

LONDON GATWICK



ANNUAL BIODIVERSITY REVIEW 2023

Our annual report summarising biodiversity work at London Gatwick and progress with the Biodiversity Benchmark Award

Abridged Version

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ACKNOWLEDGEMENTS

We would like to thank everyone who has contributed their time and effort toward the Biodiversity Action Plan in 2023, including:

- ❖ Our biological recorders Vince Massimo, Peter Townend, Tom Forward, Nick Aplin, Laurie Jackson, Jeremy Charman, Scotty Dodd, Jacob Everitt, Ian Barnard, Martyn Cooke, Lucy Groves, Sam Buckland, Stuart Card and Jon Middleton for their valuable time
- ❖ The Sussex Biodiversity Record Centre for their help with data collation, in particular Lois Mayhew and Bob Foreman for providing the latest species breakdown for Gatwick
- ❖ The Gatwick Greenspace Partnership Team; Tom Simpson, Tamara Jewell, Kevin Lerwill, Barry Wildish and Ryan Greaves
- ❖ Gatwick's Volunteer Reserve Managers; Harry Smith, Chris Lowe, Phil Turner and Robert Healey
- ❖ Roots Upwards Ltd, Synergy TJ Ltd, Gatwick Construction Ltd, Birdstrike Management Ltd and Glendale Landscape Services, for their continued support of the Biodiversity Action Plan.

Cover image:

Clifden Nonpareil *Catocala fraxini* in Brockley Wood (Rachel Bicker)

[1] – INTRODUCTION

[A] – SUMMARY

In 2023 London Gatwick has continued to uphold the requirements of The Wildlife Trusts' Biodiversity Benchmark Award. This is a certification process to help organisations manage land for biodiversity, enabling any organisation to assess its impact on the natural world and improve its contribution to the environment, whilst demonstrating commitment to biodiversity. It is the first recognised tool in the UK for awarding continual biodiversity improvement. The Benchmark is flexible and adaptable, so that it can be applied to any organisation managing land, from businesses to local authorities and charities.



- ➔ London Gatwick retained The Wildlife Trust's **Biodiversity Benchmark Award** for management of landholdings for the **9th year** in a row (awarded in February 2023)
- ➔ A total of 3,120 species have been recorded in and around Gatwick's biodiversity areas. New species include Birch Poisonpie *Hebeloma leucosarx*, Maple Whitewash *Dendrothele acerina* and Four-banded Longhorn Beetle *Leptura quadrifasciata*
- ➔ Gatwick Greenspace Partnership completed a total of **66 volunteering days, 1183 hours**. This included:
 - Completion of habitat management tasks by Volunteer Reserve Managers = 879.25 of the total hours (67%)
 - Over 260 individuals volunteering from companies including Gatwick Airport Ltd, Total Energies and Gas, Japan Electron Ltd, Green Cube Ltd, Thales and Savills Ltd
- ➔ 46 education events, engaging just over 1399 children and 147 adults
- ➔ A total of **16 out of 25 (64%) of the ecology surveys** were successfully completed
- ➔ A total of **68 out of 103 (66%) habitat actions** were successfully completed
- ➔ London Gatwick achieved category winner in the ACI Eco-Innovation Award (Airports Council International) 2023 for its ambitious Biodiversity Action Plan
- ➔ Working in partnership with Sussex Biodiversity Records Centre and Gatwick Greenspace Partnership



[B] – PHOTO HIGHLIGHTS 2023



Figure 1- Rachel Bicker on one of her last days with GGP and the VRMs © Rachel Bicker



Figure 2- Scotty Dodd undertaking an invertebrate survey in Goats Meadow © Rachel Bicker



Figure 3- Martyn Cooke undertaking bat box checks with new GGP officer Barry Wildish © Rachel Bicker



Figure 4- Nightingale rung by Stuart Card NWZ © Rachel Bicker



Figure 5- Bluebells in Horleyland Wood © Rachel Bicker



Figure 6- Bracken Scything in Horleyland Wood © Rachel Bicker



Figure 7- VINCI Environment Day 2023 © Rachel Bicker



Figure 8- Green Hairstreak *Callophrys rubi* © Rachel Bicker



Figure 9- Longhorn beetles *Pyrrhidium sanguineum* categorised as vulnerable with the Red Data Book © Rachel Bicker



Figure 10- VRMs with Tom Simpson on his last day © Rachel Bicker



Figure 11- Tom Forward conducting a winter bird survey with new Senior Ecologist Darcey Haldar © Rachel Bicker

Climate change

Human activity has increased carbon dioxide (CO₂) emissions and caused rising temperatures worldwide since the growth of industrialisation in the 19th Century. The impacts of climate change are being felt around the biodiversity sites, with unpredictable weather events such as prolonged periods of drought and extreme rainfall becoming more commonplace.

The average daytime temperature in the UK in summer currently ranges from about 14C in northern Scotland to 22C in southern England. But summers have been getting warmer, with four of the 10 hottest summers up to 2019 recorded in the past two decades. Rainfall measurements fluctuate from year to year, making projections challenging, but winters over the past 30 years have been rainier on average than previously, and the pattern of wetter winters could continue.

Met Office UK Climate Projections (UKCP) help us see how climate change might affect the UK in the future. In a high emission scenario, it is expected that the UK will experience:

- Warmer and wetter winters
- Hotter and drier summers
- More frequent and intense weather extremes

By 2070 it is projected:

- Winters will be between 1 and 4.5°C warmer and up to 30% wetter
- Summers will be between 1 and 6°C warmer and up to 60% drier

These changes could have very big impacts on ecosystems and may determine what species are able to persist within a given area.

Weather summary

Overall, 2023 was a very warm and rather wet year for the UK. The most notable features were the record-breaking temperatures in June, the exceptional heatwave in early September and run of named storms through the autumn and early winter. The year included cold snaps in mid-January, early March and late November to early December, by far the most impactful weather occurred in the second half of the year. In 2023 the UK experienced the equivalent to 111% of UK average rainfall and putting it just outside the top 10 as the 11th wettest year in a series going back to 1836. It was the sixth wettest March and July, seventh wettest October and ninth wettest December.

Late winter

The first half of **January** began mild, unsettled and wet, with some areas having roughly their average rainfall for the whole of January within the first two weeks. There was much drier and colder weather from mid-month, although temperatures gradually edged upwards in the final week to somewhere near or slightly above average. Mean temperatures for January month ended up slightly above average and sunshine was well above average in most areas. February overall was milder and drier than average, this being the UK's driest **February** since 1993. Mean temperatures for this month were well above average.

Spring

March mean temperatures ended up close to their average for most areas. Overall the UK had 155% of average rainfall for the month, and it was the sixth wettest March in records back to 1836. It was especially dull in the south of England and Wales with some places having barely half their average sunshine. **April** saw southern and eastern parts of England experiencing higher rainfall than the rest of the UK. Overall a predominantly unsettled month, with little in the way of consistent warmth. **May** was a relatively wet month in the south east, with thunderstorms and widespread flooding around the 9th. The second half of the month was more settled and the temperature was 1°C above average.

Summer

June was settled in the beginning then became hot, humid and stormy around the middle of the month. Temperature peaked at 30°C around June 10th at Gatwick, then remained high for the second half. Overall it was the hottest June on record in the UK at 2.5°C above average, with exceptional amounts of sunshine. **July** was a contrasting month, overall cool, wet and windy. A very brief warm spell on July 7th saw a temperature of 28 at Gatwick, but thereafter the daytime temperatures stayed around a peak of 20°C. The temperatures and sunshine levels were lower than average, whereas rainfall was well above average, particularly in the north of the UK. **August** saw continuing cool, damp and cloudy weather for much of the month. Settled periods of high pressure were brief, followed by light rain and windy conditions. Overall rainfall and temperature were close to average for this month.

Autumn and early winter

September was an exceptional month, with a heatwave from the 4th to the 10th and temperature close to or above 30°C at Gatwick, and the hottest day of the year for Gatwick was on the 9th with a temperature of 32°C. The middle of the month saw largely unsettled and stormy weather, with some torrential downpours. For England this was the warmest September since records began. The first half of **October** was largely settled in England, with

warm and sunny conditions. It was another exceptional month with temperatures in the 20s from the 6th - 10th (high temperatures of up to 24°C at Gatwick). The warm spell broke from the 11th and the second half was more unsettled, with consistent and at times very heavy rain.

The first half of **November** was stormy and unsettled, with strong winds and rain along the southern coast brought by Storm Ciaran. The second half of the month was more settled, with overnight temperatures dropping regularly below freezing from the 25th. Temperatures for **December** were above average across the whole of the UK except northern Scotland, and it was the equal-fifth warmest December for England and Wales in respective series from 1884. It was also the equal-eighth wettest December for the UK in a series from 1836. The year ended on a turbulent note with a run of very unsettled, wet and windy weather.

References:

<https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index>

<https://weatherspark.com/h/y/147867/2023/Historical-Weather-during-2023-at-London-Gatwick-Airport-United-Kingdom#Figures-Temperature>

Guy Freeman: British Wildlife Volumes 34 – 35.3 2023

Authored by Darcey Haldar, Senior Ecologist for Gatwick Airport Ltd

The following section provides a summary of our species monitoring for the past year within the biodiversity areas. These areas are made up of two distinct sites; the North West Zone (NWZ), where the River Mole emerges north of the runway, and the Land East Zone (LEZ). Aerial maps are provided in [Section 6](#) of this report.

Along with data collated via ecological surveys, casual wildlife records are also collected each year from individuals using the iRecord and BirdTrack biological recording platforms. This data is then shared with the Sussex Biodiversity Record Centre (SxBRC) and is in turn made accessible by individual wildlife recording schemes. Summary tables of protected and ‘notable’ species for different wildlife groups have been compiled with assistance from the SxBRC. Notable species are those which currently have an official conservation designation, are uncommon, or have some ecological significance in the local area.

The value of monitoring is that it feeds back into our Biodiversity Action Plan targets and actions. A table of recommendations made by ecological surveyors are in [Section 7](#), titled Surveillance analysis.

Certain species groups have been adopted as Biodiversity Performance Indicators (BPIs) by Gatwick to show continual biodiversity protection and enhancement. Our six-year review 2018-2024 (to be published in early 2025) will provide a summary of our progress against all of our baseline BPIs.



BirdTrack

British Trust for Ornithology

PEGI 3

This app is available for all r



iRecord App

UK Centre for Ecology and Hydrology Tools

PEGI 3

This app is available for all of your devices

<http://www.birdtrack.net>

<https://www.brc.ac.uk/irecord/>

[B] – BIOLOGICAL RECORDS SUMMARY



Below is the latest summary extract from the SxBRC showing wildlife statistics for our sites. By the end of 2023, a total of **3,120 species** were recorded in and around Gatwick's biodiversity areas. The summary extract includes a small buffer of 0.25km to the airport boundary. This is to compensate for mobile species which can be recorded near or on the airport boundary.

Table 1- Biological record statistics for London Gatwick to date

Statistic	No.
Total Records	56,396
Total Species	3,120 (↑ 534)
*Section 41 species	78
Records to 2012	13,969
Records from 2012 to 2023	42,422

*Rare and threatened species listed under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006.

Table 2- New recorded species highlights in 2023

Name	Taxon	Group	Status
Epaulet Ladybird	<i>Rhyzobius chrysomeloides</i>	Invertebrates	Widespread and Locally Common
Four banded longhorn beetle	<i>Leptura quadrifasciata</i>	Invertebrates - Beetles	Sussex Rare
Leafhopper	<i>Iassus lanius</i>	Invertebrates - True Bugs	Widespread and Locally Common
Birch Poisonpie	<i>Hebeloma leucosarx</i>	Fungi	
Maple Whitewash	<i>Dendrothele acerina</i>	Fungi	










	Invertebrates	1781			
	Higher plants	607		Terrestrial mammals	25
	Fungi and slime moulds	401		Fish	16
	Birds	151		Bats	13
	Lichens and lower plants	117		Reptiles and amphibians	9

Table 3- Species group totals for all London Gatwick records as of 2023.

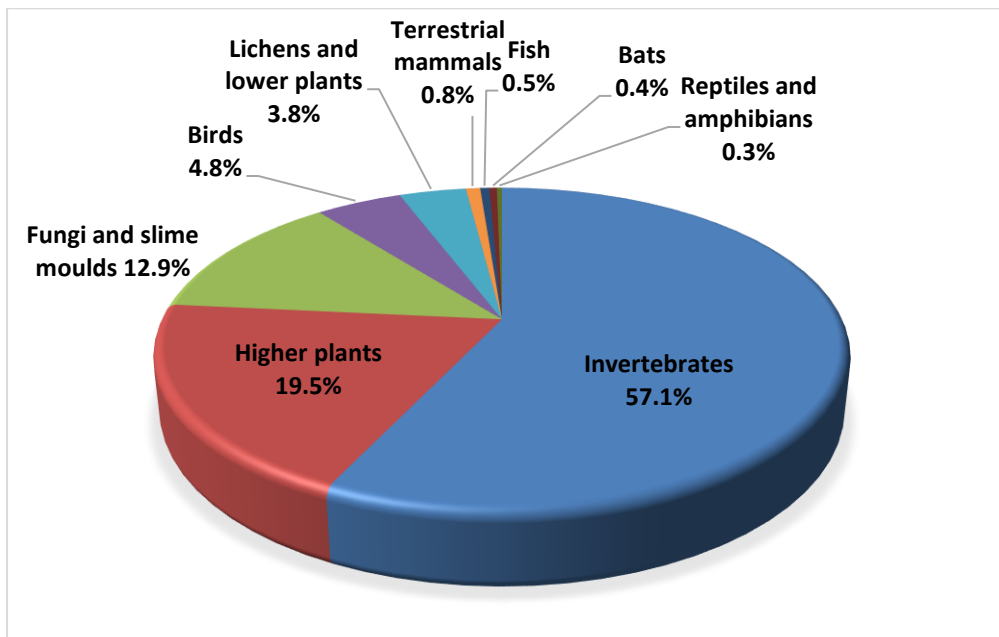


Figure 12- Species group breakdown by percentage for all London Gatwick records as of 2023

[C] – SPECIES GROUPS

AMPHIBIANS

Authored by Rachel Bicker, Biodiversity Consultant



Figure 13- Great Crested Newt male observed during bottle trapping survey of LEZ Pond 4 © Ryan Greaves

Amphibian torching surveys are carried out annually under licence¹ for seven ponds within the biodiversity areas. These are the Land East Zone ponds (Pond 3, Pond 4, Pond 7 and Rolls Farm Pond), and the North West Zone ponds (Charlwood Park 1, Charlwood Park 2 and Scotty's Pond). The method of torching is considered a less intrusive and labour-intensive approach for monitoring our amphibian populations compared with other methods such as bottle trapping and netting.

Four evening visits were made to the ponds during 2023; February 22nd, March 21st, April 9th and May 16th. Based on previous surveys, a decision was made to bring forward our first visit to the end of February (as opposed to the usual date of mid-March), to see how much activity we might pick up earlier in the season. February turned out to be a very dry and mild month, and on this first visit a moderate number of Great Crested Newt (GCN) were observed within CP1 (a total of 12). No other ponds contained GCN at this time, and counts of other newt species, Common Frogs and Common Toads during this month were low when compared with March. The GCN season tends to peak at slightly different times in different ponds, but March and April tend to show the highest levels of activity.

¹ <https://www.gov.uk/guidance/great-crested-newts-protection-surveys-and-licences>

Results

Table 4- Species group totals for all London Gatwick records as of 2023.

Pond name	GCN Peak counts	GCN Eggs	Male Smooth Newt	Male Palmate Newt	Smooth/ Palmate Newt
LEZ Pond 3	5	Y	10	0	31
LEZ Pond 4	0	N	10	7	81
LEZ Pond 7	1	Y	2	0	8
LEZ Roll's Farm Pond	0	N	1	0	1
NWZ Charlwood Park Pond 1	26	Y	3	0	6
NWZ Charlwood Park Pond 2	9	Y	2	0	6
NWZ Scotty's Pond	0	N	4	2	14

Great Crested Newt *Triturus cristatus*

Four of the biodiversity ponds are regularly observed to contain GCN. These are the LEZ Ponds 3 and 4, and NWZ Charlwood Park Ponds 1 and 2. Occasional records are made in LEZ Pond 7 and evidence of egg-laying has been observed here, however this pond tends to dry out annually during the early summer, which means it is sub-optimal for breeding.

Although no GCN were detected in LEZ Pond 4 during the torching surveys, a single male was picked up during a bottle trapping survey in early April. Pond 4 continues to be our best performing pond in terms of species diversity, with all five of the native amphibian species occurring at Gatwick being recorded here during 2023. This pond presents a challenge for the torching surveys, due to consistently high-turbidity from stirred-up silt, and the obscuring growth of Reed Sweet-grass *Glyceria maxima*. This dominant plant was accidentally introduced to the pond during habitat enhancement works in 2016 within pre-planted coir rolls. Continued vegetation removal with volunteers in the previous season has increased the amount of open water in Pond 4, and management of this pond continues to provide a diverse habitat for the variety of species breeding here.

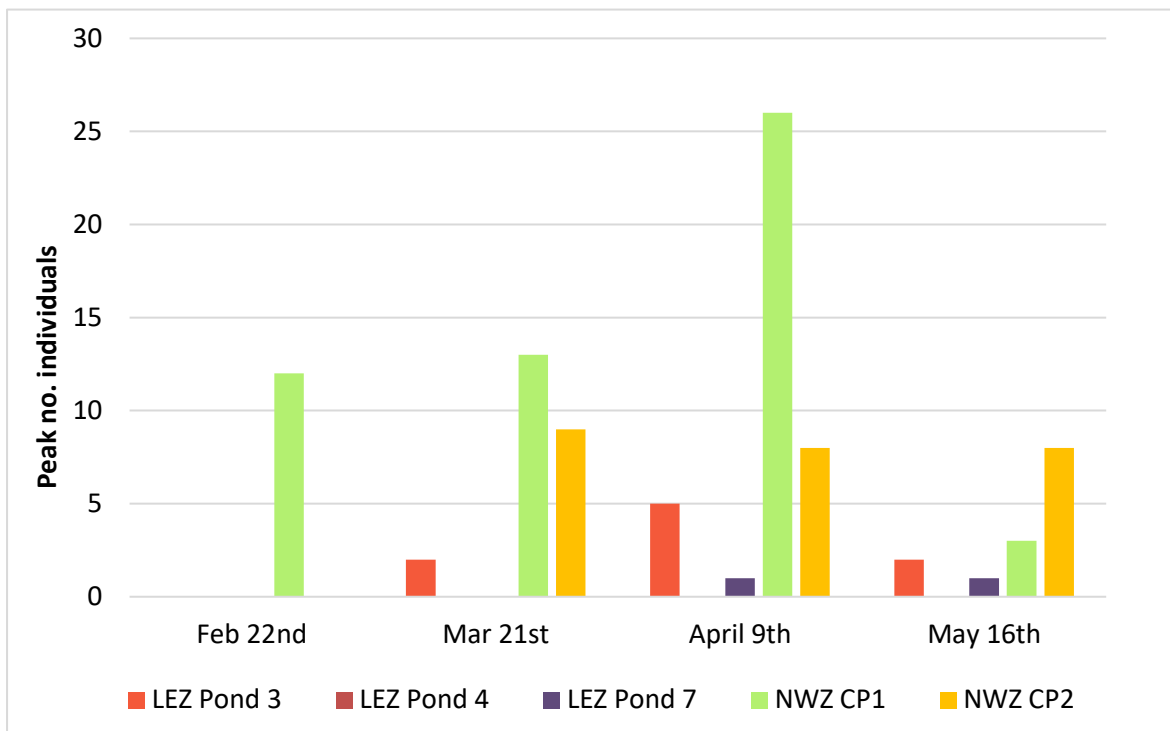


Figure 14- GCN torching survey results in four sessions during 2023

The differences in size and character of the biodiversity ponds results in varying conditions between them, affecting algal growth, duckweed coverage, turbidity and even surface coverage by willow seed. In Figure 4 therefore, the timing of peak counts of GCN are seen to vary slightly between the ponds. Numbers of GCN in both CP1 and LEZ Pond 3 peaked in April, then dropped off rapidly during May. In contrast, the count at CP2 peaked around late March, but remained fairly stable in May. Changes in vegetation cover of each pond might have reflected the changes in counts as the season progressed, however this year the surface of ponds remained relatively clear even into May. Therefore, these changes are likely more reflective of the adult population leaving the ponds at different times post-breeding.

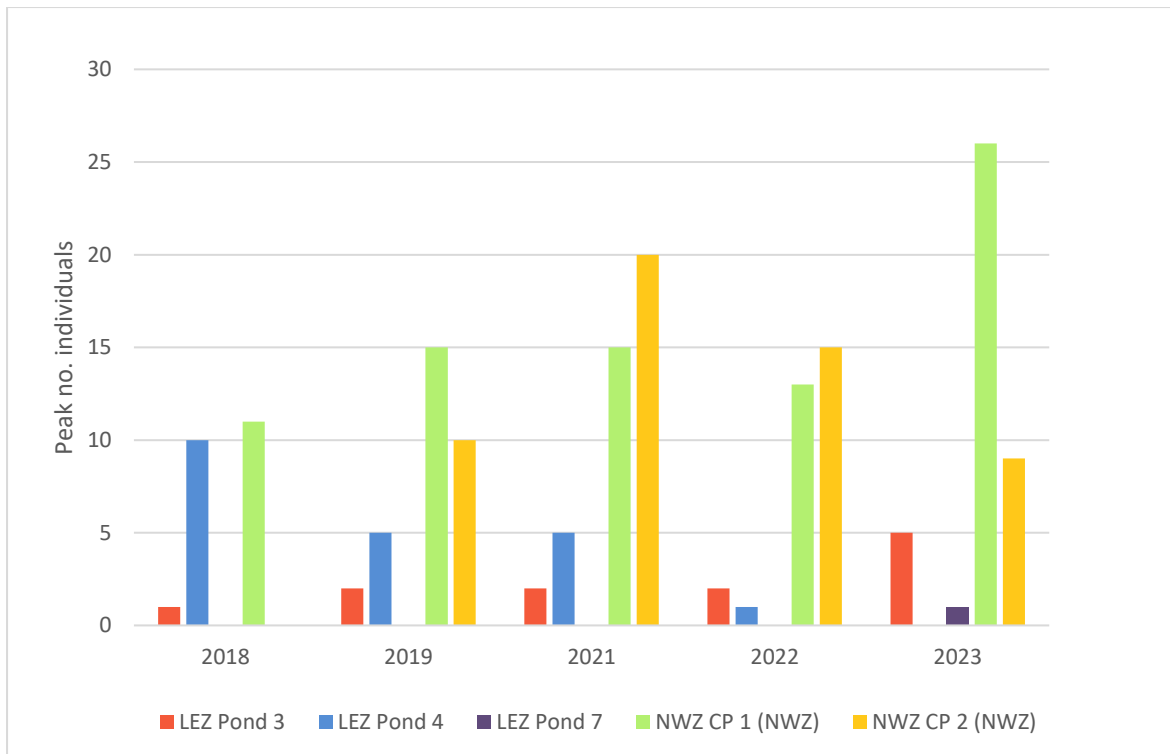


Figure 15- GCN peak counts 2018 - 2023

An all-time record count of 26 GCN occurred in CP1, contrasting with a peak of 9 in CP2 this year (the previous highest count being 20 in CP2 during May 2021). Numbers seem to fluctuate in these two immediately adjacent ponds between years, indicating a single population moving between the two waterbodies. LEZ Pond 7 turned up a single female GCN this year on two occasions, and eggs were once again observed being laid on Water Mint *Mentha aquatica*. A new record count of 5 adult GCN occurred in LEZ Pond 3 (the previous highest count of 2 individuals was made during 2019, 2021 and 2022).

Smooth/Palmate Newt *Lissotriton* sp.

A peak count of nearly 100 individuals of the *Lissotriton* genus was made in LEZ Pond 4 during March, typical of this pond (however an exceptional year occurred in April 2019 with over 200 individuals observed). Only the males of Smooth Newts *Lissotriton vulgaris* and Palmate Newts *Lissotriton helveticus* are distinguishable during the torching surveys, therefore the counts are not representative of the female cohorts of the populations. Smooth Newts remain the most abundant and widespread of the newt species, with 10 males observed in LEZ Ponds 3 and 4. Palmate Newts are regularly observed in low numbers within LEZ Pond 4, with occasional records from Pond 7 and CP1. This year two were also observed within NWZ Scotty's Pond.

Table 5- Peak counts of Anura (frog and toad species) during 2023

Pond name	Common Frog	Frogspawn	Common Toad	Water frog species
LEZ Pond 3	12	Over 300 clumps	54	0
LEZ Pond 4	3	1 or 2 clumps	6	0
LEZ Pond 7	1	25 clumps	0	0
LEZ Roll's Farm Pond	4	20 clumps	0	0
NWZ Charlwood Park Pond 1	0	0	0	2
NWZ Charlwood Park Pond 2	4	0	0	0
NWZ Scotty's Pond	4	15 clumps	0	0

Common Frog *Rana temporaria*

The highest amount of breeding activity was observed from LEZ Pond 3, with over 300 clumps of spawn observed during the late March survey. The amount of spawn has increased in LEZ Pond 7, with 25 clumps being a good raise on 10 in the previous year. Spawning activity of Common Frogs seemed to peak during March.

Common Toad *Bufo bufo*

LEZ Pond 3 typically exhibits the highest count of Common Toad, with a peak of 54 during the March visit. This number seems to fluctuate greatly, with up to 150 adults observed within this pond in some years. This may indicate a narrow breeding window, the peak of which our survey visits have missed. Pond 4 typically has a peak of less than 10 adults, with the highest count of 15 made during 2022. A single toad is normally observed in Scotty's Pond, however none were seen this year.

Water frogs *Pelophylax* sp

This non-native, recently colonising species tends to be very common within the River Mole and other nearby North West Zone waterbodies, but as of yet has not been observed in any of the Land East Zone sites. A peak of 2 adults were observed in NWZ CP1 during May, and although a single individual was previously recorded in Scotty's Pond during 2022, none were observed here in 2023.

Table 6- Locations of biodiversity ponds

Pond name	Grid reference	What3Words reference
LEZ Lower Picketts Pond	TQ 29501 40639	scale.eggs.faced
LEZ Pond 3	TQ 29279 40392	boxing.sushi.stuck
LEZ Pond 4	TQ 29479 40471	export.fonts.glue
LEZ Pond 5	TQ 29411 40121	chill.falls.duke
LEZ Pond 7	TQ 29324 39929	units.picked.navy
LEZ Rolls Farm Pond	TQ 29225 40145	suffice.part.closed
LEZ Simmo's Container Pond	TQ 29298 40021	sobs.drew.cotton
NWZ Charlwood Park 1	TQ 26143 41642	fats.yard.void
NWZ Charlwood Park 2	TQ 26146 41614	linked.mirror.crown
NWZ Scotty's Pond	TQ 25764 41196	jump.dirt.knee



Figure 16- Map of Land East Zone biodiversity ponds



Figure 17- Map of North West Zone biodiversity ponds

BATS

Bat box checks

Authored by Martyn Cooke

Surrey Bat group have been managing Gatwick's bat boxes since 2006. Due to covid restrictions and the resulting backlog of box checks in the county following restrictions being lifted, this was the first year of checks since 2019. 51 bat boxes in the NWZ were checked and cleared. Checks within Lower Picketts were unfortunately cancelled this year due to access issues.

In total 51 boxes were checked in Brockley Wood and the River Mole Corridor in 2023 with 13 showing evidence of being used (25%).

This is down on the previous count from 2019 which showed an average occupancy of 35% for Brockley Wood and the River Mole Corridor.

Activity surveys

Extract of report by Laurie Jackson

Bat transects have been walked at the airport since at least 2005 (Cooke 2009), with annual monitoring in place since 2014, alternating between the Land East Zone, the North West Zone and the River Mole corridor. There are 17 species of bats within the UK that are confirmed as breeding, with several additional species occasionally recorded as vagrants. All 17 species have been recorded in West Sussex, with 14 species recorded in Surrey (Cooke 2009).

Bat transect surveys were undertaken by Laurie Jackson and Tom Forward along the Brockley Wood transect route (Gatwick Woodlands, North West Zone and River Mole corridor) on 29 May, 22 June, 3 August and 5 September 2023, as part of annual biodiversity monitoring at London Gatwick. Transects were undertaken following standard methodology and in suitable weather conditions.

Bat activity was focused around the woody edge habitat of Brockley Wood and the linked woody shaws and hedgerows. Due to changes at the site since the survey in 2017, such as the construction of the new Hangar, the Brockley Wood transect followed a different route to that used previously. The aim of this survey was to gather data on the use of the site by bats in order to monitor against previous transects along this route, undertaken in 2017.

Summary of results:

- Three species of bats were recorded during the bat transect survey: **Noctule** *Nyctalus noctula*, **Common Pipistrelle** *Pipistrellus pipistrellus* and **Soprano Pipistrelle** *Pipistrellus pygmaeus*.
- The level of bat activity was consistent with the previous transect survey undertaken in this area, with between eight and 32 bat passes during a transect. The level of bat activity in the area is considered to be relatively low.
- There are good foraging opportunities in and around Brockley Wood for bats, however the light and noise disturbance from the runway and associated operations may impact their use of this area
- Common Pipistrelle continued to be the most frequently recorded species, they were recorded on all four transects accounting for 73% of passes
- Noctule was recorded during three of the transects, and a soprano pipistrelle was recorded during two of the transects.
- **Serotine** *Eptesicus serotinus* was recorded in 2017, however was not seen during this survey.
- Noctule activity tended to be over the open grasslands to the north of Brockley Wood rather than those to the south as recorded in 2017

Table 7- Last year recorded for all bat species: activity surveys, box checks and casual records

Common Name	Species Name	NWZ	LEZ	Airfield/other Gatwick area
Bechstein's Bat	<i>Myotis bechsteinii</i>	2020	2019	2019
Brandt's Bat	<i>Myotis brandtii</i>	2019	2019	2019
Brown Long-eared Bat	<i>Plecotus auritus</i>	2021	2022	2019
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	2023	2022	2020
Daubenton's Bat	<i>Myotis daubentonii</i>	2017	2019	2012
Leisler's Bat	<i>Nyctalus leisleri</i>	2021	-	2016
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	2021	-	2019
Natterer's Bat	<i>Myotis nattereri</i>	2020	2010	2017
Noctule Bat	<i>Nyctalus noctula</i>	2023	2022	2019
Serotine	<i>Eptesicus serotinus</i>	2021	2017	2019
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	2023	2019	-
Whiskered Bat	<i>Myotis mystacinus</i>	2022	2019	2019

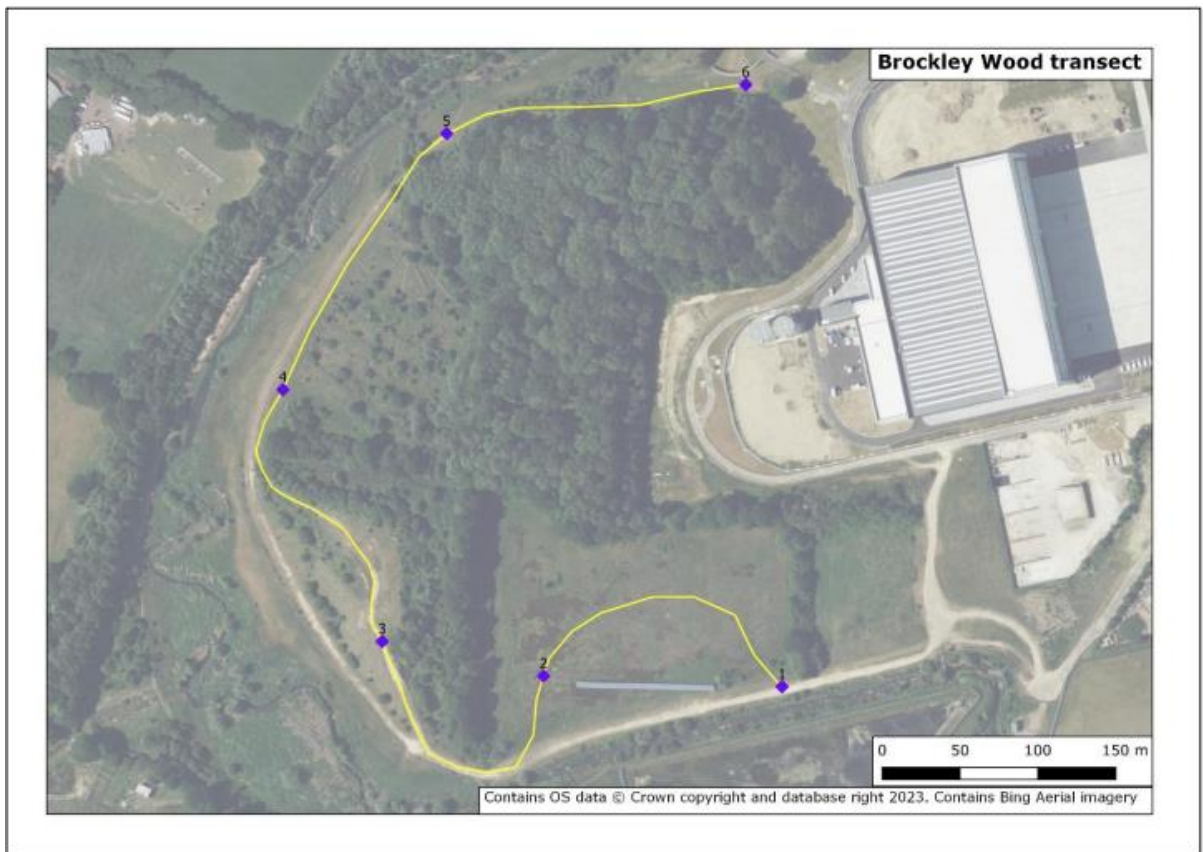


Figure 18- Brockley Wood Bat Transect

NIGHTINGALE SURVEY

Extract of report by Tom Forward



Figure 19- Northwest Zone scrub

This survey was undertaken by Tom Forward, assisted by Rachel Bicker, Stuart Card and Jon Middleton with the aim of identifying breeding status and distribution of Nightingale *Luscinia megarhynchos* along the river Mole corridor in the Northwest Zone (NWZ) at London Gatwick.

This is the first targeted survey for this species due to apparent increase in number of territories since the first recent records in 2016.

Nightingales are on the red list of Birds of Conservation Concern (BoCC5, 2021), the UK breeding population having declined by 48% between 1995 – 2020. The findings of these surveys help identify habitat areas of particular importance for this species to inform sensitive land management practices here.

The bird surveys were undertaken between 25th April and 12th June 2023. The bird survey comprised four visits to the survey area following an adapted Nightingale survey methodology as described in Bird Monitoring Methods (Gilbert et al, 1998) (Henderson 1996). All surveys were conducted under suitable conditions.

BTO bird ringers Jon Middleton (A permit holder) and Stuart Card (C permit holder) carried out targeted mist-netting sessions in identified Nightingale territories on 22nd April, and 11th, 24th, and 28th May. Data gathered in this way was shared to contribute to the results of this survey.

Results

Territory survey

The survey revealed four confirmed breeding territories, in the same locations as previous years (see map below), with the exception of a new territory near the Westfield Stream outflow west of the river.

Territories were confirmed based on records of singing males on more than one occasion, plus additional indications such as alarm calls between multiple birds in the same location around the expected nestlings/fledging dates. Likely due in part to increased survey effort than in previous years, it appeared that there was a wider distribution and an increased number of records in 2023, consistent with an upward trend of Nightingale presence throughout the breeding season since 2016.

The preferred nesting habitat used by Nightingales at Gatwick is between 3-5m in height and typically composed of dense Bramble *Rubus fruticosus agg*, Blackthorn *Prunus spinosa*, Dog-rose *Rosa canina*, Field Rose *Rosa arvensis*, Hawthorn *Crataegus monogyna*, Sallow *Salix sp.* and bordered by tall grasses and herbaceous vegetation

One Willow Warbler territory was recorded; the first breeding record of this declining, Amber-listed species since surveys by Tom Forward began in 2012.

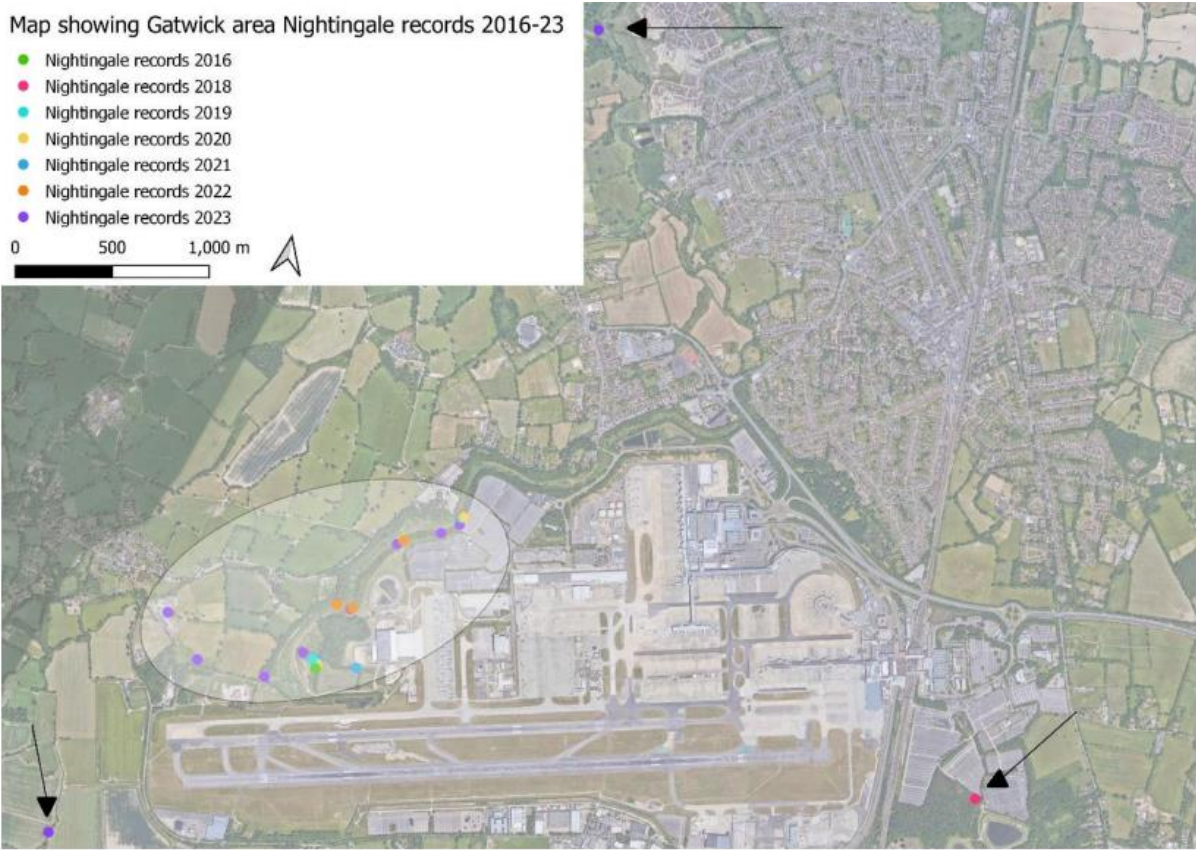


Figure 20- Map of Nightingale Records 2016-23

Mist netting

Four different Nightingales (1 ‘control’ and 3 new birds) were caught, ringed and released under licence, as part of a targeted ringing effort to understand more about how the birds are using the site (see in the table below). This data corroborates 3 of the territories identified in the main survey, with only the ‘stepping-stones’ territory bird at the northeast of the survey area not being caught.

‘Dave’ the Nightingale, first ringed in 2020 at the Knepp estate by Dave Green as a breeding bird and caught again in 2021 on territory at Gatwick. Back again at Gatwick in 2023. Interestingly, Nightingale ‘Dave’ was caught at stepping-stones area in 2021 but was caught at the bund slope nets near Brockley Wood in 2023.

Table 8- Nightingale ringing records 2023

Species	Ring	Ring no.	Age/Sex	Date	Time	Location caught
Nightingale	Controlled	AAK3967 ('Dave')	4M	22.04.23	07:30	Hedgerow ride
Nightingale	New	AHZ4748	4M	11.05.23	21:00	Holiday Car Park
Nightingale	New	AHZ4750	4M	24.05.23	18:00	Westfield Stream
Nightingale	New	AHZ4762	4	28.05.23	07:00	Bund slope nr Brockley Wood

There is an 8 year upward trend in presence and breeding activity of Nightingales at London Gatwick (see graph below). The factors that appear to be driving this change are:

- Habitat quality – the mixed native shrub and tree planting schemes of the year 2000 along the eastern slopes of Mole floodplain in the Northwest Zone have reached the height and density to provide suitable the nesting habitat for Nightingales.
- Site fidelity is high in Nightingales and male birds returning year on year will help to draw in new birds.
- An increase in local populations such as the Knepp Estate with 50 territories in 2022, which is 23km as the Nightingale flies from Gatwick, could be contributing to overspill into suitable habitat (see 'Dave').

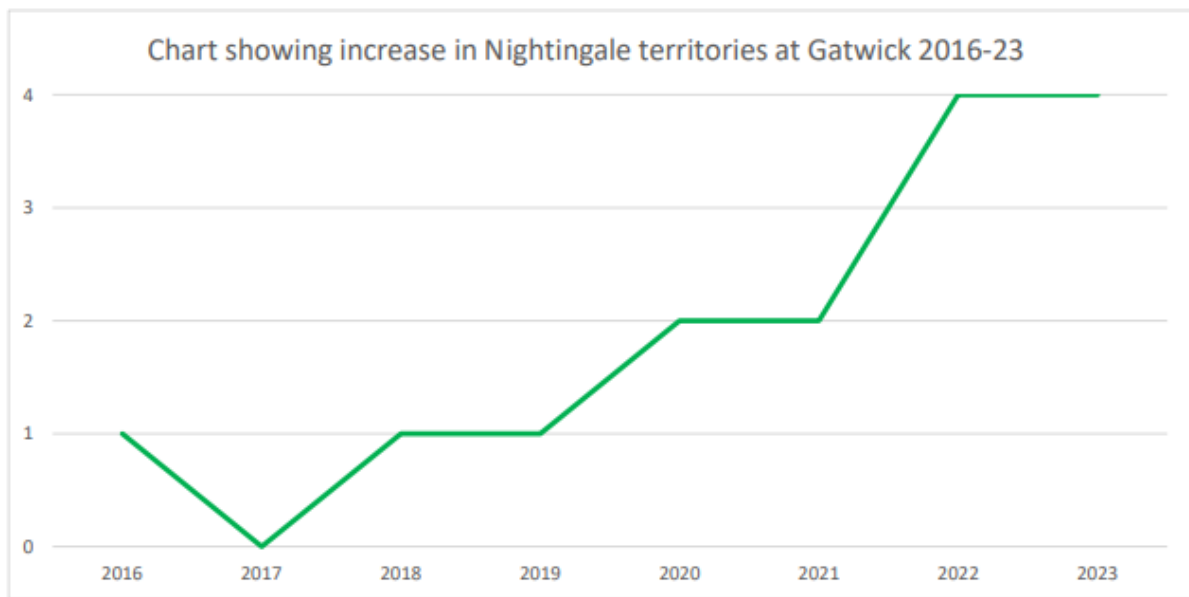


Figure 21- Graph showing Nightingale territories 2016-23

BIRD RINGING

Authored by Rachel Bicker



Figure 22- Wheatear *Oenanthe oenanthe* male in breeding plumage, August 2023 © Rachel Bicker

Bird ringing is a monitoring technique which involves catching the subject, placing a metal ring (bearing a unique number) around the leg, then releasing again, enabling individuals to be identified on subsequent encounters. A mist net erected between poles is the most common method used to catch adult birds in flight. Data gathered through this activity (age, sex, breeding status and body condition) makes a major contribution to the study of bird population changes and to our understanding of species declines. The British Trust for Ornithology (BTO) Ringing Scheme maintains very high standards of bird welfare and scientific data collection. Permits are a legal requirement, and to qualify as a ringer takes intensive training under the close supervision of experienced ringer.

Our lead ringer Stuart Card commenced monitoring efforts in early January 2023, targeting winter visiting thrushes such as **Redwing** *Turdus iliacus* along with a few over-wintering **Black Redstart** *Phoenicurus ochruros*. Three individual Black Redstart were ringed this year: one in January (a juvenile), one in March (an adult male) and another in May (male in second-year plumage). The final Redwing to be ringed during March happened to coincide with the first **Chiffchaff** *Phylloscopus collybita* of the year.

Several species which were new to Gatwick's ringed list in 2023 were **Coal Tit** *Periparus ater*, **Great Spotted Woodpecker** *Dendrocopos major*, **Jay** *Garrulus glandarius*, **Linnet** *Linaria*

cannabina, **Meadow Pipit** *Anthus pratensis*, **Reed Bunting** *Emberiza schoeniclus* and **Treecreeper** *Certhia familiaris*.

During May, with the help visiting licenced ringer Jon Middleton, efforts were focused on the target ringing of **Nightingale** *Luscinia megarhynchos*, in conjunction with the breeding territory surveys conducted by Tom Forward. Subsequently, three new Nightingale were ringed in Gatwick’s North West Zone. We also confirmed the return of ‘Dave’, a bird originally ringed at Knepp during 2020 and seen at Gatwick during each following breeding season.

After successful sessions from August to early October of ringing birds on passage migration, the year ended with a run of very unsettled, wet and windy weather, and subsequently no ringing activities took place during November and December.

During 2023, a total of **457 birds** (up from 426 in 2022) were ringed of 30 different species. To date, a total of **908 birds** of **37 species** have been ringed at London Gatwick.



Figure 23- Treecreeper *Certhia familiaris*, July 2023 © Rachel Bicker

Table 9- Ringed bird species in 2023

Common name	Status	2023 count
Black Redstart	Sch1, Amber listed	3
Blackbird	-	20
Blackcap	-	68
Blue Tit	-	64
Bullfinch	Amber listed	7
Chiffchaff	-	57
Coal Tit*	-	1
Dunnock	Amber listed, S41	17
Garden Warbler	-	4
Goldcrest	-	9
Goldfinch	-	15
Great Spotted Woodpecker*	-	1
Great Tit	-	47
Jay*	-	1
Lesser Whitethroat	-	3
Linnet*	Red listed	1
Long-tailed Tit	-	12

Marsh Tit	Red listed, S41	2
Meadow Pipit*	Amber listed	4
Nightingale	Red listed	3
Redwing	-	6
Reed Bunting*	Amber listed, S41	3
Reed Warbler	-	4
Robin	-	36
Song Thrush	Amber listed, S41	16
Treecreeper*	-	2
Wheatear	Amber listed	3
Whitethroat	Amber listed	31
Willow Warbler	Amber listed	2
Wren	-	15
Total species 30	Total count	457

* = New species to Gatwick's ringed list during 2023



Figure 24- Ringing station, North West Zone August 2023 © Rachel Bicker

WINTER BIRD SURVEY

Authored by Darcey Haldar

Winter bird surveys were undertaken by Tom Forward and Rachel Bicker on NWZ on 6th December and LEZ on 11th December.

A combined 47 species were recorded over the two sites including 3 red listed species, 12 amber listed species and 6 Schedule 41 species.



Figure 25- Tom Forward, Brockley Wood © Rachel Bicker

The highest number of species were recorded in LEZ, with 43 species including 3 red listed species, 11 amber listed species and 5 Schedule 41 species. Species found only in LEZ included Siskin *Spinus spinus*, Grey Wagtail *Motacilla cinerea* and Meadow Pipit *Anthus pratensis*.

In NWZ 35 species were recorded, including 2 red listed species, 10 amber listed species and 6 Schedule 41 species. Species found only in NWZ included Reed Bunting *Emberiza schoeniclus*, Water Rail *Rallus aquaticus* and Lesser Redpoll *Acanthis cabaret*.

Further results can be found in the table below.

Table 10- Winter Bird Survey Species List 2023

Species	Scientific name	Breeding Status	NWZ	LEZ
Blackbird	<i>Turdus merula</i>		Y	Y
Black-headed Gull	<i>Chroicocephalus ridibundus</i>			Y
Blue Tit	<i>Cyanistes caeruleus</i>		Y	Y
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber listed, S41	Y	Y
Buzzard	<i>Buteo buteo</i>		Y	Y
Carrion Crow	<i>Corvus corone</i>		Y	Y

Chaffinch	<i>Fringilla coelebs</i>		Y	Y
Coal Tit	<i>Periparus ater</i>			Y
Cormorant	<i>Phalacrocorax carbo</i>			Y
Dunnock	<i>Prunella modularis</i>	Amber listed, S41	Y	Y
Egyptian Goose	<i>Alopochen aegyptiaca</i>			Y
Feral Pigeon	<i>Columba livia f. domestica</i>			Y
Fieldfare	<i>Turdus pilaris</i>	Red listed		Y
Goldcrest	<i>Regulus regulus</i>		Y	Y
Goldfinch	<i>Carduelis carduelis</i>		Y	Y
Great Spotted Woodpecker	<i>Dendrocopos major</i>		Y	Y
Great Tit	<i>Parus major</i>		Y	Y
Green Woodpecker	<i>Picus viridis</i>		Y	Y
Grey Heron	<i>Ardea cinerea</i>			Y
Grey Wagtail	<i>Motacilla cinerea</i>	Amber listed		Y
Herring Gull	<i>Larus argentatus</i>	Red listed, S41	Y	Y
Jackdaw	<i>Coloeus monedula</i>		Y	Y
Jay	<i>Garrulus glandarius</i>		Y	Y
Kingfisher	<i>Alcedo atthis</i>	Amber listed	Y	Y
Lesser Redpoll	<i>Acanthis cabaret</i>		Y	
Little Grebe	<i>Tachybaptus ruficollis</i>			Y
Long-tailed Tit	<i>Aegithalos caudatus</i>		Y	Y
Magpie	<i>Pica pica</i>		Y	Y
Mallard	<i>Anas platyrhynchos</i>	Amber listed	Y	Y
Meadow Pipit	<i>Anthus pratensis</i>	Amber listed		Y
Moorhen	<i>Gallinula chloropus</i>		Y	Y
Nuthatch	<i>Sitta europaea</i>		Y	Y
Peregrine	<i>Falco peregrinus</i>			Y
Pheasant	<i>Phasianus colchicus</i>		Y	Y
Pied Wagtail (yarrellii)	<i>Motacilla alba yarrellii</i>		Y	Y
Redwing	<i>Turdus iliacus</i>	Amber listed	Y	Y
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber listed, S41	Y	
Ring-necked Parakeet	<i>Psittacula krameri</i>		Y	
Robin	<i>Erithacus rubecula</i>		Y	Y
Siskin	<i>Spinus spinus</i>			Y
Song Thrush	<i>Turdus philomelos</i>	Amber listed, S41	Y	Y
Starling	<i>Sturnus vulgaris</i>	Red listed, S41	Y	Y
Stock Dove	<i>Columba oenas</i>	Amber listed	Y	Y
Treecreeper	<i>Certhia familiaris</i>		Y	Y
Water Rail	<i>Rallus aquaticus</i>		Y	
Woodpigeon	<i>Columba palumbus</i>	Amber listed	Y	Y
Wren	<i>Troglodytes troglodytes</i>	Amber listed	Y	Y

GRASSLAND CONDITION SURVEY

Extract of report by Laurie Jackson

London Gatwick has a considerable resource of grassland habitat, found on seasonally wet clay soils. Grasslands make up a significant proportion of the land covered by the BAP (>48ha), and their management and enhancement are a priority, with the objective to maintain existing areas of grassland and enhance their botanical and structural diversity. This objective is underpinned by several targets and Biodiversity Performance Indicators (BPIs) have been set to measure the progress towards these targets and the overarching grassland condition objective.

Grassland condition surveys were undertaken by Laurie Jackson during July and August 2023 to gather data on a number of attributes within 11 grassland parcels at London Gatwick in the North West Zone (NWZ) and the Land East Zone (LEZ). Results can be compared to the previous survey conducted in 2019.

The 11 grassland parcels surveyed included:

- Ashley's Field (LEZ)
- Brockley Wood grasslands (NWZ)
- Gatwick Stream grasslands (LEZ)
- Goat Meadow (LEZ)
- River Mole grasslands (NWZ)
- Rolls Field (LEZ)
- Westfield Stream grasslands (NWZ)
- Y Lagoon (LEZ)

Results

The current species composition of the grasslands is variable reflecting the history of land management, including episodes of agricultural improvement, application of herbicides, alongside introduction of wildflower seeds and plugs, and planting of trees.

The management in different parcels has included mechanical cutting, scything and sheep grazing, with a more consistent management regime being implemented across most of the site in line with the BAP objective to maintain existing areas of grassland and enhance their botanical and structural diversity.

A total of 155 survey plots were surveyed across 11 separate grassland parcels, with 146 plant species recorded, including 22 species identified as positive indicators and 14 species identified as negative indicators.

Between zero and eight positive indicators were recorded within each survey plots with a mean of 2.4 per plot. 39 plots (25.2%) of quadrats had at least four positive indicator species, and 25 (16%) at least five. Between zero and five negative indicators were recorded within the plots, with a mean of 1.7 per plot. Details of the results can be seen in the table below.

Table 11- Grassland Condition Results 2023

Parcel	Positive indicators	Negative indicators	Cover of herbs	Bare ground	Rushes	Scrub
Ashleys Field north	A: 1; R: 4	A: 1; R: 3	37.5%	0%	0%	0%
Ashleys Field south	A: 1; O: 1; R: 4	O: 2; R: 1	39.2%	0%	3%	1.6%
Brockley Wood south	A: 1; R: 4	F: 1; O: 2	25.4%	0.3%	0.7%	2.1%
Brockley Wood west	A: 3; O: 5; F: 3; R: 4	O: 1; R: 1	64.85%	0.4%	2.6%	1%
Gatwick Stream grasslands	A: 2; F: 1; O: 1; R: 8	A: 1; F: 2; R: 2	29.3%	1.5%	18.3%	0.1%
Goat Meadow north	A: 2; F: 2; R: 3	O: 1; R: 1	37.5%	4%	2.4%	15.6%
Goat Meadow south	A: 3; F: 1; O: 1; R: 1	F: 1	41%	0%	11.5%	3.6%
River Mole grasslands	O: 3; R: 8	O: 3; R: 6	23%	1.5%	1.3%	1%
Rolls Field	F: 1; O: 1; R: 4	F: 1; O: 3; R: 5	35.7%	0%	0%	0%
Westfield Stream	A: 1; O: 4; R: 2	A: 1; O: 3; R: 5	55.5%	2.8%	10%	2.7%
Y Lagoon	F: 1; O: 1; R: 4	A: 2; F: 1; R: 3	4.4%	0.5%	0.2%	0%

A: abundant (61% of sample points); F: frequent (41-60% of sample points); O: occasional (21-40% of sample points); R: rare (1-20% of sample points)

Four grasslands met the suggested threshold of positive indicator species. The grasslands all generally had a good selection of positive indicator species and for those that did not reach the threshold it was as a result of the abundance rather than the diversity.

Four grasslands met the suggested threshold of negative indicator species. The negative indicator list includes common indicators of agricultural improvement such as White Clover and Creeping Buttercup, along with species such as docks and thistles that thrive in nutrient-enriched and disturbed ground. These species are all common and widespread among the grasslands at London Gatwick and the threshold for negative indicators will be challenging to meet.

Seven grasslands met the threshold for percentage cover of herbs. Though the presence of herbs in many of the parcels was generally patchy and localised, this was an increase on 2019 and is a positive sign.

Four grasslands met the threshold for percentage cover of bare ground.

All the grasslands met the threshold for percentage cover of rushes, with several parcels noted as having large patches of rushes present.

All of the grasslands met the threshold for percentage cover of scrub except for Goat Meadow north.

None of the grasslands reached the threshold for all of the monitoring criteria.

The most frequent criteria not met were the abundance of positive indicators, abundance of negative indicators and percentage cover of bare ground.

There were four positive indicator species recorded during 2019 that were not recorded during this survey: Cuckooflower, hawkbit, Salad Burnet and Ragged-robin, and one positive indicator that was recorded during 2023 that was not recorded in 2019: Cowslip.

All five species were at low abundance and in only one parcel when recorded, and in addition both Cuckooflower and Cowslip are early-flowering species that could potentially be missed when surveying later in the summer.

FUNGI

Authored by Nick Aplin, County Recorder for Fungi (Ascomycetes) and Darcey Haldar

A fungi survey was undertaken on 17th November in Horleyland Wood by Nick Aplin, accompanied by Darcey Haldar. A total of 28 species were recorded which included 6 new fungi species records to Gatwick and one slime mould, *Arcyria incarnata*.

New fungi species include Shaggy Parasol *Chlorophyllum rhacodes* (pictured to the right), Birch Posionpie *Hebeloma leucosarx*, Yellowleg Bonnet *Mycena epipterygia* and Veiled Conecap *Conocybe velata*. A particularly lovely find was this albino bitter oysterling *Panellus stipticus* pictured below.



Figure 26- Shaggy Parasol, Horleyland Wood © Darcey Haldar



Figure 27- Albino bitter oysterling, Horleyland Woods © Darcey Haldar

Table 12- Fungi records for Horleyland Woods 2023

Common Name	Latin Name
Tufted Wood Mushroom	<i>Agaricus impudicus</i>
A Slime Mould	<i>Arcyria incarnata</i>
Bulbous Honey Fungus	<i>Armillaria gallica</i>
Jelly Ear	<i>Auricularia auricula-judae</i>
Netted Crust	<i>Byssomerulius corium</i>
Shaggy Parasol	<i>Chlorophyllum rhacodes</i>
Clouded Funnel	<i>Clitocybe nebularis</i>
Veiled Conecap	<i>Conocybe velata</i>
	<i>Cortinarius</i>
Maple Whitewash	<i>Dendrothele acerina</i>
Witches' Butter	<i>Exidia glandulosa</i>
White Brain	<i>Exidia thuretiana</i>
Birch Poisonpie	<i>Hebeloma leucosarx</i>
Sulphur Tuft	<i>Hypholoma fasciculare var. fasciculare</i>
Hazel Woodwart	<i>Hypoxylon fuscum</i>
	<i>Inocybe</i>
Amethyst Deceiver	<i>Laccaria amethystina</i>
Weeping Widow	<i>Lacrymaria lacrymabunda</i>
Stinking Dapperling	<i>Lepiota cristata</i>
Wood Blewit	<i>Lepista nuda</i>
Parasol	<i>Macrolepiota procera var. procera</i>
Yellowleg Bonnet	<i>Mycena epipterygia</i>
Burgundydrop Bonnet	<i>Mycena haematopus</i>
Lilac Bonnet	<i>Mycena pura</i>
Tawny Funnel	<i>Paralepista flaccida</i>
Jelly Rot	<i>Phlebia tremellosa</i>
Common Earthball	<i>Scleroderma citrinum</i>
Sulphur Knight	<i>Tricholoma sulphureum var. sulphureum</i>

*Those highlighted in green show new additions to Gatwick's pan species list

INVASIVE PLANT SPECIES

Authored by Rachel Bicker

Himalayan Balsam *Impatiens glandulifera* continues to be a management priority both in and outside of the biodiversity areas. Mapping of invasive plant species is carried out on an annual basis, helping to guide management. In areas where Himalayan Balsam is highly abundant, or where inaccessible by foot, spraying under licence with glyphosate has been the last resort to prevent river banks from becoming completely dominated. In areas where plants are growing at more manageable levels, groups of volunteers are able to follow up with hand-pulling work.

Gatwick's Biodiversity Action Plan contains targets of reducing the length (metreage) of watercourses with Himalayan Balsam at Dominant to Abundant levels. Walkover surveys are conducted on the River Mole and Gatwick Stream every 5 years to assess changes in Himalayan Balsam abundance levels. Surveys were previously carried out in 2012 and 2017.

The River Mole

A significant increase in the total metreage of Himalayan Balsam occurred along the River Mole, by an estimated 1700 meters (a 50% increase on the 2012 level). The Abundant, Frequent and Occasional levels all increased, then seemingly stabilised around 2017. However, an effective decrease in the Dominant level was observed.

Table 13- Metreage of Himalayan Balsam along the River Mole riverbank by DAFOR abundance category

Abundance category	2012	2017	2023	2012 vs 2023	Status
Dominant	640	80	70	-570	Decreased
Abundant	210	1110	970	760	Increased
Frequent	110	990	905	795	Increased
Occasional	400	1155	1105	705	Increased
Total metreage	1360	3335	3050	1690	Increased

Gatwick Stream

There has also been an overall decrease in total metreage of Himalayan Balsam along the Gatwick Stream, by an estimated 125 meters (around a 13% reduction of the 2012 length). However, since 2017 the distribution seems to be increasing once more. There was a large overall reduction in metreage at the Abundant level category, with significant lengths of the riverbank being downgraded to the Frequent level. There has also been a decrease at the Occasional level.

Table 14- Metreage of Himalayan Balsam along the Gatwick Stream by DAFOR abundance category

Abundance category	2012	2017	2023	2012 vs 2023	Status
Dominant	15	0	0	-15	Decreased
Abundant	390	260	135	-255	Decreased
Frequent	170	120	490	320	Increased
Occasional	390	230	215	-175	Decreased
Total metreage	965	610	840	-125	Decreased

INVERTEBRATES

TERRESTRIAL INVERTEBRATE SURVEY

Extract of report by Scotty Dodd

Surveys were conducted by Invertebrate Ecologist Scotty Dodd in the Land East Zone within Ashley's Field, Rolls Field and Goats Meadow on 27th May, 2nd July and 16th September. The remit for the visit was to assess the potential for invertebrates and conduct a search for nationally rare, scarce and S41 species associated with woodland edge and grassland on clay soils.

Standard field techniques were employed to sample features of interest using a heavy-duty calico net to sweep grassland vegetation, a fine mesh butterfly net for spot netting of flying insects, a beating tray and stick to dislodge invertebrates from shrubs and branches and a suction sampler to vacuum invertebrates out of tussocks, crevices and targeted host plants. Hand searching of resources and visual observations of mobile insects were also employed.

A combined total of 426 invertebrate species were identified. Overall, 17 (4%) species with a conservation designation were recorded. In addition, 46 (11%) species deemed to be Local were recorded, giving a total of 15% of species recorded having a restricted distribution. One UK BAP / S41 species, Small Heath *Coenonympha pamphilus* was recorded during the survey.

- Ashley's Field yielded 146 species with 4 designated species.
- Roll's Field yielded 233 species with 8 designated species.
- Goat's Meadow yielded 258 species with 12 designated species.

Table 15 - Notable terrestrial invertebrate species 2023

Order	Family	Species	Common Name	SQS	Status	SAT	Comment	Ashley's	Roll's	Goat's
Lepidoptera (butterflies)	Nymphalidae	<i>Coenonympha pamphilus</i>	Small Heath	1	S41 Priority Species ; NT	F11 2	A widespread grassland species that is not uncommon in southern England. Larvae feed on grasses.	1	1	0
Coleoptera (beetles)	Chrysomelidae	<i>Agelastica alni</i>	Alder Leaf Beetle	8	DD; NR		Formerly believed to be extinct in the UK this species has rapidly expanded its range since rediscovery in 2004. Widespread and often abundant. NR status to be revised. Larvae feed on Alder, Hazel, Willow and possibly Birch.	0	1	1

Arachnida: Araneae (spiders)	Linyphiidae	<i>Trematocephalus cristatus</i>	a spider	4	NS		Formerly confined to a small area in Surrey, Sussex and West Kent between the North and South Downs, recent range expansion and now known from various other counties. Occurs on the foliage of various trees and bushes, especially oak, birch and gorse, in a variety of situations such as woodland, heathland, gardens, parkland, etc	0	0	1
Arachnida: Araneae (spiders)	Mimetidae	<i>Ero aphana</i>	a spider	4	NS	F003	Formerly a rare heathland specialist known only from Dorset, Hampshire and Surrey. Since 2000 it has started to appear widely in southern England, and as far north as Nottinghamshire, often away from heathlands. Recent records have been from a variety of dry habitats, including gardens and brownfield sites.	0	1	0
Arachnida: Araneae (spiders)	Salticidae	<i>Ballus chalybeius</i>	a spider	4	NS		Widespread in south-eastern England, but otherwise has a scattered distribution across southern England and Wales, being recorded as far north as Leicestershire and North Wales, with old records for Durham. An arboreal species associated with woodland and scrub habitats.	1	1	1
Arachnida: Araneae (spiders)	Salticidae	<i>Marpissa muscosa</i>	a spider	4	NS		In the UK the species is widespread in south-eastern England, with a few scattered records further west and north. The spider occurs mostly under loose bark on trees, on paling fences, posts, hop poles, etc, but in south-east Dorset it is common under flat stones on the tops of dry-stone walls	0	0	1
Arachnida: Araneae (spiders)	Theridiidae	<i>Episinus maculipes</i>	a spider	4	NS		Formerly a coastal rarity this species has been recorded in an increasing number of hectares since 1992 and more frequently within inland, land locked counties such as Surrey. Habitats include woodland, woodland edge and vegetated cliffs close to the coast. It has also been found among the low canopy of trees and shrubs at the edges of woodlands. It has occasionally been recorded from the field layer at the woodland edge. There are also several reports of this species from amongst dense curtains of ivy on cliff faces..	0	1	0
Coleoptera (beetles)	Buprestidae	<i>Agrilus angustulus</i>	a jewel beetle	4	NS	A212	Locally common across Southern and Central England, becoming more local and scarce in the West Country, Wales and further north to Yorkshire. In the south-east it is one of the most commonly recorded jewel beetles. Saproxylic in a range of broadleaved trees, esp. Oak.	0	0	1

Coleoptera (beetles)	Cantharidae	<i>Cantharis fusca</i>	a soldier beetle	4	NS		A formerly widespread species that suffered a rapid decline affording it RDB3 (Rare) status in the 1992 review. Downgraded to NS in the 2014 review of the group in light of a recent spread in the southern counties. A predatory species found in a broad range of habitats.	0	1	0
Coleoptera (beetles)	Chrysomelidae	<i>Gonioctena viminalis</i>	a leaf beetle	4	NS		Widespread and most frequent in the south-east of England. Associated with willows and poplars in a range of habitats.	0	0	1
Coleoptera (beetles)	Cerambycidae	<i>Pyrrhidium sanguineum</i>	a longhorn beetle	1	[RDB 2]	A21 2	In the UK it is locally common across Wales and south-east England and sporadic and generally scarce elsewhere north to southern Scotland but it seems to have increased in range and abundance over recent decades and so should be expected from any suitable habitat. A saproxylic species typically found in <i>Quercus</i> and <i>Castanea sativa</i> , although other broadleaved hosts are known and rarely in <i>Pinus</i> . Typical habitats are open broadleaf woodland and parkland trees.	0	0	1
Coleoptera (beetles)	Silvanidae	<i>Uleiota planatus</i>	a beetle	4	[Na]	A21 2	Once regarded as a rarity in the UK but has recently expanded range and become common under bark in the south-east region, some even doubt its nativity. A saproxylic species associated with a broad range of deciduous trees and occasionally coniferous species. Likely to be downgraded.	0	0	1
Coleoptera (weevils)	Curculionidae	<i>Polydrusus formosus</i>	a weevil	4	[Na]		Widespread across southern and central England, where it appears to be increasing dramatically, with occasional coastal records from Wales. An arboreal, polyphagous species whose hosts includes a wide range of broadleaf trees. Likely to be downgraded.	1	0	1
Hymenoptera: Aculeata (bees, wasps & ants)	Formicidae	<i>Lasius brunneus</i>	Brown Tree Ant	1	[Na]	A21 1	<i>Lasius brunneus</i> has only been recorded from central and southern English counties, from Essex to Shropshire. It is widespread and common in the south-east region. A saproxylic species building its nest in trees with internal decay. Workers are seldom found away from the host tree where they tend large tree aphid species and scavenge under bark. Several notable myrmecophilous coleopterans are associated with the species.	1	1	1

Coleoptera (beetles)	Cerambycidae	<i>Poecilium alni</i>	a longhorn beetle	4	[Nb]	A21 2	In the UK it is widespread though local across southern and central England north to the Humber, rare and sporadic further north to the Scottish border but generally absent from Wales and the West Country. The typical habitat is open deciduous woodland and woodland edges but it also occurs on isolated trees on heaths and disturbed ground in urban situations. A saproxylic species associated with a wide range of deciduous trees, esp. <i>Quercus</i> .	0	1	0
Coleoptera (beetles)	Eucnemidae	<i>Melasis buprestoides</i>	a beetle	4	[Nb]	A21 2	In the UK it is local across Southern England and Wales north to South Yorkshire and Lancashire although records become sparse in the west; it is our most widespread and frequently recorded eucnemid. A saproxylic species associated with a wide range of broadleaved trees, esp. <i>Fagus</i> . The larvae develop in rather hard and dry dead wood, especially in boughs low down on trunks.	0	0	1
Coleoptera (weevils)	Curculionidae	<i>Magdalis cerasi</i>	a weevil	4	[Nb]	A21 2	In the UK it is widespread though very local throughout the south of England and the midlands. This species is possibly increasing its range and becoming more frequent. A saproxylic species associated with <i>Quercus</i> and occasionally <i>Crataegus</i> .	0	0	1
								4	8	12

[NOTE: A small number of 'notable' species were omitted from the count as they are now very common in the region but the IUCN reviews for the groups are pending].

BUTTERFLIES

Authored by Rachel Bicker

Two regular transects under the UK Butterfly Monitoring Scheme (UKBMS) have been monitored at Gatwick since 2018, with a year break during 2020 due to Covid-19. Our first transect is the North West Zone (NWZ), where the River Mole emerges north of the runway, and the second is the Land East Zone (LEZ), south-east of Gatwick's railway station. The airport ecologist conducts these surveys with regular assistance from the lead volunteers Peter Townend and Vince Massimo. Further help is occasionally provided from various ecology students and graduates during the mid-summer transect walks.

The NWZ route has been amended to cover newly created habitat in the NWZ along the eastern edge of Brockley Wood, lengthening this transect by around 300m. This habitat encompasses a newly seeded wildflower bund and temporary wet scrapes adjacent to an access road, as well as the existing herb-rich and scrubby woodland edge. A map can be seen at the end of this report summary.



Figure 28- Hawthorn blooms in the Scrub West of Brockley Wood, May 2023. © Rachel Bicker

Overall results

Of the 26 weeks and 52 surveys, four visits were missed to the NWZ. This was due to inclement weather on weeks 4 and 22, and site access constraints during some of June (weeks 10 and 13). Across both transects we recorded a total of **30 butterfly species**, out of the potential 33 species recorded across Gatwick’s estate since 2016. A total of **28 species** were observed this year at NWZ, which is two fewer than the all-time record of 30 recorded in 2022. Missing from NWZ this year were Small Tortoiseshell and Clouded Yellow. **25 species** at LEZ was typically average, and is two fewer than the record count of 27 in 2019. Missing from the LEZ list this year were Brown Hairstreak and Painted Lady. A single Small Heath seen in Week 12 was the only one since 24th September 2021 and a single Marbled White in Section 9 (Goat Meadow) was an interesting record as this species is rarely observed directly on the LEZ transect.

Table 16- Butterfly species totals for transect walks at Gatwick since 2018 (note that 2020 walks were missed due to the Covid pandemic).

Area	2018	2019	2021	2022	2023
NWZ	29	28	29	30	28
LEZ	N/A	27	23	25	25

Both transects combined	N/A	30	30	31	30
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Bearing in mind the amended route at NWZ this season, the highest total count of **687 butterflies** seen in Week 14 at NWZ was an overall record. There was also a record species count of 20 species seen in one day at NWZ during Week 16, which equals the record at LEZ in Week 16 of 2019.

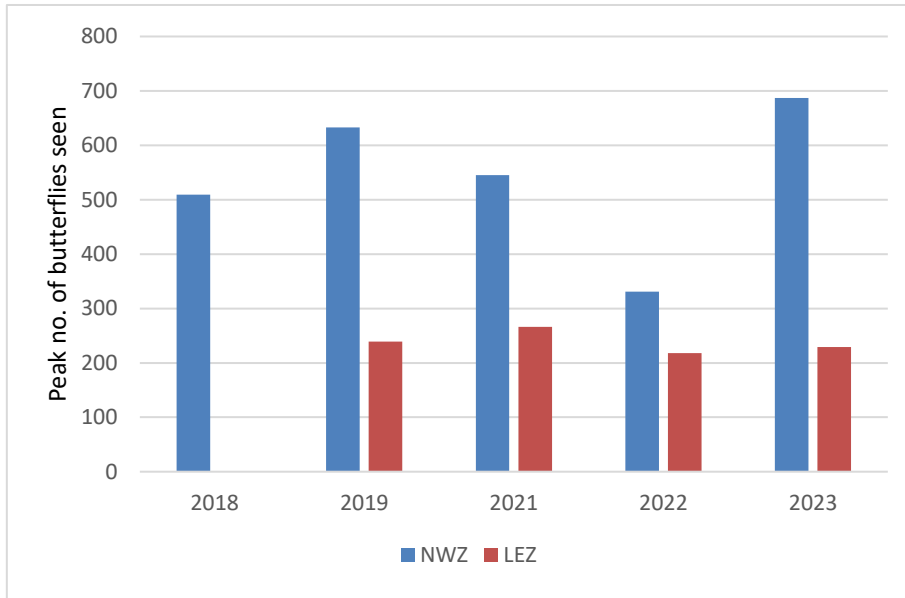


Figure 29- Highest butterfly counts made in one day

The overall total of 3,698 butterflies counted at NWZ this season was lower than the peak count of in 2019, despite having an increased route length. The total of 1,323 at LEZ this season was the lowest ever recorded, despite all of the 26 survey weeks being successfully completed in this area.

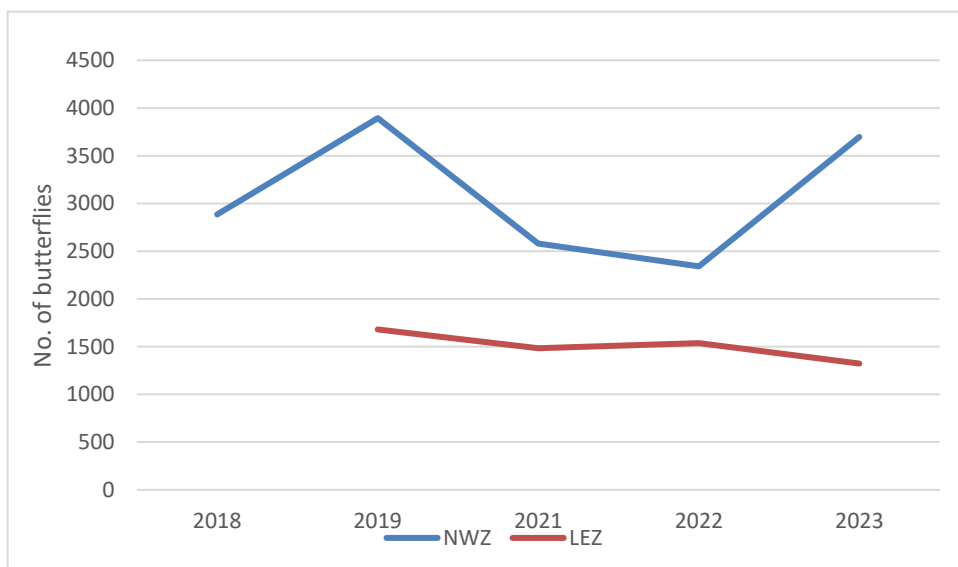


Figure 30- Overall total butterfly counts by area

Species reports

It was a good year for:

Holly Blue *Celastrina argiolus* is a very widespread species, but typically only seen in low numbers at Gatwick. It had a very good year in 2023, with a peak of 3 individuals observed on each transect. **Brown Argus** *Aricia agestis* typically occurs in low numbers, but performed well on both transects and increased in the LEZ for the second year running. Goat Meadow (Section 9) is the only part of the transect it can currently be found, with the current scything and raking management regime here likely boosting cranesbill species which the caterpillars feed on.

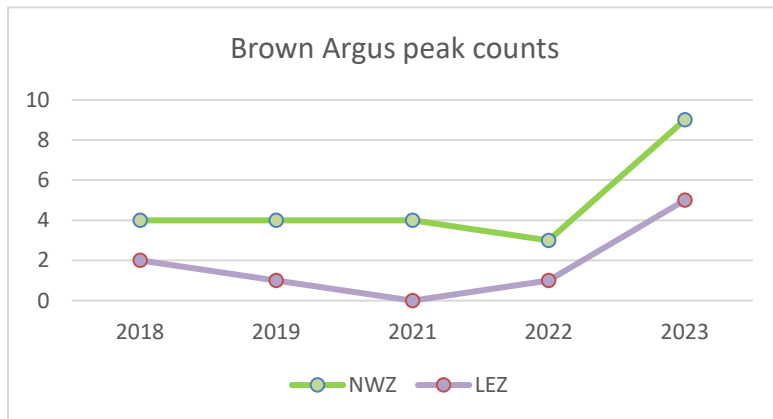


Figure 32- Brown Argus Peak counts



Figure 31- Holly Blue *Celastrina argiolus* male
©Vince Massimo

Small and Essex Skipper *Thymelicus* sp. seemed to have had an exceptional year, with an unusually high count of 354 in the NWZ during week 14, (this is after the rather dismal year in 2022 where the peak count didn't reach 50). **Gatekeepers** showed a remarkably similar pattern, also likely benefitting from the damper conditions and more luscious grass growth during spring. This indicates just how quickly the abundances of certain species can bounce back.

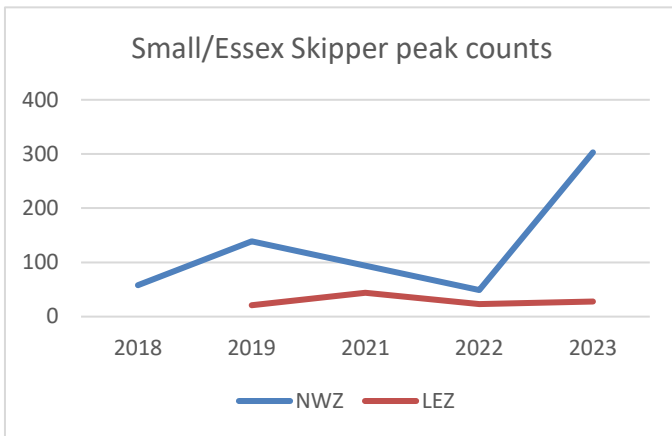


Figure 33- Small/Essex Skipper peak counts

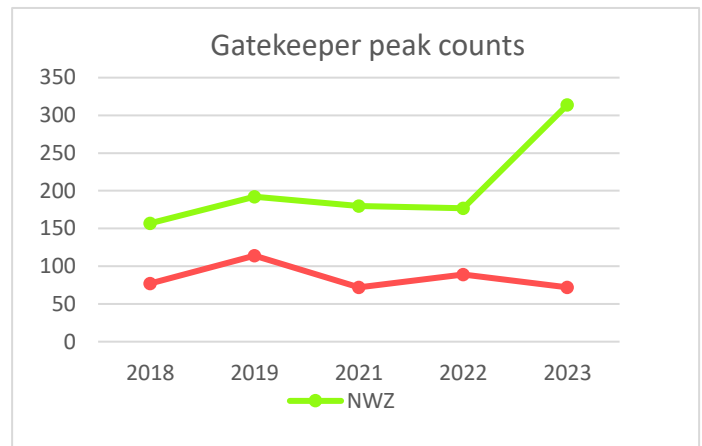


Figure 34- Gatekeeper peak counts

Overall it was a good year for the majority of the grass-feeding species, with **Small Heath** *Coenonympha pamphilus* bouncing back in the NWZ after an all-time low during 2022. However, it is still virtually absent from the LEZ due to the hard grazing by sheep. **Marbled White** *Melanargia galathea* numbers reached an all-time high of 79 in the NWZ during Week 14, and one was observed on the LEZ transect for the first time since 2019. **Meadow Brown** *Maniola jurtina* numbers were also showing signs of recovery on both transects. **Red Admiral** *Vanessa atalanta* had an all-time record count of 21 individuals on week 16 at NWZ, compared to the previous peak count of 6 in 2021. A few days after the transect season ended, Red Admirals were observed moving through the NWZ site in a constant stream on their passage migration south.



Figure 35- Marbled White *Melanargia galathea* ©Vince Massimo

It was a poor year for:

After a record peak count of 9 in the NWZ and 8 in LEZ in 2022, fortunes took a turn once more for the **Small Tortoiseshell** *Aglais urticae*, with none seen in NWZ and one recorded in LEZ. This once abundant species continues to suffer long-term declines in south-east UK. Missing from the species list this year was **Clouded Yellow** *Colias croceus* and **Painted Lady** *Vanessa cardui*, with reportedly very few individuals migrating from the continent this year. Also



Figure 36- Small Tortoiseshell *Aglais urticae* ©Jeremy Early

missing this year in LEZ was **Brown Hairstreak** *Thecla betulae*, although judging from wider area reports this species did in fact have a good year. The single **Small Heath** *Coenonympha pamphilus* seen in LEZ during week 12 was the only one to be recorded since September 2021. **Ringlet** *Aphantopus hyperantus* numbers seem to have stabilised in the NWZ at the same low as last year, however the decline has continued in LEZ. It was relief to see that **White Admirals** *Limenitis camilla* in section 10 of LEZ had not been wiped out by the drought conditions of 2022, with 2 individuals seen on just the one occasion in Week 15.

After a remarkably good year for **Dingy Skipper** *Erynnis tages* in 2022, with a peak count of 20 seen in one day, numbers were down again to a peak of 3 in NWZ. **Grizzled Skipper** *Pyrgus malvae* dropped down to 3, but this is still a relatively good count for this species which is usually found in low numbers.

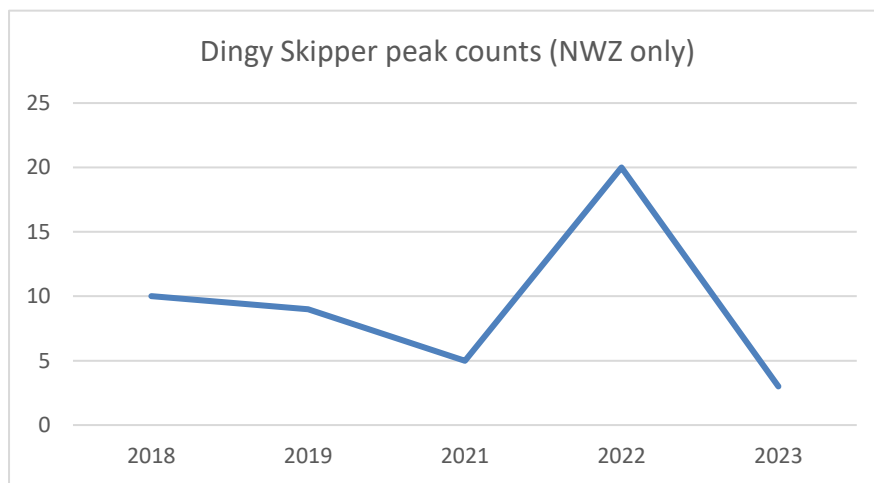


Figure 37- Dingy Skipper peak counts (NWZ)

Silver-washed Fritillary *Argynnis paphia* had a mediocre year with a peak count of 7 in LEZ. **Speckled Wood** *Pararge aegeria* was at its lowest ever counts across both sites, with a peak of 5 in NWZ and 13 in LEZ.

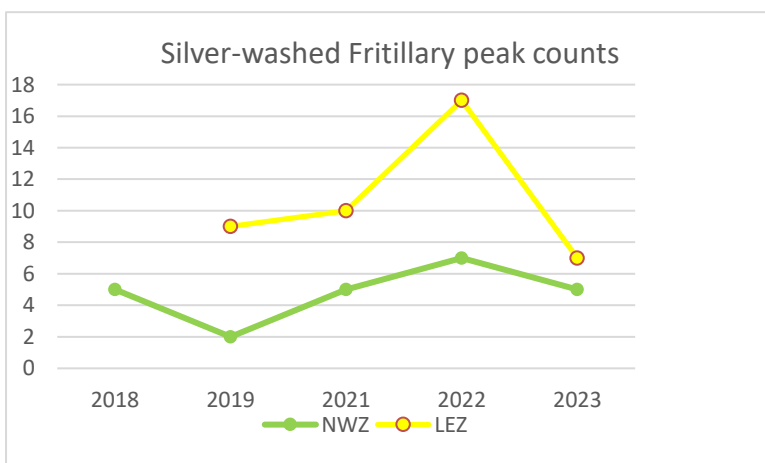


Figure 38- Silver-washed Fritillary *Argynnis paphia* male ©Vince Massimo

Figure 39- Silver Washed Fritillary peak counts

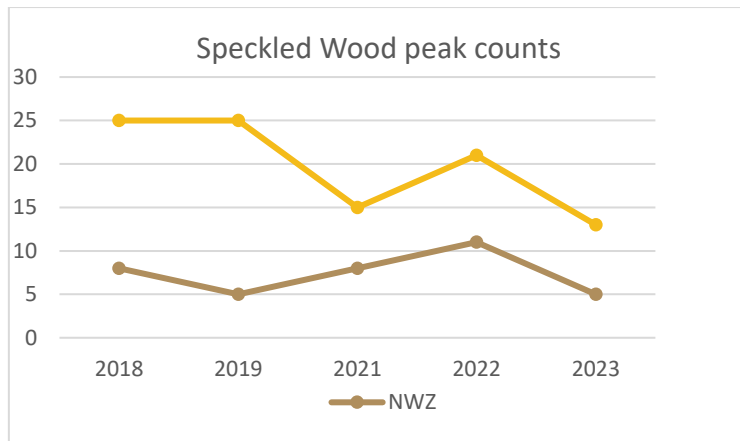


Figure 40- Speckled Wood peak counts

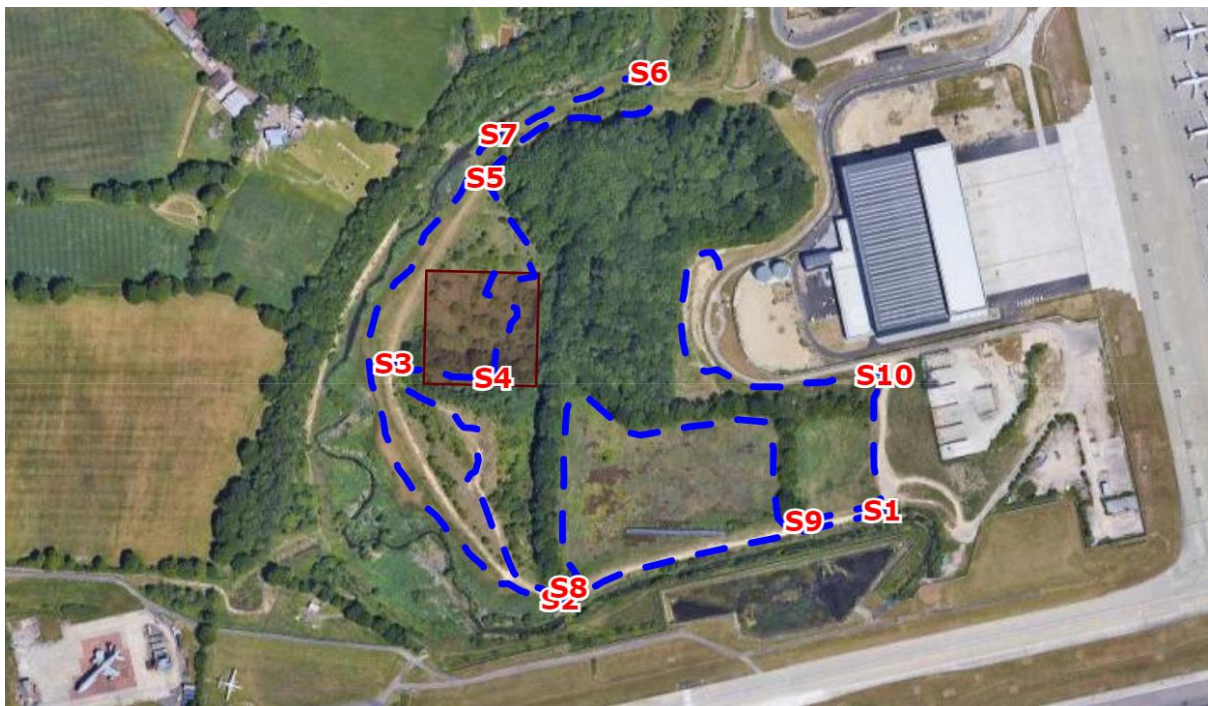


Figure 41- North West Zone butterfly survey new transect from 2023



Figure 42- Land East Zone butterfly survey transect 2018-2023

MOTH SURVEYING

Authored by Jacob Everitt

The 2023 trapping season at London Gatwick was an improvement on both the 2021 and 2022 seasons respectively. When compared to the last few years of monitoring at Gatwick 2023 saw a marked increase in species diversity which was pleasing due to many insect groups suffering once again. In the main this was likely due to good hatching conditions at vital times of the year and our trapping session coinciding with good weather conditions rather than a more widespread improvement. The weather this year was again unpredictable in both temperature and rainfall which made picking the best night for trapping a challenge. Damp, mild winters appear to be becoming the norm for the UK and this will undoubtedly have an effect on the species which overwinter in the ground as discussed last year. Interestingly this year saw a lack of 'heatwave' type conditions which affected insect numbers so badly last year and thus is reflective in the catch totals.

The 2023 season began on the 31st May at the River Mole site adjacent to the Bear and Bunny Nursery. We once again trapped all of the sites using both Mercury Vapour (MV) and Actinic light sources in an attempt to catch as many species as possible at each of the trapping locations. Each of the sites was surveyed as agreed with Rachel Bicker on the rotation which have had in place for a number of years. The four trapping sessions were carried out in May, June, August and September to give the best representation of moths as possible.

A late season leafmine survey was also carried out in October at the woodland block at Goat Meadow/Upper Picketts. This year saw a huge number of leaves left on the trees in the autumn period due to the lack of a cold snap. As a result leaf-mining moths were represented in better numbers and diversity than in previous years. In total we recorded 545 moths of 112 species comprising 67 macros and 45 micros including the leafmine data.

The best trapping session of the year was conducted at Brockley Wood in early September. The weather conditions on the evening were perfect for a good catch and it was no surprise to the team that there was a good mix of species. The lead up to the trapping date had also been conducive to migrant moths moving around as the airflow had been stuck in the south for over a week. The undoubted highlight of the session was a stunning **Clifden Nonpareil** or Blue Underwing. This is often called 'the majesty of the moth world' and is always a wonderful moth to see. This species feeds on Poplar and Aspen and the larvae can be easily found in June and July and is something that could be looked for at the correct time of year.



Figure 43- Clifden Nonpareil

The highest number of a single species this year went to **Square-spot Rustic** where 42 were trapped on the 8th September. This is a very common species, found in woodland edges, waste ground and suburban habitats so the Gatwick estate is well suited to this species. Of particular note **Flame Shoulder** was the only species recorded on three of the trapping sessions however plenty of species were recorded on two.

Flame Shoulder is a common species throughout Britain, occupying woodland fringes, gardens and meadowland. There are two generations, flying in May and June and again in August and September which explains how we managed to catch this species in May, June and August. It is good however to prove that two generations are in evidence at Gatwick and that this in the main is due to the grass cutting regime allowing Docks and Plantains to flourish, both of which are the foodplant for this species.



Figure 44- Elephant Hawk-moth

Despite plenty of effort since we began surveying the Gatwick estate we have failed to find many Hawk moth species when trapping so it was very pleasing to finally catch a single **Elephant Hawk-moth** on the 9th June. This species I have no doubt is annual at all of the trap sites however we have struggled to locate them as adults. It would be worth checking suitable stands of Rosebay Willowherb to look the gorgeous larvae when doing the butterfly transects particularly at Roll's Field flood alleviation areas.

Other notable moths this year were dominated by migrant moths and it was pleasing to once again catch the wonderfully marked **Treelichen Beauty** as well as one of the best looking micro moths in the form of ***Oncocera semirubella***. *Oncocera semirubella* is a south-eastern England speciality which is found mainly on chalk downland or limestone cliffs however can be found wandering long distances in suitable conditions. This is a beautifully-coloured moth when fresh, with pink and yellow forewings, and a whitish stripe along the leading edge of the forewing. This represented the first of this species from the estate and should be looked for when carrying out butterfly surveys as the larvae feed on Birds-foot Trefoil which is abundant particularly in the Brockley Wood surrounds.



Figure 45- Tree-lichen Beauty

LAND EAST ZONE

Authored by Tom Forward



Figure 46- Large female Grass Snake *Natrix helvetica* recorded 25th May, LEZ, 2023. ©Tom Forward

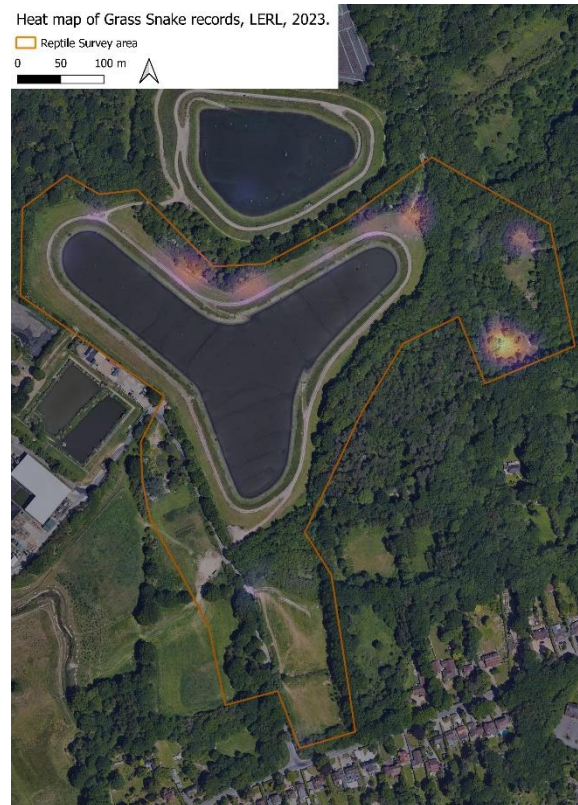


Figure 47- Heat map of all Grass Snake records for the 2023 season.

The surveys began in 2013 and so this year marked the 10th year of data collection, with 2020 being missed due to COVID19 restrictions. This longer-term data set, based on largely consistent methodology, therefore provides an opportunity to assess the population status of **Grass Snakes** at this site which has been a receptor site in the past.

The survey combines checking 90 corrugated, black 'Onduline' 1m x 1m reptile refugia with a visual search, once a month from late March to mid-October in optimal reptile basking conditions. A set route is walked, typically mid-morning, lasting approximately 2 hours, and the species, age class, gender, and length (estimated) of any reptiles encountered is recorded.

Results:

It was generally, a cool wet start to the 2023 reptile survey, with fully water-logged ground conditions still a feature at the time of the April visit (19th). By this point however the snakes had emerged, producing the second highest April count of 5 individuals after the exceptional year of 2022. Unlike the record-breaking year 2022 however, which didn't record any juvenile

snakes (less than 20cm), the September visit recorded 2 juveniles, plus a further 8 20-25cm individuals across the season, a positive indicator for local breeding success this year and last.

It was encouraging to find snakes at locations previously not recorded on this survey, including one at the northwest of the balancing pond.

One limitation that may have affected the data a bit is that a reptile refuge in the southwest corner of Ashley's Field 'disappeared' during the peak season, and although it was replaced, the months of June and July were missed. This location is historically reliable for snakes, so it is possible that results for this period were marginally reduced.

No other reptiles were recorded in this survey area this year.

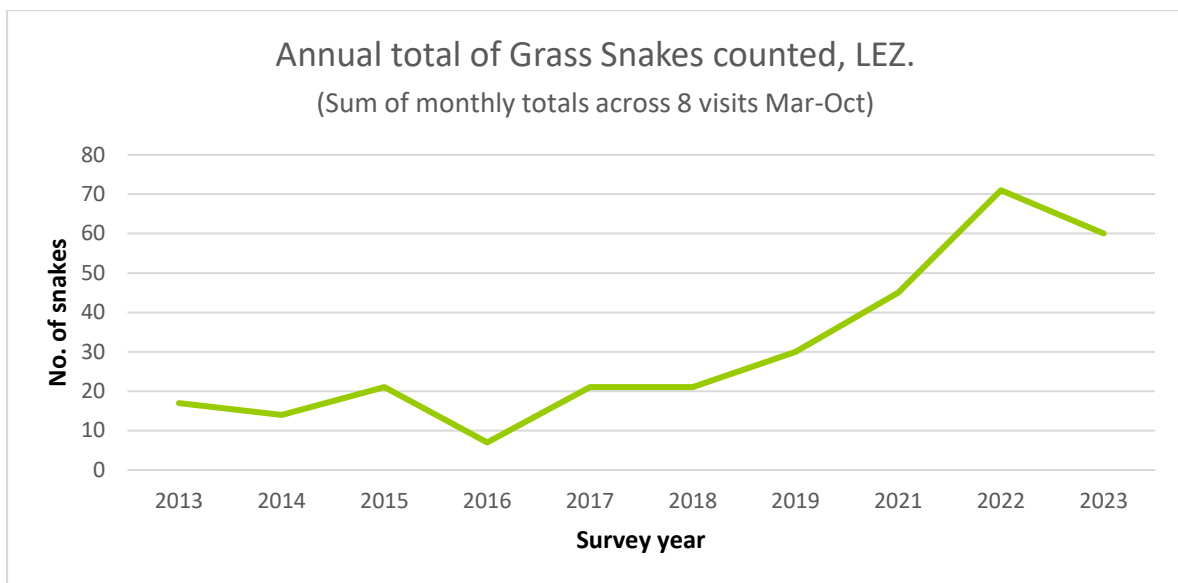


Figure 48- Graph showing the yearly totals of snakes recorded at LEZ. While it is highly likely that the same individuals were recorded on separate visits, this nevertheless gives a picture of the increasing volume of encounters.

The past 3 survey seasons have returned peak counts well above the mean peak count of 7 for the years 2013-2019 suggesting that the population may be moving from stable to increasing (see chart below). The exceptionally hot and dry spring-summer of 2022 produced the record high count in June of 18 individuals which is greatest upward change observed in any year since the survey began. The spring-summer weather of 2023 was more unsettled which may account for the drop in peak count compared with 2022.

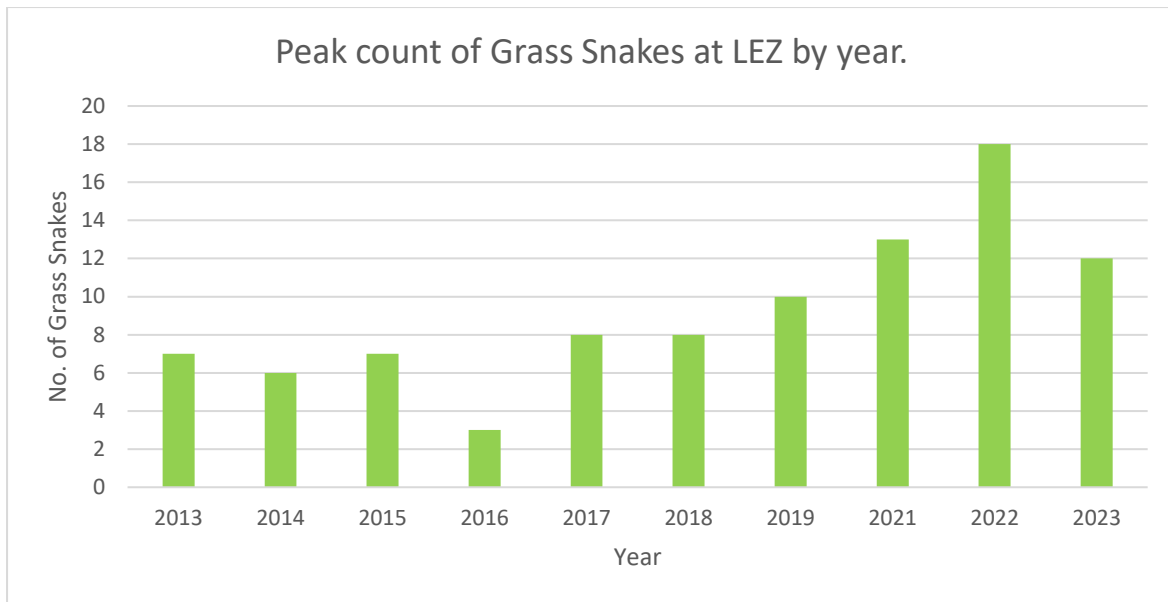


Figure 49- Chart showing the yearly peak counts since this survey began. In every year except 2023, the June survey visit recorded the peak count.

Weather effects aside, it is very likely that the increasing population of snakes can be attributed to the favourable habitat management, particularly in areas prone to shading out through scrub encroachment in Goat Meadow and along the perimeter fence of the balancing pond. Ongoing work to maintain and improve the quality of wildlife ponds across the site for breeding amphibians also serves to provide ample prey for the snakes.

It is interesting to note that certain reptile activity hot spot areas of previous years, namely the northwest corner of Ashley’s Field and a south facing edge in Goat Meadow north have become less reliable for reptile records. The reasons for this are not entirely clear, however, as the population picture overall across the survey area shows an increase, this does not represent a cause for concern.

GATWICK AVIATION MUSEUM AND WESTFIELD STREAM

Authored by Sam Buckland and Lucy Groves

A total of 79 mats were deployed across the two sites, with the Aviation Museum and Westfield Stream having 29 and 50 respectively. Monthly surveys were carried out from March to October during optimal conditions. The survey focus was on reptiles, however any other vertebrate species using the mats such as small mammals and amphibians were also recorded. Peak combined counts of 7 grass snakes were recorded on 26th June and 25th August.

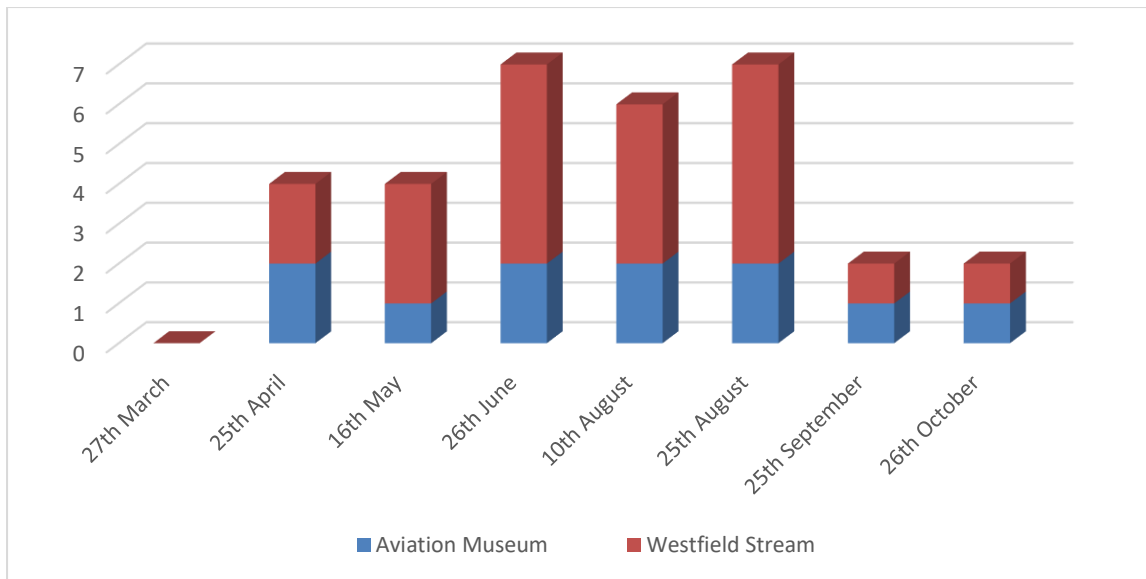


Figure 50- Chart showing peak counts of grass snakes within the Aviation Museum and Westfield Stream

Table 17- Aviation Museum reptile survey results 2023

TOTAL PER MONTH	MARCH	APRIL	MAY	JUNE	AUG	AUG	SEPT	OCT
Field Vole	7	0	0	0	0	0	1	3
Common Shrew	3	1	0	0	0	0	0	0
Pygmy Shrew	1	0	0	0	0	0	0	0
Grass Snake	0	2	1	2	2	2	1	1
Toad	0	2	0	0	0	0	0	0

Table 18- Westfield Stream reptile survey results 2023

TOTAL PER MONTH	MARCH	APRIL	MAY	JUNE	AUG	AUG	SEPT	OCT
Field Vole	9	3	3	0	0	0	4	8
Common Shrew	2	8	2	3	0	2	1	0
Grass Snake	2	1	0	1	0	0	0	0
Toad	0	0	1	0	1	1	2	0
Bank Vole	0	0	0	0	1	0	0	1
Grass Snake	0	2	3	5	4	5	1	1
Toad	1	0	0	0	0	0	0	1
Marsh Frog	1	0	0	0	0	0	0	0

TERRESTRIAL MAMMALS

Casual records and trail camera monitoring

Trail cameras are generally deployed around the sites all year round by the biodiversity advisor, with periods of focused effort where activities of particular mammal species are noticed, such as burrows and trails. Linear waterways are particularly good sites for monitoring, with many species using them as dispersal routes as well as water sources. Secluded areas which are not open to the public are also monitored in order to assess the levels of trespass and disturbance by dogs. Where footage of mammals and birds is good enough to determine the species, records are entered into iRecord.

Trail camera footage highlights from Gatwick's biodiversity areas can be found on this YouTube channel: <https://youtube.com/@biodiversitygatwick?si=uwGs-lBdBpqbNh2P>

American Mink *Neovison vison* is a non-native invasive species of mustelid found around waterways. They are commonly seen along the River Mole corridor and the Gatwick Stream, as well as several of Gatwick's balancing ponds. Monitoring of American Mink through public reporting and trail cameras helps to inform our annual programme of trapping and humane killing.

[3] – HABITAT CONSERVATION

[A] – CONTRACTED WORKS

Authored by Rachel Bicker



Figure 51- Gatwick Construction JCB assist with moving large deadwood to create habitat piles at the edges of Rolls Field. February 2023 © Rachel Bicker

Contracted habitat works include larger-scale activities with some heavy-duty machinery. Wildlife Impact Assessments are conducted prior to commencement, to reduce potential for harm to habitats and the wildlife utilising these areas.

On the large grassland sites of the River Mole floodplain and Gatwick Stream Flood Attenuation, Gatwick’s framework grounds-maintenance contractor Glendale Services have continued to carry out annual grass cutting and collection of the arisings utilising tractor and baler machinery. An in-house tractor mounted collection unit was acquired in late 2022 is now being used twice per year on Gatwick’s wildflower road verge project. The cut and collect tasks happened this year in March 2023 and late September 2023.

Baseline monitoring of wildflowers on road verges led to a selection of road verges landside being brought under a management plan for wildflower enhancements. Currently nine verges are, undergoing different treatments: low-intervention treatment (a twice yearly cut-and-collect) and high-intervention treatment (ground preparation, seeding, establishment phase, then a future cut-and-collect).



Figure 52- Dog Kennel Verge 1 with large swathe cut, May 2023 © Rachel Bicker

Examples of routine grounds maintenance tasks for the biodiversity project include:

- ➔ Road verge wildflower project cut and collect
- ➔ Cut and collect of larger grasslands using tractors and balers
- ➔ Fenceline and footpath maintenance
- ➔ Gatwick Stream rotational coppicing willows and alders
- ➔ Tree safety management (maintaining standing deadwood where possible)
- ➔ Himalayan Balsam on Gatwick Stream and the River Mole
- ➔ Control of Goats Rue on reservoirs and floodplain grasslands

Targeted habitat works are carried out annually with the team of tree surgeons from Roots Upwards Ltd. Our aim is to mimic natural processes as closely as possible using mechanised tools, selecting areas of habitat to be brought under management in order to maintain a dynamic and resilient ecosystem. We use adaptive management techniques which have directly resulted from recommendations from the ecological surveyors monitoring changes in species populations. Within wildlife conservation, new methods are constantly being trialled and then applied, resulting in variability within habitat structure. It is important when planning this work to simultaneously consider the current and future status of these areas.



Figure 53- Bird ringing ride maintenance work with Roots Upwards Ltd, January 2023 (Rachel Bicker)



Figure 54- Rides cut through Blackthorn scrub in the NWZ are re-cut each year to maintain them as open spaces for basking reptiles and invertebrates. January 2023 (Rachel Bicker)



Figure 55- Re-opening the glade at Lower Picketts Wood boardwalk, allowing light to the newly planted disease-resistant elm trees. January 2023 (Rachel Bicker)



Figure 56- Willow laid along the edges of bird ringing rides resprouting; this will help to form denser thickets. April 2023 (Rachel Bicker)

Examples of targeted contracted habitat works during 2023 included:

- ➔ Continuing widening glade and knocking out dense stands of medium oak trees at Goat Meadow north and south, laying willow and thorn to create a mixed living and dead hedge. Leaving some entire lengths of trees dropped in-situ.
- ➔ Creation of new rides through coppicing of willow and thorn scrub in grassland West of Brockley Wood
- ➔ Selective felling of mature trees and Laurel at CP Pond 2, preserving boundary to building and opening up difficult to access bank on south-eastern edge
- ➔ River Mole footpath scalloping by Man's Brook section, opening up glades in the secondary woodland
- ➔ Felling of medium to large Sycamore in Lower Picketts Wood glade, topping large dying Ash and Elm to make area safe
- ➔ Willow coppicing and pollarding along the River Mole, leaving every third clump unmanaged. Brash staked and piled off the floodplain
- ➔ Replenishing old brash and log piles, staking and consolidating them where needed using arisings from scrub and tree management

[4] – COMMUNITY ENGAGEMENT



Figure 57- Gatwick Greenspace Volunteer Reserve Managers, and Tom Simpson GGP Project officer. April 2023 © Rachel Bicker

In 2023 we said goodbye to some long-standing staff members; Tom Simpson, the Gatwick Greenspace Partnership Project Manager who joined us in 2013, left to become a ranger for the South Downs National Park. Rachel Bicker the Biodiversity Advisor with us since 2012 left to work as a landscape ecologist in both Sussex and Scotland. This year, two new members of staff joined the Gatwick biodiversity team; Barry Wildish the new GGP Project Officer, with a countryside management and gardening background, and Darcey Haldar the new Senior Ecologist, with a background in ecological consulting and a master's degree in conservation ecology.



Figure 58- Rachel Bicker and Robert Healey managing vegetation in Pond 4. September 2023 © Barry Wildish



Figure 59- GGP Project Officer Barry Wildish holding a Grass Snake slough, September 2023 © Rachel Bicker



Figure 60- Gatwick's Senior Ecologist Darcey Haldar in the North West Zone, November 2023 © Rachel Bicker

[A] – CONSERVATION VOLUNTEERING AND HABITAT MANAGEMENT

This year 264 **individuals** have volunteered from companies including Gatwick Airport Ltd, Total Energies & Gas, Japan Electron Ltd, Green Cube Ltd, Thales and Savills Ltd. A total of **60 conservation days onsite** and **6 days offsite** were run for corporate groups. Volunteers committed a total of **1,183 hours** to manage airport habitats in line with The Wildlife Trusts (TWT) Biodiversity Benchmark Award. **879 hours (67%)** have come from the London Gatwick **Volunteer Reserve Managers (VRMs)**, who work consistently on their own tasks or support one off corporate events.

The skills and experience of VRMs and the hard work of larger groups of corporate volunteers has allowed us to tackle some interesting and new projects, as well as regular essential maintenance tasks. Highlights have included:

- Continuing a programme of hedge laying along the River Mole and Sussex Border Path, to combine both traditional and wildlife conservation approaches to encourage new growth and diversify the structure of hedgerows, benefitting species such as the Brown Hairstreak Butterfly.



VRM: [Figure 61- VRMs hedgelaying along the River Mole footpath, February 2023](#) © Rachel Bicker

- Laying an older Black Poplar which had slumped on the floodplain, and planting new cuttings around it to act as a 'nurse crop'
- Continuing to plant specimens of European White Elm trees *Ulmus laevis* along the River Mole. This species has been selected for its' disease-resistance properties and will help support Gatwick's population of White-letter Hairstreak Butterflies. This is part of an ongoing project with Surrey Butterfly Conservation.
- Building a new tool container store at the Brockley Wood site for access by NWZ volunteer groups and Gatwick's bird ringing group
- Creating bare ground scrapes for invertebrates and carrying out targeted habitat management for Nightingales in the scrub west of Brockley wood.
- Scything to retain the openness of rides and glades in the North West Zone, helping to facilitate the bird ringing project



Figure 63- European White Elm on the River Mole, April 2023 © Rachel Bicker



Figure 62- VRMs Harry Smith and Chris Lowe at the Brockley Wood container, July 2023 © Rachel Bicker

- ➔ Providing wattle fenced protection around the primary wildlife ponds in Gatwick woodlands, to protect from vegetation poaching and silt disturbance by dogs
- ➔ Enlarging the wetland scrapes on the eastern edge of Brockley Wood to benefit dragonflies and other aquatic invertebrates
- ➔ Scything Bracken in Horleyland Wood and along the powerline ride to encourage the proliferation of native groundflora and create structural variability.
- ➔ Continuing meadow management in Goat Meadow, removing small trees using tree poppers, digging out larger willow stumps and creating new ephemeral pools for amphibians and invertebrates

- Managing ditches in Upper Picketts Wood, installing leaky dams and digging a new ephemeral scrape to benefit amphibians and invertebrates
- Maintaining grassy banks of the Westfield Stream site through coppicing willows and scything of Brambles. Creating new vertical bare ground areas for solitary mining bees



Figure 64- VRMs creating bee banks at Westfield Stream while being filmed for London Gatwick's Sustainability Story, March 2023 © Rachel Bicker

[B] – FOREST SCHOOLS AND COLLEGE AGE EDUCATION EVENTS

Throughout 2023 a total of **46 education events** were delivered through the biodiversity project: 41 onsite at Gatwick, 4 at schools or other locations and 1 online. These events helped us to connect with 1,399 children and young people, 121 teachers and 38 adult education volunteers.

GGP educational events have included the following:

- Crawley College English for Speakers of Other Languages (ESOL) - Refugee's from various countries carrying out willow clearance and dead and live hedging and willow tunnel creation for the Nature Tots group at Tilgate Park
- Wildlife rangers built leaky dams to channel ditches away from woodland paths into a new pond at Gatwick Woodlands
- In July Charlwood Village Primary School visited as part of their John Muir Award, involving exploratory games, habitat surveys and practical conservation work along River Mole, with 31 children attending. The day was led by Ryan Greaves and the new GGPO Barry Wildish.



Figure 65- Charlwood Village Primary students with Ryan Greaves, Sussex Wildlife Trust Forest Schools Leader, July 2023 © Barry Wildish

- The GGP Wildlife Rangers completed 6 sessions of a variety of activities, with Ryan Greaves of Sussex Wildlife Trust covering the groups until Barry Wildish joined the team in July. Tasks included newt surveying through bottle trapping in pond 4, butterfly surveys, bushcraft and forest school activities in Gatwick Woodlands. The special event 'Bat Walk for Autistic Families' was also hosted by the group at Worth Abby School

- In November, the 'Speakers for Schools' event hosted in November engaged 846 people (students and adults) via an online session hosted by Ania Abbott (Decade of Change and Engagement Manager) and Barry Wildish
- Also in November, GGPO Barry attended the Crawley Eye Project at Crawley College, hosting a 'seed bomb workshop', which engaged 80 children
- The Gatwick School has continued their highly successful forest schools programme for a small cohort of Special Educational Needs (SEN) pupils, through the spring and summer term, with 23 events in total resulting in great numbers of school children given the opportunity to experience the Gatwick Woodlands through the seasons. The final forest schools session of 2023 took place on December 14th.
- Ifield Community College returned to Gatwick for a series of forest school events from the autumn term with a consistent group of at least 10 children attending each session.



Figure 66- GGP Wildlife Rangers with Ryan Greaves conducting newt surveys, April 2023 © Rachel Bicker



Figure 67- London Gatwick Executive Leaders and Biodiversity Advisor at the Long-horned Bee slope, North West Zone, August 2023 © Nick Gabriel

- ➔ A guided tour of London Gatwick’s biodiversity sites in the North West Zone took place in August for London Gatwick’s executive leaders, as part of the sustainability steering group. The tour took in the habitats of Gatwick’s notable species such as the Long-horned Bee and Nightingales.
- ➔ Stuart Wingate, the CEO of Gatwick Airport Ltd, visited Upper Picketts Wood in the Land East Zone, to speak on camera as part of the launch for Vinci Environment Week.
- ➔ In spring the NHS Community Nurses joined in a Digital Detox session with the GGPO Tom Simpson and the visiting forest school leader Ryan Greaves in Gatwick Woodlands
- ➔ A postdoctoral study by Nottingham University commenced in Gatwick Woodlands, with the aim of researching above-and-below carbon storage of semi-urban woodlands. Hundreds of mature trees were measured and soil samples taken from the five main woodlands at Gatwick, involving over 150 field work hours. A paper is due to be published circa. late 2024
- ➔ Our annual University of Sussex biology student site tour resulted in two groups of around 20 undergraduates, visiting the Land East Zone biodiversity area as part of their Conservation in Practice course unit

- ➔ A visit was made to Surrey County Council by the GGPO Tom Simpson to provide road verge management advice based on Gatwick's Road Verge Wildflower Management Plan.



Figure 68- London Gatwick CEO Stuart Wingate, Communications Manager Linda Mortimer and HSE Senior Advisor Maria McIntyre in Upper Picketts Wood, September 2023 © Rachel Bicker

- ➔ For VINCI Environment Day in September 2023, two guided walks were led by the Biodiversity Advisor and GGPO Barry Wildish for Gatwick staff and local members of public along the River Mole



Figure 69- London Gatwick Water Quality Manager Ian Waghorn, University of Sussex students 'Conservation In Practice' tour of Gatwick Stream biodiversity areas, February 2023 © Rachel Bicker



Figure 70- Nottingham University Postdoc researchers sampling soil in Brockley Wood as part of the carbon storage study, December 2023 © Darcey Haldar

- A River Corridor Assessment site walkover took place with a lead ecological consultant from Penny Anderson Associates Ltd, the London Gatwick Water Quality Manager and Biodiversity Advisor, to discuss an in-depth baseline assessment of Gatwick's rivers as part of the Decade of Change sustainability targets and the new Gatwick Biodiversity Action Plan
- We renewed our annual partnership with Sussex Biological Record Centre, who have conducted ecological data management services for London Gatwick since 2014



Figure 71- NHS Community Nurses on a Digital Detox Day in Gatwick Woodlands, April 2023 © Tom Simpson

- We have continued to support the Gatwick Greenspace Partnership, the community wildlife project working across Reigate, Dorking, Horley, Crawley, Horsham and London Gatwick since 1994
- A visit by Weald To Waves founder James Baird explored a potential partnership between London Gatwick and this new landscape-scale nature restoration project. A follow up visit was made to the Knepp Wildlands estate by the Sustainability Lead and Biodiversity Advisor, to progress talks with the Weald To Waves team.

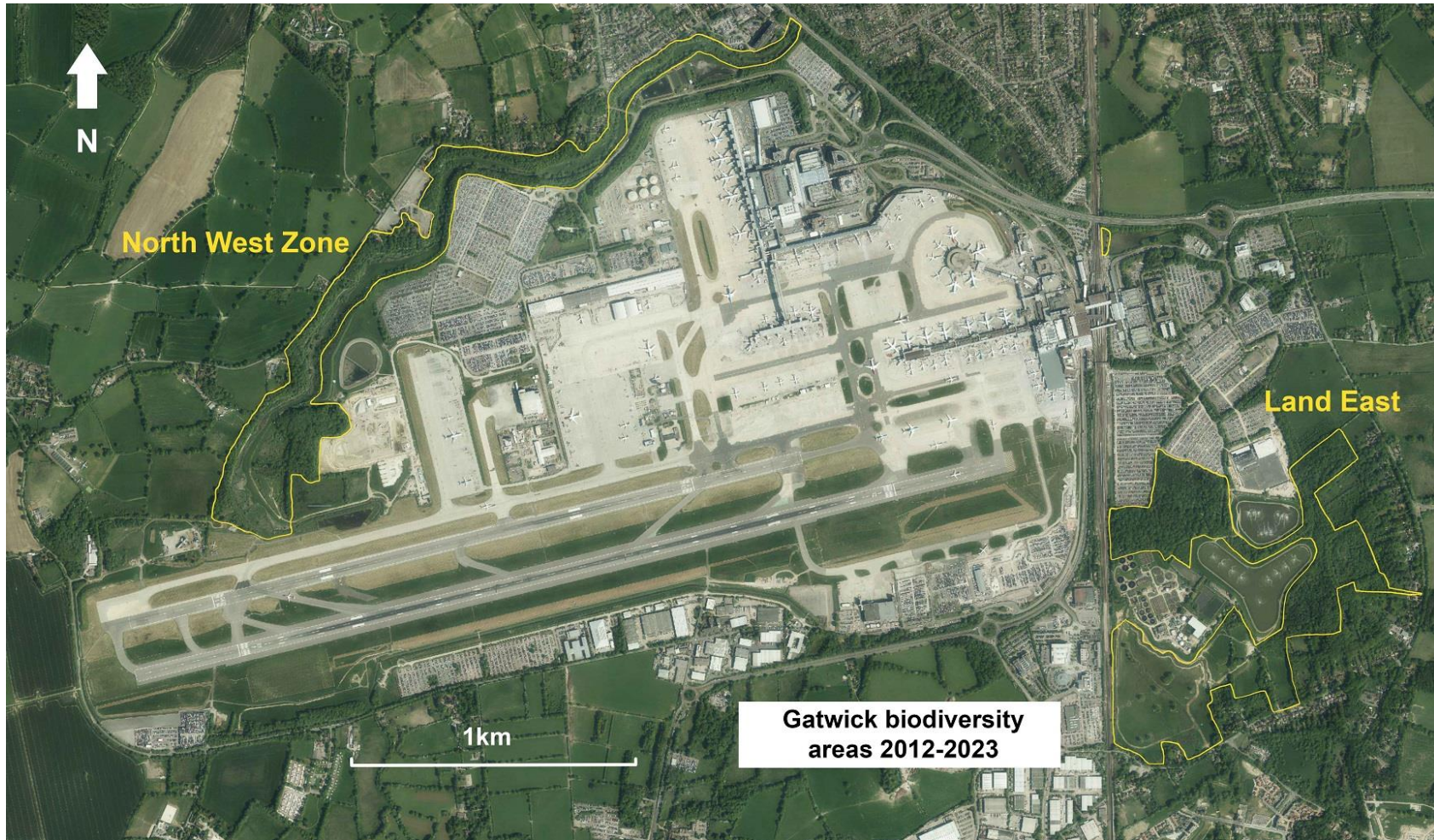


**Sussex
Biodiversity
Record Centre**



Figure 72- Long-horned Bee *Eucera longicornis* in the North West Zone © Rachel Bicker

- New surveys – Lichen Survey and River Corridor Assessments
- Ancient tree inventory of Gatwick Estate
- Targeted scrub management and scrape creation for Nightingales and Turtle Doves
- Repeating baseline monitoring surveys for habitat condition, with additional scoring using the Biodiversity Net Gain metric
- Guided walks in the biodiversity areas for Gatwick staff during mental health week
- Set up an ArcGIS map of the biodiversity areas for internal use and partnerships
- Continuing enhancing Gatwick's wildflower road verges through cut and collect
- Conducting a full year of regular bird ringing activities
- Hosting a site visit for Sussex University students Conservation in Action module
- Trialling an area for alternative herbicide use
- Continue working with project partners
- New disease-resistant Elm varieties to be planted in a recently cleared ride and glade, supporting existing population of White-letter Hairstreak Butterfly



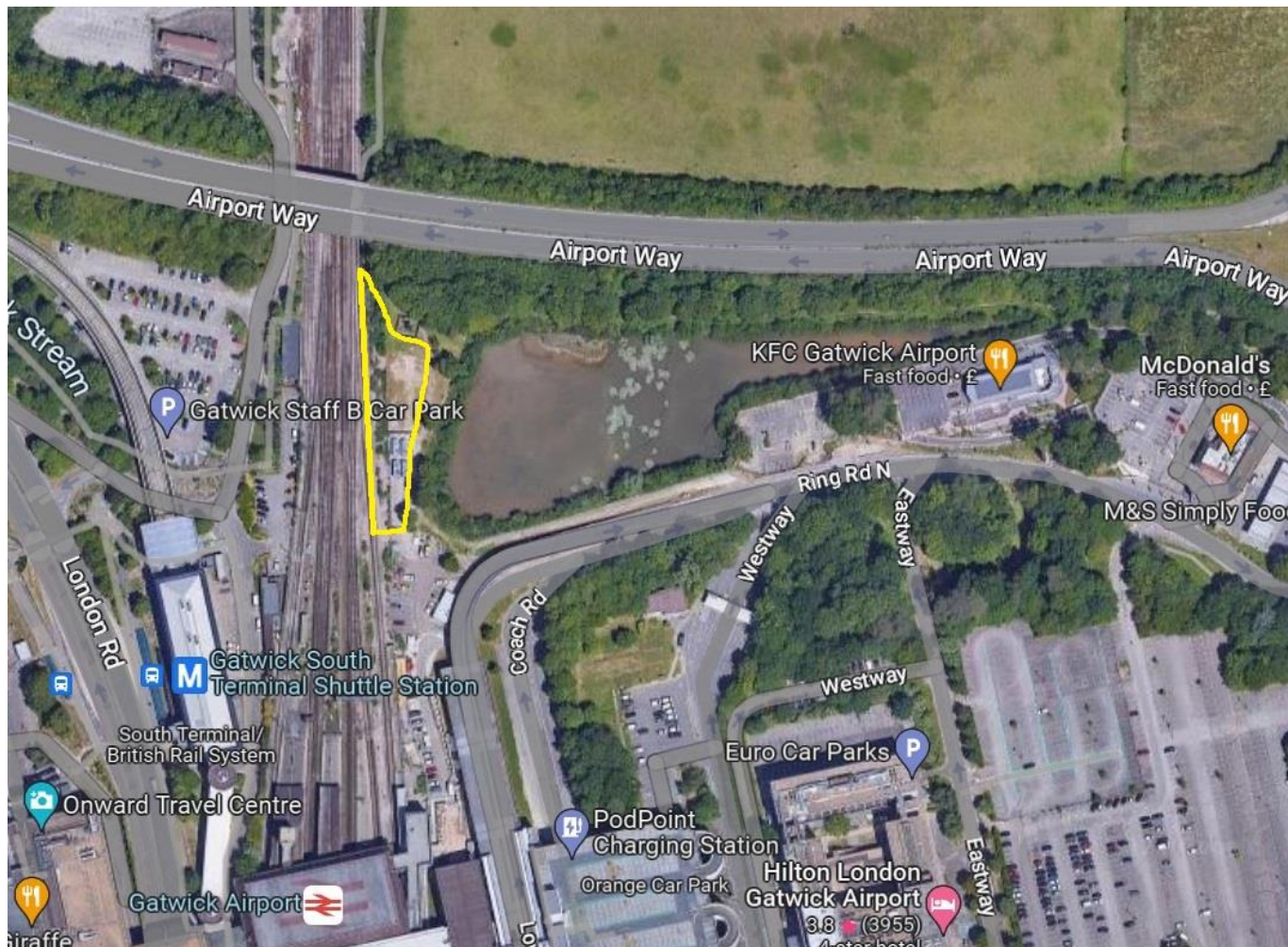
Map 1. London Gatwick biodiversity areas



Map 2. North West Zone (Brockley Wood and the River Mole corridor) TQ2540



Map 3. Land East Zone (Gatwick Stream, Flood Attenuation and Gatwick woodlands) TQ2940



Map 4. Pennyroyal Biodiversity Zone, South Terminal

7] – ANNUAL MANAGEMENT REVIEW

[A] – MONITORING

Comparing Biodiversity objectives and targets with results of ecology surveillance and previous surveys.

Table 19- 2023 progress against targets and objectives for the Biodiversity Action Plan.

Objective 1. Woodlands: Maintain and enhance structural and botanical diversity of existing semi-natural woodland.	
Target	Status
1.1 Maintain or increase woodland condition score for all woodlands. Using West Weald Landscape Partnership criteria by 2023	Progressing- Updated baseline survey planned for 2024
1.2 Annually maintain all woodland bat boxes on site, retaining the total current number	Partially Achieved ²
1.3 Annually maintain the condition of Dormouse boxes, retaining the total current number	Achieved- Target to be removed for 2024 ³
1.4 Annually maintain the condition of woodland bird boxes, retaining the total current number	Partially Achieved ⁴
1.5 Annually control dominant and invasive species in woodlands, carrying out 1 day of management with contractors and 2 days with volunteers	Achieved
Objective 2. Grassland: Maintain existing areas of grassland and enhance their botanical and structural diversity	
Target	Status
2.1 Maintain or increase grassland condition score by 2023.	Progressing- to be reviewed during 5 year review report
2.2 Annually maintain the structural diversity of open and mosaic grassland habitat through rotational cutting systems.	Achieved
2.3 Annually maintain the existing reptile habitat features on site.	Achieved
2.4 Annually control invasive species in grasslands.	Missed
Objective 3. Scrub and hedgerow: Maintain existing areas of scrub and hedgerows under a programme of rotational management.	
Target	Status
3.1 Maintain or increase hedgerow condition score, using DEFRA Hedgerow Survey criteria by 2023	Progressing- amending to a scrub condition baseline survey

² Covid resulted in a back log of box checks. Whilst some boxes have been maintained, surveyor availability and covid restrictions meant not all boxes were able to maintained each year.

³ Dormice have not been detected within the woods since 2016. Therefore, the decision has been made to remove this target from the action plan as it is likely that dormice populations are below the observational threshold.

⁴ Covid resulted in a back log of box checks. Whilst some boxes have been maintained, surveyor availability and covid restrictions meant not all boxes were able to maintained each year.

3.2 Annually maintain structural diversity of areas of scrub.	Achieved
Objective 4. Wetlands: To maintain and enhance pond condition and botanical diversity of waterbodies	
Target	Status
4.1 Annual management of mature willow trees along the River Mole on a rotational basis.	Achieved
4.2 Annually maintain existing Black Poplar trees along the River Mole to ensure a minimum number of seven specimens.	Achieved
4.3 Annually control Himalayan Balsam along waterways, carrying out 2 days of management with contractors and 1 day with volunteers.	Missed
4.4 Annually control American Mink along waterways - 4 weeks per year.	Missed
4.5 Maintain or increase habitat assessment score of ponds using West Weald Landscape Partnership criteria by 2023.	Progressing- to be reviewed during 5 year review report
4.6 Maintain or increase average number of adult Great Crested Newts recorded.	Progressing- to be reviewed during 5 year review report
4.7 Annually manage small, shallow scrapes of temporary water bodies.	Achieved
4.8 Installation and establishment of coir rolls and log deflectors in the Gatwick Stream by 2019.	Achieved
Objective 5. Ecological data	
Target	Status
5.1 Annually update the central database/master spreadsheet of Gatwick's species records through retrieved data from various sources.	Achieved
5.2 Continue regular surveillance of all listed protected species groups annually.	Achieved
5.3 Continue to record less understood species by 2023.	Achieved

Biodiversity Performance Indicators (BPIs) update

BPIs missed:

Annually control Invasive Species in grasslands (Goats Rue)

Annually control Himalayan Balsam along waterways

Annually control American Mink along waterways

Monitoring and cleaning of bird and bat boxes has been partially completed

[B] – ANALYSIS AND RESPONSE

(Outcomes from monitoring to be assessed periodically and changes reported here)

Table 20- Biodiversity Action Plan document changes

20/07/2023	Updated the action plan table – Objective 5 Ecological surveying ecological with BTO bird ringing. Table 4 Species Survey Methodology table updated with bird ringing guidelines
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Survey performance

25 different types of ecological surveys were planned for 2023. In total, **16 (64%) of the surveys were successfully completed**, two were partially completed to a reduced survey scope, four (16%) surveys were missed, three surveys were postponed to 2024.

Table 21- Survey performance 2023

Survey	NWZ	LEZ	Status	Count
Amphibians	Y	Y	Complete	1
Bat activity surveys	Y	Y	Complete	2
Bat box checks and maintenance	Y	Y	Partially complete (NWZ only)	3
Bird ringing	Y	Not this yr	Complete	4
Bumblebees	Y	Y	Partially complete	5
Butterflies	Y	Y	Complete	6
Dormice	Not this yr	Y	Complete - end of this survey	7
Fungi survey	Y	Y	Complete	8
Grassland Baseline	Y	Y	Complete	9
Hedgerow/scrub baseline	Y	Y	Postponed	10
Invasive species (baseline abundance)	Y	Y	Complete	11
Leaf miner surveys (moths and flies)	Y	Y	Complete	12
Little Ringed Plover surveying (breeding Schedule 1 survey)	Y	Not this yr	Complete	13
Mink trapping and removal. Monitoring other waterside mammals (Otter, Water Vole)	Y	Y	Missed	14

Monitoring badgers, hedgehogs and small mustelids	Y	Y	Complete	15
Moths (evening and night-flying)	Y	Y	Complete	16
Nightingale territory mapping (*New 2023)	Y	Not this yr	Complete	17
Pennyroyal walkover and mapping	Not this yr	Y	Missed	18
Pond condition baseline	Y	Y	Postponed	19
Recording and engagement events	Y	Y	Missed	20
Reptiles	Y	Y	Complete	21
Riverfly surveys	Y	Y	Missed	22
Terrestrial Invertebrates	Not this yr	Y	Complete	23
Winter Birds	Y	Y	Complete	24
Woodlands baseline	Y	Y	Postponed	25

Habitat action completion January – December 2023

A total of **103 habitat actions** (48 in the North West Zone, 51 in the Land East Zone and 4 Outside of the Biodiversity Areas) were planned for 2023 in order to help us continue meeting BAP targets. In total, **68 (66%)** of the habitat actions were successfully completed, and **35 (34%)** were missed or have been postponed until 2024. This is down from 2022 which saw our highest ever completion rate of 94.9%. The reduced completion is due to staff absences and change overs.

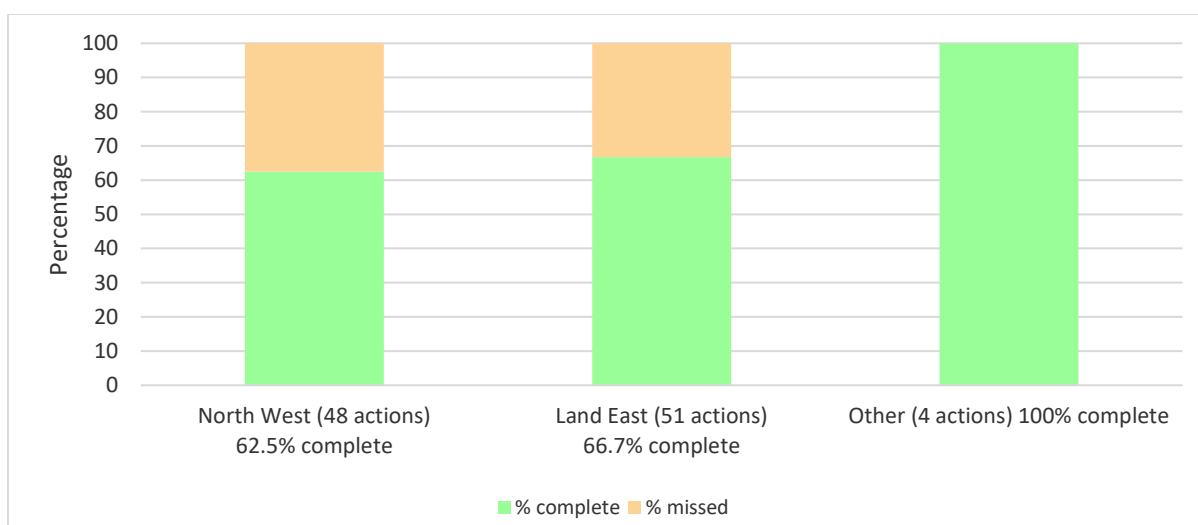


Figure 73- Habitat action completion for two biodiversity areas in 2023.

Missed habitat actions in 2023:

- Mink Trapping
- Himalayan Balsam control
- Goats Rue mapping and control
- Clean out Bird and Bat boxes LEZ
- Bird boxes NWZ
- Coppicing at Lower and Upper Picketts and River Mole woodlands
- Footpath maintenance
- Long Horned Bee slope, Charlwood Park comfrey bed, Goats Meadow and Ashleys Field scything and raking
- Boeing hangar bund scrapes and ditch creation
- Increase depth of Typha pond
- Manage hedgerow 4, laying Blackthorn
- Charlwood Park pond 2 scrub removal and Glyceria control
- Coppicing Laurel at Rolls Farm pond
- Soil scrapes and rush management in Gatwick Stream flood attenuation

[C] – SURVEILLANCE ANALYSIS

Table 22- Recommendations from ecology survey results in 2023.

Zone	Site name	Recommendations	Survey	Surveyor
LEZ	Pond 3	Continue managing the willow regrowth around the southern edge of the pond, allowing light to the bankside. Consider management on the northern bank to increase the areas open to sunlight and encourage the marginal vegetation.	Amphibians	Rachel Bicker
LEZ	Pond 4	It is essential a high proportion of the Reed Sweet Grass <i>Glyceria maxima</i> is removed each year, however this is a continual effort. Consider eliminating this plant through a late summer spot-spray eradication effort, during the period of lowest water levels (around July to August).	Amphibians	Rachel Bicker
LEZ	Pond 7	This pond continues to dry out almost entirely during the summer and is unlikely to ever be optimal for GCN. Continue encouraging and/or planting marginal nectar-rich vegetation in the marshy zone around the northern bank. Continue to coppice woody vegetation on the island to allow in more sunlight.	Amphibians	Rachel Bicker
LEZ	Rolls Farm Pond	Adding further turfs around the edge of this pond with help the reduce the amount of liner exposed to damaging UV from the sun, as well as allowing easier access for amphibians.	Amphibians	Rachel Bicker
LEZ	Lower Picketts Pond and Pond 5	Continue to protect these small ephemeral ponds with wattle and hurdle fencing, to discourage poaching and disturbance impacts from dogs.	Amphibians	Rachel Bicker
NWZ	Scottys Pond	Continue control of dominating Lesser Bulrush <i>Typha angustifolia</i> and Pendulous Sedge <i>Carex pendula</i> to maintain openness of the surface. Selective coppicing around the edges of the pond will allow in more light.	Amphibians	Rachel Bicker
NWZ	Charlwood Park Pond 1	Continue managing the bankside vegetation through annual coppicing, reducing the Alder and willow regrowth around the southern and eastern edges.	Amphibians	Rachel Bicker
NWZ	Charlwood Park Pond 2	Continue managing the tall herbaceous and woody vegetation regrowth around the northern bank. This pond mostly dried out during 2022; consider desilting all or part of this pond to increase the depth and therefore longevity of use for GCN. This work will need to be planned carefully, with the silt removal work to take place ideally between November and the end of January, considered to be outside of the active amphibian season (February to October). Careful consideration of the impacts must be given to the	Amphibians	Rachel Bicker

		terrestrial habitats surrounding the pond, as large machinery can damage habitats and hibernacula if not carefully planned. The silt removed from pond must not be deposited on areas which might be currently used by over wintering GCN.		
NWZ	Brockley Wood	Transects should be surveyed no less frequently than once every four years. Supplementing transects with static surveys using automated bat detectors or acoustic monitoring devices as well as conducting trapping sessions, may provide additional data on bat activity, particularly for transient species.	Bats	Laurie Jackson
NWZ	Scrub West of Brockley Wood	Management efforts should continue with further reduction of the height of scrub in areas adjacent to the ringing rides. This helps focus bird movements through the site within net height, improving the overall catch rate. Through annual cutting between head and chest height, the regrowth will form denser thickets appealing to small birds moving through the site while foraging, as well as nesting and roosting habitat for multiple species.	Birds	Rachel Bicker
NWZ	Scrub West of Brockley Wood	Maintain mosaic of small trees, tall scrub and lower, denser thorny vegetation mixed with open patches and glades of grassland	Birds	Rachel Bicker
NWZ	Bund East of Brockley Wood	The bund east of Brockley Wood is becoming increasingly rich in native perennial wildflowers as the Bristly Ox-tongue is becoming less prevalent. It is worth managing sections of this bund with scythes and rakes, encouraging areas of shorter forbs and reducing the nutrient load of the soils.	Butterflies	Rachel Bicker
NWZ	Scrub West of Brockley Wood	Early spring grassland scything and raking of the bird-ringing rides in scrub west of Brockley Wood will increase botanical species richness and structural diversity. Cutting rounded swathes (scallops) will help to provide warm, sheltered areas for basking.	Butterflies	Rachel Bicker
LEZ	Goats Meadow	The management regime of scything and raking in Goat Meadow seems to be especially benefitting Brown Argus and Common Blue. Ensure that these areas continue to be cut with the rule of thirds or quarters, always retaining a proportion of the area uncut to act as a refuge to overwintering eggs, larvae and pupae.	Butterflies	Rachel Bicker
LEZ	Hedgerow North of New Lagoon	The grassland at the base of the hedgerow north of the New Lagoon continues to be very heavily grazed by sheep to the detriment of Small Heath and other grass-feeding species. Consider installing further fencing or creating protected areas to the base of this hedgerow.	Butterflies	Rachel Bicker

All	All grasslands	It is recommended to carry out a grassland condition assessment every two to three years at London Gatwick. the thresholds adjusted as necessary according to any changes in management direction.	Grassland	Laurie Jackson
All	All grasslands	Targeted management would be necessary within many of the parcels to reduce the rank nature of much of the grassland and to offer the potential for an increase in abundance of many of the herb species.	Grassland	Laurie Jackson
All	Neighbouring landholdings	Once the Himalayan Balsam levels are more in-hand within Gatwick's boundaries, it would be prudent to look beyond the estate boundaries to neighbouring landholdings within the River Mole catchment. Engaging neighbouring landowners would likely result in better long-term outcome and help preserve the biodiversity of the River Mole and Gatwick Stream corridors	Himilayan Balsam	Rachel Bicker
NWZ	River Mole	Lower abundance levels of Himalayan Balsam can be followed up by volunteer effort, but only in the most easily accessible areas along the River Mole	Himalayan Balsam	Rachel Bicker
All	Watercourses	A consistent approach is critical for effective management of Himalayan Balsam, due to the rapid spread of seeds from just a few donor plants. Continuing the spot-spraying programme along both watercourses for at least 3-5 years will help to reduce the highest abundance levels and bring the sites into a more manageable state. Targeting the Dominant, Abundant and Frequent areas of highest abundance levels upstream by spot-spraying should be prioritised, and will act as 'fire breaks' for the rest of the site.	Himalayan Balsam	Rachel Bicker
		It is essential that we continue with the regular trapping at the four main sites across the airport complex and continue with the plan of changing the trapping month each year to continue to build our understanding of each of the compartments.	Moths	Jacob Everitt
Both	River Mole and Upper Picketts	As 2024 is a 'even' year we must also try to establish the extent of the Sallow Clearwings which only flies in even years. I suspect there is a colony along the River Mole but it may well be present in Upper Picketts Wood too so this should also be surveyed.	Moths	Jacob Everitt
NWZ	River Mole	revisit the River Mole site to conduct the leaf-mine survey for 2024 to monitor the populations of already found species as well as hopefully add a few more.	Moths	Jacob Everitt

NWZ	Westfield Stream	Opportunities for allowing scrub to develop near to existing Nightingale territories and the patches of expanding thorny scrub at The Westfield Stream and Gatwick Aviation Museum sites.	Nightingales	Tom Forward
NWZ	River Mole	It is recommended that this survey is repeated in 2024 using two surveyors starting at opposite ends of the survey area, as part of ongoing monitoring of this airport flagship species.	Nightingales	Tom Forward
NWZ	River Mole	Management plans should aim to allow for a proportion of the Gatwick biodiversity areas to have woodland-scrub mosaic available. This can best be achieved through allowing scrub development via a process of natural colonisation, where it does not conflict with maintenance of priority grasslands. Vegetation structure is considered a more important factor than species composition (Wilson et al, 2005), the depth of this graduated dome of vegetation is important too, the centre of which must be shady enough create suitable bare ground foraging opportunities.	Nightingales	Tom Forward
LEZ	Goat Meadow	Active late summer grassland management with patch scythed hay-cut in Goat Meadow is recommended. This creates open, warmer, drier conditions more suitable for basking snakes where uncut vegetation at this time of year can create cooler sub-optimal conditions. It is however important not to hay-cut the entire grassland as taller sward and plants still in flower are important for invertebrates.	Reptiles	Tom Forward
LEZ	Goat Meadow	Continued scrub and tree management in Goat Meadow is essential to retain open sunny clearings. This should include a mixed approach of coppicing, ring-barking, and grubbing out of the small trees that are casting shade, and cutting back of taller thatch near the hibernacula is recommended.	Reptiles	Tom Forward
LEZ	Pond 3	Annual cutting back and scalloping of encroaching Bramble, Blackthorn, Dog-rose, Snowberry and willow along the northern edges of the balancing pond perimeter fence between November and February is important to maintain this desirable 'edge habitat' favoured by the snakes as well as access for the survey.	Reptiles	Tom Forward
LEZ	All mature trees	Further investigation of the saproxylic invertebrate fauna is reiterated here and it would be a useful exercise for the site ecologists to identify and map any mature trees or features that might benefit from halo releasing to promote open growth.	Terrestrial invertebrates	Scotty Dodd

LEZ		Saproxylic species are not just associated with decay features in mature to veteran trees. Many species develop in small bore branches and twigs. This should be a consideration when managing hedgerows and scrub etc. Creating dead hedge features and brash piles is preferable to burning where this would not be detrimental to higher quality grassland resources or woodland ground flora.	Terrestrial invertebrates	Scotty Dodd
LEZ		As the 2023 data suggests that saproxylic resources are important this should be a consideration during winter conservation works. The retention of standing and fallen dead wood should be prioritised wherever it is safe to do so. If, for example, a fallen bough or tree is in a place that is not compatible with other site management priorities consideration should be given to relocating the resource to a more suitable location.	Terrestrial invertebrates	Scotty Dodd