

# Fulham Palace and All Saints Church Butterfly Survey 2021

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## **Abstract**

The author was contracted by Fulham Palace and All Saints Church to survey butterflies across their grounds in vice-county 21 (Middlesex) from May to early October. A transect route was created and all butterflies along the route were recorded during survey times, as well as an extra exploration on one occasion for Purple Hairstreak outside the main transect times and some ad hoc observations. 20 species were recorded. The Moat area recorded the most species and individual butterflies. Seven species of Odonata and some other insects were also recorded, and these records are briefly discussed. The sections of the route are compared and discussed, and habitat management recommendations suggested.

**Photographs** of Lepidoptera and habitats in this report are copyright of Joe Beale. All such images were taken on site and during the survey period.  
Cover image – Essex Skipper in the Moat, June 2021

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## Introduction

In 2021 the author (JB) was commissioned to undertake a baseline survey of the butterfly populations in Fulham Palace and All Saints churchyard (taken together as “the site”), Watsonian vice-county 21 (Middlesex) in order to provide a robust baseline, against which changes in butterfly populations can be monitored or habitat management adjusted. Butterflies are a well-studied group that are relatively straightforward to identify and monitor and serve to represent the health of the wider ecosystem. The surveyor set up a transect route to allow for the possibility of repeat surveys in the future, which can help reveal population changes and responses to grounds works. The transect was walked twice monthly from May to August, with one early September walk and one in early October, and all butterflies along the transect route were recorded. Outside these times, ad hoc observations were also made. Transects are intended to offer a representative snapshot of the butterfly community at any particular site and are not designed to count every butterfly living there. Nomenclature and systematic order in this report follows Williams (2020).

## Weather note

The following weather summary is taken from the Met Office (2021) overview:

May was unsettled, unseasonably cold and windy at times. Summer (June to August) 2021 mean temperatures were barely above average in south-eastern England where it was particularly cool and wet, with almost double the average rainfall in some places. The first half of June was generally settled and warm, and there was a very warm spell during July, but other periods were unsettled, often with thunderstorms and localised downpours. The second half of August was mostly dry. Early July was rather cool over England, but all regions had a very warm spell from around 15th to 24th, before temperatures dropped again. August temperatures were unexceptional. June rainfall totals were, in south-east England, around double the average in places. Many areas were wet in July, again with twice the average for some, with localised heavy thundery rain events occurring regularly. Early August continued the unsettled theme, but it then became much drier. In terms of sunshine, England saw one of the ten dullest Augusts historically.

Autumn 2021 (September, October and November) was only slightly above average in south-eastern England. There were few cold days, and each individual month was warmer than average. It was provisionally the third

warmest UK autumn in a series from 1884. Most areas had a rather dry autumn, despite October being rather wet, with November being much drier than average in southern UK. September was warmer than average, especially around the 6th-7th, but colder from the 27th. October started cooler, but temperatures were above normal for most of the month. September rainfall totals were below average across much of the UK but October was wetter than average for much of southern England. November was drier, especially in southern areas. The UK had 82% of normal rainfall in September, 128% in October, and 63% in November. September sunshine totals were slightly above average further east. October was a dull month in most areas, but nearer average in parts of England.

## Past Records

Past records for the site consist of 50 records on the BC Middlesex database since 1850, for Fulham Palace and All Saints Church (Andrew Wood, Middlesex county butterfly recorder pers. comm.), and even this short list appears to include 16 records from “Fulham Palace Meadows allotment” - the latter records are included in the summary below as they may overlap with Palace grounds and do not include any species not already recorded on the survey site. For the past records, the term “record” in some instances refers to the whole Palace grounds rather than specific locations within them. Apart from the single July 1996 record (of a Large White) in the grounds of All Saints Church, and four Palace records of butterflies from 1999, all past records on the database are since 2016 and on Fulham Palace grounds, as below in **Table 1** (information presented in this table has been extracted from the spreadsheet kindly provided by Andrew Wood, pers. comm.):

**Table 1: past records of butterflies for Fulham Palace (not including the All Saints Church record listed above)**

Butterfly species	Number of records (not individual butterflies) and approximate date
<b>Orange Tip</b>	One: April 2017
<b>Brimstone</b>	Two: July 2016 and 2021
<b>Large White</b>	Seven: all since 2017 (all July except one August 2018 record)
<b>Green-veined White</b>	Four: since 2016 (all in July)
<b>Small White</b>	Eight: since 2017 (all in July except one August 2018 record)
<b>Purple Hairstreak</b>	Two: late July 1999

<b>Common Blue</b>	Two: July 2016 and July 2017
<b>Small Tortoiseshell</b>	One: 08/08/2017
<b>Red Admiral</b>	Four: since 2017, all July except one August record
<b>Comma</b>	Two: July 2020, July 2021
<b>Peacock</b>	Three: April, July and August 2017
<b>Painted Lady</b>	Three: May and July 2017, July 2021
<b>Speckled Wood</b>	Four: July 1999, April 2019, two July 2020 records
<b>Meadow Brown</b>	Three: July of each of 1999, 2017 and 2020
<b>Gatekeeper</b>	Three: July of each of 2016, 2019 and 2020

A small number of observers and visits appear to have disproportionately accounted for most of these old records. For example, one visit on 08/08/2017 accounts for six records, and 57% of these past records for Fulham Palace grounds are accounted for by just six late summer visits. All but ten records are from the month of July, and only four are not from July or August. While there will have been other casual observations of butterflies in addition to these records, with some sightings never submitted by the observers and a few possibly submitted to other records centres, both The London Natural History Society (LNHS - Leslie Williams, pers. comm.) and Butterfly Conservation Herts and Middlesex branch (BC Middlesex - Andrew Wood, pers. comm.) are not aware of them. Therefore, for the purposes of this survey the records in **Table 1** provide a practical "official" historical list for the site. Against this background, the current survey is particularly important as late spring to early autumn was covered and locations across the site were surveyed.

## Methodology

Butterfly populations were monitored along a transect (see **Map 1**). The transects followed the UK Butterfly Monitoring Scheme (2021) method for fixed route transects (Pollard Walks), with the exception that bi-monthly rather than weekly surveys were undertaken. They were conducted under standard meteorological conditions (essentially in dry, warm weather above 17C, with low wind speeds, after 10.00 and before 15.00). The surveyor walked slowly, counting butterflies up to 2.5 metres either side of the path and up to 5 metres ahead, or 5 metres to one side if views to the other side were blocked. Binoculars were used at times, for closer views without disturbing the butterflies or to rapidly establish identification before a butterfly flew away. Each butterfly was counted only for the first section they were seen in; if the same individual was subsequently seen in another section, it was not counted again. All individuals were identified to species level. The transect route was designed to sample a wide range of representative habitats, including those that the surveyor suspected would be most productive. A record for this survey is the observed presence of a species in one of the six sections A-F of the transect route during that walk. For example, there are six sections A-F so the maximum number of records for one species in one transect walk would be six, although the maximum number of individual butterflies could be higher.

**The transect route** begins at All Saints churchyard (section A) and finishes at the southern end of Fulham Palace's Moat (section F). Section A: All Saints churchyard (TQ 24274 75903). Section B: starts at the southern gate to the Palace gardens (TQ 24216 75933) and continues around the eastern and northern perimeter of the gardens. Section C: starts at the Walled Garden Tudor entrance (TQ 24146 76061). Section D: starts outside Walled Garden Tudor entrance (about TQ 24134 76067) and along the southern border, doubling back on the opposite side of the path until the western garden gate. Section E: starts SE of marquee garden (about TQ 23967 76107) to the tenant's cottage gate. Section F: starts at the tenant's gate/garden (TQ 23968 76211) and finishes at the southern end of the Moat (TQ 23905 76182).

Surveys were undertaken in 2021 as follows (all three routes on each date unless otherwise specified): May 9<sup>th</sup> and 30<sup>th</sup>, June 8<sup>th</sup> and 24<sup>th</sup>, July 16<sup>th</sup> and 23<sup>rd</sup>, August 4<sup>th</sup> and 28<sup>th</sup>, September 8<sup>th</sup> and October 8<sup>th</sup>.

In addition, ad hoc sightings of butterflies during other surveys were recorded, and a special effort was made to look for Purple Hairstreaks on the evening on 22<sup>nd</sup> July, by observing the tops of Pedunculate Oaks north of the Walled



Garden on a sunny evening in the last couple of hours before sunset. All species records are provided in the **Appendix**. All data will be shared with local biological records centres, including Butterfly Conservation Herts and Middlesex branch and the LNHS, and The British Dragonfly Society and LNHS for Odonata.

**Map 1 – Butterfly transect route. Arrows show direction of walk.**





**Table 2** below shows transect weather and timings. Conditions for each section often stayed similar to those at the start, but for more details for each section please see the attached spreadsheet in **Appendix 1**.

**Table 2: Weather at the start and timing for each transect.**

Date	% sun at start of section A and temperature in Celsius	Wind at start of section A	Timing of transect
<b>May 9<sup>th</sup> 2021</b>	50% 19C	SW 13mph	10.45-11.57
<b>May 30<sup>th</sup> 2021</b>	60% 17C	NE 8mph	11.45-12.44
<b>June 8<sup>th</sup> 2021</b>	90% 19C	SW 4mph	10.15-11.40
<b>June 24<sup>th</sup> 2021</b>	90% 19C	NW 6mph	10.35-12.00
<b>July 16<sup>th</sup> 2021</b>	100% 19C	N 7mph	10.03-11.45
<b>July 23<sup>rd</sup> 2021</b>	100% 22C	E 10mph	10.37-11.41
<b>August 4<sup>th</sup> 2021</b>	50% 20C	SE 5mph	11.13-12.23
<b>August 28<sup>th</sup> 2021</b>	80% 19C	NE 12mph	11.10-12.17
<b>September 8<sup>th</sup> 2021</b>	100% 25C	SE 10mph	11.07-12.02
<b>October 8<sup>th</sup> 2021</b>	0% 17C	SE 3mph	11.27-13.16

### Survey limitations

On 30<sup>th</sup> May, an event was taking place along the southern border just alongside the Walled Garden, which meant that that part of section D was not accessible on that occasion. The last survey could not be undertaken in late September and was instead done in early October, when the weather was suitable but overcast, and no butterflies were seen. Neither of these factors is thought to have impacted on the survey in any significant way. Transects are designed to sample the butterfly population of a site and are not intended to record every butterfly present.

## Results

Across the ten transect walks, 98 records of 196 individual adult butterflies were made. This includes one evening record of 3 Purple Hairstreaks, recorded along the transect route but outside the transect times. 107 records of 206 individual adult butterflies were made overall including ad hoc (non-transect) observations. In addition, there was one record of 45 Peacock butterfly larvae. The 8<sup>th</sup> October transect was the only survey date on which no butterflies were recorded.



Orange Tip, in the Moat

**20** species were recorded:

**Essex Skipper** *Thymelicus lineola*

**Large Skipper** *Ochlodes sylvanus*

**Orange Tip** *Anthocharis cardamines*

**Brimstone** *Gonepteryx rhamni*

**Large White** *Pieris brassicae*

**Small White** *Pieris rapae*

**Green-veined White** *Pieris napi*

**Purple Hairstreak** *Neozephyrus quercus*

**Holly Blue** *Celastrina argiolus*

**Common Blue** *Polyommatus icarus*

**Small Copper** *Lycaena phleas*

**Red Admiral** *Vanessa atalanta*

**Comma** *Polygonia c-album*

**Peacock** *Aglais io*

**Painted Lady** *Vanessa cardui*

**Speckled Wood** *Pararge aegeria*

**Ringlet** *Aphantopus hyperantus*

**Meadow Brown** *Maniola jurtina*

**Gatekeeper** *Pyronia tithonus*

**Marbled White** *Melanargia galathea*

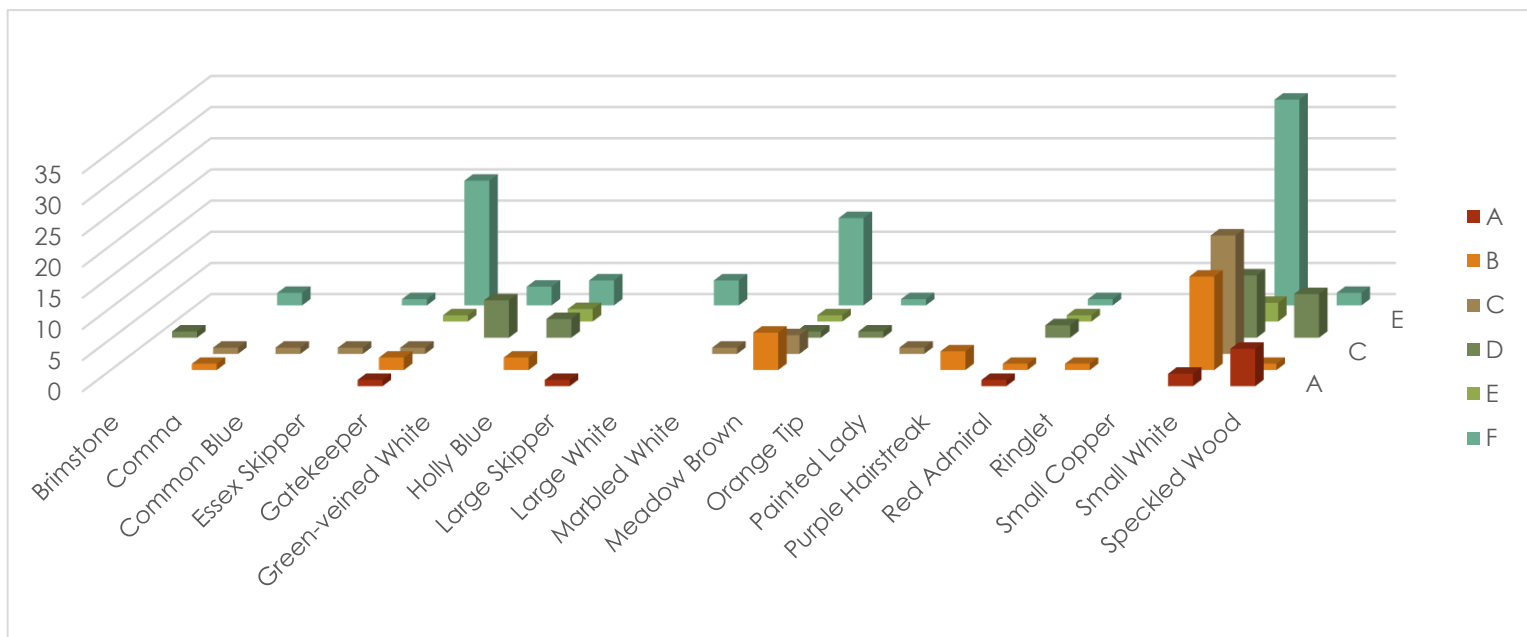
## Butterflies by transect section

**Fig. 1** below shows total counts of individual adult butterflies and species for each section of the transect route - please note these totals include Purple Hairstreak, recorded outside transect times and excludes Peacock, recorded as larvae, so as not to skew the graph. It excludes other records outside transect times. Please note that Small Copper (one observed in section F) on the graph is hidden behind the bar for Small White. **Section F** (Moat and tenant's garden) recorded 86 butterflies of 12 species - by far the most for any sections. The sections recording the next highest numbers of species were **section B** (from the southern entrance to the Walled Garden, Tudor entrance): 32 butterflies - including three Purple Hairstreaks - of nine species and **D** (the southern border of the site): 31 adult butterflies of eight species, plus Peacock butterfly larvae. **Section C** (the Walled Garden) recorded 28 butterflies of eight species, **section A** (All Saints churchyard) recorded eleven butterflies of five species and **section E** (from the gap in the railings south of the Palace building to the cottage) recorded eight butterflies of five species.



Large White on thistle, in the Moat

**Figure 1 - Total records and numbers of butterflies per section**



The following species are listed in order of abundance in terms of records: Small White, Meadow Brown, Holly Blue, Speckled Wood, Gatekeeper, Red Admiral, Comma/Green-veined White - other species were recorded only once or twice. In terms of number of individuals recorded, the order of abundance was: Small White, Meadow Brown/Gatekeeper, Speckled Wood, Holly Blue, Green-veined White, Red Admiral, Large White/Comma, Purple Hairstreak - other counts of individual butterflies numbered in the ones and twos. **Table 3** below shows which species occurred where and how many. The commonest species across all the transects was Small White. There were 27 records and 82 individuals of this species recorded during transects and it featured across all six transect sections.

Full details of species recorded can be found in the spreadsheet in **Appendix 1**. Six species (Essex Skipper, Large Skipper, Holly Blue, Small Copper, Ringlelet, Marbled White) have no site records listed on the London Natural History Society (LNHS) database (Leslie Williams, pers. comm.) or Butterfly Conservation (BC) Middlesex (Andrew Wood, pers. comm.) database.

**Table 3- Species recorded on transects, their locations and number of individuals:**

Species \ Sections	A	B	C	D	E	F	Total individuals
Brimstone				1			1
Comma		1	1			2	4
Common Blue			1				1
Essex Skipper			1			1	2
Gatekeeper	1	2	1		1	20	25
Green-veined White				6		3	9
Holly Blue		2		3	2	4	11
Large Skipper	1						1
Large White						4	4
Marbled White			1				1
Meadow Brown		6	3	1	1	14	25
Orange Tip				1		1	2
Painted Lady			1				1
Peacock				1			1
Purple Hairstreak		3					3
Red Admiral	1	1		2	1	1	6
Ringlelet		1					1
Small Copper						1	1
Small White	2	15	19	10	3	33	82
Speckled Wood	6	1		7		2	16
Section Count Total	11	32	28	32	8	86	197
Section Species Total	5	9	8	9	5	12	

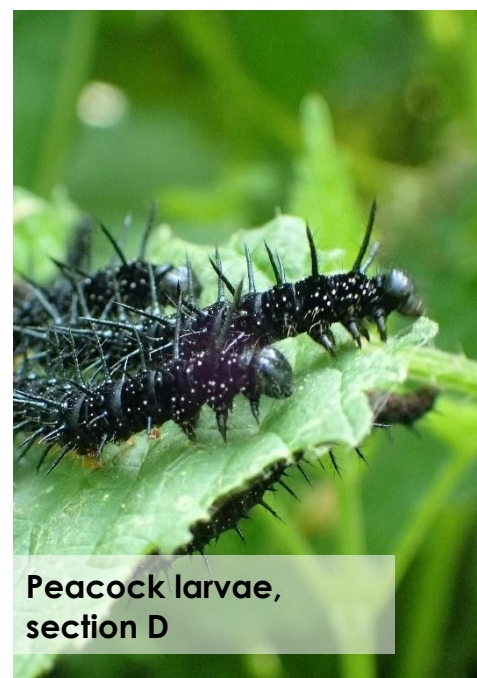


The following plants were seen being used by adult butterflies for nectar during survey times: Creeping Thistle *Cirsium arvense*, thistle sp., Black Horehound *Ballota nigra*, Hawkweeds *Hieracium* sp., Dittander *Lepidium latifolium*, Green Alkanet *Pentaglottis sempervirens*, Lavender *Lavandula*, Hedge Mustard *Sisymbrium officinale*, *Cosmos bipinnatus*, Common Ragwort *Senecio jacobaea* and *Verbena bonariensis*. **Table 4** shows which species were observed using which flowers. Please see the spreadsheet 'Comments' column for details, in **Appendix 1**.

**Table 4 showing flowers where butterfly nectaring was observed during transect surveys**

Butterfly	Flowers visited (number of individual butterflies seen nectaring in brackets if more than one)
<b>Large White</b>	Creeping Thistle, Ragwort, thistle sp.
<b>Small White</b>	Creeping Thistle (3), Ragwort (3), Black Horehound (3), Green Alkanet, Dittander, Hawkweeds, Hedge Mustard, Cosmos, <i>Verbena bonariensis</i>
<b>Holly Blue</b>	Green Alkanet, Dittander
<b>Painted Lady</b>	Lavender
<b>Meadow Brown</b>	Black Horehound
<b>Gatekeeper</b>	Creeping Thistle (2), Ragwort (2)
<b>Marbled White</b>	Lavender

There was direct evidence of breeding for Small White, Peacock, Comma, and Meadow Brown. **Small White:** ovipositing on Hedge Mustard on 30<sup>th</sup> May, 16<sup>th</sup> July and 23<sup>rd</sup> July, all in the Moat. **Comma:** on 16<sup>th</sup> July, a female was observed ovipositing on Stinging Nettles *Urtica dioica* just west of the carved green man near the Palace building (outside transect times), and a female was seen ovipositing on Stinging Nettles on the same date opposite the north gate of the Walled Garden. **Peacock:** larvae were noted on Stinging Nettles on 24<sup>th</sup> June, at Section D (around 45 larvae) and pupae were subsequently located by Fulham Palace garden staff, with at least one imago emerging from these and shown to me by garden apprentice Annette Foerger. **Meadow Brown:** a pair observed mating on 16<sup>th</sup> July in the Moat.



**Peacock larvae, section D**



**Comma egg on Stinging Nettle, near Palace building**



## Other species of note

### Odonata (Dragonflies and Damselflies)

Seven species of Odonata (Dragonflies and Damselflies) were recorded on Fulham Palace grounds during the 2021 survey period, as shown below in **Table 5**. There were 15 Odonata records totalling 16 individuals (also listed in **Appendix 2**). The most unusual record was a Hairy Dragonfly *Brachytron pratense* observed on 8<sup>th</sup> June along the southern border just west of the natural play area in a clearing (section D). This species is described as “locally scarce” (London Wildlife Trust 2020). The highest number of Odonata species recorded was around the Moat (section F: six records of five species), followed by the Walled Garden (four records of three species). Odonata records listed were all recorded during the butterfly transects, except one Migrant Hawker record, indicated with an asterisk \*. LNHS London Odonata recorder Neil Anderson (pers. comm.) has no records for the site so all those listed are potentially new records for Fulham Palace grounds.



Common Darter in the Walled Garden

Table 5: Odonata records during butterfly transects

Black-tailed Skimmer, section D	Species	Dates	Location/transect section
	<b>Common Blue Damselfly</b> <i>Enallagma cyathigerum</i>	24 <sup>th</sup> June, 16 <sup>th</sup> July	E - long grass near Mulberry, west of Palace building F - Moat
	<b>Blue-tailed Damselfly</b> <i>Ischnura elegans</i>	24 <sup>th</sup> June	F - Moat
	<b>Emperor Dragonfly</b> <i>Anax imperator</i>	24 <sup>th</sup> June, 24 <sup>th</sup> June	E - long grass near Mulberry, west of Palace building F - Moat
	<b>Hairy Dragonfly</b> <i>Brachytron pratense</i>	8 <sup>th</sup> June	D - west of natural play area
	<b>Migrant Hawker</b> <i>Aeshna mixta</i>	4 <sup>th</sup> August, 4 <sup>th</sup> August, 28 <sup>th</sup> August*, 28 <sup>th</sup> August, 8 <sup>th</sup> September (2)	C - Walled Garden F - Moat C - Walled Garden F - Moat B - border with All Saints Church
	<b>Black-tailed Skimmer</b> <i>Orthetrum cancellatum</i>	8 <sup>th</sup> June, 24 <sup>th</sup> June, 24 <sup>th</sup> June	D - outside south edge of Walled Garden C - Walled Garden F - Moat
	<b>Common Darter</b> <i>Sympetrum striolatum</i>	4 <sup>th</sup> August	C - Walled Garden meadow

## Other species recorded

During the butterfly transects and at other times, a wide range of non-target insect species was observed, and a selection of these are recorded in the spreadsheet in **Appendix 3**. Some of the more interesting or unusual records are summarised here. Dull Four-spined Legionnaire *Chorisops tibialis* (a Soldier Fly of tree rot holes and wood debris) was beaten from the Fig Tree by the Walled Garden on 28/08/2021, two Wasp Beetles *Clytus arietis* were observed mating on 09/05/2021 in herbaceous vegetation west of the natural play area (larvae require decaying deciduous wood), large and metallic Rose Chafers *Cetonia aurata* were seen on 09/05 and 30/05/2021. In addition, predatory Malachite Beetle *Malachius bipustulatus* was seen on 07/06/2021, *Rutpela maculata* (a longhorn beetle; larvae in rotten wood) on 16/07/2021, the bright red and black true bug *Corizus hyoscami* on 07/06/2021 and Brassica Bug *Eurydema oleracea* on 09/05/2021. At least ten, mainly male but also female, Stag Beetles *Lucanus cervus* were seen during evening walks on 07/06/2021, both east of the natural play area and near the compost heaps north of the Walled Garden. Stag Beetles are Nationally Scarce B and listed as a priority species for conservation in the UK and London Biodiversity Action Plans (London Wildlife Trust 2016, for example) and require rotting deciduous tree stumps and boughs.



Wasp Beetles



Stag Beetle, male

The moth trapping produced three beetle species. For convenience, these are listed with the other beetles in **Appendix 3** for this report.



## Discussion and summary

The transect recorded a higher-than-expected number of species and individual butterflies. 20 butterfly species is a reasonable proportion of the 39 species recorded regularly in the London area in recent years (Williams 2020), given that the latter total includes several scarce species and those found on the periphery of the London area. Of those 20 species, six (Essex Skipper, Large Skipper, Holly Blue, Small Copper, Ringlet and Marbled White) are potentially 'new' for Fulham Palace and All Saints churchyard (that is to say, they are not listed for the site on BC Middlesex or LNHS databases - Andrew Wood and Leslie Williams respectively, both pers. comm.). This may be due to various factors: lack of observers submitting records to biological records centres in previous years, more butterflies on site than in previous years due to increasing habitat management aimed at encouraging biodiversity - for example more long grass areas suiting the Skippers, and recent wider increases in range of some species such as Ringlet and Marbled White. It is very likely that Holly Blue has occurred before, as it has been a common and widespread VC 21 species for some time, but there are very few official records of any butterflies for the site on the above databases and it appears that few observers have walked the grounds - or of those that did visit, few have submitted their sightings to the local records centres or vice-county recorders. The current survey has, therefore, greatly enhanced the understanding of which species occur across the year at Fulham Palace and All Saints Church grounds, and this will be useful for the county recorders and will assist the garden teams to maintain and enhance habitats for butterflies.

All the species listed on the LNHS and BC Middlesex databases for the site (**Table 1**), apart from Small Tortoiseshell (*Aglais urticae*), were seen again during the current survey. The expected species for inner London were all recorded, with that exception and perhaps Brown Argus (*Aricia agestis*), which has not been recorded before but could appear in grassy areas. Distribution was not equal, however, and the best sections were generally at the borders of the site: F, B and D. Section F (the Moat area) recorded by far the highest number of individual butterflies, 86, and was high in species variety. 19 species were seen on Fulham Palace grounds (sections B-F of the transect route) and 5 species were seen in **All Saints churchyard** (section A), including the only record of Large Skipper during the survey. Discussion below includes Peacock Butterfly - found as larvae only - and Purple Hairstreak, which was recorded along the transect route but not during transect walk times. This species is most easily recorded in the early evening. It is interesting that seven species - Large Skipper, Brimstone, Common Blue, Small Copper, Painted Lady, Ringlet and Marbled White - were only represented by single

individuals on single occasions. Discussion below follows the transect sections A-F.

The LNHS London butterfly monitoring report gives some additional information about regional population trends based on long-term transects monitored weekly during the spring and summer across London. This provides useful context when assessing some of the butterfly records for Fulham Palace. Here the 2019 LNHS report (Williams 2020) is used for a more accurate assessment, as 2020 transect counts were limited by Covid-19 restrictions. At a national level, the UK Butterfly Monitoring Survey (UKBMS) summarises species abundance changes in the UK in recent decades to 2020, and here it is useful to look at some of the long-term trends that are statistically significant, highly significant or very highly significant (UKBMS 2020). Orange Tip, recorded twice in the current survey at Fulham Palace, has significantly increased nationally by 36% since 1976 and there is plenty of at least one of its foodplants, Garlic Mustard *Alliaria petiolata*, on site. Brimstone has significantly increased by 30% since 1976 - and significantly by 93% in the past ten years (UKBMS 2020). The 2019 London index (counts on transects across London) for Brimstone, recorded once at Fulham Palace in the current survey, was the second highest since the London index for this species began in 1990 (Williams 2020). Although Small Copper has shown a significant national decrease of 37% since 1976, in recent years there has been a non-significant increase. One Small Copper was seen in the current survey. In the past ten years Holly Blue, frequent at Fulham Palace, has shown a significant increase of 171% (UKBMS 2020). Red Admiral and Comma - recorded regularly at Fulham Palace in the current survey - have both shown very highly significant national increases since 1976 of 254% and 197% respectively while Peacock has shown little change and, in contrast, Small Tortoiseshell showed a very highly significant national decrease since 1976 of 79%. Speckled Wood has shown a very highly significant increase nationally of 105% since 1976 (UKBMS 2020). Ringlet was recorded, apparently new to Fulham Palace, during the current survey. In London, Ringlet appears to have been increasing in distribution in recent years and this appears to be continuing (Williams 2020). Ringlet has also shown a very highly significant national increase of 364% since 1976 (UKBMS 2020). Meadow Brown, frequent during the current survey, appears to be the commonest London butterfly and the 2019 London index was one of the highest in recent decades (Williams 2020). The London index for Gatekeeper, several of which were seen at Fulham Palace and All Saints churchyard during the current survey, was one of the highest during the past decade (Williams 2020), while at a national level Gatekeeper showed a highly significant decrease since 1976 of 43% but in the last ten years has

shown a non-significant increase. Another of the 'browns', Marbled White, was recorded apparently for the first time on site during the current survey. Marbled White in London recorded the highest index in 2019 since the London index for this species began in 1996, establishing more within green spaces in urban parts of London in recent years. Reduced mowing frequency of amenity grassland and in gardens has led to a number of first-time records of Marbled White in parts of London (Williams 2020), and it is likely this approach has also encouraged it, and other 'browns', to Fulham Palace. At a national level, Marbled White has shown a highly significant increase of 76% since 1976, and a significant increase of 93% in the past ten years (UKBMS 2020). The London index for Common Blue was 8<sup>th</sup> lowest out of the eleven years up to and including 2019 (Williams 2020) - this butterfly was recorded once at Fulham Palace during the current survey. From these records it can be seen that a number of butterfly species have increased considerably in the wider region in recent years, particularly some of the 'browns', Red Admiral, Comma and Holly Blue. Orange Tip and Brimstone also show increases regionally and nationally, and therefore the potential for increasing Brimstone numbers at Fulham Palace and All Saints grounds through increasing foodplant availability appears good. Small Tortoiseshell has shown a marked decline nationally and the situation for Small Copper is less clear, while Gatekeeper appears to be on the rise in London. The comments for Marbled White (Williams 2020) show that simple conservation actions such as reduced mowing of grasslands can have positive impacts, providing habitat for butterflies that are spreading into new areas.





## Section A - All Saints churchyard:

five butterfly species were recorded. The long grass areas held the only Large Skipper noted during the survey and Gatekeeper, another grassland species, was observed, showing the potential for the site to host a range of interesting species. Both species require coarse grasses such as Cock's-foot alongside shrubs or scrub. The other butterfly species noted during the survey were: Small White, Red Admiral and Speckled Wood. The author approached Butterfly Conservation Middlesex and the LNHS for past butterfly records but the only record they had for the churchyard was of a Large White on 13/07/1996 (Andrew Wood, BC Middlesex recorder, pers. comm.). The officially recorded species (that is, data entered onto vice-county or London butterfly recorders' databases) for the churchyard now appears to total six species.

The church grounds had some dappled shade, a mix of shrubs, a range of wildflowers and garden plants and long grass areas. The relatively low number of butterflies recorded is likely to reflect the extensive shade from the tall trees, including dense Yews *Taxus baccata*. There is plentiful Black Horehound *Ballota nigra* on site, both in the borders and amongst the grass - a useful nectar source for butterflies and larval foodplant for moths, though the centre of the site has relatively few nectar sources. Some lower tree branches could perhaps be cut back in some areas around the grassland to allow more light and warmth into the long grass areas to encourage butterflies, and to offer corridors for butterflies to move between open areas. It is recommended that some of the longer grass be cut around mid-September and the cuttings removed, with other areas - perhaps one third - left fallow all year. These areas could be rotated the following year. One or two paths could be cut through. This would allow more light and warmth in for basking butterflies and optimal larval development, and would help create a more nuanced sward by reducing nutrient levels and dominance of rank grasses and allowing some fine grasses and flowers to thrive. Small sections of grass could be cut occasionally by hand to a height of a few centimetres - this would add to the variety



Red Admiral on a gravestone

and open up warm spots for butterflies and their larvae. The area east of the church building, with the gravestones, has potential for attracting butterfly species such as Common Blue if grass is allowed to grow to a medium height (for example by using mowers with a 10cm or greater cutting height, mowing some sections occasionally and removing arisings). Speckled Wood was recorded frequently in the churchyard, and this is a species that benefits from dappled shade and longer grasses. This species should continue to thrive here. The lack of Holly Blues on this part of the transect was a surprise given the suitable habitat and foodplants, but 2021 was not a classic year for this species and it is highly likely to be present even if not recorded during the transect times

### **Section B - The south-eastern entrance, continuing outside the eastern and northern perimeter of the Walled Garden until the Walled Garden Tudor gate:**

a total of nine butterfly species were recorded (including Purple Hairstreaks outside transect times). Red Admiral was observed here around Stinging Nettles and may have oviposited there, and Migrant Hawker Dragonflies were observed. The meadowy corner, bordered by brambles and trees, opposite the north-east corner of the Walled Garden, was productive for white butterflies and 'browns', and this was the only area where Ringlet, apparently new for the site, was seen. The border between Fulham Palace and the churchyard is useful butterfly habitat.

In section B there is plenty of Black Horehound and a good range of trees and shrubs, herbaceous plants and varied long grass, with plenty of light reaching the ground. The meadowy corner, bordered by brambles and trees, opposite the north-east corner of the Walled Garden, is productive for the 'browns' and white butterflies. Patches of Stinging Nettles in this area proved suitable for Commas to lay their eggs. Ornamental and native flowers provide nectar. Deadwood near the compost heaps, and possibly the compost itself, attracts other interesting insects such as Stag Beetles. Some of



**Grassy habitat in section B**



the low Holm Oak branches could perhaps be cut back to allow in more light and create less dry leaf litter, which alerted opportunistic Foxes to the presence of the adult beetles through the rustling of dry leaves. Although some autumn grass cutting is useful, it is recommended that more of the Black Horehound be left uncut and the areas to be cut are trimmed a little later, using a higher cut level on the strimmer. The tall oaks outside the Walled Garden hold a population of Purple Hairstreaks - an often-overlooked species that is difficult to record on transect walks due to its behaviour, best searched for in the evenings. Should Oak Processionary Moth ever need removing from oaks on site, it is recommended that nest removal be done manually rather than by spraying, to preserve the Purple Hairstreak population and the many other Lepidoptera associated with oaks. Common Buckthorn *Rhamnus cathartica* or Alder Buckthorn *Frangula alnus* could be added here and there to the shrub zone in partial sun or sheltered sunny spots: Brimstone butterflies lay eggs on small to medium-sized examples of these trees and, as Brimstones are very mobile and easily able to colonise or recolonise suitable areas, this could increase their presence on site.

### Section C - the Walled Garden:

eight species of butterfly were noted on transect walks, including the only survey records of Common Blue, Painted Lady, and Marbled White - the last two using the Lavender for nectar. Three Dragonfly species were recorded.

The Walled Garden contains sunny, sheltered areas rich in ornamental flowers of a range of shapes and sizes, old fruit trees and an extensive sun-exposed long grass meadow area. The Walled Garden compliments the wilder areas at the edges of the site - for example, larval foodplants for a number of butterflies occur along the southern border of the Palace grounds, while adult butterflies may venture into the Walled Garden to nectar at various cultivated flowers such as *Verbena bonariensis* or Lavender. Minimal use of chemicals and techniques such as companion planting are helping insects.



Walled Garden

Three species of Dragonfly (Migrant Hawker, Black-tailed Skimmer and the only sighting of Common Darter - though further late summer/autumn visits may well have

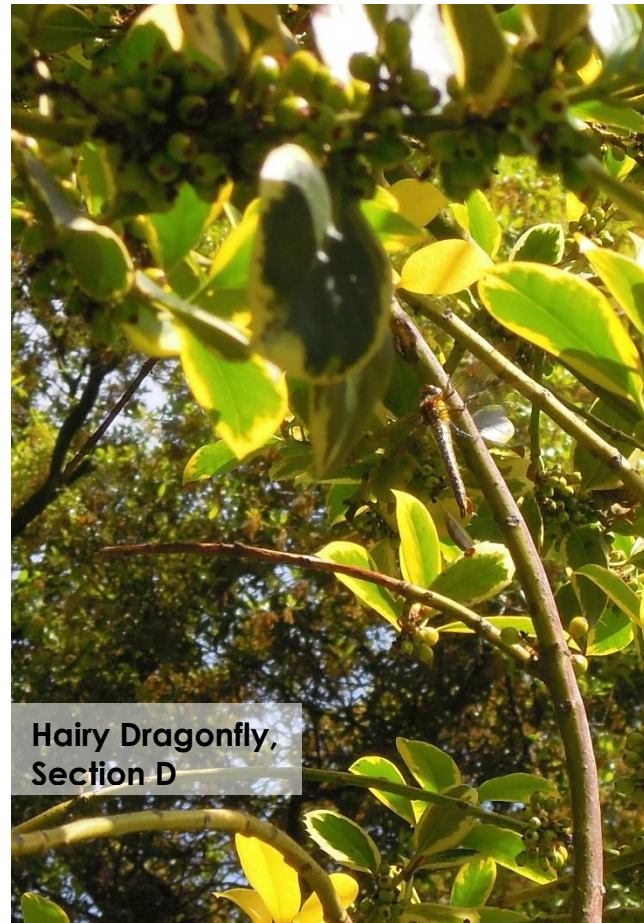
revealed more of this species on site) were seen taking advantage of the abundance of insect prey in or close to the long grass area. The record of Common Blue butterfly, which has occurred in this section before (records per Andrew Wood, pers. comm.) suggests it may be worth encouraging Common Bird's-foot Trefoil *Lotus corniculatus* in this area, along the lawn edges where the grass is of intermediate length. This butterfly is vulnerable to drought affecting the foodplant (Eeles 2019), so the Bird's-foot Trefoil could be encouraged away from the areas of heaviest footfall where apple trees cast dappled shade, for example, to help maintain the foodplant even in dry years. It may be worth - if not already being done - mowing the grass at some edges of the south-west lawn (where this individual was observed) and in some other spots to a height that is up to 10-15 cm. This management may help other flowers such as Common Stork's-bill and Dove's-foot Cranesbill which could attract Brown Argus *Aricia agestis*. The grassy meadow section around the beehives is an important habitat, rich in invertebrate life, and contains a range of grasses and flowers such as Common Ragwort. It hosts grassland butterflies such as Meadow Brown and Essex Skipper, which require coarse grasses such as Cock's-foot. There was one record of Marbled White. Marbled White requires both fine grasses, such as Red Fescue and Sheep's Fescue, and coarse species such as Cocks'-foot or Yorkshire Fog, to cover all stages of its caterpillar's development. During the annual mowing and removal of cuttings here, it would be useful - if not already being done - to leave around one third of the grass uncut in any one year to help offer an invertebrate refuge and to make it easier for some species to complete their full life cycles.





### Section D - the southern border of the site:

eight butterfly species were recorded on transect walks; nine species including the Peacock larvae. This area proved attractive to a range of butterflies including Orange Tip, the only records of Brimstone and Peacock (many larvae found on extensive Stinging Nettles in a sunny, quiet corner), and woodland species such as Holly Blue and Speckled Wood which were clearly holding territory there. It was here that a Hairy Dragonfly was found feeding in a sunny spot. This was perhaps feeding at Fulham Palace grounds before moving to the London Wetland Centre just across the Thames to breed. Interesting invertebrates of dead and decaying wood such as Stag Beetle and Wasp Beetle were also observed in this part of section D. Black-tailed Skimmer was the other Dragonfly species observed - along the outside south wall of the Walled Garden.



**Hairy Dragonfly,  
Section D**

Section D is a long section that grades from grassy areas, open bramble scrub and herbaceous plants to shaded bushes and mature trees, giving a woodland edge feel. The areas either side of the natural play area are sunny but sheltered, with a range of wildflowers and plants such as Hedge Woundwort *Stachys sylvatica*, extensive Garlic Mustard (a larval foodplant for Orange Tip), and Stinging Nettle. It is recommended that this 'woodland edge' feel with its variety of native plants, dead and decaying wood (benefiting many beetle species, including Stag Beetles) and clearings with a range of heights of shrubs, is maintained. Some sections could be cut back as "scallop" in late summer or autumn to help plant regeneration and to keep the warm, open rides and clearings, but keeping plenty uncut to allow Lepidoptera to complete their life cycles (for example, Orange Tip overwinters as a chrysalis on plant stems, so excess tidying would reduce their numbers). Access paths or clearings can still be maintained and will add to the mix of habitats - by creating insect basking spots, for example. The long border offers a corridor effect allowing good connectivity along the whole southern edge of the site for butterflies to move through. As suggested for section B, Buckthorn or Alder Buckthorn could be added to partially sunny or sheltered sunny areas in the shrub zone or alongside the south wall of the



Walled Garden. Brimstone butterflies lay eggs on these trees and it would be a simple way to potentially increase their presence on site.

### **Section E - from the south-east corner of marquee garden to the tenant's cottage:**

only eight individual butterflies of five species were noted on the transect walks, but it was a short section. This section covered a grassy meadow, some short grass and shrubby borders. The meadow and the long grass area alongside the border with the day nursery area offer good invertebrate habitats with some nectar sources, and Common Blue Damselfly and Emperor Dragonfly were observed around here. Although the border is less "wild" than section D, there are useful butterfly plants here such as patches of Black Horehound that should be retained.

### **Section F - the Moat and tenant's cottage garden:**



**Meadow Browns mating,  
the Moat**

12 butterfly species (and 86 individual butterflies) were recorded here, the highest counts of all the sections on the transect, despite being a short section. The Moat is the only area where Small Copper was recorded. Grassland species such as Essex Skipper were present and high counts of Small White, Meadow Brown and Gatekeeper were made. Gatekeeper and Meadow Brown were frequent. Five species of Dragonfly were noted here - the highest on site during the surveys. These were Common Blue Damselfly, Blue-tailed Damselfly, Emperor, Migrant Hawker and Black-tailed Skimmer.

The Moat is a warm, sheltered spot with plenty of long grass and an interesting range of wildflowers such as Creeping Thistle, Ragwort *Senecio jacobaea*, Dark Mullein *Verbascum nigrum* and even

Dittander *Lepidium latifolium* - all used by butterflies for nectar. There is some Bird's-foot Trefoil, Sorrel *Rumex acetosa* and other useful butterfly plants, and Small Whites were seen ovipositing on and nectaring at wild Brassicaceae. The tenant's cottage has a lawn and a small section of wilder lawn, plus mixed shrubs and flowers and windbreak Hornbeam hedge. The high butterfly totals were not unexpected, given the sheltered, sunny, little-disturbed and open habitat with a wide range of native grasses and low-growing plants. The Moat is the only area where Small Copper was recorded and it would be worth encouraging Sorrel for this butterfly. Common Blue butterfly was not recorded here but it could be found during regular recording, as Bird's-foot Trefoil is present. Coarse grasses such as Cock's-foot are used by larvae of Essex Skipper, Meadow Brown and Gatekeeper, with Meadow Brown also requiring fine grasses, so maintaining a varied sward is helpful. The current management of cutting in early autumn and removing the arisings (Fulham Palace garden team, pers. comm.) appears to be working, although not cutting too low and leaving some small sections - perhaps one quarter to one third - fallow each year would likely enhance its value to butterflies still further. This should prevent it becoming too coarse and allow Bird's-foot Trefoil and other important plants to thrive. The area should overall remain sunny and open with brambles, Bindweed and other fast-spreading plants checked to ensure its open meadowy grassland character is maintained. Some small "scallop" could be cut into a few sections along the sides of the Moat, cutting and removing grass and vegetation quite low by hand to a few centimetres from the soil, to create variation in the sward height and temperature that might encourage Lycaenidae such as Small Copper, Brown Argus and Common Blue.



**The Moat, section F, with grasses and herbaceous plants**



## Odonata comment

The Odonata recorded were using warm, sheltered areas as perches or patrolling over long grass and hedgerow borders. Most will have been feeding up on insects and maturing before heading to waterbodies to breed. Key areas were: inside and around the walls enclosing the Walled Garden; the Moat and tenant's garden; just west of the Palace building; and the border just west of the natural play area. All these spots are sunny but sheltered, with plentiful perches, herbaceous vegetation and/or long grass and flying insect prey. Areas of water would be beneficial for insects generally, and it is understood that barrel ponds are being put in. These may attract damselflies. Slightly larger ponds - such as raised ponds - could encourage some of the Odonata that currently visit as non-breeders to remain to breed.







**Natural play area section D  
with herbaceous and  
woody plants**

### Concluding comment

Generally, it was good to see some long grass throughout the year and sheltered sunny spots with a wide range of plants even amongst more wooded areas. A nuanced mix of habitats, a range of nectar sources across the summer, reduced footfall in some places and plentiful long grass - including areas of coarse and fine grasses - benefits many butterflies, and the grassland species such as 'browns' and Skippers featured prominently on the transect route. Creeping Thistle attracted a wide range of nectaring species in June-July. Common Ragwort is another important nectar source, while widespread larval foodplants include Stinging Nettles, coarse grasses such as Cock's-foot and fine grasses such as bents and fescues. Some butterfly species could be encouraged by specific planting. In other areas, diverting heavy footfall around key areas could help butterflies by protecting their larval foodplants and nectar sources, particularly during dry spells. Overall, it is advisable to have a mix of mown areas and areas left uncut as invertebrate refuges. It is recommended that the cuttings be removed ('cut and collect') where possible to reduce soil fertility, avoid smothering of the grassland, and to discourage coarse vegetation growth and proliferation of aggressive plant species. Rotational cutting will help prevent invasive tree species, as well as brambles, taking over the grassland and shading out butterfly foodplants and reducing connectivity between sections. The relaxed and more site-specific mowing regime should help butterflies spread between different areas of the site. The lack of chemicals and the wilder borders filled with native plants helps encourage a wide range of wildlife to thrive here.



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## Appendix 1 – Spread sheet of butterfly and other insect records from the 2021 butterfly survey

<i>Species name</i>	Common Name	Observer's Name	Date	Grid Reference	Location Name	Abundance	Sex/Stage	Section	Comment/Location Details
<i>Thymelicus lineola</i>	Essex Skipper	Joe Beale	24/06/2021	TQ 23963 76237	Fulham Palace grounds	1	male	F	Transect 10.35-12.00. North section of Moat.
<i>Thymelicus lineola</i>	Essex Skipper	Joe Beale	23/07/2021	TQ 24206 75993	Fulham Palace grounds	1		C	Transect 10.37-11.41. Walled Garden.
<i>Ochlodes sylvanus</i>	Large Skipper	Joe Beale	16/07/2021	TQ 24276 75954	All Saints Churchyard	1		A	Churchyard. Transect 10.03-11.45. One west of church in grassland.
<i>Anthocharis cardamines</i>	Orange Tip	Joe Beale	09/05/2021	TQ 24020 76046	Fulham Palace grounds	1	male	D	Transect 10.45-11.57. West of natural play area.
<i>Anthocharis cardamines</i>	Orange Tip	Joe Beale	08/06/2021	TQ 23936 76215	Fulham Palace grounds	1	female	F	Transect 10.15-11.40. South section of Moat.
<i>Gonepteryx rhamni</i>	Brimstone	Joe Beale	09/05/2021	TQ 23936 76215	Fulham Palace grounds	1	male	D	Transect 10.45-11.57. West of natural play area.
<i>Pieris brassicae</i>	Large White	Joe Beale	16/07/2021	TQ 23936 76215	Fulham Palace grounds	1	female	F	Transect 10.03-11.45. South section of Moat.
<i>Pieris brassicae</i>	Large White	Joe Beale	23/07/2021	TQ 23976 76231	Fulham Palace grounds	2		F	Transect 10.37-11.41. One in cottage garden, one in north section of Moat, nectaring at Ragwort and thistles.
<i>Pieris brassicae</i>	Large White	Joe Beale	23/07/2021	TQ 24031 76155	Fulham Palace grounds	1		Other	Casual observation. One by north side of Palace building.
<i>Pieris brassicae</i>	Large White	Joe Beale	04/08/2021	TQ23907618	Fulham Palace grounds	1		F	Transect 11.13-12.25. One in south section of Moat.
<i>Pieris rapae</i>	Small White	Joe Beale	22/07/2021	TQ 24172 75950	Fulham Palace grounds	1		Other	Roosting at night - found by torchlight.
<i>Pieris rapae</i>	Small White	Joe Beale	09/05/2021	TQ239762	Fulham Palace grounds	2		F	Transect 10.45-11.57.
<i>Pieris rapae</i>	Small White	Joe Beale	09/05/2021	TQ 241 759	Fulham Palace grounds	1		D	Transect 10.45-11.57.
<i>Pieris rapae</i>	Small White	Joe Beale	30/05/2021	TQ239762	Fulham Palace grounds	1		F	Transect 11.55-12.44. North section of Moat. Female searching plants for ovipositing.
<i>Pieris rapae</i>	Small White	Joe Beale	08/06/2021	TQ 24167 75964	Fulham Palace grounds	1		D	Transect 10.15-11.40. Opposite south wall of Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	08/06/2021	TQ239761	Fulham Palace grounds	1		F	Transect 10.15-11.40. South section of Moat.
<i>Pieris rapae</i>	Small White	Joe Beale	24/06/2021	TQ 24163 76067	Fulham Palace grounds	1		C	Transect 10.35-12.00. Walled Garden - in greenhouse.
<i>Pieris rapae</i>	Small White	Joe Beale	24/06/2021	TQ239762	Fulham Palace grounds	3		F	Transect 10.35-12.00. North section of Moat.

<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ 243 759	All Saints Churchyard	1		A	Churchyard. Transect 10.03-11.45. One west of church in grassland.
<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ242760	Fulham Palace grounds	9		B	Transect 10.03-11.45. Including one at Black Horehound by gate from Bishop's Park, one at Green Alkanet opposite north wall of Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ 24221 76017	Fulham Palace grounds	2		C	Transect 10.03-11.45. Meadow near beehives in Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ241759	Fulham Palace grounds	6		D	Transect 10.03-11.45. Four south of Walled Garden south wall, as per grid reference. One looking to oviposit east of natural play area, one west of natural play area - both TQ240760.
<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ 23945 76168	Fulham Palace grounds	2		E	Transect 10.03-11.45. Between mulberry and building near entrance, nectaring at Black Horehound.
<i>Pieris rapae</i>	Small White	Joe Beale	16/07/2021	TQ239762	Fulham Palace grounds	5		F	Transect 10.03-11.45. South section of Moat. Nectaring observed at Ragwort, Creeping Thistle and Dittander and ovipositing on Hedge Mustard.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ242760	Fulham Palace grounds	4		B	Transect 10.37-11.41. Two at grassy patch NE of Walled Garden boundary - including one nectaring at Black Horehound, two north of Walled Garden boundary.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ241760	Fulham Palace grounds	4		C	Transect 10.37-11.41. Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ241759	Fulham Palace grounds	2		D	Transect 10.37-11.41. Outside south wall of Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ 23945 76166	Fulham Palace grounds	1		E	Transect 10.37-11.41. Between mulberry tree and building near entrance.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ239762	Fulham Palace grounds	9		F	Transect 10.37-11.41. Two in cottage garden, two nectaring at Creeping Thistle in north section of Moat, one nectaring at Hawkweeds and ovipositing on Hedge Mustard, - plus four in south section of Moat.
<i>Pieris rapae</i>	Small White	Joe Beale	23/07/2021	TQ 24032 76155	Fulham Palace grounds	1		Other	Casual observation. One by north side of Palace building.
<i>Pieris rapae</i>	Small White	Joe Beale	04/08/2021	TQ241760	Fulham Palace grounds	3		C	Transect 11.13-12.25. Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	04/08/2021	TQ239762	Fulham Palace grounds	3		F	Transect 11.13-12.25. Two nectaring at Ragwort in cottage garden, one in south section of Moat.
<i>Pieris rapae</i>	Small White	Joe Beale	28/08/2021	TQ 243 759	All Saints Churchyard	1		A	Churchyard. Transect 11.10-12.17. One west of church over grassland.
<i>Pieris rapae</i>	Small White	Joe Beale	28/08/2021	TQ 24142 76069	Fulham Palace grounds	1		B	Transect 11.10-12.17. One outside west edge and tudor entrance of Walled Garden.
<i>Pieris rapae</i>	Small White	Joe Beale	28/08/2021	TQ241760	Fulham Palace grounds	6		C	Transect 11.10-12.17. In Walled Garden, including three at flowers (Verbena, Cosmos etc).
<i>Pieris rapae</i>	Small White	Joe Beale	28/08/2021	TQ239762	Fulham Palace grounds	6		F	Transect 11.10-12.17. Two in cottage garden including one nectaring at Hedge Mustard, two in north section of Moat and two in south section of Moat.
<i>Pieris rapae</i>	Small White	Joe Beale	08/09/2021	TQ 24143 76070	Fulham Palace grounds	1		B	Transect 11.07-12.02. Near Walled Garden arched entrance.

<i>Pieris rapae</i>	Small White	Joe Beale	08/09/2021	TQ241760	Fulham Palace grounds	3		C	Transect 11.07-12.02. Walled Garden. One nectaring at Verbena bonariensis.
<i>Pieris rapae</i>	Small White	Joe Beale	08/09/2021	TQ239762	Fulham Palace grounds	3		F	Transect 11.07-12.02. Two in north section of Moat and one in south section.
<i>Pieris napi</i>	Green-veined White	Joe Beale	23/07/2021	TQ240760	Fulham Palace grounds	4		D	Transect 10.37-11.41. Two outside south wall of Walled Garden TQ241759 and two west of natural play area as per given grid reference.
<i>Pieris napi</i>	Green-veined White	Joe Beale	04/08/2021	TQ 24104 75982	Fulham Palace grounds	2		D	Transect 11.13-12.25. Two outside south wall of Walled Garden
<i>Pieris napi</i>	Green-veined White	Joe Beale	04/08/2021	TQ239762	Fulham Palace grounds	1		F	Transect 11.13-12.25. One in north section of Moat.
<i>Pieris napi</i>	Green-veined White	Joe Beale	28/08/2021	TQ239761	Fulham Palace grounds	2		F	Transect 11.10-12.17. Two in south section of Moat.
<i>Neozephyrus quercus</i>	Purple Hairstreak	Joe Beale	22/07/2021	TQ 24169 76093	Fulham Palace grounds	3		B	After 19.00 around top of Pendunculate Oak near Garden staff building
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	09/05/2021	TQ 24146 75963	Fulham Palace grounds	1		D	Transect 10.45-11.57.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	09/05/2021	TQ239761	Fulham Palace grounds	1		E	Transect 10.45-11.57.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	09/05/2021	TQ239762	Fulham Palace grounds	1		F	Transect 10.45-11.57. Garden of cottage.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	30/05/2021	TQ242760	Fulham Palace grounds	1		B	Transect 11.55-12.44. On Green Alkanet. Note that this section was started just south of the gate from Palace grounds to churchyard today, due to parts of section B and D being blocked by an event.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	30/05/2021	TQ 24022 76044	Fulham Palace grounds	1		D	Transect 11.55-12.44. Near natural play area. Note that this section omitted the loop along the outside of the Walled Garden's south wall today, due to part of section D being blocked by an event.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	30/05/2021	TQ 23950 76162	Fulham Palace grounds	1		E	Transect 11.55-12.44. Between mulberry tree and building by entrance.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	30/05/2021	TQ239762	Fulham Palace grounds	1		F	Transect 11.55-12.44. Cottage garden.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	08/06/2021	TQ 24022 76044	Fulham Palace grounds	1		D	Transect 10.15-11.40. Near natural play area.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	16/07/2021	TQ 24253 76014	Fulham Palace grounds	1		B	Transect 10.03-11.45. One fresh individual on track opposite NE corner of Walled Garden.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	16/07/2021	TQ239762	Fulham Palace grounds	1		F	Transect 10.03-11.45. South section of Moat. Nectared at Dittander.

<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	04/08/2021	TQ239761	Fulham Palace grounds	1		F	Transect 11.13-12.25. One in south section of Moat.
<i>Celastrina argiolus</i>	Holly Blue	Joe Beale	28/08/2021	TQ241760	Fulham Palace grounds	1		Other	Casual observation. One opposite NW wall of Walled Garden, early afternoon.
<i>Polyommatus icarus</i>	Common Blue	Joe Beale	28/08/2021	TQ 24148 76023	Fulham Palace grounds	1		C	Transect 11.10-12.17. In Walled Garden, one male by long grassy edge and on mowed lawn in the southwest quadrant.
<i>Lycaena phleas</i>	Small Copper	Joe Beale	04/08/2021	TQ 23904 76184	Fulham Palace grounds	1		F	Transect 11.13-12.25. One in south section of Moat.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	08/06/2021	TQ 24102 75995	Fulham Palace grounds	1		D	Transect 10.15-11.40. East of natural play area. Around nettles.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	24/06/2021	TQ 24265 75988	Fulham Palace grounds	1		B	Transect 10.35-12.00. Around nettles opposite Walled Garden's east perimeter.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	24/06/2021	TQ 24204 75947	Fulham Palace grounds	1		D	Transect 10.35-12.00. East end of path opposite Walled Garden's SE corner.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	16/07/2021	TQ 23973 76232	Fulham Palace grounds	1		F	Transect 10.03-11.45. Cottage garden.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	22/07/2021	TQ 24161 76092	Fulham Palace grounds	2		Other	Outside NW corner of Walled Garden after 19.00.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	23/07/2021	TQ 24044 76165	Fulham Palace grounds	1		Other	Flying past carved tree north of Palace building, around 08.15
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	23/07/2021	TQ241760	Fulham Palace grounds	1		Other	In Walled Garden, early morning.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	23/07/2021	TQ239761	Fulham Palace grounds	1		E	Transect 10.37-11.41. Between mulberry tree and building near entrance. Flying through.
<i>Vanessa atalanta</i>	Red Admiral	Joe Beale	08/09/2021	TQ 24324 75946	All Saints Churchyard	1		A	Transect 11.07-12.02. Around gravestones.
<i>Polygonia c-album</i>	Comma	Joe Beale	16/07/2021	TQ 24228 76059	Fulham Palace grounds	1	female	B	Transect 10.03-11.45. One ovipositing in nettle patch approximately opposite north gate of Walled Garden.
<i>Polygonia c-album</i>	Comma	Joe Beale	16/07/2021	TQ 24172 76062	Fulham Palace grounds	1		C	Transect 10.03-11.45. Walled Garden.
<i>Polygonia c-album</i>	Comma	Joe Beale	16/07/2021	TQ 24044 76170	Fulham Palace grounds	1	female	Other	Ovipositing female, eggs photographed on Stinging Nettles. Approximately west of carved green man tree. Outside transect time.
<i>Polygonia c-album</i>	Comma	Joe Beale	16/07/2021	TQ239761	Fulham Palace grounds	1		F	Transect 10.03-11.45. South section of Moat.
<i>Polygonia c-album</i>	Comma	Joe Beale	23/07/2021	TQ239761	Fulham Palace grounds	1		F	Transect 10.37-11.41. One in south section of Moat.
<i>Aglaia io</i>	Peacock	Joe Beale	24/06/2021	TQ 24016 76053	Fulham Palace grounds	45	larvae	D	Transect 10.35-12.00. 45 or more well-grown larvae. West of natural play area in dense Stinging Nettles.

<i>Vanessa cardui</i>	Painted Lady	Joe Beale	16/07/2021	TQ 24208 75992	Fulham Palace grounds	1		C	Transect 10.03-11.45. Nectaring at lavender at edge of beehive meadow in Walled Garden.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	30/05/2021	TQ 243 759	All Saints Churchyard	1		A	Churchyard. Transect 11.55-12.44.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	30/05/2021	TQ 24035 76038	Fulham Palace grounds	1		D	Transect 11.55-12.44. Near natural play area. Note that this section omitted the loop along the outside of the Walled Garden's south wall today, due to part of section D being blocked by an event.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	08/06/2021	TQ 243 759	All Saints Churchyard	2		A	Churchyard. Transect 10.15-11.40. One SW of church and one in N corner by shaded gravestones.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	08/06/2021	TQ 24104 75982	Fulham Palace grounds	1	male	D	Transect 10.15-11.40. East of natural play area.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	08/06/2021	TQ239761	Fulham Palace grounds	1		F	Transect 10.15-11.40. South section of Moat.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	16/07/2021	TQ 24104 75982	Fulham Palace grounds	1		D	Transect 10.03-11.45. South of Walled Garden south wall.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	04/08/2021	TQ 24260 76020	Fulham Palace grounds	1		B	Transect 11.13-12.25. One in grassy corner opposite NE corner of Walled Garden.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	28/08/2021	TQ 243 759	All Saints Churchyard	3		A	Churchyard. Transect 11.10-12.17. Two north of church in partial shade by Yews and one west of church around grassland.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	28/08/2021	TQ 24135 75971	Fulham Palace grounds	2		D	Transect 11.10-12.17. Two opposite south wall of Walled Garden.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	28/08/2021	TQ239761	Fulham Palace grounds	1		F	Transect 11.10-12.17. One in south section of Moat.
<i>Pararge aegeria</i>	Speckled Wood	Joe Beale	08/09/2021	TQ240760	Fulham Palace grounds	2		D	Transect 11.07-12.02. One either side of natural play area.
<i>Aphantopus hyperantus</i>	Ringlet	Joe Beale	16/07/2021	TQ 24262 76012	Fulham Palace grounds	1		B	Transect 10.03-11.45. One worn individual in grassy patch opposite north gate of Walled Garden.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	24/06/2021	TQ 24157 76100	Fulham Palace grounds	1		B	Transect 10.35-12.00. Wildflower meadow patch opposite NW corner of Walled Garden.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	24/06/2021	TQ239762	Fulham Palace grounds	5		F	Transect 10.35-12.00. North section of Moat.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	16/07/2021	TQ 24260 76020	Fulham Palace grounds	2		B	Transect 10.03-11.45. One in grassy corner opposite NE corner of Walled Garden.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	16/07/2021	TQ 24222 76018	Fulham Palace grounds	2		C	Transect 10.03-11.45. Meadow near beehives in Walled Garden.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	16/07/2021	TQ 24178 75962	Fulham Palace grounds	1		D	Transect 10.03-11.45. South of Walled Garden south wall.



<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	16/07/2021	TQ 23945 76166	Fulham Palace grounds	1		E	Transect 10.03-11.45. Between mulberry and building near entrance, nectaring at Black Horehound.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	16/07/2021	TQ239761	Fulham Palace grounds	5		F	Transect 10.03-11.45. South section of Moat. Including a mating pair.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	23/07/2021	TQ 242 760	Fulham Palace grounds	2		B	Transect 10.37-11.41. One at grassy patch NE of Walled Garden boundary as grid refernce, one in wildflower meadow NW of Walled Garden boundary same section of walk but at TQ241761.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	23/07/2021	TQ239762	Fulham Palace grounds	4		F	Transect 10.37-11.41. One in cottage garden, one in north section of Moat, two in south section of Moat.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	04/08/2021	TQ 24260 76020	Fulham Palace grounds	1		B	Transect 11.13-12.25. One in grassy corner opposite NE corner of Walled Garden.
<i>Maniola jurtina</i>	Meadow Brown	Joe Beale	04/08/2021	TQ 24217 76042	Fulham Palace grounds	1		C	Transect 11.13-12.25. Inside north wall of Walled Garden.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	16/07/2021	TQ 24276 75954	All Saints Churchyard	1	male	A	Churchyard. Transect 10.03-11.45. One west of church in grassland.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	16/07/2021	TQ 24260 76020	Fulham Palace grounds	1	male	B	Transect 10.03-11.45. One in grassy corner opposite NE corner of Walled Garden.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	16/07/2021	TQ 23973 76232	Fulham Palace grounds	1		F	Transect 10.03-11.45. Cottage garden.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	16/07/2021	TQ 23919 76194	Fulham Palace grounds	1		F	Transect 10.03-11.45. South section of Moat.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	23/07/2021	TQ 24260 76020	Fulham Palace grounds	1		B	Transect 10.37-11.41. One at grassy patch NE of Walled Garden boundary.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	23/07/2021	TQ239762	Fulham Palace grounds	6		F	Transect 10.37-11.41. One in cottage garden, one in north section of Moat, four in south section of Moat.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	23/07/2021	TQ 24032 76155	Fulham Palace grounds	1		Other	Casual observation. One by north side of Palace building.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	04/08/2021	TQ 24166 76012	Fulham Palace grounds	1		C	Transect 11.13-12.25. SW grassy area of Walled Garden.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	04/08/2021	TQ 23957 76127	Fulham Palace grounds	1		E	Transect 11.13-12.25. In Knapweed area west of marquee lawn south path, SW of Palace building.
<i>Pyronia tithonus</i>	Gatekeeper	Joe Beale	04/08/2021	TQ239761	Fulham Palace grounds	12		F	Transect 11.13-12.25. Two in north section of Moat, including one nectaring at Ragwort. Ten in south section of Moat, including one nectaring at Ragwort and two nectaring at Creeping Thistles. Grid reference is for south section of Moat.
<i>Melanargia galathea</i>	Marbled White	Joe Beale	23/07/2021	TQ 24210 75990	Fulham Palace grounds	1		C	Transect 10.37-11.41. Walled Garden. Worn individual nectaring at Lavender border.

## Appendix 2 – Odonata records

Species Name	Common Name	Observer's Name	Date	Grid Reference	Location Name	Location In Park	Abundance	Sex/ Stage	iRecord	Section & Sighting Time
<i>Enallagma cyathigerum</i>	Common Blue Damselfly	Joe Beale	24/06/2021	TQ 23956 76159	Fulham Palace grounds	West of Palace building, near mulberry	1	male	yes	Section E. Butterfly transect 10.35-12.00
<i>Enallagma cyathigerum</i>	Common Blue Damselfly	Joe Beale	16/07/2021	TQ 23914 76194	Fulham Palace grounds	South section of moat	1	imm male	yes	Section F. Casual observation around 09.30
<i>Ischnura elegans</i>	Blue-tailed Damselfly	Joe Beale	24/06/2021	TQ 23914 76194	Fulham Palace grounds	South section of moat	1	male	yes	Section F. Butterfly transect 10.35-12.00
<i>Anax imperator</i>	Emperor Dragonfly	Joe Beale	24/06/2021	TQ 23956 76159	Fulham Palace grounds	West of Palace building, near mulberry	1	male	yes	Section E. Butterfly transect 10.35-12.00
<i>Anax imperator</i>	Emperor Dragonfly	Joe Beale	24/06/2021	TQ23957622	Fulham Palace grounds	North section of moat	1	female	yes	Section F. Butterfly transect 10.35-12.00
<i>Brachytron pratense</i>	Hairy Dragonfly	Joe Beale	08/06/2021	TQ24017605	Fulham Palace grounds	West of natural play area, nettle area	1		yes	Section D. Butterfly transect 10.15-11.40
<i>Aeshna mixta</i>	Migrant Hawker	Joe Beale	04/08/2021	TQ241760	Fulham Palace grounds	Walled Garden inside north wall	1		yes	Section C. Butterfly transect 11.13-12.25
<i>Aeshna mixta</i>	Migrant Hawker	Joe Beale	04/08/2021	TQ 23966 76233	Fulham Palace grounds	Tenant's cottage garden east of moat	1		yes	Section F. Butterfly transect 11.13-12.25
<i>Aeshna mixta</i>	Migrant Hawker	Joe Beale	28/08/2021	TQ24207605	Fulham Palace grounds	Walled Garden.	1		yes	Daylight search. Section C.
<i>Aeshna mixta</i>	Migrant Hawker	Joe Beale	28/08/2021	TQ23957623	Fulham Palace grounds	North section of moat	1		yes	Section F. Butterfly transect 11.10-12.17.
<i>Aeshna mixta</i>	Migrant Hawker	Joe Beale	08/09/2021	TQ24257597	Fulham Palace grounds	between Walled Garden and the churchyard.	2		yes	Section B. Butterfly transect 11.07-12.02.
<i>Orthetrum cancellatum</i>	Black-tailed Skimmer	Joe Beale	08/06/2021	TQ241760	Fulham Palace grounds	Outside south wall of Walled Garden	1		yes	Section D. Butterfly transect 10.15-11.40
<i>Orthetrum cancellatum</i>	Black-tailed Skimmer	Joe Beale	24/06/2021	TQ242760	Fulham Palace grounds	Walled Garden long grass	1		yes	Section C. Butterfly transect 10.35-12.00
<i>Orthetrum cancellatum</i>	Black-tailed Skimmer	Joe Beale	24/06/2021	TQ23907618	Fulham Palace grounds	South section of moat	1		yes	Section F. Butterfly transect 10.35-12.00
<i>Sympetrum striolatum</i>	Common Darter	Joe Beale	04/08/2021	TQ 24189 76007	Fulham Palace grounds	Walled Garden in long grass	1		yes	Section C. Butterfly transect 11.13-12.25

## Appendix 3 – Other records

Species Name	Common Name	Observer's Name	Date	Grid Reference	Location Name	Location In Park	Abundance	Sex/Stage	Comment/Location Details
<i>Chorisops tibialis</i>	Dull Four-spined Legionnaire	Joe Beale	28/08/2021	TQ24247602	Fulham Palace grounds	Outside Walled Garden north edge	1	female, adult	A female swept from Fig Tree. Accepted as considered correct on iRecord.
<i>Eurydema oleracea</i>	Brassica Shield Bug	Joe Beale	30/05/2021	TQ240760	Fulham Palace grounds		2	both sexes, adult	Mating pair
<i>Crioceris asparagi</i>	Asparagus Beetle	Joe Beale	07/06/2021	TQ24157604	Fulham Palace grounds	Walled Garden	6	both sexes, adult	Mating pair
<i>Clytus arietis</i>	Wasp Beetle	Joe Beale	09/05/2021	TQ240760	Fulham Palace grounds	West of Natural play area	2	both sexes, adult	Mating pair
<i>Carabus violaceus</i>	Violet Ground Beetle	Joe Beale	27/08/2021	TQ 24196 76027	Fulham Palace grounds	Walled Garden	1	adult	mv light trap
<i>Lucanus cervus</i>	Stag Beetle	Joe Beale	07/06/2021	TQ240760	Fulham Palace grounds	Near natural play area	5	both sexes, adult	Evening
<i>Lucanus cervus</i>	Stag Beetle	Joe Beale	07/06/2021	TQ24247606	Fulham Palace grounds	Near compost heaps	5	adult	Evening
<i>Melolontha melolontha</i>	Cockchafer	Joe Beale	07/06/2021	TQ 24177 76030	Fulham Palace grounds	Walled Garden	3	adult	To Actinic light trap
<i>Malachius bipustulatus</i>	Malachite Beetle	Joe Beale	07/06/2021	TQ 241760	Fulham Palace grounds	Walled Garden area	2	adult	in long grass
<i>Rutpela maculata</i>	A longhorn beetle	Joe Beale	16/07/2021	TQ240760	Fulham Palace grounds		3	adult	Convulvulus flowers
<i>Cetonia aurata</i>	Rose Chafer	Joe Beale	30/05/2021	TQ 23974 76230	Fulham Palace grounds	Cottage garden	1	adult	
<i>Cetonia aurata</i>	Rose Chafer	Joe Beale	09/05/2021	TQ241761	Fulham Palace grounds	Small meadow near oaks	1	adult	
<i>Oedemera nobilis</i>	Swollen-thighed Beetle	Joe Beale	30/05/2021	TQ242759	Fulham Palace grounds	Between church boundary and Walled Garden	1	adult	On hawkweeds. Fairly common on site.
<i>Curculio venosus</i>	A weevil	Joe Beale	22/07/2021	TQ 24196 76027	Fulham Palace grounds	Walled Garden area	1	adult female	To mv light trap. Probable identification but needs confirmation