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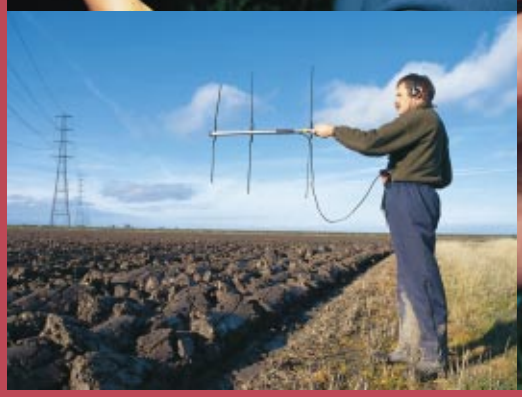
Assessing the outcome of English Nature advice on bat colony management and mitigation works

English Nature Research Reports



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Assessing the outcome of English Nature advice on bat colony management and mitigation works

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Executive summary

1. A questionnaire survey was carried out to investigate the quality of English Nature advice to owners of bat roosts both in terms of the perception of householders and the success of the various measures which were suggested to ameliorate the effects on the roosts.

2. Four separate questionnaires were designed to assess the quality of advice to roost owners seeking advice on (i) Timber treatment, (ii) Exclusion, (iii) Building work and (iv) General advice.

3. Following the collection and collation of data from all 22 English Nature offices, a total of 2226 valid questionnaires were sent out throughout England. There was a response rate of 57%. A sample of roost owners was visited subsequently to ascertain the veracity of their responses in the questionnaire. A telephone survey of a sample of non-respondents was conducted to assess any biases that may have been present among the respondents.

4. The majority of householders (94%) were either satisfied or very satisfied with the service provided by English Nature. Most roost owners (approximately 90%) also found the English Nature representatives to be prompt, polite, helpful and clear and 95% said they would return to English Nature for advice in the future.

5. The majority of building work involved work on the roof (31%), work on soffits (23%) and minor decoration/repairs (22%). The most frequently given advice (*c* 60%) was to delay work until a less sensitive time and in most cases (>80%) the work was carried out. Where it was not carried out, 17% said that this was due to concern for the bats.

6. Almost 90% of respondents to the building questionnaire followed the English Nature advice given, with 67% reporting that bats subsequently returned. Almost one third of roost owners also incorporated new access points for the bats.

7. Most timber treatment (75%) was carried out in the roof space. The most frequently given advice (59% of cases) was to postpone the treatment until a less sensitive time. Use of a bat-friendly chemical was advised in 47% of cases, with 22% advised to do both.

8. Of those who did not subsequently carry out the timber treatment, 24% stated that they had considered bats when taking their decision. The most frequently used chemicals were pyrethroids (75% of those who knew). Most treatment (97%) was carried out at the recommended time and only 14% was done between May and August (inclusive). Bats returned in almost 60% of cases but 27% did not know if they had or not. This return rate was probably an underestimate based on the results of the roost visits.

9. The main reason for wanting bats excluded was due to their droppings (62% of cases). Many respondents cited multiple reasons. In 94% of cases the advice given was to wait until the bats had left and then block the access. The main means of achieving

this was using expandable foam/mastic (37%) or re-pointing (35%). A wide range of other methods was used. The majority of exclusions (83%) took place between September and December (inclusive) and were carried out by the householder in 54% of cases.

10. Of those initially wanting exclusion 67% carried it out, of which 75% claimed it was successful. Only 15% reported that bats returned the following year and only 12% reported that they returned to an equally unacceptable location. Of those that did not carry out the exclusion, 21% had had their fears allayed by the English Nature advice while a further 26% agreed to manage for a short period.

11. Specific advice was given to approximately half of those who contacted English Nature with more general queries. Where advice was given, it mostly resolved the concerns of individuals (86% of the time) and bats were still present in 63% of the respondents' properties.

12. A total of 19 questionnaire respondents from the timber treatment questionnaire were visited during summer 2002. All had evidence of recent bat occupation, despite the fact that only 68% had reported bats as still present in their questionnaire returns (10% said bats had not returned and 22% were unsure). This indicates a far higher return rate than the questionnaire would indicate. The visits highlighted some aspects of the clarity of the advice they received.

13. The telephone survey of non-respondents indicated that there was no serious bias among respondents. Satisfaction rates were not significantly different from those of respondents. Many of the non-respondents had simply forgotten to return the questionnaires.

14. Three unusual mitigation cases were also visited to assess the outcome of works to maintain bat occupancy despite complex building work. These are detailed in Appendix 5.

15. The results enabled the presentation of a number of recommendations to assist in improvement to the advisory service and to suggest areas that need further investigation.

Contents

1. Introduction

Bats and their roosts are protected under the Wildlife & Countryside Act 1981 (as amended), the Conservation (Natural Habitats, etc) Regulations 1994 and the new Countryside and Rights of Way Act 2001. The legislation assists in meeting obligations to the conservation of bats identified in international treaties to which the UK is a party; these include the EU Habitats and Species Directive, the Rio Convention on Biological Diversity, Bern Convention on the Conservation of European Habitats and Wild Fauna and Flora, the Bonn Convention's Agreement on the Conservation of Bats in Europe, and the Pan-European Biological and Landscape Diversity Strategy.

All bats are included in Schedule 5 of the Wildlife and Countryside Act 1981, in Schedule 2 of the Conservation (Natural Habitats etc) Regulations 1994 and the Countryside and Rights of Way Act 2001. These pieces of legislation make it illegal to intentionally, deliberately or recklessly kill, injure or capture bats; to deliberately disturb bats, to damage destroy or obstruct access to bat roosts. Although this appears to be extremely strong protection, there are defences which permit certain acts of disturbance by roost owners. These defences, however, cannot be relied upon (except within the dwelling areas of houses) without notifying the Statutory Nature Conservation Organisation (SNCO).

English Nature is the SNCO for England and is responsible for giving statutory advice within dwelling houses and receives over one thousand enquiries concerning bats and bat roosts each year. Many enquiries can be dealt with over the telephone, but a significant proportion require further action, often including a roost visit. English Nature provides advice as to whether a proposed operation should be carried out and what methods and timing should be use. The advice provided by English Nature is, therefore, crucial in the conservation of bats and bat roosts. In providing such advice, English Nature is assisted by appropriately licensed members of a network of local volunteer bat groups who can carry out site visits to assess the conservation status of roosts and likely impact of proposed activities.

Enquiries to English Nature may be for further information only (interest, identification, etc), advice on exclusion or management, with reference to the impact of remedial timber treatment (localised or general), decoration/minor renovation, major renovation/extensions/loft conversions, demolition, and treatment of cluster flies or wasps. Advice may sometimes be required for the provision of fresh opportunities for bats to (re)colonise.

The advice offered depends on the species of bat (eg rarity, site fidelity, seasonal occupation behaviour), nature of roost use (eg maternity site), nature of enquiry (concerns of householders about bats in property, remedial timber treatment, building work), nature of building, nature of intended work, urgency (emergencies) and may be related to the attitude of the owners.

Concerns of householders ('perceived problems') relate to general dislike (including concerns for 'him/her/the children'), perception as vermin, bats getting into house, health issues (rabies, histoplasmosis, general disease), perception of damage, noise, droppings (inside and/or outside), urine (including staining), smell, parasites, phobia (and allergy), fear of being overrun/infestation, perceived restrictions on renovation/building works because of legislation. Occasionally there is concern for bat welfare (eg cat has learnt to pick them off at emergence/return!).

In many instances, general advice (awareness) or minor mitigation may result in the bats and their roost not being disturbed. However, home owners/occupiers are not obliged to have bats in their property, so while they are always encouraged to maintain the bats, there are cases where English Nature must give advice on how best to exclude them. It may also be in the best interests of the conservation of bats to exclude them in some circumstances (even if only temporarily during building works or remedial timber treatment).

Apart from the study by Watson (1985), there has been little attempt to assess how well the advice provided by English Nature is received by the enquirer, whether the advice is acted upon, and how effective the advice is at resolving the problem. Obligations to carry out such an assessment arise from the implementation of the EU Habitats and Species Directive (monitoring of conservation measures to protect Annex IV species - all bats), the UK Biodiversity Action Plan (specific action of pipistrelle Species Action Plan, etc), the European bats Agreement, and is identified in the UK bat action plan (Hutson 1993).

There were early assessments of the nature of enquiries and broad results (Mitchell-Jones *et al* 1986; Mitchell-Jones 1989) but no more recent assessment has been carried out. There is now an obvious need to assess the effectiveness of the measures operating to implement the Wildlife & Countryside Act, Conservation Regulations, and Countryside and Rights of Way Act.

1.1 Objectives

The two objectives for this project were:

1. To provide an assessment of the perception of householders of the advisory service provided by English Nature and its contractors, often in association with local bat group volunteers.

2. To assess the outcome of the advice given by English Nature and its contractors to roost owners in order to guide, as required, the development of improved advice and roost management options. These data will also provide a measure of the extent to which advice on exclusions, building works or remedial timber treatment is acted upon.

2. Methods

2.1 Questionnaires

Four separate questionnaires were designed in consultation with specialist questionnaire designers (Pesticide Usage Survey Group, CSL) and bat ecologists. One questionnaire was designed for those householders who had solely sought general advice about bats from the local English Nature office. The general questions posed in this questionnaire formed the basis for the other three questionnaires. Additional questions were added which were relevant to those other categories. The second questionnaire was designed for those householders who had sought advice concerning proposed remedial timber treatment at their property. The third questionnaire was designed for those householders who had sought exclusion permission and the fourth questionnaire was designed for householders who had sought advice due to their plans to carry out building works to their property. This work ranged from minor repairs and decoration to large-scale extensions and demolitions. Copies of the four questionnaires are given as Appendices 1-4.

In cases where the householder enquiry fell into more than one category, for example where someone was planning to carry out building work that included remedial timber treatment, supplementary questionnaires were also included. These questionnaires had the same questions as the corresponding full questionnaires but did not include the general questions. General questions were included in the main questionnaires only to avoid duplication of questions. This category is hereafter referred to as 'Mixed' questionnaires.

2.2 Data collection

There are 22 English Nature local offices, all participating in the review of bat related advice given to householders. In the majority of cases the English Nature local office was visited in order to collate the information required. In a small proportion of cases the contractor working on behalf of the English Nature local team was contacted for the appropriate information. The information was gathered in the period between January and March 2002 and all the data referred to cases dealt with between January 1 1999 and September 30 2000. Each office had its own procedure for logging calls in respect of bat enquiries and handled and recorded outcomes of requests for advice differently. In general, all offices used the standard English Nature Bat Roost Visit Report Form to record information gathered by voluntary bat wardens whilst visiting roosts in households. However, the vigour with which this procedure was adhered to, and the amount of detail recorded, varied between offices. In the majority of cases a bat roost report form was held for every visit made, however, there were some offices where some forms were missing and other offices where very few forms actually existed on file. In some offices all telephone enquiries were comprehensively recorded and filed, in others only names and locations at town/village level were recorded, and in others, information concerning enquires was only recorded if a visit by a voluntary bat warden resulted from the telephone call.

Due to the variation in data-recording procedures between offices, data were collected in a manner to best allow comparison between offices. Where small amounts of data were kept on file at an office all available data were used. Where there were large amounts of data, particularly with initial phone calls and no follow-up data, a sampling approach was taken.

Data were sampled on a random basis in order to obtain a sufficient number of records representative of the data available.

Cases which were unclear or incomplete (eg full address missing) were not included in the sample. Cases where people were carrying out work prior to moving house were also excluded as there would be new occupants at the address with no detailed knowledge of the work carried out. Cases where information on householders indicated they were of nervous disposition or were seriously ill/very old were also excluded from this study. Cases where there had been particularly unpleasant encounters by the bat workers/English Nature with the householder or where legal proceedings were inferred were also excluded. In total, these excluded cases amounted to less than 10% of the total sample. Information concerning advice enquiries for bats in churches and other non-domestic buildings was excluded as this was outside the remit of this study.

Once the information was collected it was entered onto a spreadsheet and it was used to create a questionnaire mailing list. CSL placed all householders into categories according to the nature of their enquiry. These were then sent the appropriate questionnaire(s). Due to the nature of some enquiries, a proportion (7.4%) of householders were sent mixed questionnaires.

2.3 Sending out questionnaires

All questionnaires were sent out with a covering letter stating the background to the questionnaire, stressing the confidentiality of all replies and requesting the assistance of the recipient. All recipients were asked if they were prepared to receive a further visit by a CSL representative to assess the results of action taken. To encourage people to return the completed questionnaire a business reply envelope was included with each questionnaire and covering letter. A reminder letter was sent out to those householders who had failed to reply *c* 1 month later in an attempt to boost the sample size of returns (which had been approximately 45% until this was done).

In order to boost sample size for analysis and prevent individual bat workers/English Nature staff and English Nature offices from being identified, the teams were combined to form eight regions. These regions are defined as follows:

East Midlands: East Midlands; Peaks and Derbyshire

Eastern: Beds, Cambs and Northants; Essex, Herts and London; Norfolk; Suffolk;

North eastern: Northumbria;

North western: Cumbria, North west;

South eastern: Hampshire and Isle of Wight; Kent; Sussex and Surrey; Thames and Chilterns

South western: Cornwall/Isles of Scilly; Devon; Dorset; Somerset; Wiltshire

West Midlands: West Midlands, Three counties

Yorkshire: North and East Yorkshire; Humber to Pennines.

Figure 1 Map showing the boundaries of the regions used in the analysis.

A total of 2287 questionnaires were initially sent out. The questionnaires were posted in early May, 2002. Reminder letters were sent out (along with another questionnaire) in mid June and only replies up to 10 July are included in the analysis. A number of questionnaires (n = 61) were returned unanswered as the contact details had changed or the original householder had moved. These were removed from the analysis, leaving an initial valid sample of 2226. This sample was divided as follows: 300 Exclusion, 299 Timber treatment, 609 Building, 854 General and 164 Mixed questionnaires. The regional distribution of questionnaires sent out is detailed in Table 1.

Table 1 The numbers of questionnaires sent out, by questionnaire type and region.

Region	Exclusion	Timber treatment	Building	General	Mixed	Total
East Midlands	14	14	80	99	5	212
Eastern	37	57	98	91	26	309
North eastern	13	6	9	4	11	43
North western	61	7	48	151	9	276
South eastern	37	85	116	187	33	458
South western	26	95	127	112	56	416
West Midlands	68	17	60	49	14	208
Yorkshire	44	18	71	161	10	304
Totals	**300**	**299**	**609**	**854**	**164**	**2226**

2.4 Telephone survey

In order to verify the validity of the questionnaire survey a random sample of 57 non-respondents were called to assess their attitude to bat advice provided by English Nature. These were asked why they had not responded to the questionnaire and a small selection of general questions relating to the quality of the service and whether bats were still present at the property. This allowed an assessment of how representative of all the addressees were those who responded.

2.5 Roost visits

2.5.1 Sample selection

Once all the initial returns were received by CSL (June 20, 2002) those respondents who had indicated they would be happy to receive a further visit from a licensed bat worker (82%) were collated and a sample was selected. To minimise travelling between sites, we chose two areas: the South East (including Kent, Sussex, Surrey and Hampshire) and the East Midlands (including Derbyshire, Nottinghamshire, Lincolnshire, Leicestershire and Northamptonshire) for follow-up visits. The priority for visiting was for those who had requested advice prior to carrying out remedial timber treatment as well as several cases which had used particularly unusual mitigation measures.

Nineteen households who had returned the timber treatment questionnaire and not objecting to a visit in these two areas were visited. All respondents who believed that bats had not returned (n = 2) or were unsure (n = 5) were visited as well as a random selection of those who reported that bats had returned. Three other roosts were chosen to ascertain complex mitigation cases.

2.5.2 Timing of visits

All timber treatment roost visits took place in July and August 2002 in order to maximise the chances of finding bats using the roosts if they were to return for this year. The visits to the three complex mitigation cases took place in October 2002.

2.5.3 Roost visiting procedure

The roost visiting exercise was designed to assess the accuracy of the reports of a sample of respondents who had initially contacted English Nature for advice concerning remedial timber treatment in households with roosting bats. This assessment was designed to compare the replies of bat presence following treatment with the results reported by the householders. This assessment was also used as an indicator of the degree of accuracy of the returns of the questionnaires as a whole.

Two bat ecologists possessing current bat roost visitors' licences carried out the roost visits. Visits generally lasted less than one hour and involved discussing any points of confusion about the case and assessing if bats had returned or not. In order to standardise the visits, a visit report form was compiled and filled whilst at each roost. A copy of the visit report form can be found in Appendix 6.

3. Results

3.1 Questionnaires

All of the percentage figures quoted below refer only to the proportion of *respondents* who answered questions. We do not, however, presume that these respondents represent an unbiased sample of those who received the questionnaires.

3.2 Response rate

A total of 1273 (57.2%) of recipients returned completed questionnaires from the 2226 valid questionnaires (see methods) that were sent out. The return rate varied significantly regionally ($\chi^2 = 42.88$, df = 7, $P<0.001$) and was highest in the south west (64.9%) and lowest in the north east (48.8%). All the other regions had response rates between 51% and 58%. Return rate was not significantly different between different questionnaire types ($\chi^2 = 0.59$, df = 3, NS), and was over 50% in all categories. The highest rate of return was in the exclusion category (59.3%), followed by building (58.7%), general advice (57.3%), timber treatment (54.2%) and mixed (52.4%).

3.3 How did people find English Nature?

Respondents established that English Nature is the body responsible for bat advice through a wide variety of means. Of the 1244 respondents who answered this question, the most frequently reported route was through the Local Authority (33.7%, n = 419) followed by the local bat group (19.7%, n = 245). A substantial proportion (17.9%, n = 223) already knew that English Nature was the body responsible. There was a large difference between the timber treatment category and the rest of the questionnaire types as almost half (48.4%, n = 76) of the timber treatment respondents found out via the contractor (Table 2). A number of respondents ticked more than one category.

3.4 How was the advice given?

Advice was most frequently given in the form of a letter following a visit (42.6%), followed by visit only (38.3%), telephone call only (13.0%) and letter only (6.0%). This pattern varied significantly depending on the nature of the enquiry ($\chi^2 = 117.67$, df = 12, $P<0.001$; Table 3). Exclusion, timber treatment and building enquiries were similar but general enquiries had more advice given by telephone only (23.5% vs. 3.5 - 9.1%) and less by visit followed by a letter (27.2% vs. 45.1 - 63.5%).

Table 2 The route through which people found that English Nature is the body responsible for providing bat advice. The total figure is greater than the number of respondents due to some respondents citing several categories.

	Exclusion	TT	Building	General	Mixed	Total
Local Authority	90	15	115	186	13	419
Bat group	33	15	75	105	17	245
Already knew	22	30	77	76	18	223
TT Contractor	2	76	6	3	14	101
Pest Controller	19	17	9	50	5	100
Builder	4	8	16	8	9	45
RSPCA	5	1	12	17	2	37
Architect	-	2	16	2	11	31
Surveyor	1	9	11	3	7	31
Internet	1	-	6	13	2	22
OGD	2	-	3	5	1	11
Other	16	11	42	29	4	102
Total	**195**	**184**	**388**	**497**	**103**	**1367 (1244)**

Table 3 The ways in which advice was given. Percentages are in parenthesis. Figures in italics show the most frequent way in which advice was given in each category.

	Exclusion	TT	Building	General	Mixed	Total
Telephone only	16 (9.1)	9 (5.6)	23 (6.4)	114 (23.5)	3 (3.5)	165 (13.0)
Letter only	12 (6.9)	5 (3.1)	24 (6.7)	31 (6.4)	4 (4.7)	76 (6.0)
Visit only	42 (24.0)	51 (31.7)	95 (26.5)	*155 (31.9)*	18 (21.2)	361 (28.5)
Telephone and visit	26 (14.9)	6 (3.7)	32 (8.9)	54 (11.1)	6 (7.1)	124 (9.8%)
Visit and Letter	*79 (45.1)*	*90 (55.9)*	*184 (51.4)*	132 (27.2)	*54 (63.5)*	539 (42.6)
Total	**175**	**161**	**358**	**486**	**85**	**1265**

3.5 Attitudes to English Nature advice

Overall, most people were satisfied with the service that English Nature provided (Table 4). On average 93.7% of those that returned questionnaires were satisfied (39.2%) or very satisfied (54.5%) by the service provided. There was significant variation between different categories ($\chi^2 = 17.01$, df = 6, $P<0.01$) with those making enquiries about timber treatment being most satisfied (99.4%) while for both exclusion and general enquiries the figure was 92%. Overall, only 24 of the respondents (1.9%) stated that they were very unsatisfied and this category was highest for exclusions at 4.0%. There was some variation at both the English Nature team level (between 2.3% and 12.5% were unsatisfied or very unsatisfied) and the regional level (2.6% to 10.8% were unsatisfied or very unsatisfied) although in all cases the number of people expressing dissatisfaction was low. Furthermore, the overwhelming majority (95%) of those that answered this question (which was 97.4%) stated that they would return to English Nature for advice in the future. This was lowest for the exclusion (93.2%) and general (93.6%) categories and highest for the timber treatment category (98.1%) and building category (96.5%).

Table 4 The satisfaction ratings of respondents by region.

Region	Satisfaction Category	No.	Percentage	Percentage who would contact English Nature again
East Midlands	Very Satisfied	61	52.6	91.0%
	Satisfied	46	39.7	
	Unsatisfied	6	5.2	
	Very Unsatisfied	3	2.6	
Eastern	Very Satisfied	70	44.6	92.9%
	Satisfied	70	44.6	
	Unsatisfied	13	8.3	
	Very Unsatisfied	4	2.5	
North eastern	Very Satisfied	10	47.6	100%
	Satisfied	9	42.9	
	Unsatisfied	2	9.5	
	Very Unsatisfied	-		
North western	Very Satisfied	81	50.3	95.5%
	Satisfied	67	41.6	
	Unsatisfied	10	6.2	
	Very Unsatisfied	3	1.9	
South eastern	Very Satisfied	138	52.7	95.7%
	Satisfied	110	42.0	
	Unsatisfied	9	3.4	
	Very Unsatisfied	5	1.9	
South western	Very Satisfied	168	62.0	95.8%
	Satisfied	91	33.6	
	Unsatisfied	7	2.6	
	Very Unsatisfied	5	1.8	
West midlands	Very Satisfied	66	56.9	95.5%
	Satisfied	47	40.5	
	Unsatisfied	2	1.7	
	Very Unsatisfied	1	0.9	
Yorkshire	Very Satisfied	95	59.4	95.5%
	Satisfied	56	35.0	
	Unsatisfied	6	3.8	
	Very Unsatisfied	3	1.9	

Similarly, the figures for other measures of people's perception of the advice were very encouraging (Figure 2). The questions on politeness, promptness and clarity of advice were presented as a ranked scale of 1-5. Most respondents (89.4%) placed English Nature in the very prompt or prompt categories while only 47 respondents overall (3.8%) put the English Nature response in the two lowest categories. There was little difference between the different categories of questionnaire (exclusion was lowest on 84.4%, timber treatment was highest on 91.1%) but there was more pronounced regional variation (regions varied between 84.4% and 93.3%). The level of variation was higher between different English Nature team areas, the lowest had a satisfaction rate of 78.6% while the highest was 100%.

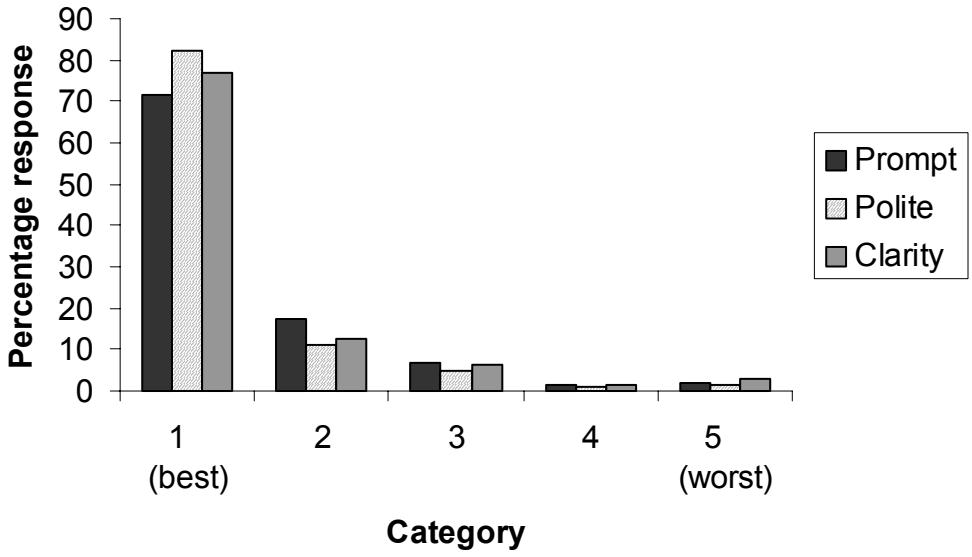

Figure 2 Overall rating of the English Nature advice. Promptness, politeness and clarity are categorised into five ranked categories.

The results were similar for polite/helpfulness with over 90% in all categories placing the English Nature response in the two most polite/helpful categories (Figure 2). There was little variation between questionnaire types (exclusion was lowest at 90.8%, general was highest at 93.9%) but regionally there was slightly higher variation (range 89.3-100%). There was slightly more variation at the team level, looking at the two lowest categories of politeness many teams (10/22) had 0% in this category but one had up to 8.5% (5/59) reporting an impolite/unhelpful service. The vast majority of respondents (89.6% were in the top two categories) also found English Nature advice to be clear but overall the scoring here was lower than for the other measures of satisfaction. Once again the lowest levels of satisfaction were for exclusions (85.6%) and general advice (88%) and the highest levels for building work (92.5%). These figures were similar between the different regions (85.9 - 95.3% in the top two categories) and English Nature teams (83.6-97.6% in the top two categories).

Overall, the advice respondents received was as expected (87.2%, n = 1043 answered yes to this question) and this varied little regionally (range: 80.4 - 93.0%). Of those that had received advice which was different from what they had expected (n = 153) all but one answered the following question, which asked whether the reasons for the difference were made clear. The majority of respondents (80.3%, n = 122) replied that the reasons had been made clear, while the rest (almost 20%, n = 30) said they had not.

In general satisfaction rating was most closely correlated with the clarity of the advice provided. If one compares the distribution of scores under promptness, polite/helpfulness and clarity of those who were unsatisfied and very unsatisfied the association is strongest with clarity and weakest with politeness (Table 5). Therefore, it is on the clarity of the advice that the main dissatisfaction appears to arise.

Table 5 The relationship between those respondents indicating that they were unsatisfied or very unsatisfied with the service and what scores they gave under promptness, politeness and clarity.

	Promptness		Politeness		Clarity	
Category	**%**	**Cumul. %**	**%**	**Cumul. %**	**%**	**Cumul. %**
5 (worst)	14.3		13.7		33.3	
4	15.6	29.9	4.1	17.8	14.7	48.0
3	19.5	49.4	26.0	43.8	21.3	69.3
2	22.1	71.5	19.2	53.0	10.7	80.0
1 (best)	28.6	100	37.0	100	20.0	100

Overall many people had their concerns allayed by the visit and/or the advice given. Of the 1223 respondents who replied to the question 40.1% (n = 491) had initially wanted the bats removed. A majority (61.1%, n = 263) of these respondents (who had also answered the following question) subsequently changed their minds about wanting the bats removed. This varied substantially both regionally (40.8-87.5%) and at an English Nature team level (34.9-100%). Of those that had changed their minds and decided to keep the bats, 302 respondents gave reasons for this. Almost two thirds (65.2%) had their fears allayed by the visit while only 28 (9.3%) cited the extra work involved as a reason for changing their minds. A substantial number (12.9%, 39 cases) had been told that they had no choice in the matter and had to put up with them. A further 28 respondents (9.3%) changed their minds after bats were found to have moved out or were not in their living area, eight (2.6%) cited conservation reasons and seven (2.3%) had only agreed to allow them to stay until the end of the breeding season. The remaining eight gave various reasons. Overall there was little overlap with only 13 respondents giving multiple reasons why they had changed their minds.

3.6 Building work questionnaire

In total, 356 questionnaires were returned from an initial sample of 609. The most frequent building-related reason for contacting English Nature for advice on bats was due to roof repairs (30.9% of cases, n = 97). Replacement of soffits and fascias (23.2%, n = 73), major structural alterations (15%, n = 47) and minor decoration/repairs (22%, n = 69) were also cited by large number of respondents. Other reasons included barn (and loft) conversions, extensions and demolitions. There was also a significant degree of overlap with 13.1% carrying out two or more types of building work (a maximum of four was cited). Table 6 details the numbers in each category of building work and the extent of overlap.

Table 6 The number of respondents carrying out work in each building category. 'Alone' shows the number carrying out that category of work only. 'Total' indicates the total number who carried out work in that category.

	Barn Conversion	Minor	Soffit/fascia	Extension	Major alteration	Roof	Loft	Demolition	Mixed
Alone	15	58	57	16	30	74	21	1	
Total	16	69	73	27	47	97	29	5	41

The most frequent advice, given in 58.2% (n = 174) of cases, was to delay the work until a less sensitive period. The next most frequent advice overall was to continue the work with caution (31.4%, 94 cases). Advice to retain existing access points was given in 89 cases (29.8%). Keeping noise to a minimum (20 cases, 6.7%), dividing the working area (14 cases,

4.7%), keeping lights on (7 cases) and creating new access points were also given in small numbers of cases. A number of other interesting cases involved the following advice:

Exclude bats 1 case
Do not do the work 1 case
Remove bats 6 cases.

The 'remove bats' advice involved the temporary removal of small numbers of bats while the work was carried out.

There was also a large overlap between the different advice categories with 30% (91 cases) of householders being advised to do more than one thing (a maximum of five was reported). Many of these cases (n = 28) involved advising the roost owner to wait until a less sensitive time and also to retain existing access points while carrying out the work. There also seems to have been some confusion with a small number of respondents claiming that they were advised both to wait until a less sensitive time and continue with caution. The nature of the advice to the different categories of enquiries (for those who answered both questions) is detailed in Table 7.

Table 7 The types of advice given for each of the categories of building work.

	Wait	**Continue with caution**	**Light/expose roost**	**Minimise noise**	**Retain access**	**Divide with sheeting**
Barn Conversion	6	5	-	-	-	-
Minor Decoration	24	12	0	2	9	1
Soffits/fascias	36	11	2	3	25	-
Extension	15	7	-	1	3	1
Major alterations	15	17	1	4	7	3
Roof repairs	46	33	3	9	25	5
Loft conversion	11	5	0	0	5	2
Demolition	2	3	-	1	1	-

In most cases (82.1%, n = 293) the proposed work was carried out. The probability of not carrying out the work was strongly related to the nature of the building work. For all the building categories, the rate of not carrying out the work was 0 - 8% but for loft conversions it was 55.6%. Twenty nine respondents detailed why they had not carried out the work, eight (27.6%) had not yet carried it out but were still intending to do so, seven (24.1%) cited a lack of money, five (17.2%) decided not to carry out the work because of the bats and in two (6.9%) cases the proposed work was not needed. The remaining seven cases cited a variety of reasons for not proceeding.

Where respondents answered the question on whether they had followed the English Nature advice, 88.6% (n = 217) said that they had followed the suggested method. However a number of respondents (16.4%, n = 48) did not answer this question. A similar proportion (90.4%, n = 217) followed the timing suggested by English Nature but a number of those (18.4%, n = 53) that carried out the building work also did not answer this question. Only seven respondents gave clear reasons why their timing or method differed from that which English Nature suggested. For those whose method differed, two said that the bats moved out once the work started and the other cited a 'lack of practical advice'. Of the four who had different timing to that recommended, one cited needing to proceed quickly because of grants, one could not delay as the roof was in a dangerous state, one managed to avoid the

need to disturb the roost and so proceeded quickly. In the final case the work ran on late into the breeding season and work areas then were separated to reduce disturbance.

We compared the probability of bats returning (ignoring the don't knows and those who carried out several types of building work) with the type of work carried out. Return rates were highest for minor decoration (72.7%) and work on the roof (69.2%) and lowest for loft conversions (54.5%) and replacement of soffits/fascias (58.1%). This comparison was hindered by the low sample sizes in many categories. Comparison of the return rates with the type of mitigation showed that where 'proceed with caution' was advised 74.4% of cases (n = 32) reported that bats subsequently returned. Where advice was given to retain existing exits the return rate was 81.3%, while wait until a less sensitive period resulted in a return rate of 56.5% (n = 48). Unfortunately, sample sizes were too low to look at the interaction between the type of building work and the advice given in relation to subsequent return rates of bats.

Overall, the results of the work are encouraging with 66.9% (n = 172) of those who carried out building work (and answered this question) reporting that the bats returned subsequently. However, once again, a number of respondents (12.3%, n = 36) did not respond to this question which means that the 66.9% is a minimum number.

Almost one third (32.8%, n = 96) of respondents also incorporated new opportunities for access and in just over half (54.1%) of these cases it worked. Of those that detailed the method used, the most frequent method employed (45 cases) involved leaving gaps in the repairs. Of these, 51.1% (n = 23) were successful, nine were unsuccessful and a further 13 respondents did not know if it had worked or not. Specialised bat access structures were tried in nine cases, three worked, three didn't and in three cases the respondents didn't know. Provision of new roosts was tried in eight cases, of which five worked. The full details of all the new opportunities tried are outlined in Table 8.

Table 8 Details of the new opportunities for access points and roosts and their success rates. Twenty five of the answers were unusable.

New Opportunities	Total	Did it work?		
		Yes	No	Don't know
Leaving gaps in repairs	45	23	9	13
Specialised access structure	9	3	3	3
Create new roost	8	5	1	2
New/relocation of access	7	6	0	1
Novel interior alterations	2	1	0	1
Total	71	38 (53.5%)	13 (18.3%)	20 (28.2%)

3.7 Timber treatment questionnaire

In total, 162 questionnaires were returned from an initial sample of 299. The majority (75%) of cases where advice was sought on timber treatment involved treatment of timbers in the roof. The remainder involved treatment of the dwelling area (20%), a barn (9%) or garage (4%), 32 cases (24.2%) involved treatment of more than one area and two of these involved treatment in three areas (Table 9).

Table 9 The areas where advice on timber treatment was sought. Figures on the diagonal represent numbers exclusive to one area. The others involved treatment of two areas. Two cases involving treatment of three areas have not been included in the table.

	Roof	Dwelling area	Barn	Garage
Roof	93			
Dwelling area	21	5		
Barn	4	-	2	
Garage	4	-	-	-

For cases where bats were found before the timber treatment had started the most frequently given advice (77 cases, 58.5%) was to postpone treatment until a less sensitive time. Use of a bat friendly chemical was also advised in 61cases (46.6%) while commencing the work with caution was advised in a more limited number of cases (21, 16.1%). Many respondents were advised to carry out more than one mitigation measure, especially postponing treatment until a less sensitive time and using a bat-friendly chemical (29 cases, 22.1%). The full range of the advice given is listed in Table 10. It must be noted that the advice will have been related to season.

Table 10 The types of advice given to roost owners wishing to carry out timber treatment and whether they proceeded to carry out the work.

	No.	%	Number not proceeding	% not proceeding
Postpone only	43	32.8	10	23.3
Proceed with caution only	14	7.6	0	-
Use bat-friendly chemical only	25	19.1	3	12.0
Postpone + bat friendly chemical	29	22.1	6	20.5
Proceed cautiously + bat friendly chemical	2	1.5	0	-
All three	3	2.3	0	-
Temporary removal of bats	8	6.1	0	-
Lights	3	2.3	0	-
Other	4	3.1	0	-

In only 27 cases were bats discovered during the timber treatment. Advice offered varied greatly in these cases (probably due to the differing circumstances, species involved etc) with ‘continue using a bat friendly chemical’ given in eight cases, halt the treatment until bats leave given in seven cases, temporary removal of the bats was also advised in seven cases, proceed with caution in four cases. In one case the respondent had been advised to isolate bats in a discrete area while the work proceeded in the rest of the roof space.

In most (81.7%, n = 132) cases the timber treatment was carried out. Where it did not take place (28 cases) the reasons were given in 21 cases: eight (38.1%) had decided the work was unnecessary for a variety of reasons, eight (38.1%) had still to carry out treatment and three (14.3%) cited expense as the main reason for not carrying out the work. Overall, five (23.8%) mentioned that the bats had been considered when taking their decision but in only one case was it the main reason for not carrying out the timber treatment.

Where the treatment was carried out most roost owners did not know the chemical used (86.8% either answered unknown or did not answer). Of the 22 who did answer this question two of the answers were not sufficiently specific to identify the product involved. Of the

other 20, 15 (75%) had used pyrethroids (14 permethrin and one cypermethrin) and four had used boron-based compounds, one other had used a fungicide and phenolic. In the vast majority of cases (97%, n = 128) the treatment was applied at the recommended time. None of the three cases who did not follow the recommended timing gave any reasons why they did not do so.

Overall 90 respondents answered the question on when the timber treatment was carried out (42 (31.8%) of those that had carried out treatment did not). Of those that did answer, the majority had carried out the treatment between September and March, only 13 (14%) had carried out the treatment between May and August (inclusive) (Figure 3).

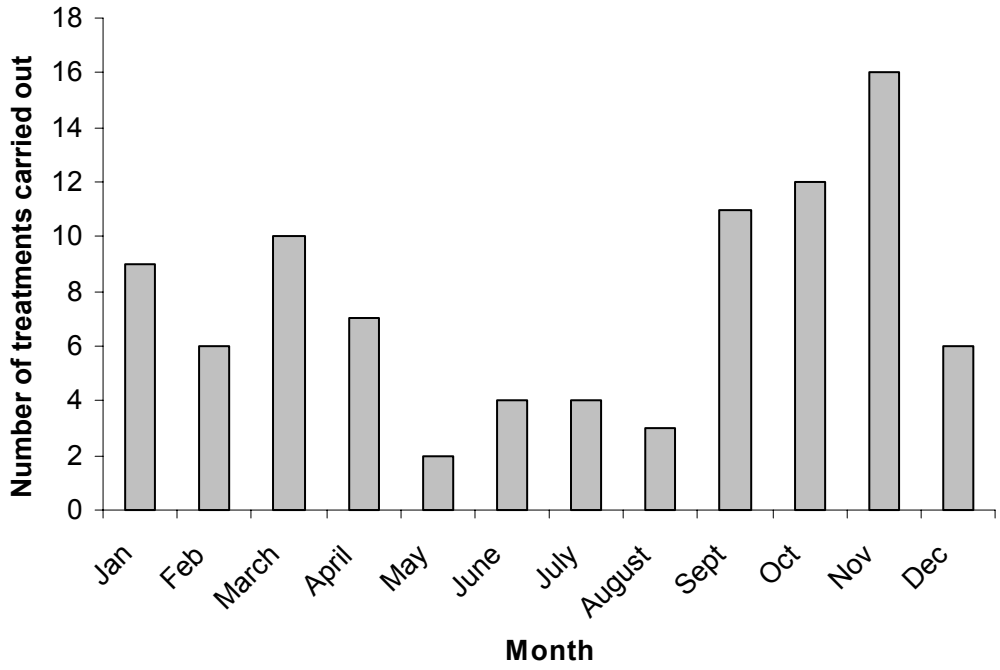

Figure 3 The distribution of timber treatments by month.

In the vast majority of cases (96.3%, n = 126) timber treatment was carried out by a contractor. The treatment also seems to have been carried out effectively in most cases although dead bats were recorded in three (1.9%) cases where the work had been carried out (both cause of death and how recent it was were unknown). Furthermore, bats returned in the following year in the majority (59.1%) of cases, however a significant number of respondents (27.3%) replied that they didn't know if bats had returned or not. On exclusion of the 'don't knows', 81.3% who replied stated that the bats had returned subsequent to the treatment. It was not possible to compare return rates between those who carried out the treatment and those who did not as none of the latter replied to this question.

The return rate of bats did not differ between the different categories of advice given: 4.5% (1/22) who were asked to postpone treatment had bats failing to return, this rate was 10% (2/20) for those advised to use a bat-friendly chemical and 11.1% (2/18) for those advised to do both. Sample sizes were too small for analysis in the other advice categories. The effect of carrying out the treatment at the correct time could not be assessed, as only three respondents had not done so. However, the timing of the work seems to have had a large

influence on the probability of return. There was a non-return rate of 50% (7/14) for roosts where the timber treatment took place between May and September (inclusive) compared with a rate of 14% (7/50) where the treatment took place between October and April. This difference was highly significant ($\chi^2 = 8.29$, df = 1, $P<0.005$)

In 30.6% of cases (n = 49) other work was being carried on at the same time as the timber treatment. Other roof work was being carried on in eight cases (16.3%), replacement of wiring/damp proofing etc was being conducted in 13 cases (26.5%) and minor painting/decoration in six cases. General refurbishment/renovation was being carried out in 11 cases (22.4%) and building work in seven cases (14.3%) with a range of other reasons in the remaining five cases (including one for pest control reasons).

3.8 Exclusion questionnaire

In total 178 questionnaires were returned from an initial send-out of 300. The main reason cited for wanting bats excluded was droppings (cited in 61.5% of cases). Fear of bats (27.9%), bats gaining access to the living area (28.5%) and noise (27.4%) were also cited as being important. Smell (19.6%), general intolerance (12.3%) and 'incidental to other works' (3.9%) were of lesser importance. There was a large degree of overlap of reasons (eg 10 people cited both droppings and smell while 12 cited both droppings and gaining access to the living area) with many people citing more than one reason for originally wanting the bats excluded (the maximum was five: droppings, noise, smell, general intolerance and gaining access to the living area). A number of other reasons were also given, including a general dislike of bats (two cases) and health fears (one case).

In the majority of cases (93.8%, n = 150) the advice given was to wait until bats had left and then block access while only four respondents (2.5%) were advised to use methods that allowed bats access out but not back in again. Four respondents claimed that they had been advised to use both methods. There were only two other recommendations: 'do not exclude the bats' and 'block access to the living areas' each given in one case. Three other methods were suggested in one case each (all given with other advice), these included: 1. only blocking part of the access holes, 2. creating alternative access points (both in conjunction with using methods to allow bats out but not back in) and 3. turning up the central heating (in conjunction with waiting until they leave).

Overall, 119 respondents listed the advice they received on blocking the entrance hole. Of the potential methods suggested in the questionnaire, the most frequent was using expandable foam/mastic (37%, 45 cases; Table 11). Re-pointing with mortar was also frequently carried out (34.5%, 41 cases) as was replacing the bricks/tiles or flashing to seal the entrance (21.8%, 26 cases). In 100 cases (84%), only one method for blocking the access holes was used, in the rest several methods were tried (a maximum of three separate methods were used). Other methods used included sealing the entrance with wire mesh (four cases), newspaper (four cases), timber (three cases), tape (one case) and even plastic bags (one case). Replacing barge boards, fascias or soffits was carried out in seven cases.

Table 11 The methods used to seal the access holes to bats for the purpose of exclusion.

Single methods	N	Percentage
Expandable foam only	40	33.6
Repoint only	25	21.0
Replace bricks/tiles/flashing	14	11.8
Wire mesh only	3	2.5
Multiple methods		
Foam and repoint	2	1.7
Foam and wire	2	1.7
Repoint and replace bricks/tiles etc	9	7.6
Repoint and wire	3	2.5
Foam, repoint and replace bricks/ tiles etc	1	0.8
Other and mixed	20	

Overall, just over two thirds (66.9%, n = 119) of those initially requesting exclusions actually carried them out and over three quarters (75.6%, n = 90) of respondents replied that it had been a success, only 8.4% (n = 10) replied that the exclusion had not worked while the remainder (16%, n = 19) did not know if the exclusion had worked or not. All five of those respondents who used methods to allow bats out but not back in were successful in excluding the bats (the other one did not answer this question). Of those that waited until the bats had left and then blocked access, 90.6% (n = 87) were successful, nine were unsuccessful while 17 respondents failed to answer this question. Overall there was only one report of a dead bat after the exclusion work had been carried out and only 15.1% reported that bats returned the following year (36.9% reported that bats did not return while 48% did not know). Another measure of the success of exclusions was that only 15 respondents (12.4% of those who carried out exclusions) reported that bats subsequently returned to an unacceptable place.

Of those that initially wanted exclusion but had not subsequently carried it out there were many reasons given for this change of mind. Forty-two respondents listed their reasons for this change of mind. The concerns of the roost owners were allayed and they decided to tolerate them in nine cases (21.4%), bats moved to a less problematic place in eight cases (19%), it was too expensive or difficult in nine cases (21.4%) and 11 respondents (26.2%) stated that they could manage for a short period. There were a further five reasons categorised as ‘other’.

Of those who did carry out the exclusions, 79.5% (n = 89) followed both the method and timing suggested by the English Nature representative. A further 12 (10.7%) followed the method but not the timing and 11 (9.8%) followed the timing only. Only five respondents gave reasons for this deviation from the recommendations and three were associated with timing deviations. The reason in all three cases was the premature leaving of the bats. In the other two cases, both methodological deviations, one installed fluorescent lights in the roof, the other fitted the whole of the bungalow with fascias.

The majority of exclusions (82.7%) took place between September and December (inclusive) with very few taking place during spring and summer (Figure 4).

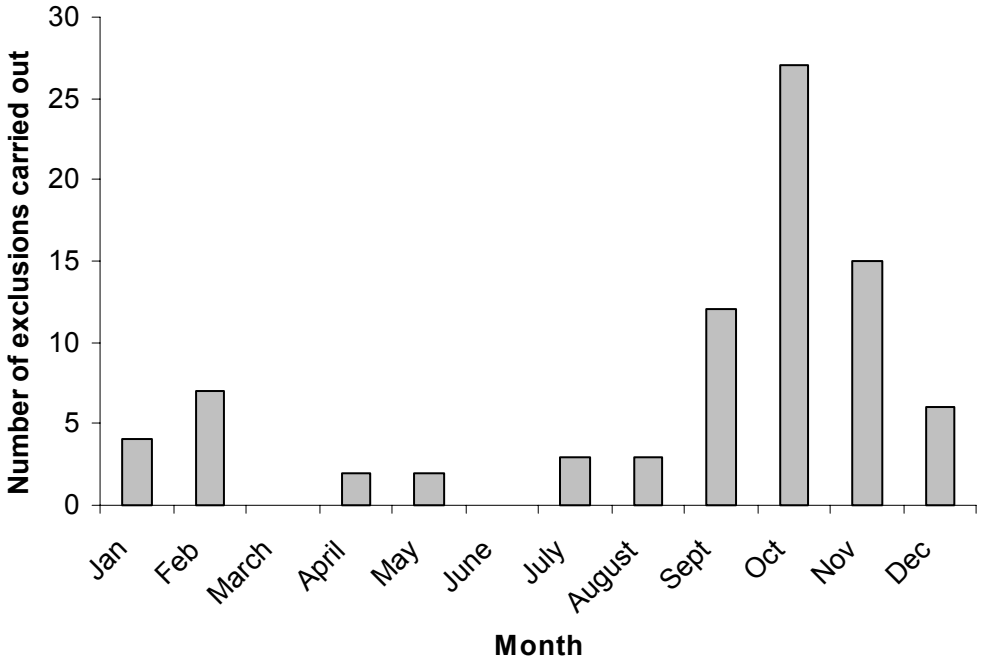

Figure 4 The distribution of exclusions by month.

Success was not related to the method used to block access and there was virtually no difference between the different blocking methods carried out. For those who exclusively used a single method and reported on the success of it (n = 59), there was a 9.1% (1/11) failure rate for replacing bricks/tiles/flashing, a 5.3% (1/18) failure rate for re-pointing and a 13.8% (4/29) failure rate for sealing using foam.

Exclusions were mainly carried out by the owners (54.2%, n = 64) but a substantial number were also carried out by builders (33.9%, n = 40). A small number (6.8%, n = 8) were carried out by the volunteer bat worker and one by a pest control contractor. Others who carried out the exclusion included one decorator, one fascia board company, one joiner, one window cleaner and one uPVC window installer.

3.9 General advice questionnaire

In total, 486 questionnaires were returned from an initial send out of 854. Overall, advice of some description was given to almost half (48.9%) of these respondents. For almost half of those receiving advice (45.5%, 110 cases), both the method and timing suggested by English Nature were followed. Where advice was not followed only 22 respondents answered the question as to how it differed from the English Nature suggestions. In six cases the owners subsequently decided to leave the bats alone, in five cases the work had been delayed. In two cases the suggested work was impractical or too expensive. The nine other cases included: 'sealed the roof anyway', 'didn't leave an entry point on completion of the work' and 'used a plastic owl to scare bats'.

In the majority of cases (86%) the advice given resolved the concerns of those seeking the advice. The most frequently given advice was to tolerate the bats for a short period, followed by restricting of access. A number of other measures, such as covering water tanks, covering

stored items etc were suggested in a smaller number of cases. In the majority of cases (63%) the bats are still present at the property at the time of replying to the questionnaire.

3.10 Telephone survey of non-respondents

Attempts were made to contact a total of 57 non-respondents by telephone in early August 2002. Of these, only 23 were actually spoken to (many failed to respond to messages left on answer machines etc). Nine of this group had either mislaid their questionnaires or had been too busy to fill them out while two no longer lived there. Others reasons included 'dyslexic' and 'didn't receive one' while several people did not know why one had not been sent back. Of those who responded to the questions on satisfaction and quality of service (n = 13), four (30.7%) were very satisfied with the English Nature service, eight (61.5%) were satisfied and one (7.7%) was unsatisfied. There was no significant difference between the telephone and questionnaire surveys with respect to satisfaction ratings (Fisher's Exact test, NS) although both satisfaction categories and both dissatisfaction categories had to be combined for analysis. All the respondents said that they would contact English Nature in the future and all but one claimed that their enquiries were dealt with promptly and that the English Nature representatives were polite and helpful (the same in both cases).

3.11 Roost visits to buildings having had remedial timber treatment

A sample of 19 roosts where the occupants had sought advice on remedial timber treatment was visited. These were in the East Midlands and the South-east.

The objectives of the visits were:

1. to verify the presence or absence of bats following treatment and determine the bat species involved;

2. to assess whether the absence of bats could be explained by any other factors (such as other building works, changes to surrounding habitat)

3. to assess the accuracy of respondents reports of whether bats were present or not.

During these visits an attempt was made to confirm what chemicals were used and whether English Nature advice had been followed. Where possible, any difference from the original number and species of bats present was noted. These visits also gave an opportunity to gauge whether people had difficulties with the questionnaire and to confirm their opinion about how the English Nature advice system worked.

3.11.1 The South–east

In the South-east a sample of 11 roosts that had only had remedial timber treatment was visited by AMH. The roosts were selected from questionnaire responses to be representative of three reports: bats present, bats not present or don't know. In fact, there were very few suitable responses where bats were reported to be 'not present' or 'don't know'.

Roosts were visited in Hampshire (1), Kent (3), Surrey (1), East Sussex (3) and West Sussex (3). Preference was given to roosts which had only had timber treatment carried out and not

other building works and where bats were likely to be using the roof space rather than roosting around the outside of the building. Note that of a sample of 32 roosts in the South-east (Kent, Surrey, Sussex), where only remedial timber treatment was recorded as proposed work that might affect bats, treatment was not carried out at eight roosts (25%) and six (19%) actually had other significant building work carried out at the same time. These roosts were not included in the sample. All roosts visited were dwelling houses, one additionally with a barn that had been treated. Access was not refused by any householder spoken to (including two where a 'cold call' was made), but there was no response to some answerphone messages.

In the questionnaire responses, two roost owners had said that bats were no longer present and one was not sure. However, evidence of continued use by bats was found at all 11 roosts. All roosts visited were used by brown long-eared bats, and two also by pipistrelle bats. One roost of brown long-eared bats had originally been logged as 'pipistrelle?'. At one site where bats were not seen and there was only scant evidence of recent usage there was no apparent other associated reason. However, the site had probably not been a site of significant usage and this was also the opinion of the original roost visitor.

One roost owner felt that there might be fewer bats now, but otherwise, except where stated, there was no obvious change in species or population status. One fairly fresh dead bat was found at one roost – there was no evidence of mortalities following timber treatment.

In four of the visited sites, extra work (mainly minor building, renovation, redecoration work) had been carried out at the time of treatment or subsequently without consultation for advice. In some cases this was because the householder did not realise that this too was strictly subject to advice. A more serious misunderstanding was that householders were told that treatment could proceed because the bats had 'gone', there was 'no evidence of bats' [being present at the time of the visit], or could proceed when the bats had gone in the autumn. A number thought the bats had gone permanently and that they were therefore not a concern any longer. There needs to be a clearer distinction made in the advice to householders between a) sites where there is no evidence of use by bats, b) sites where there is evidence of bat use in the past but not currently, and c) sites where there is evidence of bats currently using the site and where they may be absent for periods of the year but are likely to return - such that the site remains a bat roost.

3.11.2 The East Midlands

In the East Midlands, eight roosts were visited by Barry Collins of the North Nottinghamshire Bat Group. These roosts were located in Derbyshire (3), Leicestershire (2), Lincolnshire (2) and Nottinghamshire (1). With fewer roosts to choose from in the East Midlands, the sample was more mixed.

In two cases (a barn and a dwelling), remedial timber treatment (or other work) had not been carried out and the bats were still present. In one case a roof conversion had also been carried out and the bats had been more or less excluded (there was still some evidence of current use). In a fourth case the building had also been re-roofed and lined, but at least one bat was gaining access. In the other four cases timber treatment had been carried out and the bats were still present.

The sample included a mixture of brown long-eared (4 – two not treated), pipistrelle (2), whiskered/ Brandt's (2) and Natterer's bats (1 – not treated). In two cases, species present were not as on the original documentation, but this is likely to be due to earlier misidentification. Except where stated there was no obvious change in species or population status and no dead bats were found.

All of the roost owners were very satisfied with the visit from the voluntary bat wardens (one had not received a visit as English Nature was suffering a shortage of licensed roost visitors in the county at the time). Two roost owners were not happy with the response from English Nature officers, one felt that English Nature considered the bats more important than the maintenance of their home, the other that English Nature officials were treating them as if they were entirely incompetent (the owner was a doctor of biology). In the latter case it was clear from the site visit that the problem was entirely due to the lack of a visit from a voluntary bat warden at the time. Apart from one case of misidentification, the evidence from the visits confirmed the information given in the questionnaire response.

Further to this study Barry Collins is also currently researching the effectiveness of recommended bat mitigation. This research is looking at all building maintenance, renovation and conversion and mitigation issues. The effects of timber treatment and the advice given by English Nature is one of the issues currently being examined. In addition to the eight roosts reported upon above, a further twenty five properties that had been subjected to remedial timber treatment were surveyed in 2002. Nine of these were dwelling houses. Of these only one had lost its bat colony and this was due to the entire re-roofing of the house utilising an unsuitable roof underlining preventing access to the roof and the ridge tiles. As was the case in some roosts in the South-east, this activity was completed without English Nature advice, however, it was also completed in direct contravention of specific written advice from English Nature at the time of the timber treatment works.

3.11.3 Additional data from Essex

John Dobson, of the Essex Bat Group, has maintained observations at a number of significant roosts over an extended period. The six roosts involved were treated with permethrin in 1984, 1986 (2), 1988, 1995, 1996. Bat species involved are brown long-eared (5), pipistrelle (1), Natterer's (1) and serotine bats (1). Five of these colonies are thriving; in the sixth (brown long-eared roost treated in 1986) the bats deserted the roost in 2000 when a barn owl moved in.

3.11.4 General remarks

The overall results are given in Table 12. Seventeen roost buildings in the East Midland and the South-east that had had remedial timber treatment carried out were revisited. In six cases further work had been carried out; these were mainly minor works, but one (a roof conversion) sufficient to more or less exclude the bats. Nevertheless, evidence of continued bat use was found at all roosts (including at a small number of roosts where the occupiers reported that bats were no longer present). There was no indication that timber treatment alone had affected the species or populations of bats using these roost sites. The main bat species involved was brown long-eared bat (13 roosts), but the sample also included pipistrelle (4 roosts) and whiskered/Brandt's bats (2 roosts). There was supporting evidence from long-term observations at a small sample of roosts in Essex.

The survey strongly suggested that the chemicals currently involved in normal domestic remedial timber treatment are not the conservation problem that such chemicals were in the early 1980s. Nevertheless, timing of treatment would remain an important consideration.

At a few roosts, timber treatment had been considerably delayed because of the presence of bats and had involved repeat visits by bat workers. None of these householders seemed particularly upset about that, but two reported that timber treatment company had been. It was not possible to ascertain from householders the products used; only one householder was able to produce evidence of the chemical to be used, which was a permethrin.

These visits were to householders who had completed and returned the questionnaires and were willing (indeed, most were enthusiastic) to be visited. In those circumstances it is perhaps not surprising that all but one (which had not been visited) considered that the advisory system worked well.

Table 12 Summary of bat status in 2002 at 19 properties following remedial timber treatment in 1999/2000.

No.	County	TT done?	Other work?	Bats present (survey)	Bats present (visit)	Species	Change in numbers?
1	Leicestershire	Yes	No	Yes	Yes	P.auritus	No
2	Lincolnshire	Yes.	No	Yes	Yes	Pip. sp.	No
3	Nottinghamshire	Yes	Yes	?	Yes	M.myst.	Marked decline
4	Leicestershire	No.	No.	?	Yes	P.auritus	No
5	Lincolnshire	Yes	No	Yes	Yes	Pip. sp.	No
6	Derbyshire	Yes	No	Yes	Yes	M.brandtii/myst.	No (except identification)
7	Derbyshire	Yes	Yes	Yes	Yes	P.auritus	Marked decline, formerly [different species].
8	Derbyshire	No	No	?	Yes	P.auritus/ ?M.nat./ ?sp	No previous visit
9	Kent.	Yes	No	Yes	Yes	P.auritus/ P.pipistrellus	less activity?
10	Kent	Yes	No	Yes	Yes	P.auritus	No
11	Kent	Yes	No	?	Yes	P.auritus	No
12	West Sussex	Yes	No	Yes	Yes	P.auritus and P.pipistrellus	
13	West Sussex	Yes	No	No	Yes	P.auritus	No
14	West Sussex	Yes	No	Yes	Yes	P.auritus	No
15	Surrey	Yes	No	Yes	Yes	P.auritus	No
16	East Sussex	Yes	No	Yes	Yes	P.auritus	No (?slight decline)
17	East Sussex	Yes	No	Yes	Yes	P.auritus	No
18	East Sussex	Yes	No	Yes	Yes	P.auritus (+ P.pip).	No (except identification)
19	Hampshire	Yes	No	No	No?	P.auritus	No
Total with bats present				**13**	**18**		
Total with no bats present				**2**	**-**		
Total unsure				**4**	**1**		

4. Discussion

It is clear that this extensive questionnaire survey has provided a comprehensive review of the attitudes of householders to English Nature advice on bats. The high return rate of 57% strengthens the validity of any conclusions based on the sample who responded. The fact that almost 10% of those non-respondents who were subsequently telephoned had not responded because they had moved house and 39% had simply been too busy also indicates that there was little bias among the non-respondents as regards their attitude to English Nature and the survey. Furthermore, the non-respondents who were telephoned were not significantly different from the respondents in terms of their perception of the quality of English Nature advice. Overall, the survey gives a good indication of what types of advice are most sought after, what advice is most frequently given and the success rate of the suggested mitigation measures.

In general, therefore, the advice is well received and English Nature and its representatives are perceived as providing a satisfactory service in the vast majority of cases. This is particularly so in terms of promptness, politeness and helpfulness. The clarity of the advice is, however, the main area where this is not always the case and it is this that appears to most colour the perceptions of those (few) householders who were unsatisfied with the service provided. Virtually all of the respondents said that they would return to English Nature for advice in the future if they needed it. In comparison with the recent survey carried out on SNH advice, the levels of satisfaction are similar with 85% of respondents there (compared with 93.7% overall for this survey) indicating that they were very or partly satisfied with the SNH advice (Wray *et al* 2002). The clarity of advice scores from the SNH survey were similar (95%) to those for this survey (89.6%). Overall, 75% of respondents said they would return to SNH for advice in the future compared with 94% for English Nature. Direct comparison of the two surveys is not clear-cut as the suite of questions posed were not the same. However, both surveys do indicate high levels of satisfaction and comprehension of the advice given.

Although there were differences in the way the data were collected and in sample sizes, some comparison can be made with earlier assessments in Britain. Mitchell-Jones (1989) showed that while the actual number of enquiries relating to 'domestic' concerns remained constant in the years 1983-86 there was a distinct increase in the number of enquiries relating to timber treatment and building repairs. In 1983 the proportion of timber treatment/building works enquiries was about 18% increasing to about 32.5% in 1986. That trend has continued with the current level of this type of enquiry now being over 50%. Equally that means that the proportion of enquiries relating to domestic concerns has decreased from over 80% to less than 50%.

A direct comparison of the concerns of householders between Mitchell-Jones *et al.* (1986), where a sample of enquiries was allocated a single category, and the current survey, where enquiries could be allocated to more than one category, may be difficult. Nevertheless, the main concerns of householders remain droppings and bats entering the living space. However, other concerns may have changed: in the current survey 27.4% of people requesting exclusion included noise as a reason (compared with 4% in the earlier survey), 19.6% included smell (compared with 3% in the earlier survey), and 27.9% included fear of bats (compared with 15% in the earlier survey).

Of the enquiries considered by Mitchell-Jones *et al.* (1986), 27% intended no further action, 37.2% intended exclusion but were persuaded to leave the bats at least for a while and 32% insisted on exclusion. Thus less than 50% of those seeking exclusion insisted upon it (and it is known that many did not carry it out). In comparison with this survey, 61% of those initially wanting exclusions subsequently changed their minds. The study by Watson (1985) investigated 79 requests for exclusions. Access was sealed at 40 roosts, but bats returned at five (12.5%). Access was not sealed at 39 roosts and bats returned at 34 (87.2%). This is comparable with the current survey. The satisfaction rate of enquirers was 78% in the earlier study compared with 94% in the current survey.

Watson (1985) examined a sample of 47 enquiries relating to remedial timber treatment. Treatment was carried out by 29 enquirers, while the other 18 did not proceed with treatment. Excluding those that did not know whether bats had returned or not, bats did not return to 26% of the roosts after treatment, although bats did not return to 31% of the roosts that had not been treated. In the current survey there was a non-return rate of 14% where treatment was carried out between October and April, but a 50% non-return rate where treatment was carried out during the summer season which was highly significant. In the earlier survey, 92% of enquiries reported satisfaction with the advice given, compared with 94% in the present survey.

In terms of the mitigation methods suggested, it is clear that in most cases the advice was followed. In the vast majority of cases both the suggested methods and timing were followed and the timing clearly affected the outcome, at least in the case of timber treatment. For both building and timber treatment work the mitigation measures employed were largely successful - 70% of building and 60% of timber treatment cases claimed that bats had returned subsequently. However, substantial numbers of respondents (27% and 12% for timber treatment and building respectively) did not know if bats had returned or not. However, the roost visits to the sample of timber treatment cases also aids the interpretation of these data. All of the 'don't know's' actually had bats present while even those reporting bats had not returned (n = 2) actually did have bats. This indicates that return rates are substantially higher than the 60% suggested by the questionnaire returns.

Loft conversion is probably a considerable threat to many bat colonies. It is, therefore, interesting to note that 55.6% of those requesting advice with reference to loft conversion have not carried out that conversion in the intervening years. It may be due to the nature of building works, but advice to retain existing access points appears to have been given in only 30% of cases. This, as far as possible, should apply to all such advice. A number of enquirers were requested to 'keep noise to a minimum'. One might question whether this is practical advice where building work is being carried out. While the sample sizes were small, there was a surprisingly small rate of return of bats following soffit replacement (58%) – less than for work on the roof (69%). Note also that delaying work until a less sensitive time resulted in a return rate of only 56.5%, but such figures may need to be compared with normal return rates (where work was not carried out). An overall rate of return of bats following building work of 67% is equally a rate of non-return of 33%. The long-term implications of that may need to be considered.

According to the data available, the specific request for the use of chemicals less toxic to mammals was made to less than 50% of timber treatment enquirers, and to proceed with caution (and re-consult if bats found) in 16%. The results for the return of bats following timber treatment using currently available chemicals suggests that timber treatment may not

be the problem it was in the early 1980s. Nevertheless, it should be standard that advice includes the recommendation for the use of treatments least damaging to bats and that there should be reconsultation if bats are found at the time of treatment. Similarly, advice should be clear about postponement of treatment to a preferred time of year, especially where a maternity colony is suspected. Where respondents reported on whether or not bats had returned following treatment, 81% reported that they had. If nearly 20% of colonies did not return following treatment, that might be a cause for concern, but this project was not able to ascertain the return rate where timber treatment was not carried out and the follow-up survey of roosts that had been treated suggested that the return rate was in fact higher than that given by questionnaire respondents.

4.1 Conclusions and recommendations

Despite the fact that the advisory system appears to be working well, with good perceptions from the public, there are some areas where improvements could be made. These are outlined below.

4.1.1 Data recording

This relates to the way in which the data are collected and stored. Office recording procedures and the actual data recorded varied widely between different English Nature teams. This resulted in variability in our ability to extract relevant data and it reduces the power of the overall dataset.

Recommendation

Revised guidance should be given to local teams to generate uniform logging, recording and filing of records of advice.

4.1.2 How advice is given

It appears that advice on exclusion (as well as timber treatment and building work) is often given from a visit only, i.e. with no follow-up letter. More importantly only 45% of exclusions involved a letter following a visit (including 16% where advice was given solely by telephone or letter without a visit). Similarly little more than half of the cases where advice was given regarding timber treatment and/or building work involved a visit and follow-up letter.

Recommendation

As far as possible, all exclusions and most cases of timber treatment and building work should receive a visit with follow-up explanatory letter. It is appreciated that, in some areas, the resources for such visits are fully stretched and there is limited opportunity for recruitment of bat wardens into the roost visitor system. Renewed effort at recruitment and training could be considered. However, in other areas, bat wardens often report that they get few requests from English Nature to carry out roost visits and limited opportunity to train new recruits.

4.1.3 Clarity of English Nature advice

With respect to whether the respondents considered that the advice was given promptly, politely and with clarity, that of clarity of advice rates lowest. Further, of people who did not get the advice they expected, 20% were not clear about why. There was also a surprising number of requests for exclusion (12.9%) where the roost owner believed that they could not exclude the bats under any circumstance.

Recommendations

- There would appear to be room for improvement in the quality and clarity of advice.
- English Nature should clarify under what circumstances it will not approve exclusion.

4.1.4 Building work

That just over half of those cases where respondents incorporated new opportunities for bat access were successful would seem to be very encouraging. It would appear that 16-18% of enquirers did not follow English Nature advice on methods and/or timing. That appears to be high for a group of people that were initially concerned enough (for whatever reason) to consult English Nature and subsequently to respond to the questionnaire.

Recommendation

There is probably the need for further investigation into the advice relating to the management of building works, to ensure that the advice is practical, clear and consistent, and works for the conservation of bats.

4.1.5 Timber treatment

There appears to be a degree of confusion in the minds of some roost owners about when bats leave a roost. It is important that English Nature clearly explains to roost owners that when bats leave maternity roosts for the winter they are likely to return the following year.

Recommendations

- Ensure clarity of advice re ‘absence’ of bats.
- Ensure clarification that all works that might affect bats in future are similarly subject to the need for advice.
- Continue to advise treatment at times of least vulnerability of the bats using the roost.
- Make standard the use of English Nature ‘Bat Roost’ warning signs, to inform all workers of the presence of bats and the legal implications and contact points

4.1.6 Exclusions

A surprising number of requests for exclusion were refused (12.9%).

With respect to methods of exclusion, only 2.5% of respondents were advised to use methods that allowed bats egress, but not return (a ‘valve’ system). Such non-return valve systems are

labour saving and much safer for bats. An extraordinary result of this survey was that of so many people who were insistent on having their bats excluded do not know whether they have been successful (48%).

Recommendations

- There should be an increase in the use of non-return valve systems to allow bats out prior to blocking access.
- About 10% of enquiries result in exclusion. There should be further investigation of the fate of those colonies and of the impact of exclusion (intentional and unintentional through building work, etc) on bat populations.

5. Acknowledgements

We would like to thank all of the English Nature office staff who greatly helped in the collection and collation of data in the early part of this survey. We would also like to thank the following English Nature sub-contractors: Stan Irwin, Dr & Mrs Stebbings, Chris and Helen Shaw.
We thank Barry Collins of Centre Parcs for his help with roost visits and John Dobson of the Essex Bat Group for data on his long-term data on roosts. We would like to thank Gillian Parrish and Lynda Smith for all their help with collating the questionnaire returns and Roger Jones who assisted AMH with roost visits. We also thank Rob Raynor (SNH) for helpful discussion on aspects of the survey procedure.

Finally, we would like to thank all those who responded to the questionnaire and especially those who allowed follow-up visits.

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Appendices

Appendix 1 Advice Questionnaire

CSL/ENGLISH NATURE BAT SURVEY - ADVICE

CSL REF. ☐☐☐☐☐

1) WHY WAS ADVICE ON BATS ORIGINALLY SOUGHT? (Tick more than one if applicable)

General advice	☐	Remedial timber treatment	☐	Bats in living area	☐
Advice on exclusions	☐	Decoration/minor restoration	☐	Health problems	☐
Advice on bat management	☐	Other building work	☐	Pest control (excluding bats)	☐

Other - Please specify ☐

2) INITIALLY DID YOU WANT THE BATS REMOVED? Yes ☐ No ☐

3) DID YOU EVENTUALLY DECIDE TO KEEP THE BATS? Yes ☐ No ☐

4) IF YOU CHANGED YOUR MIND ABOUT KEEPING THE BATS - WHY WAS THIS?

Concerns allayed by visit ☐
Too much work involved ☐

Other - please specify ☐

5) WAS YOUR ENQUIRY DEALT WITH PROMPTLY?

Yes				No
1	2	3	4	5

6) WERE ENGLISH NATURE REPRESENTATIVES POLITE & HELPFUL?

Yes				No
1	2	3	4	5

7) HOW WAS ENGLISH NATURE ADVICE GIVEN?

Telephone only ☐ Visit only ☐ By letter without a visit ☐ By letter following a visit ☐

8) WAS THE ADVICE CLEAR AND PRACTICAL?

Yes				No
1	2	3	4	5

9) WAS THE ADVICE GIVEN BY ENGLISH NATURE AS EXPECTED? Yes ☐ No ☐

10) IF THE ANSWER TO THE QUESTION ABOVE IS NO WERE THE REASONS FOR THE DIFFERENCE MADE CLEAR? Yes ☐ No ☐

11) WERE YOU SATISFIED WITH THE ADVICE?

Very satisfied ☐ Unsatisfied ☐
Satisfied ☐ Very unsatisfied ☐

CSL/ENGLISH NATURE BAT SURVEY - ADVICE

12) IF GIVEN WAS ENGLISH NATURE ADVICE FOLLOWED PRECISELY?

Not applicable ☐

Method suggested Yes ☐ No ☐

Timing suggested Yes ☐ No ☐

13) IF THE ADVICE WAS NOT FOLLOWED PRECISELY HOW DID IT DIFFER?

14) DID FOLLOWING THE ADVICE RESOLVE YOUR CONCERNS? Yes ☐ No ☐

15) IF FOLLOWING THE ADVICE DID NOT RESOLVE THE ISSUE, WHAT WAS THE RESULT?

16) WHICH REMEDIAL MEASURES SUGGESTED BY ENGLISH NATURE HAVE WORKED?

Relocating stored items	☐	Covering stored items	☐
Covering water tank	☐	Putting up net curtains at open windows	☐
Tolerate for a short period	☐	Use deflector boards	☐
Restrict access	☐	Other - please specify	

17) ARE BATS STILL PRESENT IN YOUR PROPERTY? Yes ☐ No ☐

18) HOW DID YOU FIND OUT THAT ENGLISH NATURE IS THE BODY RESPONSIBLE FOR BAT ADVICE?

Local Authority	☐	Architect	☐
Other government body	☐	Surveyor	☐
Pest Control contractor	☐	Builder	☐
Local bat group	☐	Timber treatment contractor	☐
Already aware of English Nature	☐	Other - please specify	

CSL/ENGLISH NATURE BAT SURVEY - ADVICE

19) WHEN WAS YOUR PROPERTY BUILT?

Pre 1900 ☐ 1900 - 1945 ☐ 1946 - 1970 ☐ Since 1970 ☐ Not known ☐

20) IS YOUR PROPERTY: URBAN ☐ SUBURBAN ☐ RURAL ☐

21) WHERE WERE THE BATS GAINING ACCESS?

Under eaves ☐ Between tiles ☐ Under flashing ☐ Not known ☐ Other areas - please specify ☐

22) WHERE WERE THE BATS ROOSTING?

Under eaves ☐ Under tiles ☐ In roof space ☐ In wall cladding ☐ Not known ☐ Other areas - please specify ☐

23) WHICH SPECIES OF BAT WERE PRESENT?

Pipistrelle ☐ Brown Long-eared ☐ Lesser Horseshoe ☐ Whiskered/Brandt's ☐

Serotine ☐ Natterers' ☐ Greater Horseshoe ☐ Not known ☐

Other species - please specify ☐

24) APPROXIMATELY HOW MANY BATS WERE PRESENT?

Less than 10 ☐ Between 11 - 100 ☐ Over 100 ☐ Not known ☐

25) WOULD YOU CONTACT ENGLISH NATURE FOR ADVICE AGAIN? Yes ☐ No ☐

26) IF YOU WOULD BE WILLING FOR US TO CONTACT YOU IN THE FUTURE PLEASE RECORD YOUR DETAILS BELOW

NAME ☐ TEL. NUMBER ☐

27) DO YOU HAVE ANY COMMENTS WHICH MAY ASSIST ENGLISH NATURE WITH FUTURE ENQUIRIES?

Niall Moore, Room 02F11, Central Science Laboratory, Sand Hutton, York, YO41 1LZ. 01904 462 062

Appendix 2. Building work questionnaire

CSL/ENGLISH NATURE BAT SURVEY - BUILDING WORK

CSL REF. ☐☐☐☐☐

1) WHY WAS ADVICE ON BATS ORIGINALLY SOUGHT? (Tick more than one if applicable)

General advice	☐	Remedial timber treatment	☐	Bats in living area	☐
Advice on exclusions	☐	Decoration/minor restoration	☐	Health problems	☐
Advice on bat management	☐	Other building work	☐	Pest control (excluding bats)	☐

Other - Please specify ☐

2) INITIALLY DID YOU WANT THE BATS REMOVED? Yes ☐ No ☐

3) DID YOU EVENTUALLY DECIDE TO KEEP THE BATS? Yes ☐ No ☐

4) IF YOU CHANGED YOUR MIND ABOUT KEEPING THE BATS - WHY WAS THIS?

Concerns allayed by visit ☐
Too much work involved ☐

Other - please specify ☐

5) WAS YOUR ENQUIRY DEALT WITH PROMPTLY?

Yes				No
1	2	3	4	5

6) WERE ENGLISH NATURE REPRESENTATIVES POLITE & HELPFUL?

Yes				No
1	2	3	4	5

7) HOW WAS ENGLISH NATURE ADVICE GIVEN?

Telephone only ☐ Visit only ☐ By letter without a visit ☐ By letter following a visit ☐

8) WAS THE ADVICE CLEAR AND PRACTICAL?

Yes				No
1	2	3	4	5

9) WAS THE ADVICE GIVEN BY ENGLISH NATURE AS EXPECTED? Yes ☐ No ☐

10) IF THE ANSWER TO THE QUESTION ABOVE IS NO WERE THE REASONS FOR THE DIFFERENCE MADE CLEAR? Yes ☐ No ☐

11) WERE YOU SATISFIED WITH THE ADVICE?

Very satisfied ☐ Unsatisfied ☐
Satisfied ☐ Very unsatisfied ☐

CSL/ENGLISH NATURE BAT SURVEY - BUILDING WORK

12) WHICH REMEDIAL MEASURES SUGGESTED BY ENGLISH NATURE HAVE WORKED?

Relocating stored items	☐	Covering stored items	☐
Covering water tank	☐	Putting up net curtains at open windows	☐
Tolerate for a short period	☐	Use deflector boards	☐
Restrict access	☐		

Other - please specify _____

13) ARE BATS STILL PRESENT IN YOUR PROPERTY? Yes ☐ No ☐

14) HOW DID YOU FIND OUT THAT ENGLISH NATURE IS THE BODY RESPONSIBLE FOR BAT ADVICE?

Local Authority	☐	Architect	☐
Other government body	☐	Surveyor	☐
Pest Control contractor	☐	Builder	☐
Local bat group	☐	Timber treatment contractor	☐
Already aware of English Nature	☐		

Other - please specify _____

15) WHAT WAS THE NATURE OF THE BUILDING WORKS?

Barn conversion	☐	Major structural renovation/alteration	☐
Minor decoration/repairs	☐	Roof repairs	☐
Replacements of soffits/fascias	☐	Loft conversion	☐
Extension	☐	Demolition	☐

Other - please specify _____

16) WHAT MITIGATION MEASURES WERE RECOMMENDED BY ENGLISH NATURE?

Wait until a less sensitive period	☐	Keep noise to a minimum	☐
Continue with caution	☐	Retain existing access points	☐
Use light/expose roost	☐	Divide working areas using sheeting	☐

Other - please specify _____

CSL/ENGLISH NATURE BAT SURVEY - BUILDING WORK

17) WAS THE PROPOSED BUILDING WORK CARRIED OUT? Yes ☐ No ☐

18) IF THE ANSWER IS NO - WHY NOT?

19) IF BUILDING WENT AHEAD WERE THE ENGLISH NATURE RECOMMENDATIONS ON METHOD AND TIMING FOLLOWED?

Method followed Yes ☐ No ☐

Timing followed Yes ☐ No ☐

20) IF TIMING AND/OR METHOD DIFFERED FROM ENGLISH NATURE RECOMMENDATIONS - EXACTLY HOW DID THEY DIFFER?

21) DID THE BATS RETURN AFTER THE WORK WAS CARRIED OUT? Yes ☐ No ☐

22) WERE NEW OPPORTUNITIES FOR BAT ACCESS POINTS AND ROOSTS INCORPORATED INTO THE BUILDING WORKS? Yes ☐ No ☐

23) IF THE ANSWER IS YES - PLEASE SPECIFY?

24) DID THESE NEW OPPORTUNITIES WORK? Yes ☐ No ☐

CSL/ENGLISH NATURE BAT SURVEY - BUILDING WORK

25) WHEN WAS YOUR PROPERTY BUILT?

Pre 1900 ☐ 1900 - 1945 ☐ 1946 - 1970 ☐ Since 1970 ☐ Not known ☐

26) IS YOUR PROPERTY: URBAN ☐ SUBURBAN ☐ RURAL ☐

27) WHERE WERE THE BATS GAINING ACCESS?

Under eaves ☐ Between tiles ☐ Under flashing ☐ Not known ☐ Other areas - please specify ☐

28) WHERE WERE THE BATS ROOSTING?

Under eaves ☐ Under tiles ☐ In roof space ☐ In wall cladding ☐ Not known ☐ Other areas - please specify ☐

29) WHICH SPECIES OF BAT WERE PRESENT?

Pipistrelle ☐ Brown Long-eared ☐ Lesser Horseshoe ☐ Whiskered/Brandt's ☐

Serotine ☐ Natterers' ☐ Greater Horseshoe ☐ Not known ☐

Other species - please specify ☐

30) APPROXIMATELY HOW MANY BATS WERE PRESENT?

Less than 10 ☐ Between 11 - 100 ☐ Over 100 ☐ Not known ☐

31) WOULD YOU CONTACT ENGLISH NATURE FOR ADVICE AGAIN? Yes ☐ No ☐

32) IF YOU WOULD BE WILLING FOR US TO CONTACT YOU IN THE FUTURE PLEASE RECORD YOUR DETAILS BELOW

NAME ☐ TEL. NUMBER ☐

33) DO YOU HAVE ANY COMMENTS WHICH MAY ASSIST ENGLISH NATURE WITH FUTURE ENQUIRIES?

☐

Niall Moore, Room 02F11, Central Science Laboratory, Sand Hutton, York, YO41 1LZ. 01904 462 062

Appendix 3. Exclusion questionnaire

CSL/ENGLISH NATURE BAT SURVEY - EXCLUSION

CSL REF. ☐☐☐☐☐

1) WHY WAS ADVICE ON BATS ORIGINALLY SOUGHT? (Tick more than one if applicable)

General advice	☐	Remedial timber treatment	☐	Bats in living area	☐
Advice on exclusions	☐	Decoration/minor restoration	☐	Health problems	☐
Advice on bat management	☐	Other building work	☐	Pest control (excluding bats)	☐

Other - Please specify ☐

2) INITIALLY DID YOU WANT THE BATS REMOVED? Yes ☐ No ☐

3) DID YOU EVENTUALLY DECIDE TO KEEP THE BATS? Yes ☐ No ☐

4) IF YOU CHANGED YOUR MIND ABOUT KEEPING THE BATS - WHY WAS THIS?

Concerns allayed by visit ☐
Too much work involved ☐
Other - please specify ☐

5) WAS YOUR ENQUIRY DEALT WITH PROMPTLY? Yes 1 2 3 4 5 No

6) WERE ENGLISH NATURE REPRESENTATIVES POLITE & HELPFUL? Yes 1 2 3 4 5 No

7) HOW WAS ENGLISH NATURE ADVICE GIVEN?

Telephone only ☐ Visit only ☐ By letter without a visit ☐ By letter following a visit ☐

8) WAS THE ADVICE CLEAR AND PRACTICAL? Yes 1 2 3 4 5 No

9) WAS THE ADVICE GIVEN BY ENGLISH NATURE AS EXPECTED? Yes ☐ No ☐

10) IF THE ANSWER TO THE QUESTION ABOVE IS NO WERE THE REASONS FOR THE DIFFERENCE MADE CLEAR? Yes ☐ No ☐

11) WERE YOU SATISFIED WITH THE ADVICE?

Very satisfied	☐	Unsatisfied	☐
Satisfied	☐	Very unsatisfied	☐

CSL/ENGLISH NATURE BAT SURVEY - EXCLUSION

12) WHICH REMEDIAL MEASURES SUGGESTED BY ENGLISH NATURE HAVE WORKED?

- Relocating stored items ☐
- Covering water tank ☐
- Tolerate for a short period ☐
- Restrict access ☐
- Covering stored items ☐
- Putting up net curtains at open windows ☐
- Use deflector boards ☐
- Other - please specify _____

13) ARE BATS STILL PRESENT IN YOUR PROPERTY? Yes ☐ No ☐

14) HOW DID YOU FIND OUT THAT ENGLISH NATURE IS THE BODY RESPONSIBLE FOR BAT ADVICE?

- Local Authority ☐
- Other government body ☐
- Pest Control contractor ☐
- Local bat group ☐
- Already aware of English Nature ☐
- Architect ☐
- Surveyor ☐
- Builder ☐
- Timber treatment contractor ☐
- Other - please specify _____

15) WHAT WERE YOUR REASONS FOR WANTING BATS TO BE EXCLUDED?

- Incidental to other works ☐
- Intolerance ☐
- Gaining access to living area ☐
- Fear ☐
- Smell ☐
- Noise ☐
- Droppings ☐
- Other - please specify _____

16) WHAT EXCLUSION MEASURES WERE RECOMMENDED BY ENGLISH NATURE?

- Wait until bats have left then block access ☐
- Use methods which allow bats out but not in ☐
- Other - please specify _____

17) WHAT METHOD WAS USED TO SEAL THE ACCESS?

- Replace bricks/tiles/flashing ☐
- Repoint with mortar ☐
- Expandable foam/mastic ☐
- Crumpled wire mesh ☐
- Galvanised wire mesh ☐
- Other - please specify _____

CSL/ENGLISH NATURE BAT SURVEY - EXCLUSION

18) WAS THE EXCLUSION CARRIED OUT? Yes ☐ No ☐

19) IF THE ANSWER IS NO - WHY WASN'T THE EXCLUSION CARRIED OUT?

20) IF EXCLUSION WENT AHEAD WERE THE ENGLISH NATURE RECOMMENDATIONS ON METHOD AND TIMING FOLLOWED?

Method followed Yes ☐ No ☐

Timing followed Yes ☐ No ☐

21) IF TIMING AND/OR METHOD DIFFERED FROM ENGLISH NATURE RECOMMENDATIONS - EXACTLY HOW DID THEY DIFFER?

22) IF EXCLUSION TOOK PLACE WHEN DID THIS COMMENCE? Month ☐ Year ☐

23) WERE THE MEASURES USED SUCCESSFUL IN EXCLUDING BATS? Dont know ☐ Yes ☐ No ☐

24) WHO CARRIED OUT THE EXCLUSION?

Builder (with bat experience) ☐

Builder (without bat experience) ☐

Pest control contractor ☐

Volunteer bat worker ☐

Owner/occupier ☐

Other - please specify

25) DID THE BATS RETURN THE FOLLOWING YEAR? Dont know ☐ Yes ☐ No ☐

26) WERE ANY DEAD BATS NOTICED AFTER THE EXCLUSION? Yes ☐ No ☐

27) DID THE BATS RETURN TO AN EQUALLY UNACCEPTABLE PLACE? Yes ☐ No ☐

CSL/ENGLISH NATURE BAT SURVEY - EXCLUSION

28) WHEN WAS YOUR PROPERTY BUILT?

Pre 1900 ☐ 1900 - 1945 ☐ 1946 - 1970 ☐ Since 1970 ☐ Not known ☐

29) IS YOUR PROPERTY: URBAN ☐ SUBURBAN ☐ RURAL ☐

30) WHERE WERE THE BATS GAINING ACCESS?

Under eaves ☐ Between tiles ☐ Under flashing ☐ Not known ☐ Other areas - please specify ☐

31) WHERE WERE THE BATS ROOSTING?

Under eaves ☐ Under tiles ☐ In roof space ☐ In wall cladding ☐ Not known ☐ Other areas - please specify ☐

32) WHICH SPECIES OF BAT WERE PRESENT?

Pipistrelle ☐ Brown Long-eared ☐ Lesser Horseshoe ☐ Whiskered/Brandt's ☐

Serotine ☐ Natterers' ☐ Greater Horseshoe ☐ Not known ☐

Other species - please specify ☐

33) APPROXIMATELY HOW MANY BATS WERE PRESENT?

Less than 10 ☐ Between 11 - 100 ☐ Over 100 ☐ Not known ☐

34) WOULD YOU CONTACT ENGLISH NATURE FOR ADVICE AGAIN? Yes ☐ No ☐

35) IF YOU WOULD BE WILLING FOR US TO CONTACT YOU IN THE FUTURE PLEASE RECORD YOUR DETAILS BELOW

NAME ☐ TEL. NUMBER ☐

36) DO YOU HAVE ANY COMMENTS WHICH MAY ASSIST ENGLISH NATURE WITH FUTURE ENQUIRIES?

Niall Moore, Room 02F11, Central Science Laboratory, Sand Hutton, York, YO41 1LZ. 01904 462 062

Appendix 4. Timber treatment questionnaire

CSL/ENGLISH NATURE BAT SURVEY - TIMBER TREATMENT

CSL REF. ☐☐☐☐☐

1) WHY WAS ADVICE ON BATS ORIGINALLY SOUGHT? (Tick more than one if applicable)

General advice	☐	Remedial timber treatment	☐	Bats in living area	☐
Advice on exclusions	☐	Decoration/minor restoration	☐	Health problems	☐
Advice on bat management	☐	Other building work	☐	Pest control (excluding bats)	☐

Other - Please specify ☐

2) INITIALLY DID YOU WANT THE BATS REMOVED? Yes ☐ No ☐

3) DID YOU EVENTUALLY DECIDE TO KEEP THE BATS? Yes ☐ No ☐

4) IF YOU CHANGED YOUR MIND ABOUT KEEPING THE BATS - WHY WAS THIS?

Concerns allayed by visit ☐
Too much work involved ☐
Other - please specify ☐

5) WAS YOUR ENQUIRY DEALT WITH PROMPTLY? Yes 1 2 3 4 5 No

6) WERE ENGLISH NATURE REPRESENTATIVES POLITE & HELPFUL? Yes 1 2 3 4 5 No

7) HOW WAS ENGLISH NATURE ADVICE GIVEN?

Telephone only ☐ Visit only ☐ By letter without a visit ☐ By letter following a visit ☐

8) WAS THE ADVICE CLEAR AND PRACTICAL? Yes 1 2 3 4 5 No

9) WAS THE ADVICE GIVEN BY ENGLISH NATURE AS EXPECTED? Yes ☐ No ☐

10) IF THE ANSWER TO THE QUESTION ABOVE IS NO WERE THE REASONS FOR THE DIFFERENCE MADE CLEAR? Yes ☐ No ☐

11) WERE YOU SATISFIED WITH THE ADVICE?

Very satisfied ☐ Unsatisfied ☐
Satisfied ☐ Very unsatisfied ☐

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12) IF BAT MANAGEMENT MEASURES WERE SUGGESTED, WHICH ONES WORKED?

- Relocating stored items ☐
- Covering water tank ☐
- Tolerate for a short period ☐
- Restrict access ☐
- Covering stored items ☐
- Putting up net curtains at open windows ☐
- Use deflector boards ☐
- Other - please specify _____

13) ARE BATS STILL PRESENT IN YOUR PROPERTY? Yes ☐ No ☐

14) HOW DID YOU FIND OUT THAT ENGLISH NATURE IS THE BODY RESPONSIBLE FOR BAT ADVICE?

- Local Authority ☐
- Other government body ☐
- Pest Control contractor ☐
- Local bat group ☐
- Already aware of English Nature ☐
- Architect ☐
- Surveyor ☐
- Builder ☐
- Timber treatment contractor ☐
- Other - please specify _____

15) IF BATS WERE FOUND BEFORE TIMBER TREATMENT STARTED WHAT ADVICE DID YOU OBTAIN FROM ENGLISH NATURE?

- Postpone treatment to a less sensitive time ☐
- Commence work with caution ☐
- Treat with a "bat friendly" chemical ☐
- Divide space with plastic sheeting and treat sections of the roof separately ☐
- Other - please specify _____

16) IF BATS WERE FOUND DURING TIMBER TREATMENT WHAT ADVICE DID YOU OBTAIN FROM ENGLISH NATURE?

- Continue with caution - reconsult if more found ☐
- Halt treatment until bats have left ☐
- Continue brushing down to see if bats disperse ☐
- Continue - only with a "bat friendly" chemical ☐
- Divide space with plastic sheeting and treat sections of the roof separately ☐
- Other - please specify _____

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17) WAS THE TIMBER TREATMENT CARRIED OUT? Yes ☐ No ☐

18) IF THE ANSWER IS NO - WHY WASN'T THE TIMBER TREATMENT CARRIED OUT?

19) IF TIMBER TREATMENT WENT AHEAD WHAT CHEMICAL WAS USED?

Unknown ☐ If known - please specify

20) WAS THE TREATMENT APPLIED AT THE RECOMMENDED TIME? Yes ☐ No ☐

21) IF TIMING AND/OR METHOD DIFFERED FROM ENGLISH NATURE RECOMMENDATIONS - EXACTLY HOW DID THEY DIFFER?

22) IF TREATMENT TOOK PLACE WHEN DID THIS COMMENCE? Month Year

23) WHAT AREAS OF THE BUILDING WERE TREATED?

Roof space ☐ Barn/outhouse ☐ Garage ☐ Dwelling area ☐

24) WAS ANY OTHER WORK BEING CONDUCTED AT THE SAME TIME? Yes ☐ No ☐

If so - please specify

25) WHO CARRIED OUT THE TIMBER TREATMENT?

Name & address of contractor (if applicable)

Home owner ☐

Specialist contractor ☐

26) WERE ANY DEAD BATS NOTICED AFTER THE TREATMENT? Yes ☐ No ☐

27) DID THE BATS RETURN THE FOLLOWING YEAR? Dont know ☐ Yes ☐ No ☐

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28) WHEN WAS YOUR PROPERTY BUILT?

Pre 1900 ☐ 1900 - 1945 ☐ 1946 - 1970 ☐ Since 1970 ☐ Not known ☐

29) IS YOUR PROPERTY: URBAN ☐ SUBURBAN ☐ RURAL ☐

21) WHERE WERE THE BATS GAINING ACCESS?

Under eaves ☐ Between tiles ☐ Under flashing ☐ Not known ☐ Other areas - please specify ☐

31) WHERE WERE THE BATS ROOSTING?

Under eaves ☐ Under tiles ☐ In roof space ☐ In wall cladding ☐ Not known ☐ Other areas - please specify ☐

32) WHICH SPECIES OF BAT WERE PRESENT?

Pipistrelle ☐ Brown Long-eared ☐ Lesser Horseshoe ☐ Whiskered/Brandt's ☐

Serotine ☐ Natterers' ☐ Greater Horseshoe ☐ Not known ☐

Other species - please specify ☐

33) APPROXIMATELY HOW MANY BATS WERE PRESENT?

Less than 10 ☐ Between 11 - 100 ☐ Over 100 ☐ Not known ☐

34) WOULD YOU CONTACT ENGLISH NATURE FOR ADVICE AGAIN? Yes ☐ No ☐

35) IF YOU WOULD BE WILLING FOR US TO CONTACT YOU IN THE FUTURE PLEASE RECORD YOUR DETAILS BELOW

NAME ☐ TEL. NUMBER ☐

36) DO YOU HAVE ANY COMMENTS WHICH MAY ASSIST ENGLISH NATURE WITH FUTURE ENQUIRIES?

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Appendix 5. Building and mitigation works – case studies

The project also attempted to investigate the success or failure of unusual or major mitigation measures proposed by English Nature during building work. For a variety of reasons it proved extremely difficult to identify sites that could be visited to assess the impact of these types of mitigation measures. One site known to one of the authors of this report (AMH) and two others resulting from questionnaire responses are described here. The two cases identified from questionnaire returns (Cases 2 and 3) both involved loft conversion while the more long-term site involved major renovation to the building (Case 1).

Case 1. Hollingbury Old Golf House, near Brighton, Sussex

This Council-owned property with a well-established maternity colony of *c* 30 serotine bats was considered for demolition, but, partly in view of the bat interest, the owners decided on extensive renovation in consultation with a bat adviser (A.M. Hutson). Prior to renovation the colony had been subject to particular study during PhD research by Colin Catto (Aberdeen University). Post-renovation it was used for studies during PhD research by Jessa Battersby (Sussex University).

The building is divided into four apartments for housing managed by a local authority-appointed housing trust. The roof void is a simple rectangle with gable ends and there were two chimneys passing through the roof space.

It was agreed that renovation should attempt to maintain the bat colony and the building was subjected to complete renovation in about 1991. Apart from modification to the building itself, there was some housing development of adjacent land, but not land known to be important foraging ground for the bats.

Meetings were held with the builders on site from time to time during renovation, which was carried out between autumn and spring when the bats were expected to be absent. Renovation

resulted in the reduction of the building to its outer walls and roof timbers. The walls were solid flint walls, surfaced on the outside with plaster and the same with the inside walls in the living area (but with exposed flints to the inside of the gable ends of the roof void).

The bat colony has continued to use the building as a maternity colony roost site and in similar numbers.

Modifications included the following:

Roof covering. The roof has previously been of unlined slates. It was re-roofed with slates, but lined with underfelt. Access to the roof void via overlapped gaps in the felt was provided near the gable apices, around the chimney and in other 'strategic' places. At least the gaps around the gable apices and chimney are well-used.

Chimney removal. One of two chimneys was removed. Where the chimney had been removed a slightly deeper boxed area was provided inside the roof space on the theory that this might retain heat and be attractive to the bats, but it has never been used.

Barge/eaves boards and soffit. The original designs were retained. The original access points between the inner edge of soffit and wall at the gable apex and by a purlin on the south end were retained. As a safeguard, extra access was requested by incorporating gaps 'in the soffit' at each of the four corners of the building and at the gable of the north end. These gaps were actually created away from the edge of the soffit (about a third of the way across the width of the soffit). Further, the old wooden soffits were replaced by plastic (pvc) soffits. These freshly offered access points have never been used (not surprisingly), but obviously there was not enough precise guidance offered here to the builders about what was required here and the use of pvc had not and should have been discussed.

Roof void. Apart from the removal of a chimney and introduction of a flexible boiler vent pipe, the roof space remained more or less the same (see above under 'chimney removal'). In addition all services, water tanks, other plumbing and wiring were removed to the upper floor of the living area of the building. An electrical socket and television aerial are the only items in the roof space. The loft hatch is locked and access to the roof space is only permitted to those authorised to study the bats there.

The bats. The bats continue to roost inside the roof void by the remaining chimney, adjacent to the south-facing gable end, or on top of the gable wall. They now additionally roost or move between the roofing felt and slates.

Summary. Following major renovation, a maternity colony of serotine bats continues to use Hollingbury Old Golf House, near Brighton, Sussex. As far as possible the original roof structure and access points were retained as pre-renovation. Concerns that lining the roof with roofing felt would discourage the bats through altering the climate inside the roof space were unfounded. Indeed, the roofing felt has provided additional roosting sites and easy routes across the roof. Care in the placing of roofing felt to allow bat access (while retaining its primary weather-proofing function) paid off. A lack of clarity about the positioning of extra (safeguard) access points and lack of discussion about materials used for soffits could have been disastrous. In general, the bats have continued to use the same roost sites and access points that they used before renovation and most other features introduced as safeguards or as extra roost/access opportunities have been ignored. The builders and owners were very

helpful and accommodating throughout. The removal of any need for access to the roof void (other than to study the bats) is welcome, but may not be of major significance.

Case 2. CSL reference 15015, Surrey

The property is a large country house built in *c* 1890 and currently divided into three residences. Extensive roof space at the east wing, the largest and highest part of the building, had been surveyed in November 1993, when evidence of serotine and brown long-eared bats ('two seen') was found in the roof space and pipistrelle bats on the exterior. The site was resurveyed (by the same bat wardens) in March 1999 when long-eared bats were still present, but there was less evidence of serotine bats. The site was again visited in November 1999, just prior to commencement of building works, when no bats or fresh evidence was identified.

The evidence of long-eared bats had been found throughout the loft space and of serotine bats around the chimney. The questionnaire response stated 'relocated bat entrance under gable'. The conversion involved the creation of rooms inside the loft space, retaining loft space at the sides (lateral) and above the living space, except in a room created at the east end where the ceiling extended to the roof ridge.

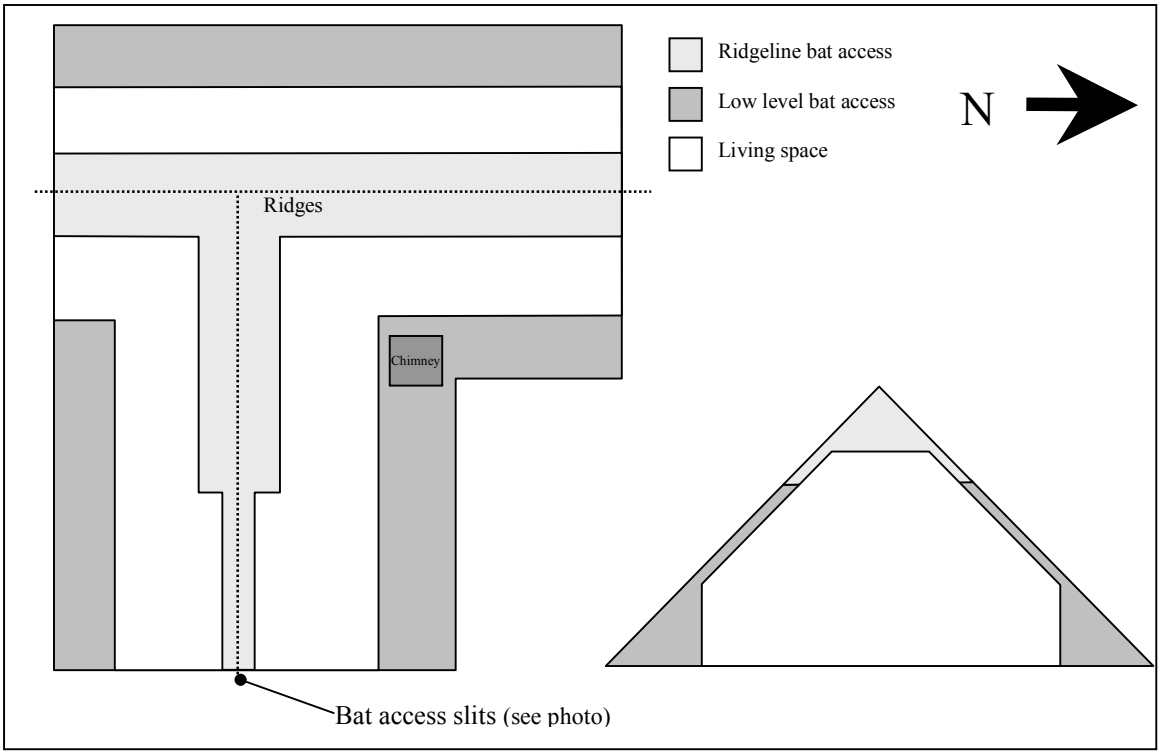
The site was visited by AMH on 19 October 2002. Four roof spaces have been retained.

A lateral roof space to the west runs from front to back of the building, but is most open at the south end, where it reaches a height of about 3.5 metres and is bounded on the west side by a wall dividing the roof space of the east wing from the roof space of the middle residence (of which the roof space is also partially converted into living accommodation). Evidence (droppings, etc) of occupation by brown long-eared bats was found in this roof space and there was evidence to suggest that the bats may also move over the top of the party wall into the neighbouring roof space, which was not inspected.

The lateral roof space to the north-east, which includes one side of the chimney and is where the serotine droppings had previously been located, was clear of any droppings, although there was some evidence of urine spotting on the black plastic covering of the water tanks.

The lateral wall space to the south-east is inaccessible.

The upper roof space runs under the roof ridge for the full width from north to south of the building and eastwards from the centre for about half the distance to the east end wall. This roof space is very shallow, being only about 1 metre high. Access for bats to this roof space was created by punching out horizontal slits through the lath and plaster just below the gable apex and above the window at the north end. There were a few bat droppings at both ends, but it is unlikely that the long-eared bats use this very small diameter loft space regularly. The slits were partially blocked by old wasps nests and spider webbing and there was no suggestion that the slits were used by bats.



It is not clear whether the bats have access between the loft spaces, but if the slits are not used then it is likely that the bats can move between loft spaces.

Summary. The brown long-eared bats seem to have accommodated the conversion, whereas the serotine bats have not. The pipistrelle bats would not have been affected. The slits created as access have probably not been used and the roof space left under the ridge is probably too small to be of significant benefit to bats. The bat wardens had visited about four times and the owners were impressed with their positive attitude in discussions on the conversion.

Case 3. CSL reference 15017, Surrey

An isolated country farmhouse dating back to the 15th Century, with a more or less simple rectangular roof space with central chimney. The roof is part stone and unlined (south-east side), part tile and mostly unlined.

The site was visited by AMH in February 1983, just prior to timber treatment with Trimethrin when no bats were seen. When revisited in June 1983 (again by AMH), 16 brown long-eared bats were seen. The site was visited in July 1996 (by other bat wardens, and by which time the property had changed ownership) following consultation about roof repairs and future plans to convert part of the roof space to living area. Approval and advice was offered by English Nature. At the time of this visit 22 brown long-eared bats were seen, including some juveniles. The site was visited again (by the same bat wardens) in May 1999 following further consultation to convert part of the roof space to living area and again approval and advice was offered by English Nature.

The questionnaire response stated 'some liming between roofing stones removed'.

When visited by AMH on 19 October 2002, some wall preparation and ceiling boards had been installed in part of the area for conversion. The owner is doing the work himself, in the winter when the bats are absent, and expects the project to take another six years!

The newly created ceilings are quite low (*c* 2.5 m) leaving a reasonable space above (>2 m) for the bats. Although currently the bats still have access to the entire roof space, they are using the space above the recently installed ceilings as a principal roost site. Access between the newly restricted roof spaces and undeveloped areas will be maintained. In installing boarding between rafters (as appropriate), adequate gaps for the bats to move between boarding and roof-cladding will be available. Special gaps in the stone roof-cladding to allow bat access have been retained or created; these are large enough to allow birds to build nests

and may block bat access, but there is plenty of other access for bats. The main roosting areas are above the rooms being created (and which the bats seem to find acceptable) and around the chimney (only part of which will ultimately be available). The main area of roof space that will not be affected is not an area currently favoured by the bats, but may be suitable in some ways. It is likely that the bats will continue to use the property and it will be interesting to follow developments.

Summary. A slow programme of a partial conversion of the loft space to living area is likely to be acceptable to the bats that have used the site for many years. The owner is very anxious to keep the bats (although very unhappy about coming in direct contact with one). He is also happy with the advice so far provided and for any further advice or visits for other purposes.

Appendix 6. **The roost visit datasheet**

English Nature Advice: Presence of bats following Remedial Timber Treatment

1.	CSL Reference	2.	Name of householder
3.	Address of householder	4.	Grid Reference
5.	Phone number of householder	6.	Date of visit
7.	Visited by	8.	Building type

9. Was there anything on the form the householder was not sure about?

10. Clarification of any points of doubt about responses on questionnaire (particularly Questions 15-33)

11. Did bats return after treatment? Y/N

12. Are bats still present? Y/N

13. Does this agree with householders response? Y/N

14. If no bats are present, is there any apparent reason, e.g.
has any other work on building been carried out since that might have affected bats?
any changes to environment around building?
Other?

15. If bats are present
species
number at time of visit
does this agree with data pre-treatment

16. Are any dead bats present?
if so, how many?
how old?
what species?

17. Confirmation that the householder thought:
English Nature/bat group representative advice was clear, etc.
And householder was satisfied.

Comments:

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Front cover photographs:
Top left: Using a home-made moth trap.
Peter Wakely / English Nature 17,396
Middle left: English Nature bat warden with a whiskered bat near Holme, Devon.
Paul Glendell / English Nature 24,795
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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