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NATIONAL REPORT ON THE IMPLEMENTATION OF THE AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE (EUROBATS)

1998 - 1999

UNITED KINGDOM

Prepared by the Department of the Environment,
Transport and the Regions,
April 2000

NATIONAL REPORT ON THE IMPLEMENTATION OF THE AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE

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A: GENERAL INFORMATION

Party:	United Kingdom
Date of Report:	April 2000
Period Covered by Report:	January 1998 - December 1999
Competent Authority:	The Department of the Environment, Transport and the Regions (DETR)

Changes Regarding:

Competent authority - formerly The Department of the Environment
Appointed member of the Advisory Committee - Mr J Clorley, European Wildlife Division, DETR
Membership of other committees/working groups (WGs) - Dr A Mitchell-Jones (including Migratory and Monitoring methodologies WG, European Bat Ringing Centre WG)
Ratification by the UK Government extended to the Bailiwick of Guernsey on 23 June 1999

Abbreviations

BCT	Bat Conservation Trust
CCW	Countryside Council for Wales
DETR	Department of the Environment, Transport and the Regions
EN	English Nature
FC	Forestry Commission
GONHS	Gibraltar Ornithological & Natural History Society
JNCC	Joint Nature Conservation Committee
MAFF	Ministry of Agriculture, Fisheries and Food
NERC	Natural Environmental Research Council
SERAD	Scottish Executive Rural Affairs Department
SNCOs	Statutory Nature Conservation Organisations
SNH	Scottish Natural Heritage
VWT	Vincent Wildlife Trust

B: STATUS OF BATS WITHIN THE TERRITORY OF THE PARTY

1. SUMMARY DETAILS OF RESIDENT SPECIES.

1.1. The number of species of bats resident in the UK has increased as follows:

(a) There has been an increase in the number of records of *Pipistrellus nathusii* in Britain in recent years, including summer records. Breeding roosts for this species have been found in Northern Ireland and Lincolnshire.

(b) A submission has been made to the International Commission on Zoological Nomenclature for the creation of two neotypes: *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*, whereas previously *Pipistrellus pipistrellus* was regarded as a single species. The designation of neotypes for the two species has not yet been formally accepted by the International Commission. Meanwhile, research continues to identify differences in the ecology and behaviour of the two species. Also, known colonies are being revisited to ascertain to which species the colony belongs.

1.2. The addition of the two species described above would bring the total to 16 for Great Britain.

1.3. Although it is recognised that bat populations have been in decline in Great Britain for some time, the 16 species vary in population from common (e.g. *Pipistrellus pipistrellus*) to rare (e.g. *Myotis bechsteinii*). Annex 2 lists the most recent population estimates, where the figures have been obtained using a variety of techniques and a review of current literature. Often the figures from which the estimates have been obtained have been based upon extrapolations from data which is, it must be stated, far from reliable. The reliability of the population estimates for each species is given both in Annex 2 and in the species specific accounts at Annex 3.

1.4. There are 4 bat species resident in Gibraltar.

1.5. Guernsey has 4 species of bat resident on the island: the Pipistrelle, Grey long-eared bat, Brown long-eared bat and Nathusius's pipistrelle.

2. STATUS AND TRENDS.

2.1. There is considerable uncertainty connected with the estimates of bat populations at Annex 2. Within Great Britain, *Pipistrellus pipistrellus* is the most numerous, with estimates indicating a population size of around 2,000,000. Other species, notably *Myotis daubentonii* and *Plecotus auritus*, are regarded as common in Great Britain (with populations of 150,000 and 200,000 respectively). Six species have estimated populations of 10,000 or less (*Rhinolophus ferrumequinum*, *Myotis bechsteinii*, *Nyctalus leisleri*, *Barbastella barbastellus*, *Pipistrellus nathusii* and *Plecotus austriacus*). In Gibraltar, the population of *Tadarida teniotis* is estimated at 100 animals. Numbers of *M.myotis* have dropped to near zero, and numbers of *Miniopterus schreibersii* have dropped to a maximum of 500 in two confirmed sites. All species of bat resident in the UK are Species of Conservation Concern.

2.2. Information on population trends is unreliable because of the lack of reliable long-term data. However, surveys of *Rhinolophus ferrumequinum* suggest that populations continue a recent increase in certain areas, notably Devon and Dorset, and decrease in others, the Cotswolds and South Wales. Since 1987 surveys of *Rhinolophus hipposideros* have shown declines of between 12%-22% across the species range, although since 1993 the Welsh element of the population appears to have been stable. Further information on species specific trends can be found in Annex 3.

2.3. Although long-term counts and surveys carried out since the 1950s have provided evidence of population numbers and their decline, the methods used carry with them a number of caveats. For instance, when mobile species are counted, the disappearance of a roost site does not necessarily mean a reduction in numbers but may indicate that the colony has dispersed or moved to another location. In addition, the variety of survey methods, and the changes in those methods over the years, further limits the level of confidence in existing figures.

3. HABITATS AND ROOST SITES.

3.1. The National Bat Habitat Survey, completed by Bristol University in 1994, demonstrated the importance of habitat continuity to bats. It found that the availability of preferred habitats was extremely low and patchy in all landscapes. In recognition of this decline, the UK Government is addressing the problem with a range of initiatives aimed at reversing the trend. An outline of the threats to the habitats thought most important to bats and the steps which have been taken to redress the effects of those threats is given in the following section, and at Annex 3 of this report.

3.2. The situation in Gibraltar remains the same.

4. THREATS.

4.1. Although these are numerous, they generally fall into four main categories:

(a) Loss of feeding habitats

Landscape changes due to loss of old unimproved pasture, the improvement of water courses and losses of deciduous woodland, have led to a reduction in feeding habitats. It should be noted, however, that the clearance of water courses may directly benefit Daubenton's bats. The removal of hedgerows and other linear features may lead to habitat fragmentation and loss of foraging areas for the smaller species of bat, which are reluctant to cross open areas. In Gibraltar, loss of feeding habitat could be a major reason for a drop in numbers of *M.schreibersii* and *M.myotis*.

(b) Roost loss

Building work in dwelling houses, including the use of timber treatment chemicals, may be killing and/or excluding many species of bat that roost there. Also, the number of mines that have been solidly capped are lost both as hibernacula and as nursery sites for cave-dwelling species. Furthermore, the removal of hollow trees, especially in hedgerows, is likely to have a serious impact on tree-roosting species.

(c) Disturbance

This has particularly acute effects where it occurs when species are hibernating. Disturbance of hibernating bats causes a significant decline in fat stores associated with metabolic activity and may lead to mortality.

(d) Agricultural pesticides

The use of some organochlorine insecticides containing significant levels of hexo-chloro-benzine and penta-chloro-benzine may have contributed to the decline of populations both as a result of poisoning, where a build-up of the pesticides are acquired from prey species, and through the depletion in the numbers of prey species. There are also concerns over avermectin-based endectocides (see 13.10). Pesticides are not used in Gibraltar.

5. DATA COLLECTION.

5.1. The major sources of data currently existing in Britain are:

National Bat Monitoring Programme (DETR/BCT);
Bat sites and bat information databases (EN, SNH, CCW, and DOE (NI));
National Bat Habitat Survey database (JNCC/Bristol University);
Annual Bat colony counts (R.E.Stebbings Consultancy);
Distribution records (Biological Records Centre);
Lesser horseshoe summer roost emergence counts in Wales (CCW);
Bat box data (Forest Enterprise Regions);
Bats in Churches data (BCT) and databases for selected species (e.g. Bechstein's and Barbastelle bats, and habitats e.g. trees);
Wales and West Midlands Lesser horseshoe bat survey (VWT);
Bechstein's bat in bat boxes database (VWT);
UK Environmental Change Network (Multi-agency long-term monitoring network, data held centrally by NERC); and
Local datasets (held by volunteer bat groups).

5.2. In Northern Ireland data on roost sites is collected by the Environment and Heritage Service (NI) staff and members of the Northern Ireland Bat Group, and stored in the Centre for Environmental Data Recording in the Ulster Museum. A recently-completed research project will provide information on the distribution and abundance of all species of bat in Northern Ireland, their habitat associations and the effect of landscape on bat community structures.

5.3. The Gibraltar Ornithological and Natural History Society keeps records of bat sightings and roost sites in Gibraltar.

5.4. In the Isle of Man, the local Biological Records Centre, Manx Wildlife Trust and the Manx Bat Group are discussing ways to improve their bats database. Surveys of localities known for their bat

activity are continuing within the limitations of a small voluntary bat group. Each year a report is made on the season's work.

5.5. The UK Environmental Change Network monitors bat activity and usage of habitat types at twelve terrestrial sites across the UK. Bat monitoring is part of an integrated monitoring programme in which a wide range of detailed measurements on climate, atmospheric chemistry, soils, water quality, land use, fauna and flora are designed to detect and interpret environmental change. Recording began in 1993 and sites are being continuously added to the network.

C: MEASURES TAKEN TO IMPLEMENT ARTICLE III OF THE AGREEMENT

6. LEGAL MEASURES TAKEN TO PROTECT BATS, INCLUDING ENFORCEMENT ACTION.

6.1. In addition to being a Party to the Agreement, the UK is also a Party to the Bern Convention on the Conservation of European Wildlife and Natural Habitats. All European species of Microchiroptera, apart from *Pipistrellus pipistrellus*, appear on Appendix II of the Convention. Species listed on Appendix II are subject to strict measures to protect them and their breeding and resting sites. *Pipistrellus pipistrellus* appears on Appendix III of the Convention, which requires Parties to restrict the keeping and sale of species. Recommendation 36 (1992) on the Conservation of Underground Habitats and Recommendation 43 (1995) on the Conservation of threatened mammals in Europe are of particular relevance.

6.2. The UK is also bound by the provisions of Directive 92/43/EEC (the Habitats Directive) of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. All species of Microchiroptera are listed and protected under Annex IV of the Directive. Five UK species are included in Annex II. This lists the species for which Member States should designate Special Areas of Conservation (SACs).

6.3. In accordance with the obligations imposed by the Agreement, and the above two international documents, the various UK territories have a number of statutes in place.

Great Britain

6.4. Under the Wildlife and Countryside Act 1981, all species of bat are protected under Section 9. It is an offence for anyone intentionally to kill, take or injure any bat, or to have any such species in his possession or control, live or dead, or to damage, destroy or obstruct access to any structure or place which a bat uses for shelter or protection, or to disturb it while it is occupying such a structure. Offering for sale is also illegal.

6.5. Section 10 (5) extends additional protection to bats in houses by requiring anyone who proposes to carry out an action in a dwelling house (other than the living area), which may affect a bat or its place of shelter/protection or access thereto, to seek advice from a statutory body on whether the action should be carried out and if so, the method to be used.

6.6. Inquiries about bats continue to be received by the 3 country agencies at the rate of about 3000 per year. Of these, about half relate to householders discovering bats, usually maternity colonies, using their house. The other half relate to building maintenance, repairs or development. To date, 12 cases have resulted in prosecutions under the 1981 Act. Details of these prosecutions are given in Annex 4.

6.7. The Forestry Commission's named advisor for bats dealt with 7 enquiries about woodland bats and their management during the period of this report.

6.8. The Conservation (Natural Habitats etc.) Regulations 1994 transpose the requirements of the Habitats Directive into British law and augment the provisions contained in the 1981 Act.

6.9. In September 1998 a consultation paper entitled "SSSIs: Better protection and management" was issued (see 11.5).

Northern Ireland

6.10. Provisions similar to those which exist in Great Britain are in force in Northern Ireland. The provisions are contained in the Wildlife (Northern Ireland) Order 1985, at Schedules 5, 6 and 7. To date no prosecutions, in relation to activities concerning bats, have occurred under this Order. The Conservation (Natural Habitats, &c.) Regulations (Northern Ireland) 1995 transpose the requirements of the Habitats Directive in Northern Ireland, and augment the provisions contained in the 1985 Order.

6.11. 1276 inquiries about bats in dwelling houses were received by the Environment and Heritage Service in Northern Ireland during the reporting period. In 68 cases, guidance on means of exclusion after natural dispersal was provided.

Isle of Man

6.12. The Wildlife Act 1990 contains provisions making it illegal to kill, capture or keep bats, unless under licence. The Act also protects bat roosts and requires advice to be sought from the Isle of Man Department of Agriculture, Fisheries and Forestry before any activity, which may affect bats, can be carried out. Up to the end of 1999 no prosecutions, in relation to activities concerning bats, occurred under this Act.

6.13. The 1990 Act also allows areas of importance to bats to be designated as Special Protection Areas for Animals if it is not sufficiently important to fulfil Area of Special Scientific Interest (ASSI) criteria. Since April 1998, two Government conservation officers have been employed whose responsibilities include bat conservation. Twenty four enquiries were received from home owners and developers in relation to bats between April 1998 and December 1999.

Gibraltar

6.14. The Nature Protection Ordinance (1991) fully protects all bats and their roost sites in Gibraltar. In addition, sites which occur within the Upper Rock Nature Reserve are further protected under the Nature Reserve Regulations (the Nature Protection (Upper Rock Nature Reserve) Regulations 1991, and 1993).

7. SITES IDENTIFIED AND PROTECTED WHICH ARE IMPORTANT TO THE CONSERVATION OF BATS.

7.1. Section 28 of the Wildlife and Countryside Act 1981 provides for the protection of any area of land which is of special interest with regard to its flora, fauna, or geological or physical features by its designation as a Site of Special Scientific Interest (SSSI). Designation of a site may include conditions restricting activities on the land which may harm the feature which it contains. Thus far, designated sites have all been roosts and no key foraging sites have been identified for protection, although a few SSSIs do have a little foraging area. Research on Greater horseshoe bats is enabling key habitat close to roosts to be identified for sympathetic management.

7.2. The most recent guidelines for the notification of roost sites as SSSIs (issued in 1989), together with a list of 43 such sites notified in England, are shown in Annex 5. As well as these sites, there are another 77 which have a bat interest recorded. In addition sites may be eligible to be designated SACs under the EC Habitats Directive. A table which shows the candidate SACs with regard to bats as at March 1999 is detailed at Annex 5.

7.3. 26 SSSIs have been notified for bats in Wales. These are also set out in Annex 5.

7.4. To date, only one ASSI has been designated for bats under the Wildlife (Northern Ireland) Order 1985.

7.5. For Gibraltar, the areas of the Rock where the bat roosts occur are included in the area proposed as a Natura 2000 site.

7.6. The Vincent Wildlife Trust (VWT) has established 16 reserves for important Horseshoe bat colonies with 1 more currently under negotiation. These are all buildings that have either been bought or leased on a long-term basis by the Trust, and include a major example of a Greater horseshoe roost. The VWT also has reserves for Bechstein's, Natterer's and Leisler's bats.

8. CONSIDERATION GIVEN TO HABITATS WHICH ARE IMPORTANT TO BATS.

8.1. Throughout this century, many of the UK's urban and rural habitats have suffered degradation or loss as a result of the growing needs of mankind. During the 1990s, the UK built up a framework of initiatives to conserve its biodiversity, many of which directly affect those habitats important to bats.

8.2. Notwithstanding these initiatives, the UK government acknowledges that more research needs to be undertaken on the level to which bats exploit different habitats. The UK has made a number of efforts to consider how these changes are affecting wildlife and, where appropriate, to control or reverse this trend. The Countryside Survey 1990 gives a picture of the extent and diversity of a range of land cover types and features in the wider countryside in Great Britain. The National Bat Habitat Survey identified those habitats which bat species prefer and how modification to land use affects the species.[1234.]

Agricultural land

8.3. Agricultural intensification, loss of wetlands, fragmentation, the effects of pollution, and the use of pesticides have resulted in a change in the nature of the UK's agricultural lands. The use of pesticides might also have affected the availability of bat prey species. Since 1987 the Agriculture Departments in the UK have developed a number of schemes to encourage farming practices that protect and enhance the environment, most notably, the Environmentally Sensitive Areas (ESAs) and the Countryside Stewardship Scheme (CSS).

8.4. The ESAs encourage farmers to conserve areas of high landscape or wildlife value which are vulnerable to changes to farming practices. ESAs are supported by financial grants and are subject to a 10-year management plan. There are 3.3 million hectares designated as ESAs in the UK. In 1999 there were just under 540,000 hectares of land under agreement in the ESAs. The Scheme also provides for the restoration of farm buildings which are likely to be valuable for the conservation of bats.

8.5. The CSS in England is available to all land managers outside ESAs and offers 10-year agreements to manage land with the aim of improving the natural beauty and diversity of the countryside, including the improvement and extension of wildlife habitats. In 1999 there were 9,872 agreements covering over 180,000 hectares in England. The Scheme is discretionary and funds are targeted. In some areas the enhancement of habitat for the more uncommon bat species is targeted in locations close to known roosts. Additional special projects to provide bat roosts have also been incorporated into agreements, e.g. for the Greater horseshoe bat.

8.6. As part of EN's Greater horseshoe bat project (see para 12.6), help was given in a number of cases to prepare applications for the Scheme to assist landowners to make the necessary landscape enhancements to aid the long-term survival of the bat population.

8.7. In Scotland, there are 10 ESAs covering a total designated area of 1.4 million hectares, including just over 1 million hectares of agricultural land. The Countryside Premium Scheme operates outside ESAs and offers farmers and crofters a similar range of opportunities to those available under the ESA Scheme.

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1 Walsh, A & Harris, S. (1996)a. Factors determining the abundance of vespertilionid bats in Britain: geographic, land class and local habitat relationships. Journal of Applied Ecology, 33: 519-529

2 Walsh, A & Harris, S. (1996)b Foraging habitat preferences of vespertilionid bats in Britain. Journal of Applied Ecology, 33: 508-518

3 Walsh, A, Harris, S. & Hutson, A. (1995). Abundance and habitat selection of foraging vespertilionid bats in Britain: a landscape scale approach. Symposium Zoological Society of London, 67: 325-344

4 Walsh A. L, Hutson A M, & Harris S. (1993). UK volunteer bat groups and the British bats and habitats survey. pp 113-123 in Kapteyn, K (ed.), Proceedings of the first European Bat Detector Workshop. Netherland Bat Research Foundation, Amsterdam. 128pp.

8.8. In Wales, a new scheme started in 1999 called Tir Gofal which has taken over from all other agri-environmental schemes. It is based on an all-farm agreement with certain compulsory work required and additional agreement sections which could also be undertaken. Agreements are being drawn up for around 600 farms and the scheme is expected to expand in future years. 64,000 hectares are expected to be included in the whole farm scheme and over 5 million pounds is available for the next year's funding. Existing Tir Cymen and ESA agreements are continuing until they come to the end of their term.

8.9. Since 1993, five distinct areas of Northern Ireland have been designated as ESAs. These total 221,000 hectares of agricultural land, representing 20% of Northern Ireland's total land area. By the end of 1999, over 4,500 farmers had entered into 10-year management agreements with the Department of Agriculture and Rural Development, representing 143,000 hectares of land under agreement, or 64% of eligible land.

8.10. The Farm Woodland Premium Scheme (FWPS) is a UK scheme, administered by the Agriculture Departments, aimed at encouraging farmers to plant and maintain woodlands. The Scheme's objectives are to enhance the environment through the planting of farm woodlands, in particular, to improve the landscape, provide new habitats and increase biodiversity. Land managers are encouraged to realise the productive potential of woodlands as a sustainable land use.

8.11. A pilot Manx Agri-environment scheme is about to be launched and should begin to address the conservation of bat habitats on farms.

Hedgerows

8.12. Whilst grant schemes may encourage the replacement or re-introduction of hedgerows, in the UK it was considered likely that statutory controls may assist the protection of existing hedges. To prevent the removal of important hedgerows in the countryside, the Hedgerows Regulations 1997 came into effect on 1 June 1997. However, the Government takes the view that, while a step forward in hedgerow protection, the Regulations could be enhanced. A group was therefore asked to review how they might be improved. The review group's report proposed a number of changes to provide stronger protection, focusing on the criteria defining "important hedgerows".

8.13. In light of the results of research carried out on the group's proposals, which were published in November 1999, the Government is giving further thought as to how the Regulations might be enhanced and the possible impact of any revisions. Any revised draft Regulations will be published for statutory consultation after the results of the research have been fully evaluated.

Woodlands

8.14. The importance of woodlands to bats has long been recognised and was confirmed in the 1990 Countryside Survey. The long decline in total woodland cover from historical times continued until 1920 when woodland occupied only 5% of the UK land surface. Since then, a large re-afforestation programme has taken place which has increased total woodland cover to 11% of Great Britain (10% UK). At the end of March 1999, the total woodland area in Great Britain was approximately 2.54 million hectares (ha), comprising 1.6 million ha of conifers and 0.9 million ha of broad-leaves. Of this, 0.8 million ha is owned and managed by Forest Enterprise, an agency of the state forestry department, the Forestry Commission (FC).

8.15. Government forestry policy is to significantly increase the area of woodland in the UK over the next 50 years to provide more benefits for society and the environment. The UK Forestry Standard (1998) sets out the criteria and standards for sustainable forestry in the UK. Environmental standards are an integral part of all forestry operations and are set out in a series of guidelines published by the FC. FC Conservancy staff encourage good forestry practice by providing information and advice and monitoring and regulating standards within Forest Enterprise and private forestry by means of felling licences and grant initiatives.

8.16. Within the UK Species Action Plans (SAPs), the Pipistrelle has been identified as a flagship species for woodland bat communities. Flagship species are used to target woodland grant incentives.

8.17. The FC funded research into habitat use and prey availability, and roosting and breeding behaviour. Results indicate the importance of woodland ponds as foraging habitats, and form the basis of an Information Note providing advice on habitat management for woodland bats. The FC has a nominated officer responsible for funding research and preparing best practice advice on bat conservation as part of wider conservation duties. A second officer is responsible for liaison with bat SAP steering groups, and for communications concerning their activities within FC.

8.18. Sites identified as important to bats are noted in Forest District Management Plans and formal protection measures carried out if deemed necessary (e.g. the grilling of cave entrances in the Forest of Dean). There are estimated to be approximately 5,000 bat boxes on Forest Enterprise Land of which about 15 are hibernation boxes, and a further 220 are proposed. Roosts in buildings are monitored and protected and there are schemes in some areas to enhance redundant forest buildings for bat roosting.

8.19. The importance of ancient trees, and of trees to bats is raised through a number of initiatives and organisations, including the Veteran Trees Initiative (VTI) which is led by EN and involves the FC, National Trust, English Heritage and others. Under WIGS3 (Woodland Initiative Grant Scheme) - Biodiversity, any management aimed at increasing biodiversity can be considered for grant aid (e.g. maintaining veteran trees in the woodland). Effectively, most management aimed at increasing biodiversity in woodlands will also be beneficial to bats. There is also an Ancient Trees Forum (a group of specialists concerned about ancient trees) which was formed before the VTI and is likely to take over the activities of VTI when it finishes in March 2000. The Arboriculture Advisory Information Service under the DETR publishes guidance for the arboricultural profession.

8.20. Certain ESAs have a woodland tier. Agreement holders implement a programme of woodland management to enhance the wildlife and landscape value of native woodland, which is of benefit to bat populations.

Caves and underground sites

8.21. Although many cave systems have been lost through destruction or blocking, the designation of SSSIs identified as roost sites (see section 7) has contributed to the protection of remaining sites. Extensive grilling of accesses to known cave hibernacula sites has been carried out by the SNCOs, the FC and voluntary bodies.

8.22. The UK has begun to collate an already well-established list of underground sites. This is specifically taking place in England, and in Wales for Lesser horseshoe bats. It contains 1074 underground sites, of which 403 are caves, 598 are abandoned mines, 39 are ice-houses, 38 are fortifications and 49 are road or rail tunnels (categories are not mutually exclusive). 302 are used by Greater horseshoe bats and 445 by Lesser horseshoe bats. A project to update this database will be carried out in 2000-2001.

8.23. BCT has received funding from the Endangered British Mammals Fund to identify measures for preservation, protection, enhancement and creation of underground sites used by bats. This research will contribute towards Step 2 of Resolution 4 of the 2nd Meeting of Parties. An interim report was produced in January 1999, and the final report is to be finished by summer 2000.

8.24. Caves and old mines on Forest Enterprise land are protected to ensure their security for future generations of bats, and bat use is monitored.

Bridges

8.25. Bridge renovation and reinforcement can exclude or entomb bats, particularly Daubenton's. A major survey in Cumbria was conducted in 1997 into bat use of bridges and a report included proposals for mitigation. A Highways Agency advice note includes assessment measures for incorporation of bat conservation into bridge construction and maintenance. In Northern Ireland, all bridges scheduled for maintenance by the Roads Service are inspected by the Ulster Museum advisor

for the presence of and suitability for bats and measures are taken to mitigate the effect on bats and potential roosts. (See also 9.4.)

Waterways

8.26. The Lowlands Ponds Survey 1996, published in June 1998, estimated the number of ponds in lowland Britain to be 228,900. Between 1990 and 1996, there was a high turnover of ponds, with an estimated 17,000 ponds lost and an estimated 15,000 new ponds created. The loss of natural ditches and ponds, and of wetlands through land reclamation and conversion to agricultural land, together with the canalisation of rivers, is believed to have had significant effects on bat populations. In all these examples, a loss of habitat favoured by prey species has resulted in the loss of foraging sites.

8.27. The National Bat Monitoring Programme monitored waterbodies for the presence of Daubenton's bat at selected sites throughout the UK. The Environment Agency had previously surveyed some of these sites as part of its River Habitat Survey, and combining the two datasets will allow the development of waterbody management guidelines to enhance the conservation status of Daubenton's bat.

8.28. BCT training of Broads Authority staff resulted in the discovery of important populations of Nathusius's pipistrelle foraging over the Norfolk Broads. Broads Authority staff are liaising with Dutch researchers to survey for the pond bat over the Broads.

9. ACTIVITIES TO PROMOTE THE AWARENESS OF THE IMPORTANCE OF THE CONSERVATION OF BATS.

9.1. The UK has continued to provide funds for publications and activities which it hopes will make all sectors of the public and institutions sympathetic to the conservation status of bats. The funds and support have been provided by a range of Government institutions including the DETR, the SNCOs and the FC. In Gibraltar, action is currently funded directly by the Gibraltar Ornithological and Natural History Society (GONHS) following initial financial support from the Foreign and Commonwealth Office.

9.2. Scottish Natural Heritage (SNH) continue to produce an advisory publication "The Design and Construction of Bat Boxes in Houses" and a technical report "Natural Heritage Interest of Road Verges and Bridges in Highland Region". SNH has also revised and re-styled its booklet in the "Scottish Wildlife" series, entitled "Bats and People". This is now available free of charge to interested parties. SNH also provides grant-aid to local bat groups for the purchase of equipment and as a contribution towards travel costs for appointed voluntary bat workers when undertaking bat roost visits at their request.

9.3. Greater horseshoes and Pipistrelles are discussed in CCW's publication "Action for Wildlife" which highlights biodiversity in Wales. In 1998 English Nature published "Managing Landscapes for the Greater horseshoe bat". Other documents of note are the forthcoming JNCC booklet "Habitat Management for bats"; BCT's contribution on bats to the review of the importance of animal dung (see 13.11); the Arboricultural Association's guidance note "Bats and Trees"; and English Heritage's guidance note "Bats in Churches". VWT is preparing a new leaflet on the Barbastelle bat.

9.4. Other action includes training courses for industry (BCT), a Bats and Bridges Survey (EN and bat group, Cumbria) and the production of the Highways Agency Advice note, "New Roads: Nature Conservation Management in Relation to Bats". CCW grant-aided BCT to undertake awareness raising, training and bat group support in Wales for 1999-2000. BCT has a website on the Internet which provides information about bats and promotes their conservation. BCT has also produced a "bat house" model for use at professional tradefairs and a bat poster for the building industry.

9.5. Grant-in-aid has been provided to support local bat groups and specific surveys. The Department of the Environment in Northern Ireland continue to provide grant-aid to the Northern Ireland Bat Group and fund an advisor post at the Ulster Museum who spends 75% of his/her time dealing with bat issues.

9.6. In the Isle of Man, the Department of Agriculture, Fisheries and Forestry ran a course for roofing contractors. The Manx Bat Group continue with a programme of educational meetings for members. Permanent notices to place in roof spaces have been produced and owners of roosts will be supplied with certificates.

9.7. The BCT ran a National Bat Week in May 1998, including a press launch with Michael Meacher (Minister for the Environment), events, widespread publicity (nationally and locally on TV, radio, and in newspapers and magazines), an information pack about activities to raise awareness of bats, and production of a national poster of British bats. Over 1,500 people took part in 'batty' games and activities at a 'Bats are Brilliant' day at London Zoo. Local bat groups organised bat walks, talks and other events throughout the UK. The BCT ran a series of beginners' courses (with funding from Esmee Fairbairn Trust), and maintains and improves its 'resource centre'. BCT supported European Bat Night with an event in Battersea park attended by about 200 members of the public.

9.8. In 1999 BCT and local bat groups provided a programme of 32 local events for European Bat Night.

9.9. Forest Enterprise District staff presented 33 talks and organised 38 local bat walks for the public. Bats are also include within general wildlife walks and talks.

10. RESPONSIBLE BODIES NOMINATED FOR THE PROVISION OF ADVICE ON BAT CONSERVATION AND MANAGEMENT.

10.1. Sections 23 and 24 of the Wildlife and Countryside Act 1981 provide for the establishment of bodies to advise the Secretary of State on the protection of birds or other animals or plants. Under the 1990 Environmental Protection Act, four separate bodies (SNCOs) were established. The role of these bodies includes the provision of advice on bat conservation.

10.2. In addition to the Joint Nature Conservation Committee, which has responsibility for the UK as a whole, these bodies are:

England	-	English Nature
Scotland	-	Scottish Natural Heritage
Wales	-	Countryside Council for Wales

10.3. In Northern Ireland the territory's Department of the Environment's Environment and Heritage Service fulfils the same role. Its enabling legislation is the Nature Conservation and Amenity Lands (Northern Ireland) Order and 1985 and the Wildlife (Northern Ireland) Order 1985.

10.4. The nominated bodies of the other territories are:

Isle of Man	-	The Department of Agriculture, Fisheries and Forestry
Gibraltar	-	The Gibraltar Ornithological and Natural History Society, directly and through the Development and Planning Commission
Bailiwick of Guernsey	-	The States of Guernsey Board of Administration

11. ADDITIONAL ACTION UNDERTAKEN TO SAFEGUARD POPULATIONS OF BATS.

Planning guidelines

11.1. DETR issues planning policy guidance (PPGs) notes in England, to local authorities who are responsible in the first instance for deciding whether developments may occur in their region. PPG No.9 on nature conservation outlines the need for nature conservation considerations to be included in land use planning, and includes information on the legal protection which must be extended to bats. Parallel guidance exists in Wales (TAN5) and Northern Ireland (Planning Policy Statement 2 - Nature Conservation & Countryside). In Scotland, guidance on how the Scottish Executive's policies for the

conservation and enhancement of Scotland's natural heritage should be reflected in land use planning is provided in National Planning Policy Guideline (NPPG) 14.

11.2. These considerations should, for projects listed in Schedule 1 (where an Environmental Impact Assessment (EIA) is always required) and Schedule 2 (where an EIA may be required) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (1989 Regulations in Northern Ireland), should be included in an EIA. Where the local planning authority is uncertain about the significance of a project's likely effects on a SSSI, they should contact the appropriate SNCO.

11.3. PPGs 7 (on the countryside and the rural economy), 12 (development plans), and 20 (coastal planning) also include references to the need to consider carrying out EIAs for projects that come within the scope of the EIA Regulations where there are likely to be significant effects on the environment. NPPGs in Scotland include similar advice.

11.4. In the Isle of Man, the Department of Agriculture, Fisheries and Forestry intend to produce a leaflet of guidance for developers to be available from the Planning Office of the Department of Local Government and the Environment.

Habitat protection

11.5. Following the Government's consultation paper, "SSSIs – Better protection and management", the Government intends to make legislative progress early in 2000 when the Countryside and Rights of Way Bill will be introduced into Parliament. The resulting legislation will affect England and Wales.

11.6. Scottish Executive Ministers are considering detailed policy proposals for the SSSI system. A Policy Statement setting out the policy proposals will be published during Spring 2000. Scottish Executive Ministers intend to introduce legislation in the Scottish Parliament to implement their policy proposals in due course.

11.7. In February 1998 the Government issued its Ramsar Strategic Plan 1997-2002 UK Targets document which contains targets to be achieved by Government, Agencies, NGOs and others for the conservation and wise use of wetlands.

12. RECENT AND ONGOING PROGRAMMES RELATING TO THE CONSERVATION AND MANAGEMENT OF BATS.

12.1. Research projects are taking place across a range of Departmental and institutional organisations. The UK Government is fully committed to supporting research which is directed at improving the conservation status of bats. Ongoing projects are listed at Annex 6. Examples of booklets and leaflets published during the reporting period are shown in Annex 1.

12.2. As part of the follow up to the UK Biodiversity Action Plan (BAP), the UK Biodiversity Steering Group Report[5], published in December 1995, contains costed action plans for 116 species, including three species of bat; Pipistrelle bat, Greater mouse-eared bat and Greater horseshoe bat. An additional three species of bats were included in a second tranche of 56 costed action plans published in June 1998[6]: Barbastelle bat, Bechstein's bat and Lesser horseshoe bat. A Steering Group has been established for Pipistrelle and an expanded action plan work programme is in preparation. A workshop on current research and identification of priorities for action plans for Horseshoe bats was held in December 1998. A similar workshop on Bechstein's and Barbastelle bats was held in March 1999. The Steering Groups of national BAPs feed into local BAPs and vice versa to ensure full exchange of information and knowledge and to avoid conflicting actions.

5 Biodiversity: The UK Steeering Group Report, Volume 2: Action Plans (1995)
6 UK Biodiversity Group Tranche 2 Action Plans, Volume 1 - vertebrates and vascular plants (1998)

12.3. In September 1999 English Nature published a report "Biodiversity - Making the Links" which identifies the associations between BAPs priority species and the BAP broad and priority habitat types and considers how this information can be used to integrate species and habitat programmes.

12.4. The Manx Biodiversity Action Plan includes Daubenton's, Leisler's and Natterer's bats for which individual species action plans are likely to be written.

12.5. English Nature is currently running three Species Recovery programmes for bats:

12.5.1. Greater horseshoe bat[7][8][9]. (1994 -)
Protection and enhancement works to maternity sites and hibernacula (contracts & grants).
Mapping of habitats around maternity roosts (contract, 1994/5).
Research into food and feeding requirements (contracts, 1995/6, 1996/7)[7][8].
Research into management of maternity roosts, including the use of heaters (contract 1997/8).
Encouraging the application of environmental land management schemes around maternity roosts (contracts & grants, 1997/8).
A leaflet, "Managing landscapes for the Greater horseshoe bat", was published in 1998.

12.5.2. Barbastelle & Bechstein's bat. (1995 -)
Support for research and monitoring of one of the three known Barbastelle maternity roosts (Norfolk); the others occur in Sussex and Somerset.
Bat box project around the site of a maternity roost of Bechstein's bat.
Support for monitoring of Barbastelle hibernation sites (Devon).

12.5.3. Natterer's bat. (1995-1999)
Support for autecological study of Natterer's bat (PhD). This is jointly funded by CCW & Peoples' Trust for Endangered Species.

12.6. The Greater horseshoe bat project was set up through the EN Species Recovery programme to increase the awareness and habitat requirements for Greater horseshoe bats within the landowning/farming communities. The project has been running since January 1998 and has concentrated on the five main maternity roosts and surrounding habitat in Devon. Contact was made with a number of farmers and 63 site visits were made. During each visit, the habitat and desired management of the bats were explained, as outlined in the EN Research Reports numbers 174[10], 241[11] and 292[12], including ways in which specific management could be incorporated into current farming practice. Contact was also made and awareness raised with many more landowners, through close liaison with partner organisations and representation at public events.

12.7. CCW supported a Wales Bat Symposium in 1997 and grant aid local bat groups and bat detector workshops. CCW are currently funding work on automatic bat counters of Horseshoe species and measurements of developing young Greater horseshoe bats in Pembrokeshire.

12.8. CCW is still carrying out the Lesser horseshoe bat monitoring in Wales although in 1998 a thorough statistical analysis of the project so far was published[13]. In addition, a feasibility study was done on the design of artificial bat roosts for Lesser horseshoe bats[14].

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7 Ransome, R. D. The management of feeding areas for Greater horseshoe bats. English Nature Research Report No. 174. English Nature, Peterborough, 74pp. (1996)
8 Ransome, R. D. (1997) The management of Greater horseshoe bat feeding areas to enhance population levels. English Nature Research Report No. 241. English Nature, Peterborough, 63pp. (Co-funded by CCW)
9 Ransome, R. D. (1998) The impact of maternity roost conditions on populations of Greater horseshoe bats. English Nature Research Report No. 292. English Nature, Peterborough, 80pp.

10 Ransome, R. D. The management of feeding areas for Greater horseshoe bats. English Nature Research Report No. 174. English Nature, Peterborough, 74pp. (1996)
11 Ransome, R. D. (1997) The management of Greater horseshoe bat feeding areas to enhance population levels. English Nature Research Report No. 241. English Nature, Peterborough, 63pp.
12 Ransome, R. D. (1998) The impact of maternity roost conditions on populations of Greater horseshoe bats. English Nature Research Report No. 292. English Nature, Peterborough, 80pp.
13 Witter, M., (1998). Analysis of the Wales Lesser horseshoe bat summer roost survey data 1993 - 1997. CCW Contract Science Report No 308.

12.9. CCW has funded research on bat use of hedgerows to draw up management guidelines. The final report is expected in the summer of 2000. CCW is also co-funding a NERC fellowship looking at the use of riparian habitats by bats.

12.10. In Scotland, exceptionally large Pipstrelle house roosts have been the subject of a range of specific measures, including the establishment of a positive management agreement with the owner in one case and the construction of a customised bat box within the roof space (and the installation of an artificial heating source) in another. The targeting of resources into the conservation of these particular roosts was considered appropriate due to their exceptional size - the largest of them probably comprised up to 2,000 bats prior to dispersal.

12.11. SNH supported a BCT Scottish Bat Day (meeting of Scottish bat workers) at the Battleby Centre in October 1999. Discussions are underway between SNH and BCT towards further developing the work of BCT in Scotland.

12.12. It is recognised that there is a need for research to continue if information on the distribution of, and the need for, habitat types is to be reliable. In addition to those projects referred to in paragraph 12.1, the DETR commissioned a major bat monitoring project aimed at producing reliable information on UK-wide populations. The National Bat Monitoring Programme (NBMP) was initiated in February 1996, and is a major research contract, to run for five years, awarded to the Bat Conservation Trust. It is hoped that the project will produce: baseline population data for seven species of bat; efficient monitoring methods designed for each species; costings for the ongoing monitoring of each species; recommendations for the frequency of continued monitoring exercises for each species; improved distribution maps for each species; and, the identification of methods suitable for the monitoring of other species.

12.13. The NBMP is now in its final year and growth of involvement is still rising. By the end of 1999, over 1,400 volunteers had signed up to the programme. About 55% of these are active annually. Records for 250 hibernation sites, and summer counts for 490 Pipistrelle, 54 Serotine and 134 Lesser horseshoe bat roost sites have been submitted. In July 1998 a new field monitoring programme for Noctule, Serotine and Pipistrelle bats was launched - for which 367 sites have been surveyed. A Daubenton's bat survey covered 715 sites. So far, the project has involved over 2,000 sites and over 6,000 survey nights. A progress report was presented at the annual National Bat Conference in September. More recently, the NBMP data base has been upgraded and data entered, checked and extracted. The Programme will go some way towards meeting the UK's obligations under Resolution 2 of the 2nd Meeting of Parties regarding monitoring methodologies.

12.14. The projects listed below yield valuable information which will assist in the management of bat populations.

12.14.1. The bats in churches project (BCT).
Following the publication of the results of BCT's Bats in Churches Project, further research has been carried out on the behaviour of bats in churches. Guidelines on the management of bats where their activities may affect works of art in churches were drawn up by a steering group co-ordinated by English Heritage in 1998 entitled "Bats in Churches - guidelines for the identification, assessment, and management of bat-related damage to church contents (furnishings, fittings, and works of art)".

12.14.2. Lesser horseshoe bat maternity roost counts in Wales (CCW and the Bat Groups of Wales). The monitoring of Lesser horseshoe bat summer roosts was repeated for the seventh time in 1999 throughout Wales using a standardised, non-intrusive method; the work is ongoing. Emerging Lesser horseshoe bats are counted from the roost and a pro forma completed with details of the roost and environmental conditions on the night of the count. Two counts are made in two ten-day periods prior to parturition. Around 7,000 bats are counted each year from approximately sixty roosts. Analysis has shown that populations in Wales appear to be stable with a statistically non-significant upward trend. This project is complemented by work in England under the NBMP.

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14 Freer R. A., Waters D. A, & Altringham J. D. (1998). Artificial maternity roosts for *Rhinolophus hipposideros*, the Lesser horseshoe bat. CCW Contract Science Report no. 250.

12.14.3. Automated Monitoring of Greater and Lesser Horseshoe Bat Nursery Colonies (P.T. Andrews, funded by CCW).
Since 1994, monitors have been placed in two Greater horseshoe bat maternity roosts in Pembrokeshire to record their movement and environment, and a monitor was installed in a Lesser horseshoe bat roost. The project has yielded accurate population numbers of bats at these roost sites throughout the summer. Several of the roosts are cSACs for bats and so the project is providing important data on the conservation status of the sites. One of the roosts acts as a hibernation site as well as a maternity roost and the project has shown that the bats are active throughout the winter and regularly leave the roost early evening for foraging. This has important implications for habitat management around hibernation sites.

12.14.4. The following measures and research were funded by the Vincent Wildlife Trust.

12.14.4 (i) A radio-tracking study of foraging behaviour of Lesser horseshoe bats has been completed. A report has been sent to CCW and a is being prepared.

12.14.4 (ii) The Trust funded a study of Greater horseshoe bat foraging ecology and diet at Bristol University. The Trust has been conducting radio-tracking studies of Greater horseshoe bats in order to identify key foraging areas for the implementation of SAC designation around important roosts. Fieldwork has been completed and a report is in preparation. Radio-telemetry of Greater horseshoe bats at the end of hibernation led to the identification of a previously unidentified maternity colony of this species. Two similar projects, both in south Wales, began in 1999.

12.14.4 (iii) Two maternity roosts of Bechstein's bats were identified in 1998, one in Sussex and one in Dorset. In 1999 another maternity roost was discovered in Sussex; it will be used to investigate the roosting ecology of Bechstein's bats. The Dorset colony is being used for a radio-tracking study on the woodland microhabitat use in this species by VWT.

12.14.4 (iv) VWT has established a reserve for a substantial maternity colony of Natterer's bats in a redundant church in Dorset.

13. CONSIDERATION BEING GIVEN TO THE POTENTIAL EFFECTS OF PESTICIDES, INCLUDING TIMBER TREATMENT CHEMICALS, ON BATS.

13.1. The Wildlife and Countryside Act 1981 affords protection to wild animals from poisoning. The proper use, storage and sale of pesticides are controlled through the Control of Pesticides Regulations 1986 (as amended).

13.2. Incidents involving pesticides are investigated under the Wildlife Incident Investigation Scheme (WIIS). Poisoning incidents fall into three categories: approved use of products according to their specified conditions of use; misuse caused by carelessness in application or storage; and abuse, a deliberate illegal attempt to poison animals or birds.

13.3. The WIIS is co-ordinated by the Pesticides Safety Directorate, an Executive Agency of MAFF. Field investigations are carried out by wildlife management advisors from the Farming and Rural Conservation Agency, *post mortem* examinations are undertaken at Veterinary Investigation Centres, and samples are analysed at the Wildlife Incident Unit of the Central Science Laboratory. The results are used in reviews of the conditions of approval of pesticide products, and evidence of abuse may lead to prosecution or other enforcement action.

13.4. As a result of the WIIS, the Government launched the Campaign Against Illegal Poisoning of Animals. It aims to protect some of Britain's rarest wildlife, including bats, whilst safeguarding domestic animals. The main objective is to stop the illegal use of pesticides and promote legal methods of pest control.

<u>Timber treatment</u>

13.5. As a result of the requirements placed by the 1981 Act, steps within the building trade to increase awareness of the need to ensure that the use of timber treatment chemicals is not detrimental to bats have continued. Timber treatment products are labelled "All bats are protected under the Wildlife and Countryside Act 1981. Before treating any structure used by bats, consult English Nature, Scottish Natural Heritage, or the Countryside Council for Wales". Any pesticide that has the potential to cause harm to bats is labelled as such and necessary precautions must be undertaken by the user where there is considered to be a likely level of exposure. In addition, the Health and Safety Executive recommends that all products containing lindane or pentachlorophenol should be labelled "Dangerous to Bats".

13.6. Roofing contractors on the Isle of Man are kept up to date with acceptable substances and products (and the law relating to bats) through mailshots from the Department of Agriculture, Fisheries and Forestry.

13.7. As a result of concern expressed about the potential risk of remedial wood preservatives to bats in roof voids, the Advisory Committee on Pesticides established an ad-hoc working group on wood preservation, bats and wood treatment chemicals. The primary task of the group was to refine the Relative Toxicity Index which is used to rank active substances in terms of their potential toxicity. By extrapolating from standard mammalian toxicity data, a comparison of new biocides with older compounds, for which there is some toxicological data for bats available, is possible. This approach is limited by a number of factors, one of which is that there is no true measure of exposure in terms of uptake of active substance.

13.8. All research work is now complete and Ministers have agreed to a Classification and Labelling Scheme for Remedial Timber Products based on this. This will reduce the need for animal testing and will be used to protect bat populations when using remedial timber products. The Scheme was developed in conjunction with the wood preserving industry, government departments, EN and international bat experts.

Other Pesticides

13.9. There is minimal direct exposure of bats to pesticides used in the agricultural/horticultural sectors. However, if exposure is predicted (e.g. from use in grain stores), then the risk is assessed appropriately using methods briefly outlined in paragraph 13.7. The use of pesticides in these sectors might be indirectly contributing to the decline in bat populations by reducing the availability of prey species; however, the importance or significance of this is not known.

13.10. There are concerns about the widespread use of antiparasitic drugs for cattle (such as avermectins). Early research suggested that the use of these drugs has an effect on the invertebrate dung fauna, which could have conservation implications for several bat species. The VWT undertook some research into the effects of antiparasitic drugs for cattle on bats and their prey species. Overall, the research showed limited differences in Pipistrelle activity over treated and untreated cattle pasture, but no broad-based impact on the overall levels of bat activity could be quantified at this stage.

13.11. BCT has contributed on bats to a national review of the importance of dung to wildlife and the potential impact of endectocides. A report has been produced by Hampshire Wildlife Trust for English Nature[15].

13.12. Companies are required to apply for renewal of their Marketing Authorisation for individual avermectin products every 5 years, at which time the data dossier on environmental safety is updated. As part of the regulatory authority's work on assessment guidelines, a review of the published literature on the effects of avermectins on dung insects has been produced.

13.13. The effects of sublethal exposure of Pipistrelle bats to lindane have also been demonstrated[16].

15 Cox, J. (1999). The Biodiversity of Animal Dung. Hampshire Wildlife Trust, Eastleigh, 45pp.
16 Swanepoel, R.E., Racey, P.A., Shore, R.F., & Speakman, J.R. (1999). Environmental Pollution. No 104: 169-177.

D: FUNCTIONING OF THE AGREEMENT

14. CO-OPERATION WITH OTHER RANGE STATES.

14.1 The UK co-operates with other Range States and welcomes advice on their experiences. It has participated in "European Bat Night" which was organised by the Secretariat. Under the European Bat Agreement, it is also involved in the development of its Conservation Management Plan (Resolution 8) proposals for species for migratory/monitoring studies and wider transboundary projects. The UK also supports the work of the IUCN and its Chiroptera Specialist Group. The VWT is working closely with individuals and organisations (NGOs and SNCOs) in other Range States promoting the conservation of bats.

14.2 A.M. Hutson (BCT) and Paul Racey (Aberdeen University) are co-chairman of the IUCN/SSC Chiroptera Specialist Group, A.M. Hutson is the UK representative on its regional subgroup, the European Co-ordinating Panel, which is chaired by Peter Lina (Netherlands). Almost all European Range States have a representative on this panel. The European Co-ordinating Panel aims to develop and implement collaboration on bat conservation activities in Europe under relevant intergovernmental treaties (especially the Agreement on the Conservation of Bats in Europe), and for non-governmental concerns.

14.3. The Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention), which met in December 1999, recommended that Parties draft and implement, or where necessary, reinforce, national action plans for the Greater horseshoe and Pond bats. It invited observer States to consider doing the same.

ANNEX 1

EXAMPLES OF LEAFLETS & BOOK/LETS RELEVANT TO THE AGREEMENT PUBLISHED DURING THE REPORTING PERIOD

Bats in Churches - guidelines for the identification, assessment, and management of bat-related damage to church contents (furnishings, fittings and works of art) - English Heritage
Bats and People - Scottish Natural Heritage
Bats in Roofs - a Guide for Surveyors - English Nature
Bat Workers' Manual - Mitchell-Jones, A.J. & McLeish, A.P. (eds) 1999. JNCC Peterborough.
Focus on Bats - English Nature
Guidelines for bat groups on contract work - Bat Conservation Trust
Long-eared bats - Swift, S.M. (1998). Poyser Ltd, London
Managing Landscapes for the Greater horseshoe bat - English Nature
New Roads: Nature Conservation Management in Relation to Bats - Highways Agency Advice Note
Regulations concerning trees and bats factsheet - Bat Conservation Trust
The Bat Detective - Briggs, B. & King, D. (1998). Stagg Electronics, Sussex.
The Bats of Britain and Ireland (Echolocation Calls, Sound Analysis, and Species Identification) - Jon Russ. Alana Books ISBN 0 9536049 O X.
Trees and Bats, Guidance Note 1 - Arboricultural Association
Ystlumod Bats - Countryside Council for Wales

POPULATION DEMOGRAPHICS

Table I - Population demographics (Great Britain)

Common name	Specific name	Population estimate	Reliability of estimate*	Distribution/ Status**	Estimated trend*
Greater horseshoe bat	*Rhinolophus ferrumequinum*	4,000	4	Restricted/rare	-
Lesser horseshoe bat	*Rhinolophus hipposideros*	17,000	4	Restricted/rare	o
Whiskered bat	*Myotis mystacinus*	40,000	2	Widespread/scarce	-
Brandt's bat	*Myotis brandtii*	30,000	1	Widespread/scarce	-
Natterer's bat	*Myotis nattereri*	100,000	2	Widespread/ frequent	o
Bechstein's bat	*Myotis bechsteinii*	1,500	2	Restricted/rare	o
Daubenton's bat	*Myotis daubentonii*	150,000	2	Widespread/ common	o
Serotine	*Eptesicus serotinus*	15,000	2	Widespread/ frequent	o
Noctule	*Nyctalus noctula*	50,000	3	Widespread/ frequent	-
Leisler's bat	*Nyctalus leisleri*	10,000	2	Widespread/rare	o
+Pipistrelle	*Pipistrellus pipistrellus*	2,000,000	3	Widespread/ common	-
Nathusius's Pipistrelle	*Pipistrellus nathusii*	?		Widespread/rare	o
Barbastelle	*Barbastella barbastellus*	5,000	1	Widespread/rare	-
Brown long-eared bat	*Plecotus auritus*	200,000	2	Widespread/ common	-
Grey long-eared bat	*Plecotus austriacus*	1,000	3	Restricted/rare	o

* The reliability of estimates and estimated trends are based on Harris et al (1995)[17] except for *Pipistrellus nathusii*. The reliability is graded from 1 to 5, with 1 being the most reliable and 5 being the least reliable; 1 may be accurate up to 10%, 5 may be accurate up to within one order of magnitude. Estimated trend: o = stable/unknown, - = decreasing.

** Distribution/status - Hutson (1993)[18]

+ This is now considered to comprise two species and their relative status has not yet been assessed.

17 Harris, S., Morris, P., Wray, S., & Yalden, D. (1995). A review of British mammals: population estimates and conservation status of British mammals other than cetaceans. Peterborough: JNCC.168pp ISBN 1 873701 68 3

18 Hutson, A.M. (1993). Action Plan for the Conservation of bats in the United Kingdom. London: The Bat Conservation Trust.49pp ISBN 1 872745 16 4

Table II - Population demographics (Northern Ireland)

Common name	Specific name	Population estimate	Distribution/status
Leisler's bat	*Nyctalus leisleri*	*18,000	Widespread/frequent
Brown long-eared bat	*Plecotus auritus*	*45,000+	Widespread/frequent
Common pipistrelle	*Pipistrellus pipistrellus*	*1,150,000	Widespread/common
Soprano pipistrelle	*Pipistrellus pygmaeus*	*580,000	Widespread/common
Nathusius's pipistrelle	*Pipistrellus nathusii*	*12,000	Widespread/ rare
Natterer's bat	*Myotis nattereri*	*48,000	Widespread/rare **
Daubenton's bat	*Myotis daubentonii*	*410,000	Widespread/ frequent **
Whiskered bat	*Myotis mystacinus*	*24,000	Widespread/rare **
Brandt's bat	*Myotis brandtii*	Not yet known	Not yet confirmed

* Mean population estimates based on flying individuals - Russ, J.M. 1999[19]
** Status not confirmed, due to lack of information

Table III - Population demographics* (Gibraltar)

Common Name	Specific name	Population estimate
Greater mouse-eared	*Myotis myotis*	max. 4 sightings
Schreiber's bent-winged	*Miniopterus schreibersii*	500
Pipistrelle	*Pipistrellus pipistrellus*	1550**
Free-tailed bat	*Tadarida teniotis*	100**

* Owing to lack of survey data, population trends are unknown in Gibraltar.
** Both Pipistrelles and Free-tailed bats have been widely observed in buildings (figures for which have not been obtained).

Species List (Isle of Man)*

Common pipistrelle *(Pipistrellus pipistrellus)*
Soprano pipistrelle (*Pipistrellus pygmaeus)*
Natterer's bat *(Myotis nattereri)*
Daubenton's bat *(Myotis daubentonii)*

Whiskered bat *(Myotis mystacinus)*

19 Russ, J.M. 1999. The microchiroptera of Northern Ireland: community composition, habitat associations and ultrasound. The Queen's University of Belfast. Unpublished Ph.D. thesis.

Brown long-eared bat	*(Plecotus auritus)*
Leisler's bat	*(Nyctalus leisleri)*

* Maternity roosts have been identified for 5 of the 6 known species (i.e. all except Daubenton's) but in insufficient numbers to enable population estimates to be made at this time.

Species List (Guernsey)

Pipistrelle	*(Pipistrellus pipistrellus)*
Brown long-eared bat	*(Plecotus auritus)*
Grey long-eared bat	*(Plecotus austriacus)*
Nathusius's pipistrelle	**(***Pipistrellus nathusii***)**

There are no reliable population estimates at this time.

SPECIES SPECIFIC (GREAT BRITAIN) INFORMATION

Resident species

1. *Rhinolophus ferrumequinum:* Greater Horseshoe Bat

Status: Native; very rare and endangered.
Population size: Currently thought to be about 4,000; in England 3,650, and in Wales 350. Intensive searches for this species suggest that very few new colonies will be found, although a better understanding of the percentage of the population recorded at nursery roosts may increase the estimate for total population size. **Reliability of population estimate:** 4[20].
Population trends: Following a decline through the 1970s and 1980s, the population in Dorset is increasing following protection. The same applies in south Devon, where summer and winter surveys indicate that numbers have more than doubled in the last 20 years, although it is possible that this does not reflect a genuine increase but is due to immigration or to the adoption of improved monitoring techniques. The south Wales population is believed to be stable or undergoing a small decline. That in the Cotswold area is continuing to decline. Population growth has been shown to be limited by summer weather; poor summers lead to late births and, when followed by an unfavourable climate and poor food supplies in late August and early September, lead to slow growth of juveniles, thereby leading to reduced juvenile survival. Thus, at small population sizes, greater horseshoe bats seem to be particularly vulnerable to declines as a result of a series of cold and wet summers.
Population threats: Populations benefited from mines for limestone, ochre and metal extraction falling into disuse early this century, but more recently many closures for safety reasons are thought to have seriously depressed numbers in Dorset, and to a lesser extent in Avon, Gloucester, Somerset and Wiltshire. Of 426 known hibernacula, 97 (23%) are SSSIs or proposed SSSIs, and these cover 72% of the known hibernating population of Greater horseshoe bats. Although formerly roosting in caves in both summer and winter, this species now depends on buildings during the summer, since few cave sites provide sufficiently high temperatures for successful breeding. Large colonies are also known to have died following the use of pesticides. The loss of large beetles (a major food source) following habitat changes, especially the loss of old pasture, probably poses a major threat to their survival in many areas, and other farming changes are important, e.g. the conversion of hay to silage.
Current action: SAP for UK BAP published, and included in National Bat Monitoring Programme. The UK has contributed to a Species Action Plan for Europe drafted by BCT for the Council of Europe/Bern under Action Theme 11 of PEBLDS. VWT is undertaking habitat enhancement work around 6 key maternity roosts in south-west England. CCW-funded monitoring has continued with the use of non-invasive automatic counters at 2 cSAC sites. EN currently has a major project to improve the management of feeding areas around maternity sites.

2. *Rhinolophus hipposideros:* Lesser Horseshoe Bat

Status: Native; rare and endangered.
Population size: Estimated to be 17,000; in England 7,000, and in Wales 10,000. Recent intensive searches for this species have improved the data on which the population estimate is based, and it is unlikely that further work will substantially increase this population estimate. **Reliability of population estimate:** 4.
Population trends: Current population trends are less clear, since populations are highly localised and variable in size. The loss of abandoned mine sites probably depressed numbers and/or led to a range reduction, whereas densities in forested areas have increased recently, and this species has probably benefited from increased afforestation. A 1987 survey suggested that there had been a range reduction, but with increased densities within the range. Based on roost counts it has been estimated that, in the seven years up to 1992, there had been an overall size reduction of 12% in 36 roosts in England and Wales, but for the 24 roosts in Wales this was 22%, although it is unlikely that this represented a real population decline. Certainly, there appears to be a slight increase in range, with

20 The reliability of population estimates in the above accounts are based on a scientific evaluation of the data available for each specific species. The reliability has been scaled from 1 to 5 (5 being the most credible assessment). See Harris, S., Morris, P., Wray, S., & Yalden, D. (1995). A review of British mammals: population estimates and conservation status of British mammals other than cetaceans. Peterborough: JNCC.168pp ISBN 1 873701 68 3

bats occurring further east in Dorset, although this may be due to increased recorder effort, and there has been an increase in population size in south Wiltshire. Data from hibernacula in south-west England suggest that there has also been a population increase in this area. Overall, in the absence of hard winters for a number of years (see below), it seems that Lesser horseshoe bats have been maintaining population levels and increasing in some areas. A preliminary analysis of the Wales RHB summer roost counts suggests that numbers of bats is remaining stable with a small non-significant upward trend.
Population threats: Reasons for the dramatic range reduction in much of northern Europe are unclear; in Britain the loss of mine sites has probably led to a range reduction. The loss of roosts is a continuing problem, and the species is thought to be very vulnerable to severe winters since many colonies appear to lack suitable hibernacula to protect them from low temperatures. Of 909 known hibernacula, 161 (18%) are SSSIs or proposed SSSIs, and these include 53% of the known hibernating population of Lesser horseshoe bats. Loss of roosts through renovation is significant in Wales.
Current action: Maternity colony monitoring in Wales since 1993. Included in National Bat Monitoring Programme (DETR/BCT). SAP for UK BAP published 1998. PhD recently completed on ecology, roost requirements, habitat requirements etc. (Aberdeen University/VWT). VWT is undertaking habitat enhancement work around 8 key maternity roosts in Wales. CCW and the Bat Groups in Wales repeated monitoring of Lesser horseshoe bat summer roosts in 1999 and the work is continuing.

3. ***Myotis mystacinus:*** Whiskered Bat

Status: Native; locally distributed.
Population size: Estimated to be 40,000; in England 30,500, in Scotland 1,500 and in Wales 8,000. At present there is only a limited amount of information on this species, in particular on its abundance in different parts of Britain and its abundance relative to Brandt's Bat. **Reliability of population estimate:** 2.
Population trends: If this assessment of their relative abundance last century was correct, there has been a significant decline in their relative abundance compared to Pipistrelles, and hence a disproportionately large decline in the number of Whiskered/Brandt's Bats, although their range appears to be much as it was a century ago.

4. ***Myotis brandtii:*** Brandt's Bat

Status: Native; common in west and north England, rare/absent elsewhere.
Population size: Estimated to be 30,000; in England 22,500, in Scotland 500 and in Wales 7,000. Very little is known about this species in Britain, and it is not even clear whether the species is more/less common than Whiskered Bats. **Reliability of population estimate:** 1.
Population trends: Unknown due to early confusion with Whiskered bats; see above for an account of Whiskered/Brandt's bats.

5. ***Myotis nattereri:*** Natterer's Bat

Status: Native; fairly common throughout much of Britain.
Population size: Estimated to be 100,000; in England 70,000, in Scotland 17,500 and in Wales 12,500. Since there is little information on this species, further data on its abundance relative to other species are needed to refine the population estimate. **Reliability of population estimate:** 2.
Current action: Included in National Bat Monitoring Programme (BCT). PhD on ecology with reference to conservation carried out in Wales (Aberdeen University/PTES) is ongoing.

6. ***Myotis bechsteinii:*** Bechstein's Bat

Status: Native; very rare in central southern England, absent elsewhere.

Population size: Estimated to be about 1,500 individuals; all in England although there has been at least one sighting in Wales. **Reliability of population estimate:** 2.
Population trends: It may be that the species is, and in recent times always has been, rare throughout its range, and that populations are stable at low levels. If so, the current low numbers do not represent a recent decline. However, fragmentation of woodlands (see below) may have lead to a population decline. In 1996, a roost was discovered in the New Forest (south coast of England).
Population threats: If the population is as low as is currently believed, this species is one of Britain's rarest resident mammals, and in view of the low numbers must be very vulnerable to further population declines due to chance events. Also, it is thought to be characteristic of ancient deciduous woodland, and because it does not like flying in open areas, fragmentation of woodland is likely to pose a significant threat and may have led to population declines.
Current action: Recent review of records and assessment of potential for future action (BCT report to EN). SAP for UK BAP published in 1998. Some fieldwork through research at autumn cave swarming sites (Surrey) and with bat boxes (Dorset). Possible breeding site identified in Hampshire. Radio tracking study of roosting and foraging ecology (VWT). Three maternity colonies are now known and are under observation.

7. ***Myotis daubentonii:*** Daubenton's Bat

Status: Native; common throughout much of Britain.
Population size: Estimated to be 150,000; in England 95,000, in Scotland 40,000 and in Wales 15,000. These estimates are based on its abundance relative to other species and the belief that the paucity of roost records gives a false impression of rarity. **Reliability of population estimate:** 2.
Population trends: There is no specific information on current population trends in Britain, but in Europe there have been significant increases in the numbers of Daubenton's Bat. These increases may be because aquatic insects, which form the major source of food, have not declined as much as terrestrial insects as a result of the use of insecticides. Eutrophication of fresh waters may have increased food availability for Daubenton's Bats. Changes in water quality in Britain may lead to changes in the availability of suitable insect prey, and in the long-term affect the number of Daubenton's Bats.
Current Action: Included in National Bat Monitoring Programme. Recent research to identify habitat requirements and formulate habitat management plans (EA/Leeds University/NT). Ongoing research on summer activity (Northamptonshire). Research on relationship of foraging to water quality (Aberdeen University). Published.

8. ***Eptesicus serotinus:*** Serotine Bat

Status: Native; widespread in southern Britain.
Population size: Currently believed to number around 15,000; in England 14,750 and in Wales 250. However, this may be a significant under-estimate. **Reliability of population estimate:** 2.
Population trends: Some nursery colonies are known to have declined substantially since 1960. In 1991 a detailed study in East Anglia had shown that the Serotine population had declined by about 90% in 10 years, with some colonies disappearing completely. Recent records from Nottingham, Yorkshire and Wales may be indicative of a range expansion but are more likely to reflect the greater number of people recording bats; although a large bat, the Serotine's crevice-dwelling habits and small colony size render it inconspicuous. Thus, there is an absence of hard data on which to assess current population trends.
Current action: Included in National Bat Monitoring Programme. Current PhD investigating requirements of roosts and associated habitat (Sussex University). Long-term ringing programme for site fidelity, mortality, breeding activity (BCT). Study of roost occupancy and diet across the range in the UK (VWT).

9. ***Nyctalus noctula:*** Noctule Bat

Status: Native; generally uncommon, but more numerous in well-wooded areas.

Population size: Estimated to be 50,000; in England 45,000, in Scotland 250 and in Wales 4,750. This seems a reasonable estimate, based on the relative abundance of Noctules to other species of bat in the samples submitted for rabies testing. **Reliability of population estimate:** 3.
Population trends: No quantified information is available on current population trends. Although widespread, there are not many roosts in buildings and so there are few data on which to base an estimate of population trends. The loss of ancient woodlands and old hedgerows may have removed both foraging habitats and roost sites.
Current action: Included in National Bat Monitoring Programme. Project initiated to investigate roost and foraging requirements to identify habitat management plans for the species conservation (BCT/EBMF).

10. ***Nyctalus leisleri:*** Leisler's Bat

Status: Native; widespread but scarce in Britain.
Population size: Around 10,000; in England 9,750, and in Scotland 250. More information is needed to refine this estimate. **Reliability of population estimate:** 2.
Population trends: Unknown, but it seems probable that this species has always had a restricted range and been at relatively low population levels in Britain. There has been a proportional increase in the number of recent Leisler's records, and the species may be increasing slightly.
Current action: Current PhD (Northern Ireland) on habitat use (University Belfast); long-term ringing project (NI Bat Group).

11. ***Pipistrellus pipistrellus:*** Pipistrelle Bat

Status: Native; common in most areas.
The echolocation calls of Pipistrelle bats fall into two distinct frequency bands, with frequencies containing most energy averaging 45 kHz and 55 kHz. The two types also show small differences in average morphometrics. Although both phonic types are found throughout Britain, they are reproductively isolated with separate maternity colonies. Thus, *Pipistrellus pipistrellus* may actually consist of two cryptic sibling species, and further genetic work seems to support this view. There is some evidence that the low frequency type predominates on the south coast, whilst the high frequency type predominates in Scotland. A submission has been made to the International Commission on Zoological Nomenclature for the creation of two neotypes needed to establish the names for the two species as: *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*.
Population size: Probably around 2,000,000; in England 1,250,000, in Scotland 550,000 and in Wales 200,000. More information is needed on the population structure of Pipistrelles, and density estimates from areas in southern Britain, to improve this estimate. Also, since the density estimates used may have been some way below the actual density, this figure is likely to be an under rather than over-estimate. **Reliability of population estimate:** 3.
Population trends: Overall, Pipistrelles are thought to have undergone a substantial population decline since 1960; annual surveys of colonies in houses from 1978-1983 showed declines of 55%, and average colony size fell from 119 to 53. By 1987 this decline had reached 62% of the 1978 population, and there were few known colonies of more than 1000 individuals, although such large colonies were not unusual before 1960. Also, whilst there are regional differences in mean Pipistrelle colony size (south-west England 56, mean of 44 colonies per year counted 1986-1992; south-east England 64, mean of 173 colonies per year counted 1986-1992; Midlands 70, mean of 78 colonies per year counted 1986-1992; north England 85, mean of 122 colonies per year counted 1986-1992; Scotland 262, mean of 41 colonies per year counted 1989-1992; Wales 99, mean of 56 colonies per year counted 1986-1992), it is unclear whether these mean colony sizes represent different population densities. Although two studies in Scotland and one in Yorkshire found very similar population densities (Speakman, 1991), mean colony size in Scotland was three times that in north England. Hence differences in mean colony size may not represent different population densities, and interpreting data on roost sizes is difficult. Thus, whilst it is likely that there have been declines in Pipistrelle numbers, the magnitude of this decline is unclear. They are, however, still by far the most common and widespread bat in the UK and colony counts are an unreliable population estimate for this species.
Current action: Included in National Bat Monitoring Programme. SAP for UK BAP published. Research into separation into two species and implications for conservation (Bristol/Aberdeen University/Institute of Zoology).

12. *Barbastella barbastellus:* Barbastelle Bat

Status: Native; widespread but rare.
Population size: Probably about 5,000 individuals; in England 4,500, and in Wales 500. Until we know more about the biology of this species, it is impossible to estimate population size more precisely. **Reliability of population estimate:** 1.
Population trends: Currently unknown. Despite the increase in records for most species of bats due to the recent increase in bat recording, the number of Barbastelle records has declined after a peak in the 1950s and 1960s. This might represent a population decline. An alternative explanation for the decline in the number of records is that Barbastelles are known to respond to severe weather by entering caves, where they are more likely to be detected. Thus severe winters (e.g. 1962/1963, 1969) may have produced peaks of records that do not imply a real decrease subsequently. The reported decline in the number of records has been questioned, and it has been suggested that there has been an increase in records in the last decade in line with the increased activity of Bat Groups. In 1996, a breeding roost was discovered in Norfolk, and a second in Sussex in 1997 by VWT.
Current action: Recent review of records and assessment of potential for further action (BCT report to EN). SAP for UK BAP published in 1998. Some field work through research at maternity roosts and other roost sites (Norfolk, Devon, Sussex). Maternity colonies have been identified in Norfolk and Sussex and work is being pursued on both these colonies and in Devon. Further maternity sites were found in Somerset in 1999.

13. *Plecotus auritus:* Brown Long-eared Bat

Status: Native; common.
Population size: Around 200,000; in England 155,000, in Scotland 27,500 and in Wales 17,500. For the second most common bat in Britain, there is a surprising lack of data on which to base a more precise population estimate. **Reliability of population estimate:** 2.
Population trends: Currently unclear. It has been concluded that the species has declined in recent decades, because Brown long-eared bats are very dependent on roof spaces and so, during the last 30 years, were at risk from the amount of timber treatment in buildings using organochlorine pesticides. Since this was coupled with the known loss of woodland, a habitat of great importance to Brown long-eared bats, it has been argued that this decline may have been substantial.
Current action: Completed PhD on roost use and habitat preferences (Aberdeen University). Recently completed PhD on roost fidelity, paternity and kinship (Aberdeen/Institute of Zoology). Completed PhD on roost requirements and associated habitat (Sussex University).

14. *Plecotus austriacus:* Grey Long-eared Bat

Status: Native; very rare, and only a few small colonies are known.
Population size: All estimates put the figure at about 1,000, in England only. In view of the limited range and information on the species, this is the best available estimate. **Reliability of population estimate:** 3.
Population trends: Any long-term population trends is unknown. Grey long-eared bats are generally rare in north-west Europe, but common in southern areas, particularly around the Mediterranean. Thus they are vulnerable to harsh winters, and in the cold winter of 1962/1963 one colony in Dorset declined from 22 to 4 individuals. Three colonies in Dorset and one in north-west Devon have all declined to extinction in the last 20-30 years.

15. *Pipistrellus nathusii:* Nathusius's Pipistrelle Bat

Status: Rare.
The discovery of a 160+ breeding roost in Northern Ireland has removed any question of the status of this species. In Great Britain, it remains a regular winter visitor, although the possibility of breeding remains, based on two young animals with barely fused epiphyses from Peterborough in 1992.

Population size: Unknown; apart from a maternity roost in Northern Ireland and one in Lincolnshire, there are only about 100 records of individuals, most of which are around May and September and in the winter. Social calls have been widely reported in the UK. This temporal distribution does not coincide with winds of a particular direction, and hence suggests that some bats migrate across the North Sea and English Channel to hibernate in Britain, returning to mainland Europe the following spring. However, there is evidence to suggest that the species may be breeding in Britain (see above), and their regular occurrence amongst the bats submitted for rabies testing (around 1% of bats submitted) suggests that the species may be under-recorded. However, this sample is biased by the inclusion of bats from North Sea oil rigs that are automatically sent for rabies testing.
Population trends: Unknown. The recent spate of records may be due to a change of status and the species expanding westwards, but more critical recording by volunteer Bat Groups is likely to have been a significant factor leading to more records.
Population threats: None known specifically for this species.
Current action: A review of British records and status is in preparation by Belfast University, BCT and Aberdeen University.

PROSECUTIONS BROUGHT UNDER THE WILDLIFE AND COUNTRYSIDE ACT 1981, WHICH INVOLVED BATS.

Table IV

Year	Details	Plaintiff	Result	Fine (£)
1985	Spraying poisonous substances	North Yorkshire Police	Conviction	1000 (plus 350 costs)
1985	Spraying poisonous substances	Dyfed/Powys Police	Conviction	50
1985	Spraying poisonous substances	Nature Conservancy Council	Conviction	1000 (plus 500 costs)
1986	Spraying poisonous substances	North Yorkshire Police	Conviction (overturned on appeal)	500 (plus 200 costs)
1986	Killing bats	Procurator Fiscal	Conviction	5
1988	Disturbing a roosting bat	Nature Conservancy Council	No jurisdiction	-
1988	Illegal possession of a dead bat	Yorkshire Police	Conviction	30
1989	Disturbing a roosting bat	Nature Conservancy Council	Conviction	1200 (plus 933 costs)
1990	Illegal possession of a dead bat	Royal Society for the Prevention of Cruelty to Animals	Conviction	1200
1992	Damaging a bat roost and disturbing bats	Nature Conservancy Council	Conviction (overturned on appeal)	1500
1994	Illegal possession of a dead bat	Nottinghamshire Police	Conviction	100
1994	Illegal possession of a dead bat	Nottinghamshire Police	Conviction	100

1. SPECIES SPECIFIC GUIDELINES FOR THE CONSIDERATION OF BAT ROOSTS AS SSSIs.

Greater horseshoe bat - all main breeding roosts and all winter roosts containing 50 or more adult bats.

Lesser horseshoe bat - all breeding roosts containing 100 or more adult bats and all winter roosts containing 50 or more bats.

Mouse-eared bat - all breeding and hibernation sites.

Barbastelle, Bechstein's and Grey long-eared bats - any traditional breeding roosts.

Natterer's, Daubenton's, Whiskered, Brandt's, Serotine, Noctule and Leisler's - except in exceptional circumstance protection of roost of these species should come under Section 9 of the 1981 Act.

Pipistrelle and Brown long-eared bats - protection should rely on Section 9 of the 1981 Act.

Mixed assemblages - where 4 or more species are found, 50 or more individuals; 3 species, 100 or more; 2 species, 150 or more, or exceptionally 300 (in those parts of the country where large roosts are unknown.

2. SSSIs IN ENGLAND, NOTIFIED FOR THEIR BAT INTEREST:

Table V

Cornwall	Trehane Barton Farm Minster Church
Devon	Beer Quarry and Caves Berry Head to Sharkham Point Bulkamore Iron Mine Buckfastleigh Caves Chudleigh Caves and Woods
Dorset	Bryanston Creech Grange
Essex	Hangman's Wood and Deneholes
Gloucestershire	Woodchester Park Box Farm Meadows Blaisdon Hall Buckshaft Mine & Bradley Hill Railway Tunnel Devils's Chapel Scowles Old Bow & Old Ham Mines Sylvan House Barn Westbury Brook Ironstone Mine Dean Hall Coach House and Cellar Caerwood, Tidenham Wigpool Ironstone Mine
Hampshire	Greywell Tunnel (Basingstoke Canal)
Hereford & Worcestershire	The Malvern Hills
Kent	Westerham Mines
Norfolk	Eaton Chalk Pit
Somerset	Old Ironstone Works, Mells The Cheddar Complex Banwell Ochre Caves Brockley Hall Stables Brown's Folly Coombe Down & Bathampton Down Mines

	King's Wood & Urchin Wood
Shropshire	Llanymynech & Llynclys Hills
Suffolk	Little Blakenham Pit The Glen Chalk Caves Horringer Court Caves
Surrey	Mole Gap to Reigate Escarpment
West Sussex	Cocking and Singleton Tunnels
Wiltshire	Winsley Mines Box Mine Chilmark Quarries Fonthill Grottoes Iford Manor

3. SSSIs IN WALES, NOTIFIED BECAUSE OF THE SITE CONTAINING A BAT INTEREST:

Table VI

Powys	Buckland Coach House & Ice House West Llangynog Slate Mine Allt y Main Mine Penygarnedd Mine Garth-eryr Bryngwyn Hall Stables and Coach House Hendre, Llangedwyn
Pembrokeshire	Stackpole Hook Wood Stackpole Courtyard Flats & Walled Garden Little Hoyle and Hoyle's Mouth Caves & Woodlands Carew Castle Castlemartin Cliffs and Dunes Slebech Stable Yard Loft, Cellars & Tunnels
Monmouthshire	Siambre Ddu Wye Valley Upper Wye Gorge Newton Court
Denbighshire	Ffynnon Beuno and Cae Gwyne Caves
Swansea	Penrice Stables and Underhill Cottage
Conwy	Coed y Gopa
Gwynedd	Coleg Glynlifon Dolorgan Barn Penmaenuchaf Hall Glyn Cywarch Y Glyn Bryn y Gwyn Isaf

ANNEX 5

4. CANDIDATE SPECIAL AREAS OF CONSERVATION:

Twelve sites have been identified as being of importance for their bat interest and have been submitted to the European Commission as candidate Special Areas of Conservation. The criteria under which the sites are selected are set out in Annex III of the Habitats Directive.

Table VII

Bat Species' Candidate Special Areas of Conservation (cSAC) under the EU Habitats Directive

SPECIES **SITE NAME**	**Greater horseshoe (*Rhinolophus ferrumequinum*)**	**Lesser horseshoe (*Rhinolophus hipposideros*)**	**Barbastelle (*Barbastella barbastellus*)**	**Bechstein's (*Myotis bechsteini*)**
Bath and Bradford on Avon Bats	√			
Beer Quarry and Caves				√
Chilmark Quarries			√	√
Coleg Glynllifon		√		
Limestone Seacliffs of S.W. Wales	√			
Mells Valley	√			
North Somerset and Mendip Bats	√			
Pembrokeshire Bat Sites	√			
South Hams	√			
Tanat and Vyrnwy Bat Sites		√		
Usk Bat Sites		√		
Wye Valley and Forest of Dean Bat Sites	√	√		

ANNEX 6

RESEARCH PROJECTS UNDERWAY IN 1998 – 1999

Table VIII

Subject	**Responsible organisation**
Development of Relative Toxicity Index for	DETR ad-hoc group, the Health and Safety

pesticides	Executive and the Institute of Terrestrial Ecology
Greater horseshoe recovery programme	English Nature
Echolocation, flight and foraging	Bristol University
Greater horseshoe bat ecology	R Ransome and R.E.Stebbings
Annual bat colony survey	R.E.Stebbings Consultancy
Application of molecular methodologies to studies of population genetics, social organisation and taxonomy	Aberdeen University, Bristol University and the Institute of Zoology
National Bat Monitoring Programme	DETR/BCT
Social organisation of Pipistrelle bats	Leeds University
Serotine bat breeding behaviour, site fidelity, mortality	Bat Conservation Trust
Ecology of Daubenton's bat	P Richardson
Population/habitat studies	Forestry Commission/Leeds University
Ecology of Natterer's bat	Aberdeen University
Greater horseshoe bat foraging	Vincent Wildlife Trust
Lesser horseshoe bat maternity roost monitoring	Countryside Council for Wales
Lesser Horseshoe foraging	Vincent Wildlife Trust
Bechstein's bat survey	Vincent Wildlife Trust
Roost monitoring of Greater Horseshoe bat	Peter Andrews and Countryside Council for Wales
Community Structure and resource partition of bats in Northern Ireland	Dept of the Environment Northern Ireland and Queens University, Belfast
Ecology and Conservation of Leisler's bat	Dept of the Environment Northern Ireland and Queens University, Belfast
Use of corridors by bats	University of Aberdeen
Ecology and behaviour of Noctule bats	University of Aberdeen

Research on the biology of Leisler's bat in Northern Ireland	University of Aberdeen
Hedgerow architecture and its implications for pipistrelles and other bats	CCW
Bechstein's studies	VWT Bat worker
Barbastelle studies	Norfolk and Devon bat groups and BCT
Long-eared and Serotine ecology PhD	University of Sussex

Bat use of Farm Woodland Premium Scheme plantations	CSL and BCT
Noctule bat roosting and foraging behaviour	Aberdeen University/BCT (EBMF grant)
Bats & wildlife corridors	University of Aberdeen
Ecology of pipistrelle species	Bristol University
Leisler's bat long-term ringing project	NI Bat group
Bat rabies surveillance	CVL/BCT
Effects of avermectins on bat foraging over cattle grazed pasture	VWT
Wales & West Midlands Lesser horseshoe bat roost survey	VWT
Radio-tracking study of foraging behaviour of Lesser horseshoe bats	VWT
Radio-tracking studies to identify key foraging areas around important Greater horseshoe bat roosts for designations of SACs	VWT
Roosting and foraging ecology of Bechstein's bat	VWT
Roosting and foraging ecology of the Barbastelle	VWT
Design and construction of artificial roosts for Lesser horseshoe bats	VWT
Serotine bat regional variations in roost occupancy and diet	VWT
Feasibility of artificial maternity roosts for Lesser horseshoe bats	Leeds University and CCW
Bechstein's bat box project	VWT and English Nature
Preservation, protection, enhancement and creation of underground habitats for bats	BCT (EBMF grant)

DNA profiling of Serotine bat colonies in SE England and adjacent mainland Europe.	Central Science Laboratory/BCT