Introduction

The last distribution maps of bats in Britain were included in the “Atlas of mammals in Britain” published by HMSO in 1993 (Arnold). It did not include any records for Ireland. Since then there has been an upsurge in recording by local bat groups aided by new user-friendly computer programs, and a number of groups have published distribution maps for their areas. At the end of a millennium it was decided to amalgamate existing data for Britain (including the Channel Islands) and Ireland to show the present state of bat distribution so that comparisons can be made in the future. In addition, the National Bat Monitoring Programme of BCT is just completing its first 5-year cycle so this new atlas provides an opportunity to incorporate some of the results.

The records

It was decided to divide records into three categories:

- Bats at summer roosting sites
- Records of bats away from roost sites (this to include bat detector records, grounded bats, bats trapped indoors, dead bats, bats at, or heading to, feeding areas)
- Bats in hibernation

It is known that these are broad categories and that there are no clear-cut definitions that take into account all cases. Summer roosts may be nursery sites, all-male gatherings, spring gathering sites, single male sites, autumn dispersal roosts or a single bat in a bat-box in summer. Bats trapped indoors and grounded bats are often from a nearby roost yet are recorded here as being away from a roost site unless the roost was discovered. In autumn, bats may go to winter hibernation sites, but not begin to hibernate so such sites could be classed as summer roosts. Hibernation records were meant to give an impression of where bats are likely to be found in those cold months when activity is relatively low. Long-eared bats, however, are well-known for lingering in summer roost sites well into December, and becoming torpid. Nevertheless, overall, most records fitted well into the three categories. A few county recorders were unable to separate their records into the three categories (mainly Norfolk and Suffolk) and these have been recorded as hollow circles (records away from roosts) although some are known to be summer roosts and hibernation records.

Recording was based on 10 km squares and did not take density into account.

Records from 1980 to 1999 were gathered. This was believed to be a long enough time to provide a significant number of records of the more scarce species, and also to have an up-to-date set of data.

Numbers of records:

Over 16,860 records were collected and, once duplicate records had been removed, 13,051 records of 10km squares remained.

The recorders

The major contributors were the bat groups around Britain and Ireland. Most of these have recorders who provided the records, but in some cases the records came via local museum services, wildlife trusts or the statutory nature conservation organisations. In addition, major contributions were received from the National Bat Monitoring Project of BCT, the Vincent Wildlife Trust, the Forestry Commission, the National Trust and the National Parks and Wildlife Service of Ireland. Details of occasional migrants were extracted from Bat News, the BCT newsletter. A list of contributors is printed at the back on page 43.
The maps

- Full circles represent roosts in summer, or hibernating bats.
- Hollow circles represent bats away from roosts.

To ensure confidentiality a cluster of smaller circles is used to indicate the general area of sensitive roosts.

Usually hibernation areas are in the same areas as summer roosts, but to assess overall distribution it is best to view both the summer and the hibernation maps side by side.

As with any distribution mapping the maps need to be interpreted with caution.

- One spot in a 10 km square of the National Grid can refer to a single bat seen once or 50 roosts each of 1000 bats.
- There is a natural tendency to have clusters of records around recorders’ home areas because that is where most fieldwork is carried out.
- There is an unevenness of recording effort between areas –
  - some counties have a large number of active fieldworkers whereas others have few
  - changes in county boundaries have resulted in some areas lacking any recording by bat groups
  - some counties have carried out special surveys on certain species resulting in a large number of records of those species.
- There is a bias towards recording roosts that are relatively easy to find – residential buildings – whereas tree roosts are less often encountered and so tree-roosting bats are likely to be under-recorded. Bat box schemes are redressing the balance to some degree, but roost records tend to concentrate around human habitation.
- Some bat species are relatively easy to detect (such as pipistrelles and noctules) whereas others need special techniques of detection (such as barbastelles and Bechstein’s bats).
- Some roosts were known to have been abandoned during the two decade period covered by this Atlas and the bats were known to have moved to new locations so were represented by second spots on the map. Others were not re-discovered and it is not known if they died out or moved. This gives rise to the possibility of some over-recording.

Nevertheless the maps give a guide to the ranges of different species of bats across Britain and Ireland. It is hoped that this will be used to monitor future changes in distribution. The full size maps are of the same size as overlays produced for publications such as the first Atlas of Breeding Birds in Britain and Ireland. These give useful information such as isotherms, altitude and some major habitat features.

Bat distribution in Britain and Ireland should also be viewed in terms of the ranges of the species across Europe and beyond. We are on the edge of the ranges of many species. Full accounts can be found in “The Atlas of European Mammals”.
The future
In the immediate future it is hoped that these maps will stimulate more recording to fill in the gaps so that future maps will be more complete. In addition, a number of hollow circles will become filled as roosts are discovered. It is envisaged that new sets of maps will be produced in the near future so that comparisons can be made. It is also hoped that by then we will have more information on numbers so that density can be plotted as well as distribution.

This project highlighted a number of problems with recording across the country – everything from recorders going missing with all the records (in one case 20 years of hard-won records were completely lost) to new databases that could not be questioned by the Group to extract the records. It is hoped that the necessity of an easy-to-use data retrieval system operated regularly in each area has been made apparent, and Groups will be able to improve the way they hold records. Help and suggestions on all aspects of recording can be obtained from BCT.

Errors
Please check for errors inadvertently made and notify the author. I would also like to hear of any suggested improvements in displaying distribution data. Records unknown to a Group recorder may have come from another source: please contact the author for details.

Thanks
Lists of the correspondents from the Bat Groups, individuals and organisations that submitted records are published on Page 43. Their help has been invaluable in compiling this atlas. The whole project would not have been possible without the records of the hundreds of bat workers around the country. Please continue to record and submit your records through your county recorders. This atlas builds on the NBMP funded by the DETR. Thanks also to the proof readers – Conor Kelleher, Shirley Thompson and Frank Greenaway. The DMap computer program made the collation and printing of the records easy. My thanks to Alan Morton for his help and advice.

Phil Richardson
Bat Conservation Trust
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8 Battersea Park Road
London SW8 4BG

December 2000
Greater horseshoe bat (*Rhinolophus ferrumequinum*)

A species relatively easy to record as it does not hide in crevices. Also the subject of many studies over many years so traditional roost sites and hibernacula are relatively well-recorded.

Restricted to south Wales and south-west England.

Hibernates at relatively high temperatures in winter and is found in the same areas as the summer roosts, in the warmer south-west of Britain. A few wandering animals have been recorded in winter out of area. One of these (found in Leicestershire) had been ringed, and had come north-east from the main area of concentration.

The “roost” records may not be breeding sites and could include sites where a single bat was found once in summer.

- 10 km squares with records of roosts: 71
- 10 km squares with records, but no roost recorded: 62
- 10 km squares with hibernation records: 125
**Lesser horseshoe bat (Rhinolophus hipposideros)**

Restricted to Wales, south-west England and west Ireland, with regular records as far east as Oxfordshire and Warwickshire.

Special efforts have been made to locate and monitor roosts and hibernacula.

The “roost” records may not be breeding sites and could include sites where a single bat was found once in summer.

10 km squares with records of roosts 300
10 km squares with records, but no roost recorded 78
10 km squares with hibernation records 254
**Whiskered bat (Myotis mystacinus)**

Identification of this species is sometimes very difficult due to the presence of the very similar Brandt’s bat, so also see whiskered/Brandt’s bat distribution.

Although it is found across Britain as far north as southern Scotland its distribution is patchy and it seems to be rarely encountered in some well-surveyed areas, such as Norfolk, Suffolk and Essex. Even within areas where it has been recorded it is not present throughout. Being associated with woodlands could mean that it is under-recorded as roosts in trees are hard to find.

Distribution may be linked to areas of woodland such as sessile oakwoods.

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<td>311</td>
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<td>10 km squares with hibernation records</td>
<td>86</td>
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</table>
Brandt’s bat (*Myotis brandtii*)

A similar distribution to whiskered bat, but rarer. Not recorded in Ireland (yet).

- 10 km squares with records of roosts: 81
- 10 km squares with records, but no roost recorded: 75
- 10 km squares with hibernation records: 32
**Whiskered/Brandt’s bats**

Problems with identification result in these maps. It is hoped as new characteristics for separating whiskered bats from Brandt’s bat are discovered the true distribution of these species can be found.

- 10 km squares with records of roosts: 163
- 10 km squares with records, but no roost recorded: 279
- 10 km squares with hibernation records: 71
Natterer’s bat (*Myotis nattereri*)

Although not an easy species to locate, the two decades of the mapping period have produced a wealth of records. It is widely distributed across the UK. Some clusters of records are the result of special surveys (e.g. Hertfordshire barns survey, Natterer’s bat roost survey for BCT in part of Wales) and these show that extra effort can produce records in each 10 km square studied.

10 km squares with records of roosts 420
10 km squares with records, but no roost recorded 380
10 km squares with hibernation records 281
Natterer's bat

1980-1989

Roost
Occasional record
Bechstein’s bat (*Myotis bechsteinii*)

Restricted to southern England. A difficult species to detect, but special studies on this species are producing new techniques, and new information is being obtained which will help future recording. The “roost” records may not be breeding sites and could include sites where a single bat was found once in summer.

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<td>31</td>
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<tr>
<td>10 km squares with hibernation records</td>
<td>7</td>
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Mouse-eared bat (*Myotis myotis*)

The small number turning up to hibernate each winter in Sussex finally dwindled to a single bat and that failed to return after 1990. Elsewhere only one other has been recorded - in Kent in 1985 (no map).

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<tr>
<td>10 km squares with hibernation records</td>
<td>2</td>
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</tbody>
</table>
Bechstein's bat
Daubenton’s bat (*Myotis daubentonii*)

Widely distributed across Britain and Ireland. Most records are of bats at feeding areas by electronic detector. This must be the easiest bat to identify in flight. Relatively few roosts are known, probably an indication that many are in tree holes – always difficult sites to locate.

- 10 km squares with records of roosts: 361
- 10 km squares with records, but no roost recorded: 875
- 10 km squares with hibernation records: 240

Daubenton's bat hibernation
Parti-coloured bat (*Vespertilio murinus*)

Four records of single animals in England (Cambridge, Sussex and two in Essex), all found grounded. In addition, two records from the Shetlands and recorded on North Sea oil rigs. A vagrant from Europe. No Map.

10 km squares with records of roosts 0
10 km squares with records, but no roost recorded 5
10 km squares with hibernation records 0

Silver-haired bat (*Lasionycteris noctivagans*)

Two records during this period, both brought into the country by humans: one from the cockpit of a US airforce plane at Mildenhall, Suffolk and another in 1996 amongst imported wood. No map.

Serotine (*Eptesicus serotinus*)

The range is restricted to the south and south-east of England. There has been a worrying trend of summer roosts declining and being abandoned in the east. Future mapping should prove interesting to see if this produces a change in distribution. There is a scattering of occasional records in parts of the Channel Islands, Wales, S Lancashire and the Midlands. Hibernation records are few as this species is rarely found underground. A record from the Shetlands would be of a migratory animal.

10 km squares with records of roosts 180
10 km squares with records, but no roost recorded 194
10 km squares with hibernation records 23
Noctule (*Nyctalus noctula*)

Restricted to England, Wales and south-west Scotland. Being principally a tree-roosting bat relatively few roosts have been discovered. It is a big and obvious bat in flight, easily detected on a bat detector so producing a wealth of occasional records away from roosts. This species does not use underground sites so is rarely encountered in winter months. Records of single bats from N Ronaldsey and Sanday (Orkneys) and from the North Sea oil rigs would be of migrating animals, as may be a few records from some other parts of Scotland.

10 km squares with records of roosts 225  
10 km squares with records, but no roost recorded 560  
10 km squares with hibernation records 22
**Leisler’s bat (Nyctalus leisleri)**

The third most commonly found bat in Ireland, but much scarcer elsewhere. Other than Ireland, records are mainly restricted to the central and south-eastern parts of England with major concentrations east of London and in the Derbyshire/South Yorkshire area. Records from Dumfries & Galloway and the Isle of Man reflect their geographical closeness to Ireland. The similarity of this species to noctule has probably resulted in it being overlooked in some areas.

| 10 km squares with records of roosts | 166 |
| 10 km squares with records, but no roost recorded | 133 |
| 10 km squares with hibernation records | 8 |

![Leisler's bat hibernation map](image_url)

**Northern bat (Eptesicus nilsonii)**

A winter record of a single animal from Surrey (TQ 25) and a record from an oil rig in the North Sea of this species from north, central and eastern Europe. No map.

**Big brown bat (Eptesicus fuscus)**

A single record of this North American species involved one amongst imported timber at Bishops Stortford in 1996. No map.
Pipistrelle sp. (*Pipistrellus sp.*)

This refers to the two recently separated species of pipistrelles (*P. pipistrellus* and *P. pygmaeus*) that had not been split into two species throughout most of the period recorded here.

Widespread throughout Britain and Ireland except for the Shetlands and Western Isles of Scotland. In one area where detailed recording has been operating since 1980 (Northants) pipistrelles have been found, on average, in 23% of the 100 1km squares in each 10km square, this number rising to 49% in suburban areas close to the recorder. Hibernation sites are rarely discovered as this species is only occasionally found underground where most such survey work is carried out. Several individuals have been found on the Shetlands and North Sea oil rigs, probably all migrating animals.

10 km squares with records of roosts 2037
10 km squares with records, but no roost recorded 487
10 km squares with hibernation records 125

"pipistrelle" hibernation

![Map showing distribution of pipistrelle hibernation sites](image-url)
Bat Groups are just beginning to separately record the two recently-split species of pipistrelles, and the maps show little difference as yet between their ranges with both species widely distributed across Britain and Ireland as far north as the Orkneys.

- 10 km squares with records of roosts: 381
- 10 km squares with records, but no roost recorded: 294
- 10 km squares with hibernation records: 13

**45kHz pipistrelle hibernation**
55kHz pipistrelle (*Pipistrellus pygmaeus*)

See 45kHz pipistrelle. Widely distributed across Britain and Ireland although there has been the suggestion that 55kHz pipistrelle roosts are more common in Scotland and parts of Ireland.

10 km squares with records of roosts 406
10 km squares with records, but no roost recorded 228
10 km squares with hibernation records 12
55kHz pipistrelle

Roost
Occasional record
1980-1999
Nathusius’ pipistrelle (*Pipistrellus nathusii*)

An increasing number of records, many of single, grounded bats probably migrating from mainland Europe. Many of these are at coastal sites. Some records also received from the oil rigs in the North Sea. Breeding roosts have now been discovered. As Bat Groups become more proficient at identifying this species and separating it from the other, superficially similar, pipistrelles more records will result.

| 10 km squares with records of roosts | 4 |
| 10 km squares with records, but no roost recorded | 39 |
| 10 km squares with hibernation records | 2 |

Hibernation (no map). NS99 (S.Scotland) and WV37 (Channel Islands).

Kuhl’s pipistrelle (*Pipistrellus kuhli*)

Two records from the docks at Felixstowe and Southampton and another in a container were likely to be bats accidentally imported. In addition, holiday-makers returning from abroad to Waterlooville, Hants brought in another by accident. Three coastal records of single, grounded bats at St Helier (Jersey), St Leonards (E. Sussex) and St Blazey (Cornwall) may have been migrating animals. Range is southern Europe from Spain, through France to East Caucasus. No map.

Savi’s pipistrelle (*Pipistrellus savii*)

This southern European pipistrelle has been recorded from the Sussex coast at Pevensey Bay, Wallesa (near Liverpool Docks), East London in frozen beans and from Wick. It is believed that ship-assisted passages may have been involved in at least two of these records. No map.
Nathusius' pipistrelle

Roost (●: approximate area) O Occasional record
1980–1999
Barbastelle (*Barbastella barbastellus*)

This hard-to-find species is limited to southern England and Wales, south of a line between the Wash and Anglesea. Special studies, some with radio transmitters, have resulted in the finding of breeding and other summer roosts. These studies are giving us a better understanding of the habitats the species requires and the techniques needed to detect it. The “roost” records may not be breeding sites and could include sites where a single bat was found once in summer.

- 10 km squares with records of roosts: 18
- 10 km squares with records, but no roost recorded: 68
- 10 km squares with hibernation records: 15
Barbastelle

- Roost (•: approximate area)
- O Occasional record

1980–1999
Brown long-eared bat (*Plecotus auritus*)

Widespread throughout Britain and Ireland except for the Scottish islands. In winter it is regularly found in underground sites in mainland Britain but rarely discovered in Ireland. In Northants, an area where detailed recording has taken place since 1980, this species has been recorded on average in 14% of the 100 1km squares in each 10km square, with up to 22% in some squares. In Lincolnshire there was found to be good numbers in areas near to woodland and the Wolds, but few as expected, in the Fens (although some bats have turned up in very open areas).

There are a few records from the oil rigs in the North Sea of Scotland indicating some migratory tendencies.

- 10 km squares with records of roosts: 1423
- 10 km squares with records, but no roost recorded: 472
- 10 km squares with hibernation records: 301
**Long-eared bat sp. (**Plecotus sp.**)**

Due to the presence in Britain of Grey long-eared bat this category exists to encompass those Plecotus not closely examined by an expert. In most cases they would be *P. auritus*.

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<th>Description</th>
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<td>10 km squares with records, but no roost recorded</td>
<td>88</td>
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<tr>
<td>10 km squares with hibernation records</td>
<td>44</td>
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"long-eared bat" hibernation
Grey long-eared bat (*Plecotus austriacus*)

Restricted to the south coast and south-west of England and the Channel Islands, although there was one vagrant grounded bat recorded in Leicestershire. The “roost” records may not be breeding sites and could include sites where a single bat was found once in summer.

10 km squares with records of roosts 11
10 km squares with records, but no roost recorded 20
10 km squares with hibernation records 1
Acknowledgements

The majority of the records were collected by members of the local bat groups across Britain and Ireland. These members usually submitted their records through their area recorders (see below) who collated them and sent them on to me. Many thanks to all of you.

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Important sets of data were supplied by the following organisations:

In addition, the following individuals supplied records:

References: