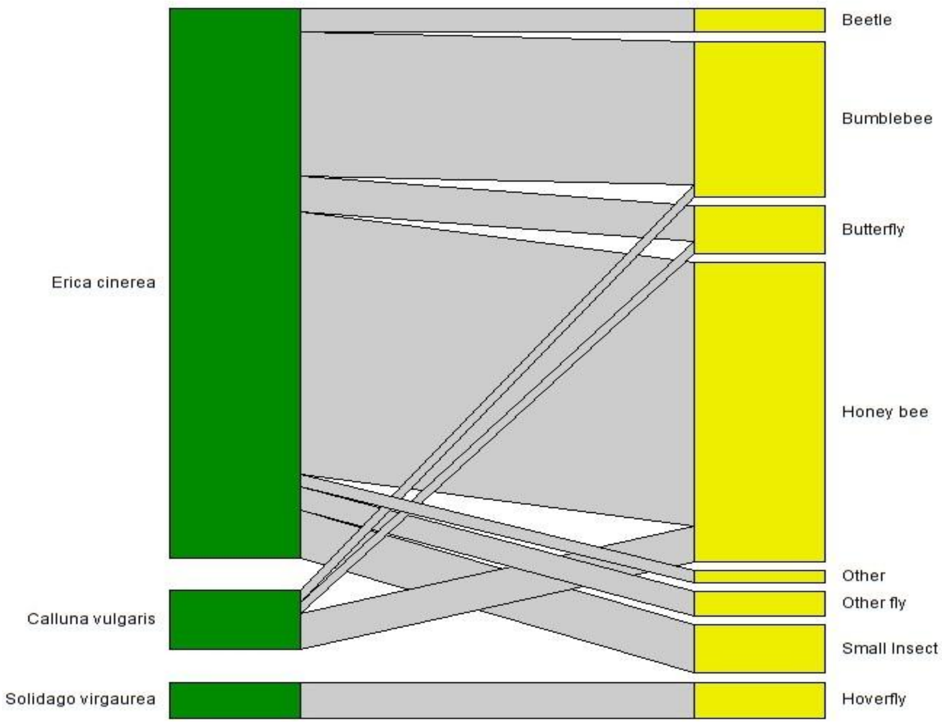

Figure 5. Troopers Hill lowland heathland plant-pollinator network.

Table 2. Network indices produced from Troopers Hill acid grassland and lowland heathland plant-pollinator network data

Network topic	Index	Troopers Hill habitat:	
		Acid grassland	Lowland heathland
Structure	Shannon	2.72	1.84
	H2	0.53	0.43
	Modularity Q	0.52	0.12
Functioning	Plant niche overlap	0.28	0.31
	Pollinator niche overlap	0.23	0.73
Resilience	Plant robustness (set.seed=1)	0.54	0.29
	Pollinator robustness (set.seed=1)	0.58	0.62

Discussion

Acid grassland:

Involving 21 unique interactions, the AG habitat at TH contains a relatively stable and diverse plant-pollinator network (Figure 4). Considerable network modularity (0.52), interaction diversity (2.72), and specialisation (0.53) indicate this network consists of distinct clusters of diverse interacting species (Table 2). This notion is reflected by plant (0.28) and pollinator (0.23) communities' low niche overlap, indicating significant resource portioning (Table 2). As a result of this network being comprised of diverse clusters of interacting species, both plants (0.54) and pollinators (0.58) are largely resilient to species loss (Table 2).

While 8 species of flowering plant were recorded within AG during this study, this was the result of the re-selection process defined earlier, with the majority of the habitat being dominated by short grasses and patches of bare ground. The lack of observed common indicator species such as heath bedstraw (*Galium saxatile*) or harebells (*Campanula rotundifolia*) (Defra, 2025), while potentially the result of random sampling, was concerning, as was the relatively low number of solitary bees observed at the site (Figure 3) given the importance of AG and bare ground to this group's ecology (Natural England and RSPB, 2020).

Lowland heathland:

In contrast to AG, the more generalised LH network contained fewer unique interactions (11) (Figure 5). Lower modularity (0.12), interaction diversity (1.84), and specialisation (0.43) indicate a less diverse, less compartmentalised network structure (Table 2). While plant niche overlap was low (0.31), there was a high level of overlap within the pollinator community (0.73), suggesting functional redundancy and high competition (Table 2). Low interaction diversity and modularity may explain this habitat's low plant robustness (0.29), however, the observed high pollinator robustness (0.62) is likely misleading due to the dominance of bell heather (Table 2; Figure 2). Since robustness simulations assume random species loss, the low impact of removing other plant species masks pollinators' dependence on bell heather.

While low in species richness and diversity compared to AG, the observed LH plant-pollinator network is typical of dry heathland, with bell heather, honeybee, and bumblebee dominance matching previous observations in England (Forup *et al.*, 2008). The high degree of pollinator niche overlap observed in this study, especially between honeybees and bumblebees which shared the same two plant species (Figure 5), is also well-documented within heathlands, however the extent of their resource competition appears somewhat unclear (Burns, Herbertsson, and Stanley, 2025; Franklin *et al*., 2018).

Climate change:

While being considered relatively resilient to climate change, AG is still expected to experience community shifts, loss of bare ground, and the spread of stress-tolerant species; LH, which is more sensitive, could additionally undergo reduced structural diversity and increased competition from grasses (Natural England and RSPB, 2020). Given these impacts, TH's habitat mosaic will likely undergo significant changes going forward, with AG expanding into LH areas as stress-tolerant species are increasingly selected for (Carey, 2015). While AG had a greater plant and interaction diversity in this study (Figure 2, Table 2), given both habitats support distinct communities, the loss of either would harm local biodiversity. Expected shifts in species' ranges and phenology will also likely cause significant disruption to these plant-pollinator networks (Gérard *et al*., 2020), especially in AG given its higher level of specialisation and compartmentalisation (Table 2), factors known to increase susceptibility to such disturbances (Schleuning *et al*., 2016).

Management recommendations:

This study highlights the vast differences between AG and LH plant-pollinator networks at TH, emphasising the importance of maintaining and enhancing both habitats for biodiversity and ecosystem functioning outlined in the site's management plan (WEC, 2020). While numerous tools to manage and improve these networks exist, many, like grazing or controlled burns, are unsuitable given TH's urban setting.

Despite relatively high species richness (Figure 2), AG has low floral abundance. This could potentially be enhanced through the seeding of yellow rattle (*Rhinanthus minor*) to reduce grasses' competitive dominance, before reseeding areas with critical AG species such as tormentil (*Potentilla erecta*) (Defra, 2025), improving network robustness and supporting specialist pollinators such as the tormentil mining bee (*Andrena tarsata*) (The Wildlife Trusts, 2025). Bare ground should be left unseeded, with succession actively suppressed in these areas to protect solitary bees' habitat.

Similarly, interspersing species like harebells and heath milkwort (*Polygala serpyllifolia*) within LH would not only improve the habitat's low floral diversity (Figure 2), but also help reduce pollinator dependence on bell heather (Figure 5), decreasing niche overlap by facilitating resource partitioning, a process known to reduce competition and facilitate coexistence (Franklin *et al.,* 2018).

Any actions taken must be consistent with adaptive management principles, including repeated monitoring of plant-pollinator networks to assess responses to interventions like those discussed, helping guide future decisions.

Limitations and future steps:

While providing initial insights into TH's AG and LH plant-pollinator networks, there are limitations to this study's findings. For example, random quadrat positioning was constrained by the lack of a formal habitat assessment map, and sampling was restricted to a single day, potentially obscuring temporal variation in pollinator communities. Additionally, the FIT count approach only identified pollinators to a group level, limiting taxonomic resolution.

Future studies should look to sample these networks throughout the year to capture seasonal changes in pollinator activity and floral resources (Harris, Balfour, and Ratnieks, 2024). Integrating nocturnal surveys to assess the role of moths in pollination, a taxa of known importance for species like red clover (Alison *et al.,* 2022), would also be helpful. Finally, using alternative methods such as sweep netting and passive traps could help reveal different pollinator assemblages (Thompson *et al.,* 2021).

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Appendices

Appendix 1. Complete Troopers Hill plant-pollinator observational study dataset

Quadrat	Plant species	Pollinator group	Frequency
AG1	*Jacobaea vulgaris*	Butterfly	1
AG1	*Jacobaea vulgaris*	Other fly	1
AG1	*Jacobaea vulgaris*	Hoverfly	3
AG1	*Jacobaea vulgaris*	Beetle	5
AG2	*Trifolium pratense*	Honey bee	3
AG2	*Trifolium pratense*	Beetle	1
AG2	*Trifolium pratense*	Other fly	1
AG2	*Trifolium pratense*	Hoverfly	1
AG3	*Hypochaeris radicata*	Hoverfly	2
AG4	*Hypochaeris radicata*	Hoverfly	2
AG5	*Cirsium vulgare*	Bumblebee	1
AG5	*Jacobaea vulgaris*	Other fly	1
AG5	*Jacobaea vulgaris*	Beetle	1
AG6	*Achillea millefolium*	Other fly	5
AG6	*Achillea millefolium*	Hoverfly	1
AG7	*Solidago virgaurea*	Other fly	2
AG8	*Tanacetum vulgare*	Solitary bee	3
AG8	*Tanacetum vulgare*	Small insect	7
AG8	*Tanacetum vulgare*	Hoverfly	1
AG8	*Tanacetum vulgare*	Other fly	3
AG8	*Tanacetum vulgare*	Bumblebee	1
AG9	*Hypericum perforatum*	Solitary bee	1
AG9	*Achillea millefolium*	Other fly	7
AG9	*Hypericum perforatum*	Hoverfly	4
AG10	*Trifolium pratense*	Bumblebee	1
AG10	*Trifolium pratense*	Beetle	1
LH1	*Erica cinerea*	Small insect	2
LH1	*Erica cinerea*	Beetle	1
LH1	*Erica cinerea*	Bumblebee	4
LH2	*Calluna vulgaris*	Butterfly	1
LH2	*Erica cinerea*	Butterfly	1
LH2	*Erica cinerea*	Other fly	2
LH2	*Calluna vulgaris*	Honey bee	1
LH3	*Solidago virgaurea*	Hoverfly	3
LH3	*Erica cinerea*	Honey bee	3
LH3	*Erica cinerea*	Bumblebee	1
LH4	*Erica cinerea*	Butterfly	1
LH4	*Erica cinerea*	Bumblebee	4
LH4	*Erica cinerea*	Honey bee	7
LH5	*Erica cinerea*	Honey bee	1
LH6	*Erica cinerea*	Honey bee	2
LH6	*Erica cinerea*	Beetle	1
LH7	*Erica cinerea*	Bumblebee	1
LH7	*Erica cinerea*	Other	1
LH7	*Erica cinerea*	Honey bee	1
LH8	*Erica cinerea*	Small insect	2
LH8	*Erica cinerea*	Bumblebee	1
LH8	*Erica cinerea*	Honey bee	6
LH8	*Erica cinerea*	Butterfly	1
LH9	*Calluna vulgaris*	Bumblebee	1
LH10	*Calluna vulgaris*	Honey bee	2
LH10	*Erica cinerea*	Honey bee	2
LH10	*Erica cinerea*	Bumblebee	1

Appendix 2. Observed plant species in Troopers Hill acid grassland and lowland heathland habitats (✓ indicates presence)

Plant species	Common name	Acid grassland	Lowland heathland
Jacobaea vulgaris	Ragwort	✓	
Trifolium pratense	Red clover	✓	
Hypochaeris radicata	Common cats ear	✓	
Cirsium vulgare	Spear thistle	✓	
Achillea millefolium	Common yarrow	✓	
Solidago virgaurea	European goldenrod	✓	✓
Tanacetum vulgare	Tansy	✓	
Hypericum perforatum	St John's Wort	✓	
Erica cinerea	Bell heather		✓
Calluna vulgaris	Common heather		✓
Teucrium scorodonia	Woodland germander		✓

Appendix 3. Observed pollinator groups in Troopers Hill acid grassland and lowland heathland habitats (✓ indicates presence)

FIT count pollinator group	Acid grassland	Lowland heathland
Bumblebees	✓	✓
Honeybees	✓	✓
Solitary bees	✓	
Wasps		
Hoverflies	✓	✓
Other flies	✓	✓
Butterflies	✓	✓
Moths		
Beetles >3mm	✓	✓
Small insects <3mm	✓	✓
Other insects		✓

Appendix 4. Risk assessment for Troopers Hill plant-pollinator network surveys

University of the West of England BRISTOL

GENERAL RISK ASSESSMENT FORM

Ref: RMA5

Describe the activity being assessed:	**Assessed by:**	**Endorsed by:**
Off-campus postgraduate research activity. The activity will take place at Troopers Hill Park LNR and be carried out by a postgraduate student during daylight hours. The student will undertake plant-pollinator surveys at different habitats within Troopers Hill LNR in order to understand network compositions and study differences between habitats. The surveys will broadly follow the process outlined in the Flower-Insect Timed (FIT) count approach developed by the UK Pollinator Monitoring Scheme. The planned activity will take place over 3-4 hours on two days in late July / early August 2025. HAS safe systems of work will be adhered to at all times, with particular attention paid to SS0W11 Incidental Exposure to Hazardous Microorganisms (see here).	Mark Ashby	Bethan Hindle
Who might be harmed: Student – Kieran Masters **How many exposed to risk:** 1	**Date of Assessment:** 13.07.25	**Review date(s):** 13.07.26

Hazards Identified ***(state the potential harm)***	**Existing Control Measures**	**S**	**L**	**Risk Level**	**Additional Control Measures**	**S**	**L**	**Risk Level**	**By whom and by when**	**Date completed**
Weather – exposure to cold, wet and windy weather, leading to illness or hypothermia. Weather – exposure to sunny weather leading to sunburn.	Activity is scheduled to occur in July, when the weather is most likely to be sunny and warm.	3	2	6	Student will avoid working in poor weather conditions by planning work in conjunction with weather forecasts. If very poor working conditions are forecasted (e.g., an amber or red weather warning), the planned activity will be postponed for another day/cancelled. Work must not be conducted in the event of an amber or red weather warning. The student will check the weather forecast and any weather warnings on the day of the activity before departure. Student will assess weather on arrival and continue to assess weather throughout the activity. If the weather deteriorates, the student will consider briefly taking shelter somewhere on-site or ending the activity. The student will bring and wear appropriate clothing depending on the expected weather on the day. If the weather is sunny, the student will wear clothing that covers their arms and legs (for protection from the sun). If the weather is sunny, the student will apply sun cream to exposed skin and have a sunhat and sunglasses to hand.	3	1	3	Student before the activity and during the activity Student before leaving Student at survey Student before and throughout activity Student throughout the activity Student before the activity	

					The student will bring a supply of water and food to maintain comfort levels throughout the day.				Student before and throughout the activity	
Lone working. Not being able to summon help if needed. Personal attack leading to personal injury.	Student will be working in a public nature reserve and will not be working in remote areas. Student is advised to carry a charged mobile phone with them at all times. The mobile coverage across the site is good.	4	1	4	The student will always carry a charged mobile phone and will bring a portable charger (battery pack and cable). Be vigilant and know the area and where you can go in case someone is showing signs of inappropriate behaviour or aggression. If someone is following you, walk to an area where there are more people, and if needed, contact friends/family/staff or emergency services.	4	1	4	Student, On the day of the activity Student, throughout the activity	
Slips/trips/falls when walking to the field sites leading to minor cuts and abrasions; broken limbs; sprained ankles.	Student is advised to wear appropriate footwear, i.e., sturdy walking boots with good ankle support. Student is advised to take care and to watch footing whilst walking during the activity particularly where the ground may be icy, muddy, wet or slippery. Some of the slopes in Troopers Hill are especially steep, increasing the risk of injury from slips/trips/falls	3	1	3	Wear appropriate footwear, i.e., sturdy walking boots with good ankle support. Watch your footing while walking during the activity, particularly where the ground may be wet, flooded, muddy, or slippery. Student will avoid working on these steep surfaces, re-selecting any random quadrat positions that landed on such land	3	1	3	Student throughout activity Student throughout the activity Student throughout the activity	
The contraction of Lyme's disease from a tick bite.	Tick bites are more common in Spring/Summer months, than in Autumn/Winter months. Student acknowledges that working in the field carries the risk of picking up ticks. Student is advised to wear long trousers tucked into their socks so that ticks cannot attach or climb up the leg.	3	1	3	Check for ticks on your body after you have been out in the field. If ticks are found, remove them as soon as possible with a tick-removing tool. These can be/will be part of the first-aid kit. Ask technical or academic staff to provide one before beginning the activity.	3	1	3	Student during and after the activity. Student during and after activity	

	Ideally, wear light-coloured clothing so that ticks are visible.				If you develop any of the following symptoms: Headache, Extreme Fatigue, a typical bull's eye rash, spreading outwards, not necessarily in the area of the bite, seek medical advice and mention you have experienced a tick bite. Awareness and knowledge of dangerous species, and where they could be.				Student, if concerned Student throughout the activity	
Cuts, bites or adverse reactions caused by plants and animals, e.g. contact with nettles, dogs, wild mammals, birds, biting/stinging insects, etc, leading to rashes, physical injury.	Student is advised by Mark Ashby to: 1) Avoid coming into extensive contact with plants, and wear long trousers & sleeves when working in long grass. 2) Avoid close proximity with insect nests (e.g. ant, bee, wasp). 3) not provoke or approach wildlife (e.g. wild mammals, birds or reptiles), ensure minimal disturbance of habitats and avoid contact with pets.	3	2	6	Follow the rules outlined in existing control measures. In the event of a minor sting/cut/bite, participants to consider seeking medical attention, depending on severity., In the event of a moderate sting/cut/bite (such as a large cut or an animal bite), the student should seek emergency medical attention (call 111 or 999). Any student hypersensitive to insect bites or plants should bring personal medicines.	3	1	3	Student during the activity Student throughout activities. Student throughout activity Student throughout activity	
Coming into contact with moving road traffic or off-road vehicles can lead to physical injury	No activities will take place close to the roadside.	5	1	5	Be aware of traffic. Do not cross roads on blind bends or near hill crests. If any roads are to be crossed, use designated crossing points where possible.	5	1	5	Student, throughout activities.	

					Stay vigilant for off-road vehicles (e.g. 4x4s, golf buggy, lawnmower), ensure you are visible to any in nearby proximity, and avoid getting close to them when moving.					
Incidental ingestion of dirty water, dirt or faeces when eating leading to infection and severe illness. Agents that can cause GI tract infections are common in the environment, particularly where animal excrement is present. Other infectious agents in the environment, such as *Salmonella*, *E. coli* O157, *Campylobacter* and other infectious agents	Student has been informed before the activity about the risk of contracting an infection through incidental ingestion or inhalation of contaminated matter during fieldwork The planned activities do not require any interaction or handling of soil. CHSS SS0W11 'Incidental Exposure to HG2 Microorganisms during Environmental Fieldwork, Field Trips or Similar Activities in the UK' will be adhered to at all times (see here).	4	1	4	The student will maintain normal hygiene practices, such as washing hands thoroughly with soap and running water before any lunch or refreshment breaks using the handwashing facilities. The student will avoid contact with animal excrement and will wash hands (with running water and soap) as soon as possible if contact occurs. A copy of SSOW 11 will be provided to the student	4	1	4	The student, before and during the activity. The student, before and during the activity. Mark Ashby, before any work begins	

RISK MATRIX: (To generate the risk level).

Very likely **5**	**5**	**10**	**15**	**20**	**25**
Likely **4**	**4**	**8**	**12**	**16**	**20**
Possible **3**	**3**	**6**	**9**	**12**	**15**
Unlikely **2**	**2**	**4**	**6**	**8**	**10**
Extremely unlikely **1**	**1**	**2**	**3**	**4**	**5**
Likelihood (L) ↑ **Severity (S)** →	**Minor injury – No first aid treatment required** **1**	**Minor injury – Requires First Aid Treatment** **2**	**Injury - requires GP treatment or Hospital attendance** **3**	**Major Injury** **4**	**Fatality** **5**

ACTION LEVEL: (To identify what action needs to be taken).

POINTS:	**RISK LEVEL:**	**ACTION:**
1 – 2	NEGLIGIBLE	No further action is necessary.
3 – 5	TOLERABLE	Where possible, reduce the risk further
6 - 12	MODERATE	Additional control measures are required
15 – 16	HIGH	Immediate action is necessary
20 - 25	INTOLERABLE	Stop the activity/ do not start the activity