Big Wood Volunteers

Big Wood, Barnet

Bat activity survey

Dr Greg Carson

July 2015

Report control

Document:	Bat activity survey
Project:	Big Wood, Barnet
Client:	Big Wood Volunteers
Job Number:	15001
File Origin:	15001 BigWood BAT R01.doc

Primary Author	Dr Greg Carson	
Contributor		
Review By		

Issue	Date	Status
1	7/6/15	Draft
2	6/7/15	Final
3		
4		

© Ecology Network Ltd
Primrose Hill Business Centre
110 Gloucester Ave
LONDON
NW1 8HX

+44 (0)777 544 6260 Mob
+44 (0)207 483 2681 Tel
+44 (0)207 483 4541 Fax
info@ecologynetwork.co.uk
www.ecologynetwork.co.uk

Registered company: 6906166

Contents

Executive summary

Location	Big Wood, Barnet (centre OS GR: TQ 256887)
Previous surveys / documentation	None
Survey	Automated bat activity survey over 6 consecutive nights
Conclusions	Bat activity, comprising entirely common and soprano pipistrelles, takes place throughout Big Wood. The strong presence of soprano pipistrelle social calls (along with emergence times) towards the north of the site, suggests the presence of a roost.

1. Introduction

1.1. Ecology Network Ltd was commissioned by Peter Falk of the Big Wood Volunteers on 5/2/15 to undertake a basic bat survey of Big Wood, Barnet (centre OS Grid Ref: TQ 2556 8873; Fig 1). This report presents the data and results of the survey.

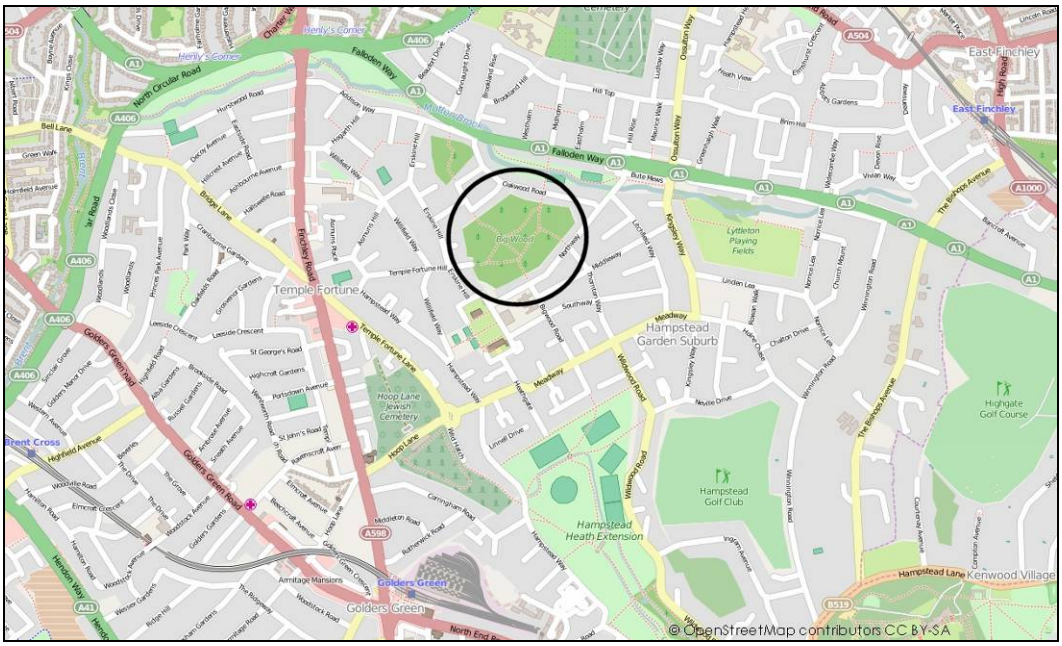


Fig 1 Location plan, Big Wood

1.2. Big Wood is a 7 Ha block of semi-natural ancient woodland, just over 1km north of Golders Green station. Details of the site, and its flora are provided in the 'Big Wood' History & Nature Trail' leaflet produced by Barnet Council. Broadly speaking, the site includes may mature oaks, wild service trees and an abundance of coppiced hazel, with an ivy-dominated ground layer.

1.3. In order to produce a more uneven age structure of trees in the longer term, a programme of glade creation has taken place. These areas are marked on the plan provided within the above leaflet.

1.4. It is understood that no previous survey for bats has been undertaken, although ad hoc bat detection has been undertaken by volunteers, revealing the presence of pipistrelles.

1.5. The objective of this survey was to establish what species may be present, and potentially provide some information on their distribution.

2. Bat ecology

2.1. There are eighteen (including the recently identified Alcathoe' and Geoffroy's) types of bat in Britain. Many of these are considered to be threatened, largely due to habitat loss and disturbance / damage to roosts. Most of these species regularly use trees, as well as buildings, as roosts.

2.2. Bats are highly mobile flying mammals which in Britain feed entirely on insects. They are able to fly and feed in the dark by using a system of echolocation that gives them a 'sound picture' of their surroundings.

2.3. In winter, when prey is scarce, bats hibernate in humid parts of buildings, caves and hollow trees where temperatures are stable. They may wake occasionally but only become fully active in the spring.

2.4. Female bats gather together in maternity roost in summer to give birth and rear their single offspring. Breeding extends from early June – late August. Like other mammals, bats have fur and give birth to live young. Infant bats suckle on their mothers' milk for several weeks until they can fly and hunt for themselves. Bats are long lived and some British species are known to live for over 25 years.

2.5. A breeding roost will usually be well concealed within a man made structure or tree and requires enough space for free movement. These roosts can sometimes be detected by the presence of small mouse-like droppings. Roosts may also be identified by looking for bats 'swarming' at the roost entrance just before dawn.

2.6. A hibernation roost is often found in smaller crevices and may or may not be visible from the exterior. Hibernating bats are normally found in smaller numbers than in breeding roosts, from October - April, depending on climatic conditions.

3. Legislative & policy background

Bat legislation & policy

3.1. All bats are protected under Section 9 of the Wildlife and Countryside Act, 1981 (as amended) and Regulation 41 of the Conservation of Habitats and Species Regulations, 2010, which transposes the Habitats Directive into UK law.

3.2. This makes it an offence to:

- deliberately kill, injure or take (capture) any bat
- deliberately disturb bats in such a way as to be likely significantly to affect:
  - the ability of any significant group of bats to survive, breed, or rear or nurture their young, or
  - the local distribution or abundance of that species.
- damage or destroy a bats breeding site or resting place.
- intentionally or recklessly damage, destroy or obstruct the access to any place used by bats for shelter or protection (even if bats are not in residence).

3.3. This legislation applies to all life stages.

3.4. The words 'deliberately' and 'intentionally' include actions where a court can infer that a defendant knew that an action would almost inevitably result in an offence, even if that was not the primary purpose of the act.

3.5. The offence of damaging or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

3.6. European Protected Species licences are available from Natural England under certain circumstances which permit activities that would otherwise be considered an offence.

4. Activity survey & methodology

4.1. In establishing presence / absence of bat activity, best practice involves undertaking at least 3 separate surveys, under appropriate weather conditions during the summer months.

4.2. In this instance, financial constraints meant that the survey could be undertaken only on one occasion. This is not a problem as the survey was undertook for research purposes, rather than to inform a development proposal. However, it must be borne in mind that the results present a 'snapshot' of activity in time, and therefore must be considered as the *minimum* level of activity that the wood may actually support.

4.3. Three Anabat Express automated frequency division detectors were used for the survey. These were deployed on 28/5/15 and set to record during night time only, to conserve battery power.

4.4. The location of each detector was decided in conjunction with Peter Falk, who has an intimate knowledge of the site:

4.5. One detector (Serial no: 314088) was deployed at the southern corner of the wood (approximately OS GR: TQ 2552 8858), as this point was adjacent to the property off North Square which has the only substantive pond in the area, and consequently is likely to draw bats within the vicinity.

4.6. The satellite image of the wood was checked to see if there were any obvious linear features which may serve as flight lines to other suitable bat habitat (such as rivers or other blocks of greenspace). It appeared that a 'corridor' of trees at the western corner connected Big Wood with Little Wood to the north. Consequently, a detector (Serial no: 314171) was placed at this location (approximately OS GR: TQ 2539 8876). This also was coincident with there being an adjacent allotment, which would also encourage insect, and therefore bat, activity.

4.7. In selecting a location for the third detector(Serial no: 314125), it was decided to place it at the northern end of the site, in order to gain the maximum geographical spread. The detector was deployed within an area which had been cleared relatively recently (approximately OS GR: TQ 2549 8902), as the 'edge effect' of such areas should encourage greater insect activity. The location of the detectors is shown in Fig. 2.

Fig 2

Location of the detectors (identified by the last three digits of the serial number)

4.8. All the detectors were mounted on trees, at a height of approximately 3.5m (Figs. 3 - 5)

Fig 3

Location of detector 314088

Fig 4

Location of detector 314125

Fig 5

Location of detector 314171

4.9. An EasyLog temperature logger was also mounted adjacent to the detector at the southern corner. In addition, each morning, the information on the weather conditions was captured from the web, so that times of rainfall, as well as sunset / sunrise times, could be correlated with the pattern of the results.

4.10. The detectors were left in place for 6 nights.

5. Results

5.1. Each file produced by the Anabat was manually analysed using AnalLook software, and the results summarised within the table (below). A note was made of the time a bat was first detected and the same for the last bat detected (the times are accurate and precise to within a couple of minutes or better). The changes in temperature throughout the duration of the survey and other climatic factors are provided in the appendix.

Big Wood Anabat Express summary

Unit & location	File / Date	Time	Call characteristics
SN314088 **nr North Square**	2015-05-28	20:30 - 03:40	Ppi; dense activity at 01:15.45
	2015-05-29	20:16 - 03:20	Ppi
	2015-05-30	20:09 - 00:13	Ppi; noise from 00:40 - 04.20 = constant rain?
	2015-05-31	20:17 - 03:25	Ppi
	2015-06-01	19:57 - 03:33	Ppi, but few calls. Much noise throughout - sporadic rain?
	2015-06-02	20:20 - 03:20	Ppi; 01:56 myotis?
SN314125 **north-east clearing**	2015-05-28	20:11 - 03:41	Ppi & Ppy; Ppy (and less frequent Ppi) social (eg around 23:13 & 01:49 respectively); Ppi feeding
	2015-05-29	20:12 - 03:24	Ppi & Ppy; Ppy (and less frequent Ppi) social
	2015-05-30	19:57 - 03:38	Ppi & Ppy; Ppy (and less frequent Ppi) social
	2015-05-31	20:08 - 03:34	Ppi & Ppy; Ppy social
	2015-06-01	20:07 - 03:53	Ppi & Ppy; Ppy (and less frequent Ppi) social
	2015-06-02	19:53 - 03:37	Ppi & Ppy; Ppy (and less frequent Ppi) social Constant rain from 00.33?
SN314171 **western corner, by allotments**	2015-05-28	20:16 - 03:32	Ppi & Ppy; Ppy at 60kz at 22.47
	2015-05-29	20:25 - 03:15	Ppi & Ppy; Decline in activity after 20:32
	2015-05-30	20:21 - 03:12	Ppi & Ppy; Nothing after 21:10 other than single Ppy call at 3.12.
	2015-05-31	20:45 - 21:18	Limited activity - one Ppy CF call at 20:45
	2015-06-01	22:34 - 04:18	Just noise for all of file? Rain?
	2015-06-02	20:30 - 02:19	Limited activity - 2 Ppi & 2 Ppy calls

5.2. It should be noted that if there were very faint calls from myotis bats, they may have been missed, and likewise, had there been any of the larger species (noctule, Leisler's *Nyctalus* sp,or serotine *Eptesicus serotinus*), their low echolocation frequencies may have been obscured by noise at the same frequency. It is also the case that the long-ear bat *Plecotus auritus*, has a very quite call and therefore is difficult to detect.

5.3. Notwithstanding the above limitations, it appears that the only bats present throughout the woodland are the common (Ppi) and soprano (Ppy) pipistrelles (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*).

5.4. The minimum and maximum daytime temperatures were on the 29th May (10.5°C) and 2nd June (18.5 °C) respectively. The minimum and maximum night time temperatures were on the 30th May (6.5°C) and 3nd June (11.5 °C) respectively.

5.5. The 'noise' on the night of the 30th/31st and 1st/2nd, correlates with the rain as indicated from the weather reports. It is interesting to note that there was little noise recorded on the detector at the clearing at the northern corner of the woodland. It is believed that the ultrasonic

interference is more from the rain hitting the leaves, rather than the rain itself - at this location, the detector was facing an open area, rather than dense foliage of adjacent trees.

5.6. Notwithstanding the noise from the rain, it appears that the location within the woodland has a greater bearing on activity than the fluctuations of temperature throughout the duration of the survey. For example, the activity at the northern corner of the woodland was just as considerable when the night time temperature was at its minimum as when it was at its maximum.

5.7. It is of note that the maximum activity appeared to be at the above location. This activity included a significantly higher degree of social calling (mostly from soprano pipistrelles) that either of the other two locations. This coupled with the fact that the first appearance of bats is all but consistently earlier than in either of the other two locations, suggests that a roost is present in this area.

5.8. It was also of note, and perhaps surprising, that there was so little activity at the western corner of the woodland. The presence of the allotments, the potential for a flight 'corridor' and the fact that the detector was pointing towards an oak with very dense ivy cover (Fig. 6) led to an expectation of considerable bat activity. And yet the converse appears to have been the case.

Fig 6 Ivy-covered oak in line with Detector 314171

6. Conclusions

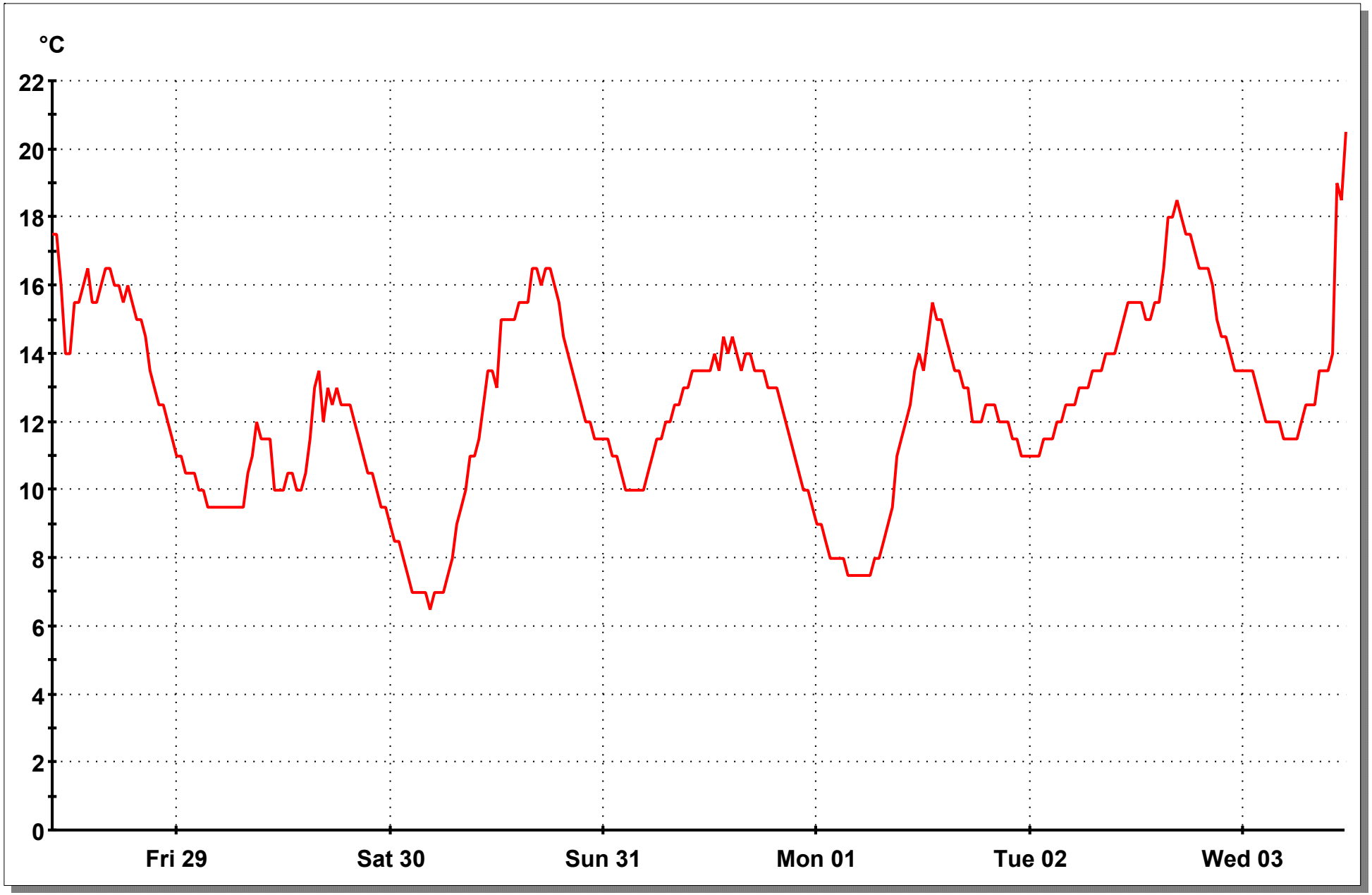
6.1. Although the survey effort was minimal, the results suggest that bat activity takes place throughout Big Wood. However, this appears to be restricted to that of common and soprano pipistrelles, and the *degree* of activity varies considerably across the wood.

6.2. The strong presence of soprano pipistrelle social calls (along with emergence times) at the clearing towards the north of the site, suggests the presence of a roost.

6.3. It is not possible to infer whether there may be better suited conditions for bats at the northern end of the woodland, or if it is the presence of the clearing that has prompted roosting activity.

7. Appendix - logged temperature data

Big Wood



Celsius

From:- 28 May 2015 10:00:00 To:- 03 June 2015 11:30:00

8. Appendix - BBC weather reports

LONDON

Fri	Sat	Sun	Mon	Tue
17°C 8°C	18°C 11°C	18°C 9°C	16°C 10°C	17°C 10°C
16	11	15	13	13

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:52 Sunset 21:04

Last updated 06:08 Graph Table

08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00 SAT	01:00	02:00	03:00	04:00	05:00
11°	13°	13°	13°	14°	13°	13°	14°	15°	15°	15°	14°	14°	13°	12°	11°	11°	10°	10°	9°	9°	9°
11	13	15	17	19	16	16	15	16	16	14	14	12	13	12	11	9	9	8	8	7	7

London and South East England

Share this page
640
Share
Facebook
Twitter

Forecast Summary

Environmental Summary

Forecast Video

LONDON

Sat	Sun	Mon	Tue	Wed
17°C 10°C	17°C 8°C	16°C 11°C	18°C 12°C	20°C 11°C
10	15	15	18	11

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:51 Sunset 21:06

Last updated 06:06 Graph Table

0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000 SUN	0100	0200	0300	0400	0500
12°	13°	14°	15°	16°	16°	16°	16°	16°	16°	15°	15°	14°	13°	12°	11°	11°	11°	12°	12°	13°
8	8	9	10	10	11	11	10	10	12	13	12	11	10	10	9	10	11	12	13	13

London and South East England

Share this page
644
Share
Facebook
Twitter

Forecast Summary

Environmental Summary

Forecast Video

LONDON

Sun	Mon	Tue	Wed	Thu
16°C 8°C	16°C 11°C	18°C 11°C	19°C 11°C	21°C 13°C
14	16	19	12	7

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:50 Sunset 21:07

Last updated 12:05 Graph Table

1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000 MON	0100	0200	0300	0400	0500
16°	16°	15°	15°	14°	14°	14°	13°	13°	12°	11°	10°	10°	9°	9°	9°	8°
14	18	16	15	16	16	14	13	12	10	11	10	10	9	8	7	8

London and South East England

Share this page
644
Share
Facebook
Twitter

Forecast Summary

Environmental Summary

Forecast Video

LONDON

Mon	Tue	Wed	Thu	Fri
16°C 10°C	19°C 12°C	19°C 11°C	21°C 14°C	24°C 13°C
16	19	12	6	8

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:49 Sunset 21:08

Last updated 06:04 Graph Table

08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00 TUE	01:00	02:00	03:00	04:00	05:00
10°	12°	14°	15°	15°	14°	15°	15°	14°	14°	13°	12°	11°	11°	11°	11°	11°	11°	11°	12°	12°	13°
10	11	12	13	16	16	17	18	17	17	18	17	16	16	17	18	19	19	19	19	18	16

London and South East England

Forecast Summary

Environmental Summary

Forecast Video

LONDON

Weather warnings issued

Further ahead

Tue	Wed	Thu	Fri	Sat
19°C	19°C	21°C	23°C	22°C
11°C	12°C	13°C	13°C	12°C
21	12	7	8	8

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:48 Sunset 21:09

Last updated 06:06 Graph Table

0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000 WED	0100	0200	0300	0400	0500
15°	16°	16°	17°	17°	17°	17°	17°	18°	18°	17°	16°	15°	14°	14°	13°	13°	12°	12°	12°	12°
20	20	20	21	21	21	20	19	18	19	18	18	16	15	13	12	13	11	10	10	10

London and South East England

Share this page
655
Share
Facebook
Twitter

Forecast Summary

Environmental Summary

Forecast Video

LONDON

Wed	Thu	Fri	Sat	Sun
20°C 13°C	22°C 14°C	24°C 13°C	20°C 11°C	20°C 10°C
11	9	9	9	8

Find a Forecast

Enter a town, county or UK postcode

Favourite Locations (0)

Sunrise 04:48 Sunset 21:10

Last updated 06:09 Graph Table

08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00 THU	01:00	02:00	03:00	04:00	05:00
13°	15°	16°	17°	18°	18°	19°	19°	19°	19°	19°	18°	18°	17°	16°	16°	16°	15°	14°	14°	13°	13°
13	13	12	12	11	11	12	11	10	9	9	8	8	7	6	5	5	5	4	3	2	2

London and South East England

Forecast Summary

Environmental Summary

Forecast Video

9. Appendix - Example output from Analook

Social calls from soprano pipistrelles at a frequency lower than their echolocation calls.

(calls shown in compressed view)

10. Report conditions

10.1. This report is produced solely for the benefit of Big Wood Volunteers and no liability is accepted for any reliance placed upon it by any other party unless specifically agreed in writing otherwise.

10.2. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Ecology Network Ltd. In time, improved practices, new information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of Ecology Network Ltd using due skill and care in the preparation of the report.

10.3. This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

10.4. This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

10.5. Reliance has been placed on the documents and information supplied to Ecology Network Ltd by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

10.6. Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information, particularly due to timescale, seasonal and weather related conditions. Thus we cannot guarantee that the survey or monitoring undertaken as part of the commission completely define the degree or extent of, for example, species abundance or habitat management efficacy which may be described.

10.7. Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Actual environmental conditions are typically more complex and variable than the investigative approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

10.8. The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

10.9. The performance of environmental mitigation measures is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Ecology Network Ltd accept no liability for issues with performance arising from such factors.