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Report Number
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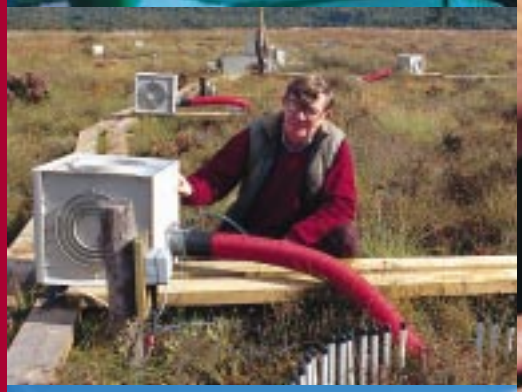

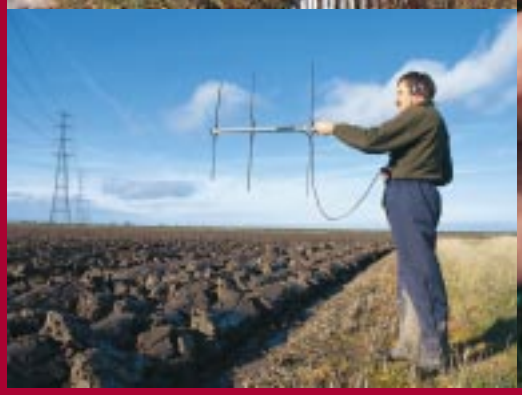

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Greena Ecological Consultancy

Project Manager : David Appleton, English Nature Devon Area Team

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Acknowledgements

English Nature (in particular David Appleton) for planning, funding and licensing the activities carried out under this study, for the loan of aerial photographs and for providing copies of 1:10000 and Phase I habitat maps under their Ordnance Survey licence.

The contract field surveyors Geoff Billington, Jan Collins, Alison Johnston and Marie Dee Rawlinson.

The volunteer helpers Gareth Jones, Martin Longley and Siobhan Murphy.

In addition to the project brief Greena Ecological Consultancy input the results into MapInfo and provided English Nature with a digital map tile.

The large number of roost owners for permitting access to their land and buildings for inspections.

Photographs by Geoff Billington.

Summary

The activity patterns of greater horseshoe bats *Rhinolophus ferremequinum* roosting at Buckfastleigh Caves Site of Special Scientific Interest (SSSI) were investigated over ten and eight day periods in May/June and August 2003 respectively. A total of 20 bats of both sexes were radio-tagged in the two sessions.

Bats regularly commuted six kilometres to foraging areas and were recorded travelling over 8 kilometres away from the roost. The total area used by the population covered at least 50 square kilometres.

Bats foraged primarily around tree lined watercourses, bushy hedgerows and tree lines surrounding pasture, rough grassland or scrub and woodland edge habitats.

A total of 12 foraging areas were identified during the study. The most significant foraging areas were: south of King's Wood, Hembury Woods to Stoodley, Hockmoor to Combe, Holne and Poundsgate area.

The main commuting routes used by almost all of the bats leaving the SSSI are north across Church Hill to Buckfast, then either northwest into the valleys carrying the River Mardle and Holy Brook or further north along the River Dart. Bats also commute across Church Hill via Holne Road along hedgerows. They also commute southeast along the River Dart southeast as far as Riverford, and south to Upper and Lower Dean.

Two day roosts were located and 19 night roosts were identified

Contents

1. Objectives

To identify the principal foraging areas and flight routes used by greater horseshoe bats roosting at Buckfastleigh Caves SSSI. Secondary objectives were to identify any night and day roosts used by the bats.

2. Background

This study was commissioned and funded by English Nature and carried out by Greena Ecological Consultancy from temporary bases in holiday cottages at Blackawton and Rattery. In this study the movements of relatively large groups of bats (up to 10 per session) were examined to record the distribution and behaviour of greater horseshoe bats during early May/June and August 2003.

3. Study area

Buckfastleigh Caves SSSI (NGR SX742665) contains a greater horseshoe bat maternity and several hibernation roosts, situated near the town of Buckfastleigh in Devon (Figure 1). The roost supports up to 1900 individuals (English Nature data).

The majority of the study area lies within the southern part of Dartmoor National Park and is characterised by hills with extensive tracts of broadleaved and mixed woodland interspersed by pockets of small field systems enclosed by hedgerows and tree lines. Minor river valleys feed the River Dart, which drains southeast through the area in a wooded valley. Livestock rearing dominates the local agricultural landscape. The extreme north and northwest of the study area extends into the upland habitats of Dartmoor.

4. Methods

Greater horseshoe bats were radio tracked over a total of 18 days from 31 May-9 June and 15-22 August 2003.

All bats were caught in either a harp trap or one of several mist nets (see Figure 1). The bats were fur-clipped and the transmitters glued between the shoulder blades, using SkinBond adhesive. Bats were fitted with 0.57g 173 MHz radio transmitters, manufactured by Biotrack, with a specified minimum nine-day battery life. The bats were given time to settle down before release. Captured bats were also weighed, sexed, measured and examined to ascertain breeding condition. The bats were also checked for the presence of rings.

Professor Gareth Jones (Bristol University) collected tail membrane biopsy samples (3mm diameter punched holes) from 13 bats on the 15 August, for use in ongoing genetic research.

Up to three fieldworkers used *Australis* 26K and *Sika* receivers with *Yaggi* rigid aerials to track bats. Whip omni directional antennas were used to search for bats by vehicle. Both receivers were able to automatically scan through different frequencies, this made it possible to search for a number of tagged bats. Tailor-made recording sheets were used to record data and radio sets were used for two-way communication. Accurate bearings of bat locations were taken from hand held sightings compasses. Global Positioning Systems were used to

increase the speed and accuracy of surveyors. *Duet* bat detectors were used to confirm the presence of horseshoe bats by listening for their characteristic echolocation calls.

For all tagged bats the following data was recorded: observer location, bat ID number, triangulation bearings, signal strength, apparent location or route and behaviour. When bats were commuting or at their first foraging sites, they were usually observed from elevated points (see Table 1) with each surveyor based at separate locations, in contact by radio set. On several occasions surveyors were able to make close approaches to bats, to ascertain the exact foraging area and behaviour or commence pursuit if the bat was moving away.

Tracking ended either when the tags fell off the bats, the transmitters failed, the bats moved away or the fieldwork period ended.

At the start of each survey night, estimations of environmental conditions were noted: wind (Beaufort scale) and direction, rain (0-5) an estimate of rainfall intensity from 0 - none to 5 – heavy rain, cloud cover (0-100%) and air temperature (Celsius). Any marked changes in weather throughout the survey period were also noted.

Table 1. Elevated observation points used during radio tracking

Observation point	**Grid reference**	**No. times used**
Five Lanes Junction	75056702	3
Junction to Old Totnes Road	74206608	20+
Round Cross	73796683	3
Coxhill Cross	73106525	5
Track across Wallaford Down	70906589	4
Hockmoor junctions	72746733 & 73166739	10
Five Oaks	72816714	6
South and West of Hembury Castle	Various in 7268/7367	19+
Humphrey's Cross	72156933	3
Driveway to Old Brook Farm	71316806	3
Cross restored	71046817	8
Handley Cross	71126880	4
Ridgey Cross	71196925	4
Gallant Le Bower	71906995	4
Ridgey Cross	71196925	3
Quarry north-west of Holne	69686991	3
Bend in road at Lake Farm	70467238	3
Junction north of Spitchwick	70417261	3

Fieldwork was carried out for 18 nights throughout the night or during the main foraging periods.

Daytime work included verifying roost occupation, recording and plotting out results. Investigations of night roosting sites discovered during the two tracking periods were made in October 2003.

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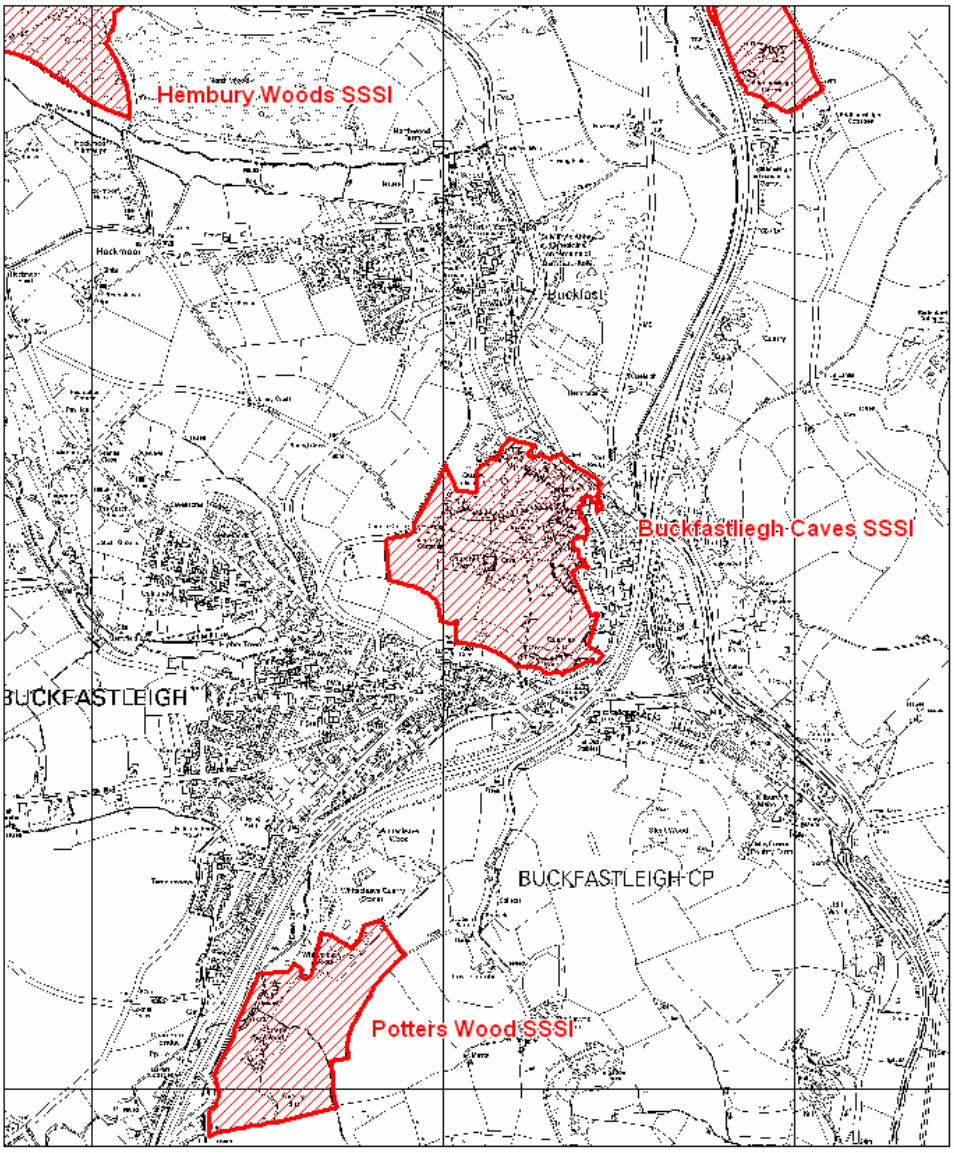
Figure 1. Location of Buckfastleigh Caves SSSI



Scale 1:15000 Map 1 of 1

0 300 600 900m
0 250 500 750yd.

Drawn By: David Appleton
Date: 20/2/2004
Ref: sx7409166461

Grid North

English Nature
Devon Team
Level 2, Renslade House
Bonhay Road
Exeter
Devon
EX4 3AW

5. Results

5.1 Tracking and bat data

A total of 26 separate greater horseshoe bats were caught during the study. Of these, 19 were fitted with radio transmitters (Table 2). No other bat species were captured.

Table 2. Greater horseshoe bat captures at Buckfastleigh

Date	Total caught	Number radio tagged
31 May	13	10
15 August	13	9*

* Initially ten see below

In total 117 bat/days data was collected, 55 in the first period and 62 in the second with an average of 6.16 days per bat (a range of 3-8 days), based on data from 19 bats (Chart 1 and Table 3).

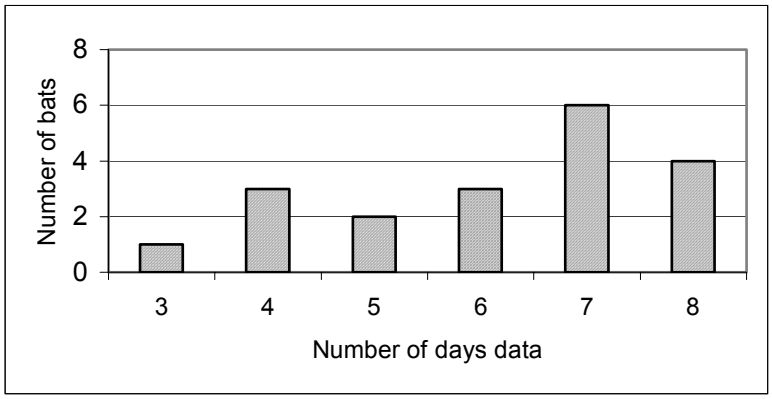


Chart 1. Bat radio-tracking periods at Buckfastleigh SSSI

*Welfare considerations took precedence over all other issues resulting in the early release of one bat selected for tagging during on the 15th August. Following securing of the tags the bats did tend to spend more time in the day roost than on subsequent nights consistent with other studies of this nature.

Table 3. Greater horseshoe bat captures, measurements Buckfastleigh Caves SSSI, 31 May 2003

F-female, M-male, l-lactating, b-bred before, nb-not bred before, a- adult

Gender / Status	Forearm (mm)	Weight (g)	Tracking ID number
F b	56.20	22.60	1
F b	56.00	20.70	2
M	55.70	18.70	3
F nb	55.90	20.30	4
F b	56.00	19.80	5
F b	56.50	21.90	6
F b	55.10	23.10	7
M	55.30	17.30	8
M	56.10	16.70	9
F b	56.00	17.80	10
F nb	56.20	16.20	-
M	54.60	16.20	-
M	54.90	15.60	-

Table 4. Greater horseshoe bat captures, measurements Buckfastleigh Caves SSSI, 15 August 2003

F-female, M-male, Θ-juvenile, a-adult, l-lactating, nb-not bred before

Gender / Status	Forearm (mm)	Weight (g)	Tracking ID number
F l	56.50	20.00	1
M Θ	53.25	15.75	2
F l	54.30	22.00	3
F l	57.30	19.25	4
F l	56.40	20.00	5
F l	56.50	20.00	7
F l	56.80	21.00	8
F l	56.30	20.50	9
F nb	56.20	20.00	10
F l	55.80	20.50	-
F l	55.10	19.50	-
F l	55.00	19.75	-

5.2 Foraging

5.2.1 Foraging areas

The location and descriptions of the 12 foraging areas identified during this study are given below and on Maps 1-14 in Appendix I. The numbering system used does not denote any particular significance in terms of the importance of an individual foraging area.

5.2.1.1 Buckfastleigh (1)

SX 7366, SX 7365 & SX 7466 (see map 3)

The area around Buckfastleigh town includes Church Hill with several quarries, surrounded by small to medium sized improved/semi-improved fields separated by hedgerows and tree lines. The tree lined Old Mill Leat runs west to east through the centre of the town.

Some foraging took place within this area immediately after emergence before bats flew off to foraging areas further a field, although during the August study many bats returned to the nursery roost during the night and would forage locally for short periods between lengthy bouts of night roosting at the nursery roost.

Seven bats were recorded foraging here.

5.2.1.2 King's Wood (2)

SX6966, SX6965, SX7066, SX7065, SX7166, SX 7165, SX 7266, SX 7265, SX 7366 & SX7365 (see map 4)

King's Wood comprises patches of mixed woodland and plantation situated to the west of Buckfastleigh. There are several watercourses and footpaths/tracks crossing the patchy woodland. To the south are field systems with hedgerows and tree lines.

Bats foraged around the south of this wood during both study periods. Usage of this area was most often at the end of the night during June prior to returning to the maternity roost. Several tagged bats were recorded feeding together. In August the pattern was similar with bats using this area before returning to the maternity roost, in the middle of the night. Kings Wood appears to be used as a gathering/meeting place.

Nine bats were recorded foraging here.

5.2.1.3 North of Buckfastleigh (3)

SX7368, SX7367, SX7469, SX7468 & SX7467 (see maps 5 & 7)

This area includes the town of Buckfast, farmland with field systems bordered by hedgerows and areas of woodland: North Wood, Blackmoor Wood and Shere Wood. The wooded River Dart runs through this area from north to south. Two night roosts were used in this area.

Bats were recorded here in the early evening in June foraging or commuting out or back using the River Dart. In August it was used more in the middle of the night.

Five bats were recorded foraging here.

5.2.1.4

Hembury Woods to Stoodley (4)

SX7169, SX7168, SX7269, & SX7268 (see maps 5, 6 & 9)

This area comprises part of Hembury Woods, a large area of broadleaved woodland, and the field systems running northwards up to Gallant Le Bower. The fields immediately to the northwest of Hembury Castle have scattered trees and scrub, further north are grazed pasture fields surrounded by hedgerows and tree lines. Small field systems around Stoodley Farm (a night roost) were a popular feeding site.

Three bats were recorded foraging here.

5.2.1.5 Hockmoor to Combe (5)

SX6968, SX6967, SX7068, SX7067, SX7169, SX7168, SX7167, SX7166, SX7268 & SX7267 (see maps 4, 5, 6 & 8)

This area includes Holy Brook and the River Mardle valleys and the surrounding small field systems.

Favoured foraging locations within this area were:

- Mill Leat and Holy Brook to the east of Hockmoor plantation;
- the broadleaved woodland edge around Burchett's Lodge (a night roost), including Burchett's Wood and Hepney Wood;
- the River Mardle westwards along to Brook Manor and Brook Farm (both night roosts), including extensive field systems with tree lines and hedgerows to the north of these properties;
- Holy Brook and surrounding field systems, hedgerows and tree lines including rough grassland and scrub, a quarry and Hawsons Farm the most important night roost (away from the day roost);
- further west along the River Mardle to Higher Combe.

Extensive foraging was observed in this area during both study periods, this is the most important foraging area of all those found.

Nine bats were recorded foraging here.

5.2.1.6 Holne and north (6)

SX6969, SX7070, SX7069 & SX7169 (see map 8)

This area comprises the village of Holne, the watercourse running out of the village to the southeast, which joins Holy Brook less than a kilometre away, the hedgerows and tree lines of field systems surrounding the village, and Holne Wood to the north.

Foraging took place here early in the night during both study periods.

Five bats were recorded foraging here.

5.2.1.7 Newbridge and River Dart to Gallant Le Bower (7)

SX7171, SX 7170, SX7271 & SX7270 (see maps 7 & 9)

The wooded valley along the River Dart, including Kinghurst Down Wood, Holne Chase Wood, Cleave Wood, small field systems with tree lines around Chasegate and Welpritton (a night roost).

The most extensive foraging occurred in this area during June.

Four bats were recorded foraging here.

5.2.1.8 River Dart near Holne Park Lodge (8)

SX7270, SX7370 & SX7369 (see map 7)

The wooded Dart valley near Holne Park Lodge.

One bat recorded foraging here.

5.2.1.9 Poundsgate (9)

SX7072 & SX7071 (see map 9)

This is an area of very small field systems of grazed pasture with overgrown hedgerows and tree lines and copses between Leigh Tor Farm and Uppacott Farm (a night roost). There is also a night roost at Lake farm. Several watercourses cross the area.

Three bats were recorded foraging here.

5.2.1.10 Dunstone (10)

SX7176, SX7175 (see map 11)

An area of small field systems with hedgerows and tree lines including some wet rough grassland, scrub and a copse. Some of the fields have ditches along the boundaries. The exact foraging location within this area was not determined.

One bat recorded foraging here.

5.2.1.11 River Dart at Dartmeet (11)

SX6673, SX6672, SX6773 & SX6772 (see maps 10 & 12)

The River Dart runs through a steep sloping valley around Dartmeet with wooded slopes, large trees and areas of scrub and bracken. Extensive foraging was recorded during August both along the tree lined river, in the surrounding fields containing scrub, and along a tributary to a quarry surrounded by trees southwest of Dartmeet.
One bat recorded foraging here.

5.2.1.12 River Dart southeast of Buckfastleigh (12)

SX7563, SX7663 & SX7763 (see map 2)

A section of the River Dart at Riverford Bridge and into a small tree lined tributary joining it from the southwest. Foraging was only observed in August, along these watercourses and around copses, hedgerows, tree lines surrounding large fields lying between the tributary to the south and the River Dart to the north.

One bat recorded foraging here.

5.2.2 Foraging area usage

The five most significant foraging areas were King's Wood (2), Hembury Woods to Stoodley (4), Hockmoor to Combe (5), Holne and north (6) and the Poundsgate area (9) (Chart 2).

King's Wood (2), Hembury Woods to Stoodley (4), Hockmoor to Combe (5), Holne and north (6) and the Poundsgate area (9) appear to be most important during the June study period, whilst King's Wood (2), North of Buckfastleigh (3), Hembury Woods to Stoodley (4), Hockmoor to Combe (5), Dartmeet (11) and River Dart south-east of Buckfastleigh (12) were most important during the August session.

Newbridge and River Dart to Gallant Le Bower (7), River Dart near Holne Park Lodge (8) & Dunstone (10) were only used during the June study period, whilst Dartmeet (11) and River Dart south-east of Buckfastleigh (12) were only used during the August session (Charts 3 and 4).

Charts 2, 3 and 4 display the average daily combined foraging records for all bats in each area, i.e. the total for the complete study divided by the number of nights tracking - 18.

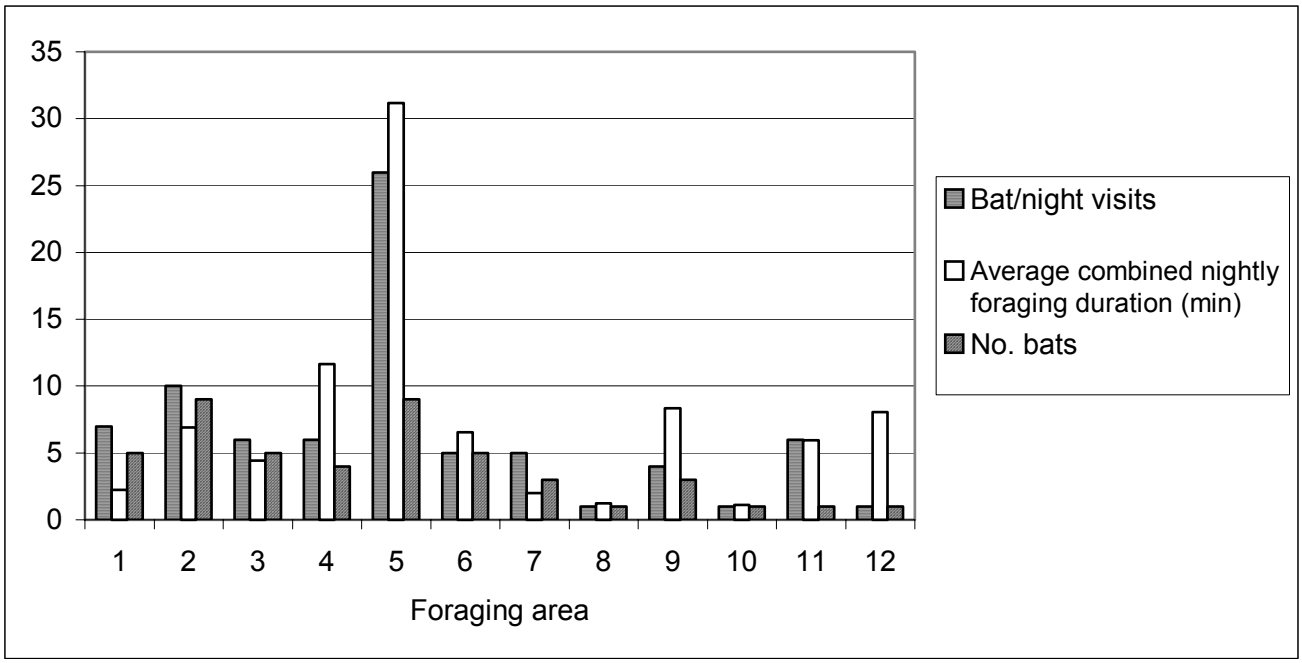


Chart 2. Combined foraging area usage by tagged bats over the two survey periods

5.3 Flight corridors

Flight routes used by the bats are shown in the series of maps in Appendix I.

Bats were recorded commuting:

- north from Buckfastleigh via Buckfast to foraging areas 3, 4 & 5;
- north into Ashburton via the road;
- northwest via the River Mardle, Holy Brook and the roads to foraging areas 4, 5, 6 & 7;
- west then north at Hockmoor junction via the road to foraging areas 4 & 5;
- north along the road at Five Oaks junction to reach foraging areas 4, 5, 6 & 7;
- northwest via the road between the driveways to Hawson Court and Hawsons Farm to reach foraging area 6;
- northwest of Holne via the road cutting between Fore Stoke and the quarry;
- northwest of Holne to foraging area 11, probably via the River Dart;
- east back into Buckfastleigh from foraging area 2 back to the roost via the River Mardle, Old Mill Leat or the roads; and,
- southeast of Buckfastleigh to foraging area 12, along the River Dart.

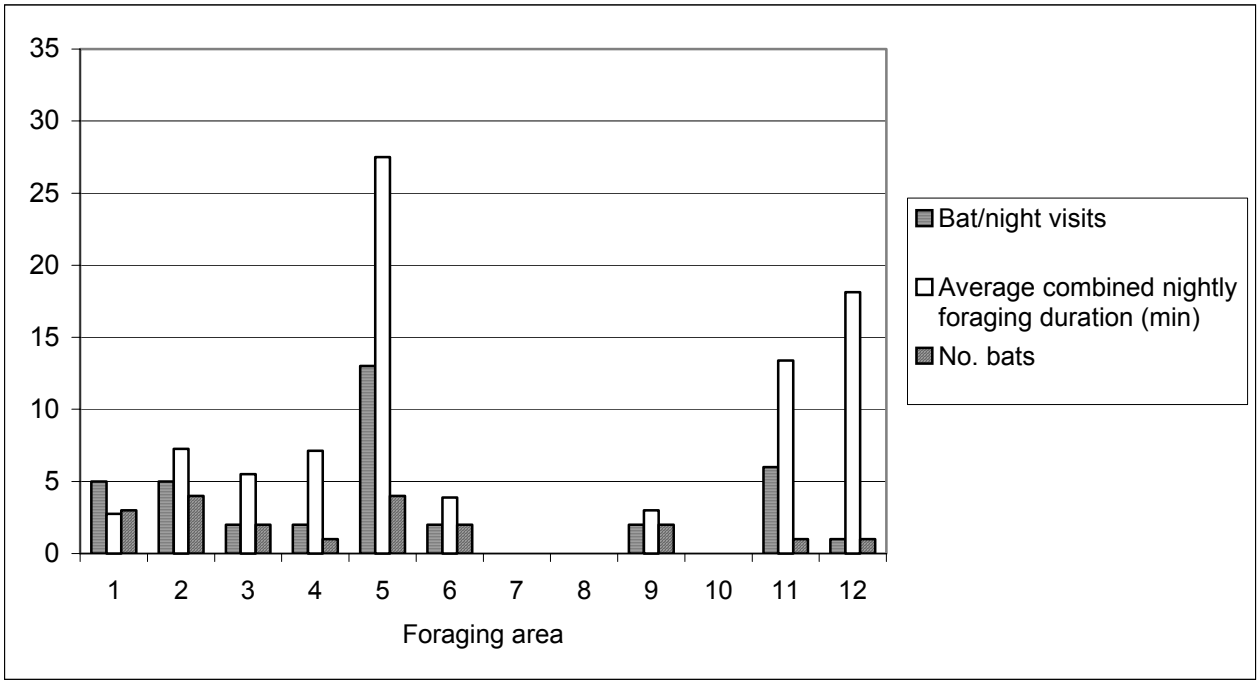


Chart 3. Foraging area usage 31 May – 9 June

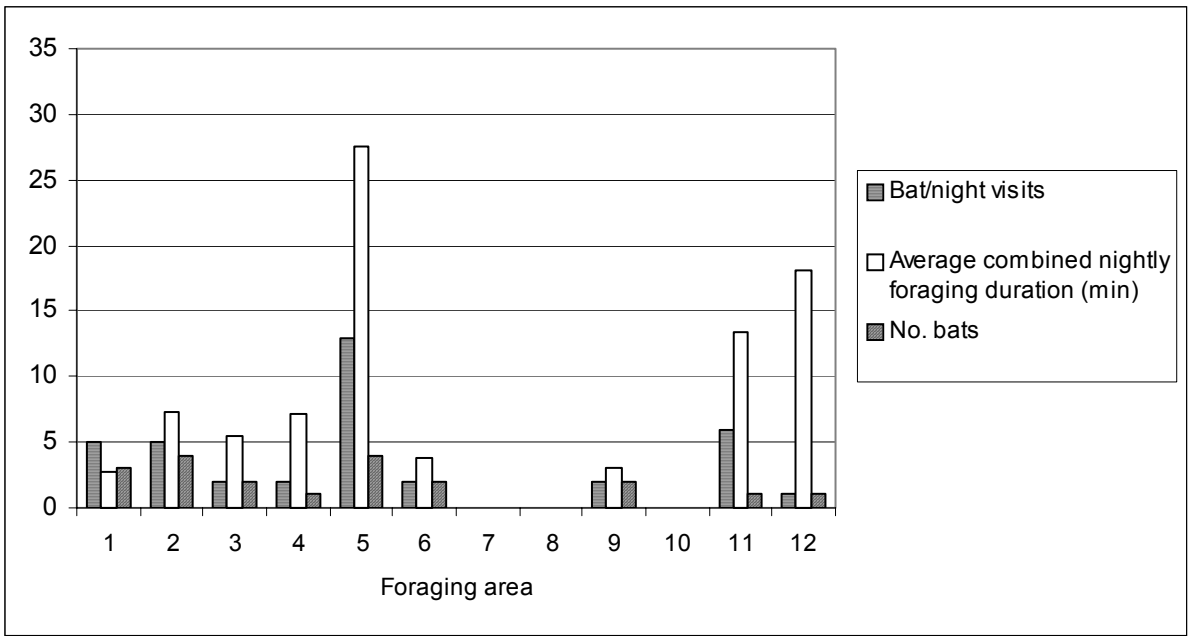


Chart 4. Foraging area usage 15 – 22 August

5.4 Daytime roost sites

5.4.1 Number of roosts and roost types

Day roosting was recorded at Buckfastleigh Caves SSSI (as expected) and at Buckland Court at Buckland in the Manor (one bat for one day) (Chart 5). A further day roosting site was discovered during night roost inspections in October in a cave in woodland near Hockmoor House.

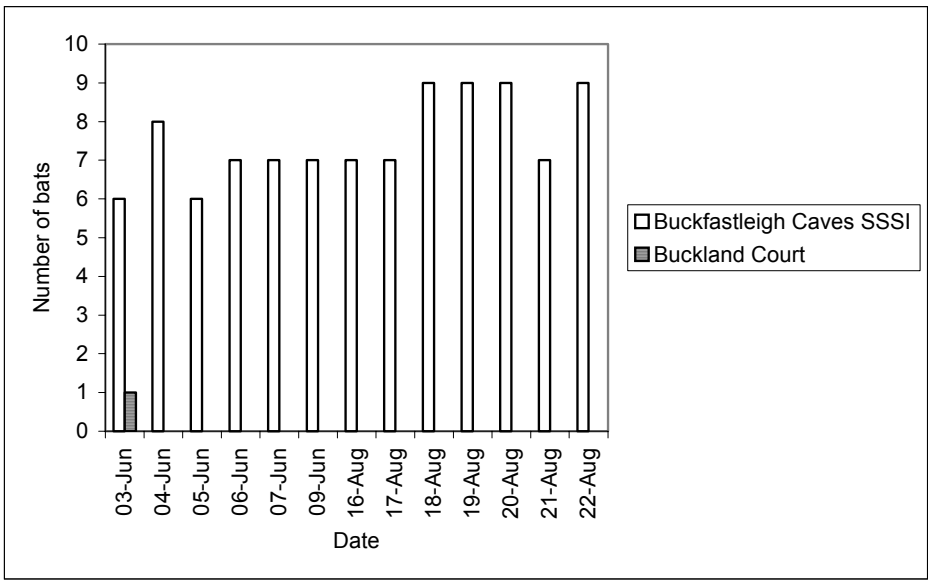


Chart 5. Daily usage of day roosts by tagged bats throughout study

5.4.2 Roost descriptions

5.4.2.1 Buckfastleigh Caves SSSI (map 3 - roost 1 SX742665)

The greater horseshoe bat roost has been known for many years and is used the year round, previously owned by Nature Conservancy Council now in the hands of a private conservation organisation. It is believed that roost numbers can peak over 1500 bats in July (adults and juveniles) though this is only for a couple of weeks suggesting widespread dispersal to other rearing sites carrying young occurs.

5.4.2.2 Buckland Court (map 9 – roost 2 SX72077301)

Buckland Court is an old manor house but inspection has not been attempted due to no access to the site, this was the only other day roost used by the tagged bats, by a single animal.

5.4.2.3 Cave near Hockmoor House (map 5 roost 3 SX72896775)

A cave approximately 2x4m with 70+ greater horseshoe and 30+ lesser horseshoe

droppings and one bat of each species present on (visited by J. Collins 10 October).

5.5 Night roost sites

Night roosts are temporary roosts, used between and during bouts of foraging for resting, feeding and socialising.

5.5.1 Number of roosts and roost types

Bats were recorded night roosting at 19 sites. Table 4 shows the night roost types identified or confirmed in this study. Appendix III gives tagged bat occupation records.

Table 5. Night roost types

Type	Number
Building	17
Cave	2

5.5.2 Roost descriptions

5.5.2.1 Buckfastleigh Caves SSSI (map 3 – roost 1 SX74*66*)

See 5.4.2.1 for site description.

5.5.2.2 Buckland Court (map 9 – roost 2 SX72077301)

See 5.4.2.2 for site description.

5.5.2.3 Blackmoor Farm (map 5 – roost 4 SX73856832)

Modern farm buildings made of wood, tin or concrete with tin, plastic or asbestos roofs and open stable-type doors. The farm buildings were not inspected due to the presence of

livestock therefore the exact building was not identified. A stone outbuilding with slate roofing attached to the nearby Blackmoor Cottage was inspected (map 5 – roost 3a SX73676832), 5 greater horseshoe bat droppings and 300+ lesser horseshoe droppings were found (visited by J. Collins 15 October).

5.5.2.4 Brook Manor (map 6 – roost 5 SX71326768)

An old manor house of stone construction with a slate roof and extensive attics. One greater horseshoe and one lesser horseshoe dropping in the east facing porch, attic with 1000+ droppings of several species including mainly lesser horseshoe droppings and at least 100+ greater horseshoe droppings, outbuilding with six greater horseshoe droppings and 20 lesser horseshoe droppings (visited by J. Collins 1 October). Brook Manor has long been known to be a lesser horseshoe maternity roost greater horseshoe bats have been recorded in the nearby mines in the woodland to the southwest (pers. com. Peter Chapman & Ida Hornsey).

5.5.2.5 Hawson Court (map 6 – roost 6 SX71616818)

Complex of buildings including main house (stone building with slate roof and extensive attics), several other houses of variable construction and stable blocks (stone with slate roofs). Exact night roosting location not identified as buildings not inspected. Hawson Court main house has long been known to be a lesser horseshoe maternity roost (pers. com. Peter Chapman & resident at Hawson Court).

5.5.2.6 Furzeleigh Farm (map 5 – roost 7 SX74566772)

Complex of two-storey stone barns with corrugated tin roofs and several open doorways. Eight greater horseshoe droppings scattered throughout the barns, one building not fully inspected for safety reasons (visited by J. Collins 15 October).

5.5.2.7 Hawsons Farm (map 6 – roost 8 SX70936844)

Two-storey stone barn with slate roof and open doorways. 400+ greater horseshoe droppings and 15+ lesser horseshoe droppings (visited by J. Collins 1 October).

5.5.2.8 Old Brook Farm (map 6 – roost 9 SX71206780)

Complex of two-storey stone barns with slate roofs and open doorways around a courtyard.

Ten greater horseshoe droppings and 30+ lesser horseshoe droppings, part of building not inspected for safety reasons (visited by J. Collins 1 October).

5.5.2.9 Burchett's Lodge barn (map 5 – roost 10 SX72306775)

Single storey barn of stone construction with clay tiled roof. Visited during the night of 5 June by M. Rawlinson, 7 greater horseshoe bats present including one tagged bat. 50+ greater horseshoe droppings (visited by J. Collins 1 October).

5.5.2.10 Hockmoor Farm (map 5 – roost 11 SX72646754)

Bungalow of stone with clay tiled roof adjacent to breeze block wall and corrugated asbestos roof stables. Exact night roosting location not identified as buildings not inspected (probably stables).

5.5.2.11 Stoodley Farm (map 8 – roost 12 SX71826981)

One tin shed and a stone and wood shed with a corrugated tin roof. Exact night roosting location not identified as buildings not inspected.

5.5.2.12 Cott Lodge (map 8 – roost 13 SX70626995)

Stables and house constructed of stone with slate roofs. Exact night roosting location not identified as buildings not inspected.

5.5.2.13 Lake Farm (map 9 – roost 14 SX70457228)

Complex of two-storey stone barns with tin or slate roofs – not visited.

5.5.2.14 Welpritton Farm (map 8 – roost 15 SX71587038)

One corrugated tin stable, a wooden shed with asbestos roof, breeze block shed with plastic roof. Exact night roosting location not identified as no greater horseshoe bat signs found (visited by J. Collins 1 October).

5.5.2.15 Uppacott Farm (map 9 – roost 16 SX70107281)

Several large well-used open farm sheds made of wood or tin with tin or asbestos roofs, and a single stone barn with corrugated tin roof. Exact night roosting location not identified as no greater horseshoe bat signs found in well used sheds, stone barn not inspected (visited by J. Collins 1 October).

5.5.2.16 Hockmoor House barn (map 5 – roost 17 SX73016760)

Two storey stone barn with corrugated asbestos roof and open doorways, well used. Exact night roosting location not identified as no greater horseshoe bat signs found, although bats and signs were found in the nearby **c**ave (map 5 roost 3 SX72896775) (visited by J. Collins 15 October).

5.5.2.17 Parklands Farm (map 6 – roost 18 SX71366709)

Main house being renovated at time of visit, old house roof made of concrete tiles had been removed and placed into a large shed. Exact night roosting location not identified as no greater horseshoe bat signs found on site (visited by J. Collins 15 October).

5.5.2.18 Brimpts Farm (map 12 – roost 19 SX66807285)

A collection of stone buildings with slate roofs, most converted into accommodation. Exact night roosting location not identified as no greater horseshoe bat signs found, access was not permitted to all areas (visited by J. Collins 15 October).

5.5.2.19 Badgers Holt (map 12 – roost 20 SX67307340)

Several small caves in rock outcrop one cave two metres long and contained 2 greater horseshoe and 100+ lesser horseshoe droppings (visited by J. Collins 15 October).

6. Discussion

6.1 Study aims and objectives

The study was successful in achieving the primary objective of identifying the principal foraging areas and commuting routes used by greater horseshoe bats roosting at Buckfastleigh Caves SSSI during May / June and August 2003.

In addition two additional day roosts and 19 night roosts were identified. One of these night roosts at Hawsons Farm, appears to be of high significance to the South Devon greater horseshoe bat populations.

6.2 Foraging distances

The majority of foraging areas identified lay within six kilometres of the roost. The results obtained are similar to findings of comparative studies at Brockley Hall Stables SSSI (Somerset) in 2001 (Billington 2002) and Caen Valley Bats SSSI (North Devon) in 2002 (Billington 2003).

Table 6. Maximum foraging distances and area of foraging from three radio tracking studies of greater horseshoe bat populations at Brockley Hall Stables, SSSI Caen Valley SSSI and Buckfastleigh Caves SSSI

Age class	Maximum foraging radius from roost (km)			Number of 1 km squares with bat fixes		
	Brockley (2001)	Caen Valley (2002)	This study	Brockley (2001)	Caen Valley (2002)	This study
Juvenile	4.5	4.5	4	75	62	50
Adult	6.8	7.25	8			

6.3 Primary foraging habitat

The longest foraging periods and most favoured foraging areas were associated with mosaics of high overgrown hedges and tree lines surrounding pasture, rough grassland or scrub with nearby woodland edge and riparian habitat. The River Dart, a large river system mostly banked by broadleaved woodland was also a key habitat. Limited foraging was recorded within woodland itself.

Jones *et al* (1995) have previously reported the importance of grassland, hedgerow and woodland mosaics as foraging areas for greater horseshoe bats. Ransome (1996) has linked these landscape features to the availability and abundance of key prey species.

6.4 Flight corridors

Key flight corridors linking Buckfastleigh Caves SSSI with foraging areas were identified and were found to be associated with watercourses, tall bushy hedgerows particularly along the roads. The most significant are flight routes across Church Hill between Buckfastleigh and Buckfast, which are used by most of the colony. Retaining hedgerows and tree lines (in darkness) is of paramount importance. The enclosed nature of one corridor allows bats to progress out from the roost before it is completely dark; it is essential this corridor is maintained in its existing structure any level of hedge or tree trimming or lighting could prevent bats from using it, and have disastrous consequences for the colony.

6.5 Roosts

The majority of bats remained faithful to day roosting in Buckfastleigh Caves SSSI. Of the three bats not recorded roosting there or for only for a few days during June, two were males and the other was a breeding female. The breeding female only spent two days at Buckfastleigh Caves SSSI suggesting usage of a second unidentified maternity site. Otherwise individuals during both study periods spent only single days away from the roost.

7. Recommendations

7.1 Foraging areas

Hedgerows were found to be important foraging places for this colony of greater horseshoe bats. Where appropriate attention should be given to restoring and maintaining dense, high, overgrown hedgerows in and around the foraging areas identified by this study.

The foraging areas and flight routes identified during this study should be given priority in the targeting of advice and management agreements to maintain and enhance the landscape for the bats using Buckfastleigh Caves SSSI.

Potential developments that may affect the foraging areas and flight routes identified during this study should be fully assessed to ensure that there are no negative impacts on the bats or the landscape that supports them.

7.2 Roosts

The night roost at Hawsons Farm appears to be of high importance to this population of bats, although the building itself is falling into dereliction. It is recommended that the owners are made aware of the importance of the roost so that any renovation work carried out on this building is sympathetic to the bats which use it, and if funding assistance is available this should be provided to the owners to restore this as an agricultural building, such as through Countryside Stewardship, or by funding from private conservation organisation sources

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Peter Wakely/English Nature 17,396
Middle left: Co_2 experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
Paul Glendell/English Nature 23,020
Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
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