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in the Federal Republic of Germany

1998 - 2000

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A General information

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Competent Authority: Federal Agency for Nature Conservation (BfN)
Konstantinstraße 110
D-53179 Bonn
Germany

Member of the Advisory Committee: Gerhard Adams (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, BMU)

Advisor to the Committee member: Peter Boye (BfN)

This report was compiled from contributions by the *Länder* of Baden-Württemberg (Dr. Michael Linnenbach, Landesanstalt für Umweltschutz <*State Institute for Environmental Protection*>; Monika Braun, Koordinationsstelle für Fledermausschutz Nordbaden <*Coordination Office for Bat Conservation in North Baden*>), Bavaria (Bernd-Ulrich Rudolph, Landesamt für Umweltschutz <*State Institute for Environmental Protection*>; Matthias Hammer, Koordinationsstelle für Fledermausschutz Nordbayern <*Coordination Office for Bat Conservation in Northern Bavaria*>; Dr. Andreas Zahn, Koordinationsstelle für Fledermausschutz Südbayern <*Coordination Office for Bat Conservation in Southern Bavaria*>), Berlin (Johannes Schwarz, Senatsverwaltung für Stadtentwicklung <*Senate Administration for Urban Development*>; Carsten Kallasch and Martin Lehnert, Vespertilio e.V. <*NGO*>), Brandenburg (Dr. Jens Teubner and Dr. Dietrich Dolch, Landesumweltamt <*State Environment Agency*>), Hesse (Markus Dietz, Arbeitskreis Wildbiologie an der Justus-Liebig-Universität Gießen <*NGO*>; Dr. Klaus Richarz, Arbeitsgemeinschaft für Fledermausschutz in Hessen <*NGO*>), Lower Saxony (Bärbel Pott-Dörfer, Landesamt für Ökologie <*State Institute for Ecology*>), North Rhine-Westphalia (Christian Stang, Ministry for the Environment, Regional Planning and Agriculture), Saarland (Joachim Gerstner, Environment Ministry; Christine Harbusch), Saxony (Dr. Ulrich Zöphel, Landesamt für Umwelt und Geologie <*State Institute for the Environment and Geology*>), Saxony-Anhalt (Dietmar Spitzenberg, Ministry for Regional Planning and the Environment; Bernd Ohlendorf, Arbeitskreis Fledermäuse Sachsen-Anhalt e.V. <*NGO*>), Schleswig-Holstein (H. Schladerbusch, Ministry for the Environment, Nature and Forestry), Thuringia (Hartmut Geiger, Staatliches Umweltamt Erfurt <*Erfurt State Environmental Agency*>) and competent Federal Authorities.
Compiler: Peter Boye.

B Bats in Germany

1 Summary of species occurring in Germany

The present report serves to supplement the data presented in the first and second National Reports of 1996 and 1998. To avoid repetition, we do not reproduce here the previous findings concerning distribution, roosting, habitat requirements and risk factors, unless any significant changes have been recorded. A new addition to the list of Germany's bat species is the soprano pipistrelle, *Pipistrellus pygmaeus*, which was previously undistinguished from the common pipistrelle, or only as the "55 kHz variant".

1.1 *Rhinolophus ferrumequinum*
Greater horseshoe bat

Germany has a residual population of around 60 to 90 greater horseshoe bats. As before, there is only one known maternity roost, which the state of Bavaria has undertaken various measures to preserve.
German Red List: Category 1 = Critically endangered.

In Bavaria, since the discovery of the last maternity roost in 1992, some nine to twelve young have been born and raised each year by the 20 or so females. Since 1990, some 15 to 19 individuals have been recorded in seven caves in Oberpfalz (Upper Palatinate region of Bavaria) which are known winter roosting sites (Figure 1). The size of this residual population can only be estimated. As the existence of further maternity roosts in Bavaria is thought to be unlikely, and the population is therefore confined to a few roosting sites, the current total is thought to be no more than 50 to 70 individuals. A species aid programme has been initiated in Bavaria. As part of this scheme, the building containing the maternity roost colony was leased by the Higher Nature Conservation Agency of Oberpfalz in 1996. Funds are now available from the Bavarian Nature Conservation Fund <*Bayerischer Naturschutzfonds*> to purchase the building as soon as it comes on the market.

In Baden-Württemberg, there is only one known summer roosting site at present, in the foothills of the Central Black Forest. A few known winter roosting sites are distributed amongst the Swabian Alb and the Black Forest.

In Saarland, greater horseshoe bats are confined to the western Saargau/Niedgau district in Mondorf, Hemmersdorf, Eimersdorf and Siersburg. There are records of a maximum of 15 bats in winter roosting sites and migration roosts, and a few of them also spend the summers in these roosts. The population is in contact with a group in Luxembourg and another group in neighbouring Lorraine, where there are several maternity roost colonies.

1.2 *Rhinolophus hipposideros*
Lesser horseshoe bat

The population of lesser horseshoe bats in Germany remains low and is thought to be less than 1,000. In recent years, many roosting sites have been abandoned or destroyed. The remainder are distributed amongst three isolated populations in southern Bavaria, Saxony, Saxony-Anhalt, Thuringia and Hesse and therefore faced increased risk.
German Red List: Category 1 = Critically endangered.
In Bavaria, reproduction of the lesser horseshoe bat only occurs in southern Bavaria. In northern Bavaria, it has been classified as extinct since the early Nineties, although a single bat spent the winter in a cellar in northern Frankenalb in the district of Bayreuth every year from 1996 to 1999. At present,

Figure 1: Development of the population of greater horseshoe bats in Oberpfalz (Upper Palatinate region of Bavaria), 1986 to 1999.

there is only one known maternity roost in Bavaria, at Herrenchiemsee castle in the Rosenheim district. This colony continues to show positive development (Figure 2). The former colony in Peißenberg in the Weilheim-Schongau district seems to be extinct. In 1998 and 1999, searches only revealed the faeces of a single bat. Indications of an additional colony in the Bad Tölz region have not yet been substantiated. Intensive research in numerous buildings in Kochel has revealed a migration roost with three individuals. In the year 2000, there are plans to conduct a telemetric experiment with female horseshoe bats in order to locate the roosting sites of the suspected colony, starting from a cave above the Kochelsee lake. Winter roost findings in southern Bavaria are confined to individual bats in a few caves and tunnels in the Alps and the foothills of the Alps.

In Hesse, only isolated individuals have been found in a winter roosting site in the Werra Valley, close to the border with Thuringia.

In Saxony, there are eight known maternity roosts with a total of 380 adult and juvenile bats in the vicinity of Dresden. In two larger maternity roosts, the population is increasing. One small maternity roost with four adult females was discovered in 1998. The population, which is slowly increasing, is concentrated in a few summer roosting sites. In view of the serious threat posed by redevelopment measures and changes of ownership, the population would be at risk of extinction if the intensive conservation efforts were to be relaxed. Not all of the winter roosting sites in Saxony are known; some 75 bats spend the winter in nine roosts.

In Saxony-Anhalt, special protective measures have prompted a slight upward trend in the population development of the lesser horseshoe bat. At present, the population is estimated at around 120. In the period under review, one maternity roost and two additional winter roosting sites were discovered. A species aid programme has been set up for lesser horseshoe bats in Saxony-Anhalt, and there are plans for a research project to document the summer and winter roosting sites in the Unstrut region.

In Thuringia, the monitored population numbers approximately 240 bats, but the trend remains negative. The central Saale valley is home to the country's two largest known winter roosts, with populations of around 60 and 100 respectively. The few maternity roosts are extremely at risk. In the past ten years, more than half of them have been destroyed or disturbed.

Figure 2: Population development of the lesser horseshoe bat at Herrenchiemsee castle. Where adult and juvenile bats are monitored separately, this has been noted. In 1995, monitoring was carried out before the young were born, with the result that only adult individuals were counted. In 1953, the colony consisted of 200 individuals. The numbers of young are minimum figures, since they are easily overlooked when clinging to their mothers.

1.3 *Myotis myotis*
Greater mouse-eared bat

With a dwindling population up until the early Eighties, for the past 15 years or so the greater mouse-eared bat has enjoyed a trend reversal in Germany. For example, since the summer of 1985 the average size of the maternity roost colonies in northern Bavaria has risen significantly, from around 270 to 470. Within this period, the large colonies have increased to a maximum of 1,000. In 1997, Germany's total population was estimated to be at least 350,000.
German Red List: Category 3 = Vulnerable.

The greater mouse-eared bat is widespread in Bavaria and there are currently thought to be around 285 colonies, 156 of them in southern Bavaria and 130 in northern Bavaria. Most of these are monitored annually, in order to count the number of individuals and evaluate reproductive success (Figure 3). In summer, 119 maternity roosts with a total of 53,700 bats were monitored in northern Bavaria, and 151 maternity roosts with 26,200 bats in southern Bavaria, producing a total of 80,000 females and juveniles. The size of the colonies ranges from less than 10 to over 2,600 (Table 1). By far the highest density of population and largest colonies are found in the nature areas of Spessart, Rhön and

Frankenalb (Table 2). The common feature of the densely populated areas is a high proportion of woodland, particularly deciduous forests, and favourable climatic conditions in the summer season. Several other nature areas such as the Franconian Forest (Frankenwald), the Fichtel Mountains (Fichtelgebirge), the Oberpfalz part of the Bohemian Forest (Oberpfälzer Wald) and the Bavarian Forest (Bayerischer Wald) are not populated, or only sparsely populated, probably for climatic reasons or due to the high proportion of coniferous forest. In winter, the mouse-eared bat is found in a wide range of large, underground roosts and is the commonest type of species in Bavaria, being widespread throughout depending on the supply of winter roosting sites.

In Baden-Württemberg, during the summer months greater mouse-eared bats are concentrated in the Black Forest, Ostalb, Kocher-Jagst plains and the Tauber region. As the species is prevalent throughout the state, Baden-Württemberg shares a special responsibility with Bavaria for the conservation of this species.

In Berlin, only isolated individuals of the species are found in summer, whereas in winter they are regularly sighted in the larger winter roosts. The population has stabilised at a low level, not least thanks to intensive conservation measures, and indicates a slight positive trend. A recently created roost in the Tegel Waterworks (cf. Figure 4) accommodated 65 greater mouse-eared bats in the winter of 1999/2000.

The slow increase in the number of bats which spend the winter in Brandenburg suggests that the population has probably increased in recent years. There are 15 known maternity roosts in the state. In winter, the roosts only usually contain a few bats, generally well below a hundred. Only the winter roosting sites in the Rüdersdorf mine (but with a declining trend) and in the Frankfurt/Oder brewery cellar (with a rising trend, with over 800 in 1996) contain several hundred bats. Several greater mouse-eared bats from Brandenburg migrate over 200 km to their winter roosts in Poland and Saxony.

In Hesse, there are signs that the population is stabilising. There are currently 45 known maternity roosts with more than 7,000 adult females. A monitoring programme and a roost management system is currently under development for this species.

In Lower Saxony, many years of monitoring indicate that the population of greater mouse-eared bats is stabilising.

In North Rhine-Westphalia, populations in the winter roosting sites are on the increase.

In Saarland, however, the situation contradicts the population trends in other *Länder*. During the summer, there are only two known maternity roost colonies, each with a maximum of 50 adults. Winter tunnel inspections revealed only comparatively few bats (a maximum of 50). Former Westwall tunnels and old ore mines serve as the principal winter roosting sites.

In Saxony, the numbers of greater mouse-eared bats have been on the increase since the early Eighties, although development of the individual colonies shows a highly differentiated pattern. There are 21 known maternity roosts in the lowlands and downs, the largest with up to 900 females and juveniles. The total population in Saxony is estimated at around 2,700 individuals.

In Saxony-Anhalt, for the past five years, all data on greater mouse-eared bats has been collated within the context of a selective monitoring programme. This has indicated a positive development trend. In the underground maternity roost at the Meisdorf vault in the Harz region, the known population has increased from 120 to 800 within the space of six years. In 1999, the population of greater mouse-eared bats in Saxony-Anhalt was estimated at around 6,125 (Table 3).

In Schleswig-Holstein, which represents the northern distribution limit of the greater mouse-eared bat, there are records of one or two animals each year in the Segeberg cave. Other isolated bats spent the

winter of 1998 in two bunkers near Geesthacht. Despite intensive searches in the south-eastern part of the *Land*, no maternity roosts have been found to date. However, surveys for the construction of the A 20 road revealed greater mouse-eared bats foraging for food in the Wakenitz region.In Thuringia, this species is found in nearly all nature areas which offer suitable thermal and structural conditions. There is an apparent lack of maternity roosts in large-scale, intensively farmed rural districts. Most confirmed winter roosting sites are in the northern and southern periphery of the Thüringer Wald and other mountainous areas. There is a population of approximately 6,600 adult females in the maternity roosts. Population development is well-documented, thanks to the large numbers of random samples and targeted monitoring in the maternity roosts. Since 1990, there has been increasing evidence of maternity roosts being destroyed as a result of redevelopment measures. There have been repeated incidences of poisonings caused by the use of wood preservatives toxic to bats. However, the populations are not expected to retreat from this area.

Figure 3: Development of the population of greater mouse-eared bats in 37 permanently monitored winter roosting sites in northern Bavaria

Table 1: The eleven largest colonies of greater mouse-eared bats in Bavaria, 1998.

Table 2: Size of colony and density of population of greater mouse-eared bas in selected Bavarian nature areas with respect to maternity roost animals (females with this year's young).

Table 2: Continued.

Table 3: Results of selected monitoring of the greater mouse-eared bat in Saxony-Anhalt, 1999.

Figure 4: Development of the population of greater mouse-eared bats in winter roosting sites in Berlin.

1.4 *Myotis daubentonii*
Daubenton`s bat

Daubenton's bats are widespread and common in Germany. However, maternity roosts are only found comparatively rarely, because they are usually in tree hollows and therefore difficult to spot. The population is stable, and even increasing in many regions.
German Red List: Not threatened, IUCN category LR cd.
In the permanently monitored winter roosting sites in Bavaria, the population of Daubenton's bats has shown a continuous increase interrupted only by occasional setbacks (Figure 5). Reproduction is concentrated in the pond regions of Franconia and Oberpfalz (Upper Palatinate region of Bavaria). However, visual monitoring of numerous waterbodies throughout Bavaria verifies area-wide distribution overall, albeit with varying density. In Lower Franconia, which has little stagnant water, there have been no sightings in certain areas.

In Berlin, the species is found on most waterbodies in summer, but there is no equivalent number of known roosts. In the winter of 1998/1999, Daubenton's bats were found in ten winter roosting sites. In Spandau Citadel, the visible population in winter fell from 214 in 1974/1975, to 169 in 1989/1990, to 69 in 1999/2000 (Figure 6), reflecting an actual decline in population also apparent at other Berlin roosting sites but which cannot be precisely quantified.

In Brandenburg, by contrast, there are signs of a slight increase in population, although the winter roost in the Rüdersdorf mine, which used to accommodate several thousand Daubenton's bats, now only numbers a few hundred. Most other winter roosting sites provide shelter for less than a hundred bats.

In Saarland, Daubenton's bats are distributed throughout all suitable running and stagnant waterbodies, but there are no known summer roosts. In winter, small numbers are regularly recorded in the roosts.In Saxony, maternity roost colonies with generally 35 to 40 adult bats, up to a maximum of 67, have been

identified, primarily in the pond region of Upper Lusatia (Oberlausitz). The winter roosting sites are mainly concentrated in the mountains.

In Saxony-Anhalt, there are three known maternity roosts in spotted woodpecker holes. There have been winter sightings in all major primary and secondary rock roosts. There are also known colonies of more than 50 in the winter roosts at two properties in Gardelegen and Havelberg. Surveys of the winter roosts in the Harz region would seem to suggest a negative population development in Saxony-Anhalt. Two marked bats from the Harz region were identified in the northern Harz foothills, indicating migrations of up to 100 km.

The species is distributed throughout Schleswig-Holstein, and the population in winter roosts and summer habitats is stagnating. The Segeberg cave is particularly significant as both a summer and winter roosting site, and accommodates between seven and eight thousand bats in the winter. Large hibernating colonies are also found in bunkers and tunnels in Kiel, Eckernförde, Flensburg and Groß Nordsee.

In Thuringia, wider area distribution of the species suggests positive population development. Since the mid-Eighties, increasing numbers have been recorded in the winter roosts.

Figure 5: Development of the population of Daubenton's bats in 37 permanently monitored winter roosting sites.

Figure 6: Population development of Daubenton's bats in long-term monitored winter roosts at Spandau Citadel and the Fichteberg bunker in Berlin.

1.5 *Myotis dasycneme*
Pond bat

Our knowledge of the pond bat in Germany remains inadequate. There are suspected maternity roosts in the vicinity of major rivers and lakes throughout northern Germany, but to date only a few have been located. Winter distribution is also unclear, since net captures were made in late summer in front of roosts where the species had not previously been recorded. Germany's total population is now estimated at between 2,000 and 5,000.
German Red List: Category G = Threatened but status unknown, IUCN category CR, EN or VU.

In Brandenburg, summer sightings of pond bats were also made in Schwedt (Uckermark) and Beeskow (east Brandenburg). There are signs that the species does reproduce in the *Land*, but no proof as yet. The species is rarely found in winter roosting sites.

In Hesse in the period under review, a pond bat was once again sighted at a winter roosting site in central Hesse.

In Lower Saxony, in the vicinity of Nienburg an der Wester, two male roosts with approximately 50 and 15 bats respectively have been confirmed.

In North Rhine-Westphalia, no significant changes in population have been ascertained. Important roosting sites include the Meyer well near Havixbeck, the Karststein caves near Mechernich (Eifel) and the Stolzenburg cave near Urft (Eifel).

In Saxony, individual sightings of the pond bat were recorded in Upper Lusatia (Oberlausitz), and in September 1999 from a net capture in front of a tunnel opening in the Freiberg region.

In Saxony-Anhalt there have been two recent sightings – a summer sighting at Aland near Wanzer and a sighting at the winter roost in the Volkmars cellar near Blankenburg (Harz).

In Schlweswig-Holstein, every year up to ten bats are sighted in mating roosts in the eastern part of the Holsteinische Schweiz lake region. There are no known maternity roosts at present, but it is anticipated that some will be found. Around 50 bats spend the winter in the Segeberg cave. Other winter roosting sites have also been found in the environs of Kiel and the North Sea-Baltic Canal.

In Thuringia, there have only been four recorded sightings of individual bats to date. Further such sightings are anticipated in future, particularly in the major river valleys of Werra, Unstrut and Saale. The pond bat may even extend its territory to Thuringia.

1.6 *Myotis nattereri*
Natterer`s bat

Natterer's bats occur throughout Germany. They may actually be more common in many areas than was thought until recently. Population growth has been ascertained in many regions.
Red List: Category 3 = Vulnerable.
In Bavaria, the population is expected to remain constant to slightly increasing (Figure 7). Natterer's bats are concentrated predominantly in northern and north-eastern Bavaria, with numerous maternity roosts in and on buildings and in nesting boxes. They occur area-wide in winter roosts in northern Bavaria. By contrast, the Natterer's bat is far more rare in southern Bavaria, where there are just 20 known winter roosts in the northern part and nine in the Alps and in the foothills of the Alps. There are 23 known maternity roosts in southern Bavaria, with a maximum colony size of 85. A similar number of maternity roosts are known to exist in northern Bavaria. Evidently, the Natterer's bat inhabits various forest regions in comparatively high densities, since in 1998 and 1999, for example, the species was recorded as the commonest species of noctule bat in the Ebersberg Forest, an extended pine forest region to the east of Munich.

In Berlin, the Natterer's bat is the commonest species in winter roosting sites. Winter roosts which have been monitored over a period of many years indicate population growth. For example, the number of bats seen to be spending the winter in Spandau Citadel rose from 91 in the winter of 1974/1975 to just over 200 in the winter of 1999/2000. The species is amongst the first to inhabit newly created winter roosts.

In Brandenburg, various indications likewise suggest a slight increase in population numbers. There are usually only isolated individuals or well below a hundred bats in the winter roosting sites, except in the winter roost at a brewery in Frankfurt an der Oder, where the number of Natterer's bats spending the winter has increased to just under 1,000. The fact that large numbers of the species are thought to be concentrated in very large migration roosts poses an additional risk.

In Hesse in 1999, increasing numbers of Natterer's bats were recorded in holes in the wall cavities of barns. As a result, the number of known maternity roosts has now increased to eight.

The population is increasing in North Rhine-Westphalia.

In Saarland, only a few sightings have been recorded in the western part of the *Land* as a result of net captures. A detector system proved successful in Warndt.

In Saxony there are 22 known maternity roosts, 13 of them in and on buildings, and nine in the forest. Isolated sightings in migration and winter roosts occur predominantly at the northern periphery of the Central German Uplands (Mittelgebirge).

The species is widespread in Saxony-Anhalt, where there are six known maternity roosts. Two known winter roosts are located in cellars in the north of the *Land*, each with around 150 to 200 bats.

In Schleswig-Holstein, sightings are confined to the eastern and central parts of the *Land*, apart from a few sightings in Dithmarschen. In the Iloo forest region near Nortorf, in the period under review, summer roosting sites were discovered with several hundred bats in total. Winter roosts are located in various air-raid tunnels and in the Segeberg cave, where some 7,000 to 8,000 bats spend the winter. According to the monitoring figures, the number of bats spending the winter in Schleswig-Holstein has increased over the past three to four years.

In Thuringia, the Natterer's bat is found in many parts of the *Land* during winter. However, to date only isolated maternity roosts have been located. There are no signs that the species exhibits a preference for certain nature areas. In a long-term comparison, the population shows signs of growth, a fact which is also reflected in a more visible presence in the area.

Figure 7: Development of the population of Natterer's bats in 37 permanently monitored winter roosting sites.

1.7 *Myotis bechsteinii*
Bechstein`s bat

This species is widespread in forest regions, but the only areas where it is common are the Central German Uplands (Mittelgebirge) region of Rhineland-Palatinate and Northern Bavaria. The most northerly known maternity roosts are in Ahrensbök in Schleswig-Holstein and in Fläming in Brandenburg. Germany's total population of this species is now estimated at over 10,000.
Red List: Category 3 = Vulnerable.

In Baden-Württemberg, Bechstein's bats are most prevalent in Neckar-Tauberland, in the Wutach region and in the Upper Rhine plains. The most important known winter roosting sites are in the Black Forest and the Swabian Alb district.

In Bavaria, the Bechstein's bat is reasonably common in the deciduous forests of the north. There is a larger number of known maternity roosts in nest aids e.g. in the nature areas of Rhön, Spessart, Mainfränkische Platten, Hassberge and Steigerwald. The largest known populations are in Rhön, Steigerwald and the forests around Würzburg. In southern Bavaria there have only been a few sightings, primarily of isolated bats in nesting boxes. Maternity roost sightings in nesting boxes have been reported from Bad Wörishofen, Geiselhöring, the Ebersberg and Kösching forests, and near Dillingen in the Swabian Alb. In winter, isolated Bechstein's bats are seen rarely in northern and southern Bavaria, but regularly in cellars (Figure 8). However, the majority of winter roosting sites remain unknown. It is impossible to comment on population trends, given the low number of individuals recorded within the context of winter roost monitoring. Several surveys into the ecology of the population indicate constant, isolated populations which remain very faithful to certain locations.

In Brandenburg, the species' northern distribution limit is thought to be in the Berlin area. The northernmost records originate from winter roosting sites in the Uckermark and Ostprignitz-Ruppin districts. Most of the sightings in the Märkische Schweiz and Lusatia (Lausitz) regions, the peripheral districts of Berlin and Fläming were from winter roosts. In 1997, the first evidence of reproduction was discovered in the Teltow-Fläming district, via the capture of a recently fledged juvenile. A maternity roost was discovered in the same district in 1998.

Increasing numbers of bats have been discovered in North Rhine-Westphalia, including the Meyer well in Coesfeld and in Albachten near Niederort, as well as the winter roosting site in the Achenloch cave in the Eifel region.

In Saarland, there have only been three reported sightings of the species from summer roosts. Unlike the neighbouring Rhineland-Palatinate, where the Bechstein's bat is regularly and frequently recorded in its winter roosting sites, no such sightings have been made in Saarland.

At present, there are no known maternity roosts in Saxony, just individual sightings in migration roosts and winter roosts, as well as net captures in front of a former mine.

In Saxony-Anhalt in the period under review, information came to light which suggested the existence of a maternity roost belonging to the Bechstein's bat.

In Schleswig-Holstein in August 1998, the first maternity roost with four females and their four young was discovered in a nesting box in the forest near Ahrensbök in the Ostholstein district. Prior to that, there had only been summer sightings of isolated males in the southern part of the *Land*. There have been regular sightings of the Bechstein's bat in the Segeberg cave since the early Eighties. In 1999, some 100 bats were captured in front of the cave, and it is assumed that several hundred bats spend the winter there. The cave also serves an important function as a courtship and mating roost for this species. Another winter roosting site with isolated individuals is located in the Geest region in Schleswig-Holstein, in a cellar of the Aukrug clinic which was once used to store medicines.

To date the Bechstein's bat has only rarely been sighted in Thuringia. It has been found only in small populations and predominantly in large, mainly deciduous forest areas. There is no evidence that the population is changing, even though the species has been seen to expand its territorial presence in the area in winter.

Figure 8: Development of the population of Bechstein's bats in 37 permanently monitored winter roosting sites in northern Bavaria.

1.8 *Myotis brandtii*
Brandt`s bat

The Brandt's bat is widespread in Germany, but in many regions is only rarely recorded. Maternity roosts are predominantly found in Bavaria, Saxony and Saxony-Anhalt, but there are also known maternity roosts in Schleswig-Holstein. During hibernation, no distinction is made between it and the other, lesser, whiskered species for conservation reasons. This makes it difficult to comment on population development.
German Red List: Category 2 = Endangered.

In Baden-Württemberg, distribution of the species is not yet adequately known, and there have been no indications whatsoever that it is breeding there.

In Bavaria, there are a few known maternity roosts, primarily in the north and east, although the species also occurs in southern Bavaria and in the Alps.

In Brandenburg, the Brandt's bat is rarely seen, despite the fact that it is widespread. It is apparently closely linked to wetland biotopes and water. There is very little evidence of reproduction.

In North Rhine-Westphalia, the population is on the increase.

In Saxony, there are 21 known maternity roosts in the lowlands and downs comprising up to 110 females. There is a large winter roosting site located in the ridge of the eastern Erzgebirge (Ore Mountains) with a more or less stable population estimated between 100 and 300.

In Saxony-Anhalt, there are more than ten known maternity roosts. The largest maternity roost in the Dumme lowlands comprises some 500 individuals. In Saxony-Anhalt, the species prefers forests with old or dead wood, and evidently prefers deciduous wood. Migrations of up to 120 kilometres between the summer roosts in the Dumme lowlands and the winter roosting sites in the Harz region have been recorded, and of up to 50 km between summer roosting sites.

In Schleswig-Holstein in the period under review, the species was confirmed at several locations in the south-east of the *Land* by means of net captures.In Thuringia, the Brandt's bat has rarely been sighted to date. Recorded sightings are clustered around areas in the south and in the north-east near Altenburg. Counts in the few known summer roosts do not indicate a change in population size. As there are thought to be only a few occurrences of the species in Thuringia, the risk of accidental destruction of their roosts is particularly high.

1.9 *Myotis mystacinus*
Whiskered bat

Distribution of this species in the individual regions of Germany varies widely. Whereas it is common in Bavaria and Thuringia, for example, in Brandenburg, Saxony-Anhalt and Saarland it is one of the rarer species. Reports on population development likewise vary, and the problem is exacerbated by the fact that no distinction is made between Brandt's bats and the lesser whiskered bats in the winter roost. Because it is so dependent on buildings, the whiskered bat is often the victim of renovation and rebuilding measures.
German Red List: Category 3 = Vulnerable

In Baden-Württemberg there are eight reported maternity roosts, the largest of which numbers 230 bats. Summer distribution is concentrated in the Kocher-Jagst plains, in the western foothills of the Black Forest, in the foothills of the central and eastern Swabian Alb district, in the wooded slopes of the Swabian and Franconian mountains, and in the environs of Lake Constance. Winter sightings are largely confined to the Upper Black Forest.

In Bavaria, the whiskered bat is widespread in all nature areas, including the Alps, and is one of the common species of bat. There are more than sixty known colonies. Some 15 whiskered bat colonies which had not previously been clearly identified were genetically examined in order to determine their species and were found to be whiskered bats.

In Brandenburg, this species of bat is very rare. There are only records of one maternity roost and a few isolated sightings, as well as very few sightings in the winter roost.

The population is increasing in North Rhine-Westphalia. New findings include Amelsbüren near Münster and Davert, where there are several maternity roosts.

In Saarland, there are only a few winter sightings but these are regular. There are almost no summer sightings.

In Saxony, there are 15 known maternity roosts in the lowlands and downs with up to 39 females. A large winter roosting site with an estimated population of 70 to 150 bats is located in the crest of the Erzgebirge (Ore Mountains).

In Saxony-Anhalt, the population appears to be in decline. At present, the monitoring agencies are aware of one suspected maternity roost. Isolated sightings of bats spending the winter in the Harz region have been recorded, with some 45 individuals having been recorded in the Büchenberg roost.

In Schleswig-Holstein, there have only been two recorded sightings since 1993, as a result of net captures in the south-eastern part of the *Land*. Despite intensive searches, no maternity roosts have been found.

In Thuringia, the whiskered bat is more widespread and more commonly seen than the Brandt's bat. There are signs that the population is increasing slightly.

1.10 *Myotis emarginatus*
Geoffroy`s bat

The only regular occurrences of this species are in Baden-Württemberg and Bavaria. The total population in Germany, estimated at between 3,800 and 5,000, is thought to be increasing slightly again.
German Red List: Category 1 = Critically endangered.

In Baden-Württemberg, occurrences of the species are confined to the central Black Forest region with its foothills and the Markgräfler downs. There are only three known summer colonies; the winter roosting sites are located almost exclusively in the Black Forest. The total population is approximately 650.

In Bavaria, there are limited populations of the Geoffroy's bat in the southern part of Upper Bavaria. In 1999, there were eleven known maternity roosts comprising some 1,250 adult females in total. However, the male roosts and winter roosting sites are as yet unknown. The size of the maternity roosts ranges from ten to over 400 females. Together with the juveniles, this means that there are between 15 and 700 bats in the maternity roost. The eleventh colony was discovered in 1999 in a building of the Schäftlarn monastery, in a rural region to the south of Munich. It comprised 15 adults and 11 juveniles. This is the most westerly maternity roost in Bavaria, and is approximately 35 kilometres away from the next known colonies in Vagen and Dettendorf, in the Rosenheim district. The population in the maternity roosts may vary considerably (cf. Table 4). 1999 was evidently a good year, with a population of 1,250 bats predominantly in the maternity roosts. In 1998, by contrast, only 1,000 adults were counted. Taking such fluctuations into account, overall, the population of Geoffroy's bats is thought to be constant with a rising trend. Population development at the maternity roost in Dettendorf has been particularly good, where the population of 50-100 bats in 1981-1989 rose to around 150-155 adult bats in 1996 and 1997 (Figure 9). In 1998 and 1999, it was estimated that there were at least 200 bats in maternity roosts. Given the proximity of the colonies to the Alps and in view of the fact that Geoffroy's bats were caught in net captures at caves in the Alps in 1996 and 1997, further winter roosts are likely to exist in the Alps.

Figure 9: Number of adult Geoffroy's bats at Dettendorf church in Bavaria. The figures for 1992 and 1994 are estimates based on the number of maternity roost bats.

Table 4: Population development of Geoffroy's bats in Upper Bavaria. A = adults, J = juveniles.

1.11 *Nyctalus noctula*
Noctule bat

The noctule bat occurs throughout Germany, but the maternity roosts are in the east, particularly the north-east. The regions without maternity roosts are only inhabited by males during the summer. In autumn, courtship and mating occurs in the west and south-west. Due to the large migrations and the species' frequent preference for inaccessible roosts, it is almost impossible at present to estimate the population size and population development.
German Red List: Category 3 = Vulnerable.

In Baden-Württemberg, most summer roosts are occupied by groups of males, and bats are primarily observed en route to their winter roosting sites.

In Bavaria, too, most noctule bats are observed during the migration and courtship periods in spring and autumn (Figure 10) e.g. at the Ismaning reservoir near Munich and many other waterbodies throughout the country. During the migration periods, they are visible, not only because of their groups of up to a thousand or more hunting individuals, but also because of their choice of roosts on buildings, preferably high-rise blocks. In recent years, some significant colonies have been discovered in various towns and cities, such as Munich, Ismaning, Wasserburg, Waldkraiburg, Rosenheim and Ingolstadt. Maternity roosts are also found on high-rise blocks, but most of the few maternity roosts discovered in Bavaria have been in tree hollows, namely in the pond district of Erlangen-Hochstadt and in the towns of Erlangen, Nuremberg and Ingolstadt. There are a number of known summer roosts in tree hollows and high-rise blocks, but little evidence of reproduction, due to their inaccessibility. Some of these may be male roosts. Unknown numbers of noctule bats spend the winter in Bavaria in roosts in trees and buildings.

In Berlin, the species occurs regularly, and the population is stable. In winter, there are increasing reports of sightings on buildings, particularly high-rise blocks.

In Brandenburg, the noctule bat is recorded throughout, and its population is thought to be stable. In autumn, the resident population migrates to Switzerland and northern Italy to spend the winter there. At the same time, bats from north-eastern Europe also pass through the state. Increasingly, some of these bats are attempting to spend the winter in Brandenburg, and generally seek out large cities, which tend to have a more favourable climate and where gaps in precast concrete structures serve as

Figure 10: Distribution of noctule bats in various roosts in south-eastern Bavaria (top) and on the Danube (bottom). Figures are given as percentages of the maximum number of bats counted (Wasserburg 1997: 324, 1998: 583; Waldkraiburg 1997: 118, 1998: 354; Rosenheim 1997: 45; Ingolstadt "Fischerheim" 1996: 174, 1997: 327, 1998: 191; Bergheim barrage weir 1997: 320, 1998: 340; Bittenbrunn barrage weir 1997: 237, 1998: 426). Where several counts were made in one half of the month, the highest figure has been used.

roosts. In rarer cases, they will also use other buildings and tree hollows. When a wall collapsed in the open-cast mine at the lime works in Rüdersdorf in winter 1997/1998, it was possible to confirm that a large number of noctule bats, together with Serotine bats and common pipistrelles, spend the winter in the crevices there.

The population is increasing in North Rhine-Westphalia.

In Saarland, the species is regularly sighted in forested regions, but there are no known roosts.

In Saxony, there are maternity roosts with between 20 and 35 adults, particularly in the lowlands of Upper Lusatia (Oberlausitz). Significant winter roosts are located in rock crevices in the Sächsische Schweiz region. To date, only smaller hibernating colonies with between 50 and 100 bats have been found in tree hollows.

In Saxony-Anhalt, there are 27 known maternity roosts, all located in the northern part of the *Land* on the Elbe river and in Drömling. Winter sightings have been rare. In six cases, noctule bats which had been marked in Saxony-Anhalt were sighted in other parts of Germany.

In Schleswig-Holstein, the species has been sighted in all parts of the *Land*, primarily in the east and south-east. More recent findings have also been made on the islands off the west coast. Isolated winter roosts have also been found in tree hollows, but the largest, with some 6,000 individuals, is located in the Levensau viaduct in Kiel.

In Thuringia, there are isolated records of maternity roosts and winter sightings in the north. This *Land* would appear to be an important route for migrating individuals. There have been reports from various parts of the *Land* of the loss of large hibernating colonies due to winter tree felling.

1.12 *Nyctalus leisleri*
Leisler`s bat

In the past, sightings of the Leisler's bat were comparatively rare. Our knowledge of its presence in Germany has since improved, thanks in large part to the use of bat detectors. However, it is still not possible to comment on population development. There may be roosts in all parts of Germany. The species only rarely spends the winter here, and the only indications of winter roosts are in Baden-Württemberg and Saxony. Several resightings of ringed bats, however, document some very long migrations in a south-westerly direction.
Red List: Category G = Threatened but status unknown, IUCN category CR, EN or VU.

The Leisler's bat is very rare in Baden-Württemberg. Most summer sightings are located in the eastern part of the wooded slopes of the Swabian and the Franconian mountains. The only winter sighting was in the Freiburg bight.

In Bavaria, the species occurs in low density in several deciduous forest regions of northern Bavaria, such as Spessart, Frankenhöhe and Steigerwald. Isolated cases of reproduction have already been reported in the towns of Ansbach and Bayreuth, and in the Rhön district. However, as the colonies are not constant and checks are not regularly made, their status is unknown. Night plotting in the town of Bayreuth in 1998 did not reveal any colonies. However, there was fresh evidence of a maternity roost in the Bamberg district. South of the Danube, the only evidence was a single dead bat on the Chiemsee lake. There have been no resightings of the species.

In Brandenburg, Leisler's bats have only been recorded in certain areas in parks and oak forests, as well as mixed woodlands containing oaks. There are very few known maternity roosts. Resightings of

bats ringed in Brandenburg in the summer in southern France and Switzerland in the winter confirm that they migrate to winter roosting sites in the south or south-west.

In North Rhine-Westphalia, new sightings have been recorded in Amelsbüren near Münster and in Davert. A colony of nine to thirteen bats was discovered in Reichshof in the Oberbergisch district.

The species is widespread in Saarland, although not quite as common as the noctule bat. At present, there are eight known maternity roosts and several other summer roosts.

In Saxony, there are records of four maternity roost colonies in nesting boxes in forested areas in the west of Saxony. The bats are thought to spend the winter in a rock crevice in Sächsische Schweiz.

In Saxony-Anhalt, the species is thought to be represented in all major forest areas and has a lower population density than other bats, due to their naturally large radius of activity. There are eight known maternity roosts and fifteen to twenty mating sites. To date, there have been no sightings in the Allstedt forest or in the high altitudes of the Harz mountain range. The species prefers the holes of spotted woodpeckers and tree hollows with several entrances and crevices. Of the thirteen remote sightings documented to date in Europe, the longest recorded flight was by a female, who covered a distance of over 1,567 kilometres from Saxony-Anhalt to Spain.

In Schleswig-Holstein, Leisler's bats are recorded each year, including mating roosts in the Duchy of Lauenberg district. Despite intensive searches, however, to date only one maternity roost has been found.

The species is rarely found in Thuringia, and the majority of sightings originate from mountainous regions.

1.13 *Barbastella barbastellus*
Barbastelle bat

In recent years, there have been a number of fresh sightings of Barbastelle bats in several mountainous and forested regions of Germany. Population growth in regularly monitored winter roosts indicate that the species is recovering slightly. However, the species is still a long way from recovering its former prevalence and colony size. Populations are very difficult to estimate, due to the frequent changes in summer roosts and the irregular use of winter roosting sites. However, the population in Germany is at least 2,000.
German Red List: Category 1 = Critically endangered.

In Baden-Württemberg, where the species was once common, at present only isolated individuals are being monitored in the Wutach region, in Albtrauf and in the Taubergiessen region. Most winter roosts are located in the Swabian Alb region and in the Jagst valley.

In Bavaria, the population is concentrated in the nature areas of Spessart, Rhön, Itz-Braunach-Hügelland, Hassberge, Northern and Central Frankenalb, the Franconian Forest (Frankenwald), the Oberpfalz part of the Bohemian Forest (Oberpfälzer Wald) and the Oberpfälzer Bruchschollenland region, the Bavarian Forest and the Alps. At present, five maternity roost colonies have been recorded in northern Bavaria, in the districts of Wunsiedl, Coburg, Kulmbach and Neustadt/Aisch-Bad Windsheim. In southern Bavaria there are four known maternity roosts in the Passau and Rottal/Inn districts (Table 5). The colonies generally comprise between 20 and 30 individuals, with a maximum of 20 adult females. Three further maternity roosts were found in the early Nineties in the Rosenheim region, but these have not been confirmed recently. Roost types include window boxes and wooden

Table 5: Evidence of reproduction of the Barbastelle bat in Bavaria. KOORD. = Co-Ordinating Office for Bat Conservation; ZSM = Government Zoological Collection, Munich.

formworks, and once a bat box. There are no known maternity roosts in the species' natural habitat, the forest. Apart from the maternity roost records, there have been four sightings of lactating or pregnant Barbastelle bats which indicate maternity roosts in the vicinity. Winter data also suggests the existence of additional, as yet undiscovered colonies, since the species is regularly sighted in winter roosts in northern and eastern Bavaria. They prefer dry, relatively cold casemates in fortifications and ruins, i.e. exposed positions. There are some quite large colonies of ten to thirty bats in such roosts, including Coburg, Kulmbach, Kronach, Neustadt/Saale and Würzburg. One of the largest central European winter roosting sites is in southern Bavaria, in Bodenmais in the Bavarian Forest, in a former mine shaft. In winter 1998/99, 508 bats were counted there (Figure 11). Another important winter roost with up to 18 individuals (1997) is located in a tunnel in Ammerschlucht, in the Garmisch-Partenkirchen district (Figure 12). More recent data shows that the species is more prevalent in the Bavarian Central German Uplands (Mittelgebirge) than until recently thought. Net captures in the Upper Bavarian Alps have also shown that the species probably occurs in a comparatively low density in the mountains. Population development in the summer roosts cannot be estimated, because the colony sizes may fluctuate from year to year and because the bats cannot be regularly counted, due to the poor accessibility of the roosts and the fact that they are only present for short periods. In recent years, one

roost in the Rosenheim district was found to be no longer occupied, but it is assumed that the colony has moved elsewhere rather than become extinct. The roost in Wiesing was also empty in 1999, and we can only assume that the colony has moved elsewhere. Population figures in 37 selected winter roosts monitored regularly since 1986 fluctuate widely from year to year, probably due to the effects of the weather. In 17 roosts for which figures are available since 1990, the species has occurred in greater numbers in recent years. Most bats are counted in cold winters. However, the results of the monitoring programme at winter roosting sites in both northern and southern Bavaria do not show a clear population trend.

In Brandenburg, there are isolated sightings for nearly all districts. Prignitz, Ostprignitz-Ruppin, Oberhavel and Uckermark are the most northerly distribution limits of the species. The number of bats spending the winter in the principal region, the Teltow-Fläming district, where there are up to 150 bats in the Merzdorf bunker system alone, indicates a slight increase in population. Records of maternity roosts are only available from the south-east of the *Land* and are only occupied occasionally, apart from one permanently occupied roost. They tend to be located on upright, dead wood behind loose bark, but also on buildings and in tree hollows. Findings from monitoring programmes in the Spreewald forest confirm that the bats often move to different roosts, even during the maternity period. There are generally only a few animals at the winter roosting site, and they usually only appear there if there is a hard frost. Winter roost sightings are also more common in the south of Brandenburg than in the north. Little is known about the relationship between summer and winter roosts. It is thought that the females spend the winter in the immediate vicinity of the maternity roost, up to a maximum of 20 kilometres away. The males migrate up to 70 kilometres to their winter roosting site.

In Hesse, there have now been isolated sightings in summer and in the winter roosting sites throughout the entire *Land*. The only maternity roost in the Lahn valley in Marburg has been confirmed. It is hoped that telemetric experiments will reveal other roosts belonging to the colony.

In North Rhine-Westphalia, the species indicates a slight stabilisation of the population in eastern Westphalia. There are currently six roosts, in addition to the old known roost near Burgsteinfurt. The species also uses hollows in thick trees as its winter roost.

In Saxony, the species occurs predominantly in the foothills of the Central German Uplands (Mittelgebirge), and the population is apparently stable. In the past, there were clear signs of a dwindling population, particularly in eastern Saxony. At present, there are known maternity roost colonies with between 10 and 25, up to a maximum of 83, adult and juvenile bats in the western Saxon forest regions, on buildings and in nesting boxes. The winter roosting sites are located in the tunnels of railway embankments, tunnels, former mines and cellars. Some of them are at risk from redevelopment work, e.g. when broken stone walls are repointed.

At present, the population in Saxony-Anhalt is estimated at around 300. An apparent population growth is in fact attributable to improved monitoring of the species, and population development has shown no signs of a positive trend in recent years. In the period under review, five additional winter roosting sites were recorded.

In Thuringia, there are signs that the population of the Barbastelle bat is increasing in general. More frequent findings of large colonies spending the winter there in recent years, and the sharp increase in the number of individuals in known winter roosts, reinforce this opinion. The species is also found more frequently, both in formerly unpopulated winter roosts, and in summer roosts and maternity roosts. The known maternity roosts are located primarily in residential areas, but there have also been repeated sightings in forest areas. The reasons for the increased sightings remain unclear, however. The extent to which greater numbers in the winter roosts reflect an increased level of reproduction in Thuringia is questionable, since the Barbastelle bat is a migratory species.

Figure 11: Population development of the Barbastelle bat in the former Bodenmais silver mine in the Bavarian forest, the species' largest winter roosting site in Germany. Annual monitoring has only been carried out since the winter of 1993/94.

Figure 12: Population development of the Barbastelle bat in the largest Alpine winter roost, Angerlloch in Bavaria. Weather conditions have prevented monitoring from being carried out every winter.

1.14 *Vespertilio murinus*
Parti-coloured bat

There have been many individual findings throughout Germany, but maternity roosts seem to be confined to the eastern half of the country. Almost nothing is known about the winter roosts. In autumn and winter, parti-coloured bats are predominantly found in large towns and cities. The population in Germany is not declining, and the reproduction territory may even be expanding.
German Red List: Category G = Threatened but status unknown, IUCN category CR, EN or VU.

In Baden-Württemberg, there are no concrete details of maternity roosts. There are only two known largish male roosts, in the Kocher-Jagst district and in the Allgäuer downs.

In Bavaria, there are rare but regular sightings of individual bats throughout the entire *Land*, with the greatest prevalence in north-eastern and eastern Bavaria. In southern Bavaria, 83 individual parti-coloured bats were reported between 1985 and 1998. These were seen entering buildings or refer to findings of weak animals, rather than roost reports. Sightings are more common in late spring and in

autumn, which indicates migration. In summer, the species is primarily found in Oberpfalz (the Upper Palatinate region of Bavaria), the Bavarian Forest and the foothills of the Alps. There is a maternity roost in the Cham district, and a total of around 30 male roosts with between 25 and 256 bats have been recorded in these nature areas. The annual counts of animals leaving several of these male roosts indicate substantial fluctuations, and consequently it is not possible, at the present time, to comment on population development (Table 6).

In Berlin, the species occurs rarely, but the population would appear to be stable.

In Brandenburg, most documentation of the parti-coloured bat is based on individual findings in towns. To date, there has been one known maternity roost in a loft to the west of the town of Brandenburg, and another maternity roost was verified by the finding of a juvenile in Prenzlau. There is now at least one other record of a maternity roost in the Dahme-Spreewald district. There is also a known male roost in the same area. The winter roosting sites of the bats living in Brandenburg are thought to be far away. Initial dietary analysis suggests that the species prefers to forage over waterbodies.

In Lower Saxony, there have likewise been several reported individual findings which are spread throughout the entire *Land*.

In Saarland, detectors have recorded the parti-coloured bat several times in the northern part of the *Land*, and once in the winter in Saarbrücken. In recent years, the species appears to be spreading towards the west.

There are no maternity roosts to date in Saxony. A colony of males in the eastern Erzgebirge (Ore Mountains) comprised up to 72 bats in 1998, but was extinguished in 1999 when a building was renovated. There is a proliferation of individual sightings in late summer and autumn in and on buildings, particularly in large towns and cities. There are only a few records of bats spending the winter here, particularly in rock crevices in Sächsische Schweiz.

In Saxony-Anhalt, there are still no known maternity roosts, although there have been individual sightings in several large towns including Bernburg, Burg, Dessau, Halle, Lutherstadt Wittenberg, Magdeburg, Naumburg, Merseburg and Thale.

Table 6: Populations in regularly monitored male roosts of the parti-coloured bat in eastern and southern Bavaria. - = Not monitored.

In Schleswig-Holstein, the first maternity roost was found in Lübeck in the period under review. The discovery could be linked to a suspected expansion of the species' territory.

In Thuringia, there has been a known maternity roost since the mid-Nineties. The winter status of the species has not been clarified. More recent sightings of parti-coloured bats provide no indication of population trends.

1.15 *Pipistrellus pipistrellus*
Common pipistrelle

The common pipistrelle is a common or even the most common bat species in many regions of Germany. Nevertheless, it might still be at risk, because the populations are concentrated in mass winter roosts, some of them containing several thousand bats. To date, however, our knowledge both of the significance of such centralised roosts, and the actual populations in residential areas, is inadequate to enable reassessment of the risk.
German Red List: Not threatened, IUCN category LR cd.

The species is widespread in Baden-Württemberg. High population densities are found primarily in the environs of Lake Constance with the neighbouring Upper Swabian downs and in the western Allgäu. Three significant winter roosting sites include Freiburg cathedral, a quarry in Leimen and Heidelberg Castle.

In Bavaria, summer findings, including maternity roosts, have been reported throughout the *Land*. It is thought to be the commonest species of bat in Bavaria. In some towns and cities, such as Bayreuth, Coburg and Nuremberg, invasions of juveniles regularly occur in late summer, although the phenomenon is less common in other towns such as Würzburg and Erlangen. There are only a few reported findings from the winter season, and no large winter roosts have been found to date.

In Berlin, the common pipistrelle is the commonest species of bat in the eastern districts of the city in summer, and can be found everywhere foraging for food. In winter 1999/2000, a large winter roosting site was discovered with several hundred bats. Many roosts are unknown and face a latent risk from the redevelopment of buildings. The population is thought to be in decline, due to the loss of roosting sites.

In Brandenburg, the species is widespread and often forms colonies of several hundred. Roosting sites can be found both in residential areas, in and on buildings and in inner cities, as well as in forests, in crevices, tree hollows and bat boxes. The roosts are often used all year round.

In Lower Saxony, it is not yet possible to differentiate between the common pipistrelle and the soprano pipistrelle. Populations of the common pipistrelle in its wider definition have stabilised at a comparatively high level and no longer appear to be at risk.

In Saarland, the common pipistrelle is the commonest species of bat and is widespread throughout. There are several records of maternity roosts, but in winter the species is rarely found, due to its concealed habits.

In Saxony, there are 61 maternity roosts with up to 195 bats in lowlands, downs and mountainous areas. In winter, the species is recorded in rock crevices in Sächsische Schweiz.

In Saxony-Anhalt, the common pipistrelle is only widespread in the Harz region, where it is found both in the lowlands and at altitudes of up to 550 m above sea level. At present, there are ten known maternity roosts on buildings, and two in bat boxes in the forest. Most of them comprise 60 to 100 individuals, and the one in Pansfelde even contains up to 500.

In Schleswig-Holstein, the species is recorded throughout the mainland. It roosts both in buildings and in nesting boxes. Winter roosts are predominantly found in large buildings such as churches and road bridges such as the Levensau viaduct, where several hundred animals spend the winter. There are also large year-round roosts in recently built high-rise blocks.

In Thuringia, the common pipistrelle does occur generally, and its presence in the area has even increased over the past decade. The population is thought to be stable. There are large known hibernating colonies, e.g. in northern Thuringia and the Orlasenke.

1.16 *Pipistrellus pygmaeus*
Soprano pipistrelle

As the soprano pipistrelle was only recognised as a separate species a few years ago, there is no comparative data available on its historical occurrence in Germany. In recent years, however, targeted searches for the species have been conducted in a number of regions. It has now been recorded in at least eight *Länder*. At this stage, it is not possible to comment on the status of and possible risks to the species.
German Red List: Category D = Data Deficient

In Baden-Württemberg, nesting box checks in two nature areas in northern Baden - the Rhine water meadows in the "Rußheimer Altrhein" nature conservation area, and the wooded upland region of Klein Odenwald - revealed a total of 47 individuals. The bats were found either individually or in mating groups, and never associated with other species of bat. However, directly adjacent roosts were often occupied by the common pipistrelle.

In Bavaria, the first reliable record of the species was in 1999 in the Bayreuth region.

In Hesse, there are detector records from Gießen and a maternity roost was discovered in the "Kühlkopf-Knoblauchsaue" nature conservation area. This colony, in a forester's lodge, totalled some 280 adult bats as per 18 May 1998, some of whom were found to spend all year there. Following essential conversion work in the winter of 1998/1999, the colony stopped visiting the house, even though alternative facilities had been provided.

In Lower Saxony, the soprano pipistrelle seems to occur regionally in small populations.

In Saxony-Anhalt, there has been one sighting to date from a mating roost in the "Bürgerholz" nature conservation area near Burg.

In Schleswig-Holstein, the species is predominantly observed in the eastern part of the *Land* and on buildings. In Malente, a maternity roost with 500 bats was discovered in a building.

There is also evidence that the species occurs in North Rhine-Westphalia and Rhineland-Palatinate.

1.17 *Pipistrellus nathusii*
Nathusius`pipistrelle

Maternity roosts in Germany are largely confined to the north-eastern *Länder*. In other regions, the Nathusius' pipistrelle predominantly occurs as a migratory species only. Some males will spend the whole year in one area. In the autumn, the species uses forest areas close to water as mating territory. The winter whereabouts of animals which migrate through Germany is still unknown. Many more recent sightings suggest that the species is not uncommon here.
German Red List: Category G = Threatened but status unknown, IUCN category CR, EN or VU.

In Baden-Württemberg, the Nathusius' pipistrelle occurs primarily in the upper section of the Rhine. There have been a few individual findings of winter roosts in the Swabian Alb region, but there are no known maternity roosts.

In Bavaria, thanks to more widespread monitoring, the species is being sighted at an increasing number of locations, primarily via detector evidence and nesting box checks, particularly during spring and late summer/autumn when migration and courtship take place. However, the status has not changed as a result. There is no evidence of reproduction or winter sightings in Bavaria.

In Berlin, there are regular sightings at migration time, and the population is stable.

In Brandenburg, distribution of the species is evidently uneven, it being more common in the northern part of the *Land*. Populations are thought to be stable. In September/October, the resident population migrates to the south-west, as far as southern France in some cases. They return in April/May. Bats from Poland and the Baltic states migrate through Brandenburg, and isolated individuals also attempt to spend the winter there.

In North Rhine-Westphalia, one maternity roost was discovered in 1999. The population numbers are increasing.

In Saarland, there has only been one finding of a male, and a few detector records.

In Saxony to date, there have only been isolated records of reproduction in the Upper Lusatia (Oberlausitz) region. For example, in 1999 an unfledged juvenile was discovered in a bat box. Some information is also available on winter habits – for example, one winter roost was found in an old oak tree in a park in Dresden.

In Saxony-Anhalt, the only known findings to date are from the north and north-east parts of the *Land*. In addition to the maternity roost recorded in 1997, a further four have since been reported. Following intensive searches, there are also now 37 known, well-occupied mating sites. Associations with the Brandt's bat have often been observed.

In Schleswig-Holstein, the species is found everywhere. In the past two years, there have also been sightings on the west coast and on the island of Föhr. The maternity roosts are in bat boxes and buildings. Individual bats have been found spending the winter in concealed cracks.

In Thuringia, most sightings occur in spring and autumn. However, the preferred migratory routes are not known. In recent years, isolated males have also been seen in Thuringia during the summer months. This would suggest that bats hoping to mate spend the summer there.

1.18 *Pipistrellus kuhlii*
Kuhl`s pipistrelle

Kuhl's pipistrelle is a rare visitor amongst Germany's bat fauna. For this reason, it has not yet been evaluated for the Red List. However, it is possible that the findings of recent years are part of a territorial expansion of the species, in the course of which it is gradually populating the southern regions of Germany.

In Bavaria, the species was recorded for the second time on 19 February 1999. A bat had flown into an apartment in Munich.

1.19 *Hypsugo savii*
Savi´s pipistrelle

In the period under review, the species was not recorded in Germany.
German Red List: Category 0 = Extinct in the Wild.

1.20 *Plecotus auritus*
Common long-eared bat

The common long-eared bat is widespread in Germany, and its populations are now stable or showing a slight increase.
German Red List: Category V = Lower Risk near threatened.

In Baden-Württemberg, the species is concentrated in the Kocher-Jagst flats, the wooded slopes of the Swabian and the Franconian mountains , the northern part of the Black Forest fringes and the Upper Gäu, the Lake Constance region with the neighbouring Upper Swabian and Western Allgäu downs, and in the Upper Black Forest and Alb-Wutach region. The Swabian Alb with its numerous karst caves offers optimum winter roosting sites for the species.

In Bavaria, systematic monitoring of church roofs in southern Bavaria alone revealed 71 maternity roosts with up to 50, but generally less than 20, bats. However, the numbers are thought to be far greater. In northern Bavaria, the common long-eared bat is the second most common species in the winter roosts and is distributed throughout the region. In southern Bavaria, which has far fewer winter roosts, it has nevertheless been discovered in 87 roosting sites. In those winter roosting sites included in the permanent monitoring programme, since the early Eighties this species has shown a continuous increase in population, interrupted only by a few setbacks (Figure 13).

In Berlin, common long-eared bats are found in nearly all monitored winter roosts. In summer, they are only regularly found in the forests, but the population would appear to be stable.

In Brandenburg, the common long-eared bat is likewise one of the commonest species of bat, and is thought to have a stable population at present. There are known maternity roosts both on and in buildings in residential areas and on isolated farms, as well as in tree hollows and bat boxes. The winter roosts generally only accommodate a few individuals.

In Saarland the species is widespread throughout, but there are only comparatively few known summer roosting sites. In winter, the species is regularly detected in underground roosts.

In Schleswig-Holstein, the common long-eared bat has only been recorded in the eastern and central parts of the *Land* to date, and is thought to be absent from the west coast. Larger winter roosts with up to 10 bats are located in Eckernförde and Mönchneversdorf.

In Saxony, maternity roosts are common from the lowlands through to the mountainous regions, and the population is approximately stable.

In Saxony-Anhalt, there are currently some 21 known maternity roosts in bat boxes in the forest.

In Thuringia, population development in the winter roosts has exhibited a positive trend for approximately 20 years. The common long-eared bat can be found in all types of landscape and high ground, and is the most commonly observed species of bat.

Figure 13: Development of the population of common long-eared bats in 37 permanently monitored winter roosting sites in northern Bavaria

1.21 *Plecotus austriacus*
Grey long-eared bat

The grey long-eared bat is concentrated in the warmer regions of Germany and is absent from the north-west German lowlands. It is found everywhere in far smaller numbers than the common long-eared bat. All known summer roosts are in or on buildings, which poses a general risk.
German Red List: Category 2 = Endangered.

In Baden-Württemberg, the grey long-eared bat avoids higher, exposed habitats in summer. In winter, the population is divided into two segments. Just over half were recorded at a height above sea level of less than 350 m, whilst the remainder spend the winter at an altitude of 600 – 750 m above sea level.

In Bavaria, known maternity roosts generally contain between ten and thirty bats. The species is concentrated in the warmer regions of Lower Franconia, Central Franconia and the Danube. To date, 16 maternity roosts have been discovered in southern Bavaria, and an equal number in northern Bavaria. Isolated bats are regularly recorded in winter roosts.

In Brandenburg, the species' distribution limit is located to the north of Berlin. Populations are thought to be stable. Records originate almost exclusively from residential areas, and the preferred foraging grounds include the well-structured peripheries of such areas. Only a few bats are generally recorded in the winter roosting site.

In North Rhine-Westphalia there is a very small population which only occurs locally.In Saarland, there are only a few summer and winter sightings. Given the minimal quantity of data available, it is almost impossible to comment on distribution, but the St. Wendel district is a focal point.
In Saxony, maternity roosts are primarily located in the lowlands. There are no up-to-date winter records from the mountainous regions It is impossible to comment on population development.

In Saxony-Anhalt, there is currently a known maternity roost in the Steckby ornithological station. There are only occasionally winter sightings in the Börde and Altmark regions, never in the Harz region.

In Thuringia, the species is only found in certain locations, particularly in valleys and lowlands. There are very few known roosts. In recent years, there have been no signs of any population changes.

1.22 *Eptesicus serotinus*
Serotine bat

The serotine is more common in the north-west of Germany than in the south, but occurs in all *Länder*. However, there is very little evidence of winter roosts, and such that are known to exist nearly always concern isolated individuals. It is almost impossible to comment on population development, but the species has been at risk in recent years, because its preferred roosts in lofts are being destroyed or impaired at a rapid pace as a result of development work.
German Red List: Category V = Lower Risk near threatened.

The serotine bat is very rare in Baden-Württemberg. In summer, it is concentrated in the Kocher-Jagst plains. Other colonies are found in the Hardt plains, in the central region of the Swabian Alb, the Upper Rhine, and the western Allgäu downs. Very little is known about winter roosts.

In Bavaria, there are a total of 31 known maternity roosts with a maximum of 100 individuals. They are concentrated in the lowlands of Central Franconia and Swabia. However, the species is also found in low densities or numbers in many other areas of Bavaria. Some 20 to 30 regularly used winter roosts have been recorded.

In Berlin, the serotine bat is the commonest species of bat in the western districts of the city in summer, and can be found foraging for food everywhere. Despite this, to date there are only two known maternity roosts.

In Brandenburg, the serotine bat is widespread, and in places even common, but there are very few records of winter roosts. The population would appear to be stable. Evidence suggests that the species regularly spends the winter in buildings, on roofs, in false floors and in wall cavities, and is not particularly sensitive to dryness.

In Hesse, special investigations revealed 28 maternity roosts in the Narburg-Biedenkopf district, compared with only six known maternity roosts in 1996. However, it is not the population which has increased, but rather, the intensity of searching for roosts.

In Saarland, the species is widespread and comparatively common. There are several known maternity roost colonies, but few records of winter roosts.

In Saxony, the species is most prevalent in lower lying areas, e.g. in villages in the pond landscape and heathlands of Upper Lusatia (Oberlausitz). There are 99 known maternity roost colonies, generally with 30-50 females, or occasionally up to 100. To date, 23 winter roosts of individual bats have been found.

In Schleswig-Holstein, the species is distributed throughout the *Land*, including the west coast and the islands, and is not rare. There are records of maternity roosts with more than 100 bats. Here too, however, winter findings are rare.

In Thuringia, the species is assumed to be more prevalent, since there have been increasing sightings of the species in summer in recent years, primarily via the use of detectors. However, sightings are concentrated on the plains and downs.

1.23 *Eptesicus nilsonii*
Northern bat

This species is confined to Germany's submontane and montane regions and is rare in parts. However, detector records in various areas indicate that the species has often been overlooked in the past, due to its concealed habit. There is no tangible decline in population anywhere; instead, populations would appear to be stable or even rising.
German Red List: Category 2 = Endangered.

There are no known maternity roosts in Baden-Württemberg, but there have been several summer sightings in Tauberland, the Upper Black Forest and the Alb-Wutach region. Winter roosts are distributed amongst the central Flächenalb region, the Upper Danube Valley, the Alb-Wutach region, the Central Black Forest and the Upper Black Forest.

In Bavaria, countless maternity roosts have been found in the vicinity of the north-eastern and eastern Bavarian Central German Uplands (Mittelgebirge), and also in Central Franconia. Roosts behind shutters and behind wooden and slate panelling on buildings are the preferred choice. In the submontane and montane regions of eastern and northern Bavaria, the northern bat would appear to be one of the commonest species of bat, e.g. in the Fichtel Mountains (Fichtelgebirge), the Franconian Forest (Frankenwald), the Oberpfalz part of the Bohemian Forest (Oberpfälzer Wald) and the Bavarian Forest. We anticipate further findings of maternity roosts. Sightings in winter roosts in northern and southern Bavaria nearly always concern a few individuals. It is not possible to comment on population development at present.

In Brandenburg, the northern bat is the rarest species of bat. Its status is unclear, and it may have only entered the region recently. The few roosts which have been found were located exclusively in tree hollows. One maternity roost was found in Lower Fläming, and one juvenile discovered in the Dahme-Spreewald district suggest other summer colonies.

In Lower Saxony, a maternity roost was discovered in the Harz region.

In North Rhine-Westphalia, the species has been spreading south for some years. The first record of a winter roost was in the Veleda cave in Sauerland. Overall, however, the population is very small.

In Saarland, the species was recorded for the first time a few years ago. However, detector findings and sightings have since been made throughout the entire *Land*. There are no known roosts.

In Saxony, the maternity roosts and individual sightings are all in the mountainous regions of Vogtland, the Erzgebirge (Ore Mountains) and the Zittau mountain range, generally above 400 m above sea level, but occasionally down to 300 m above sea level. The maternity roosts contain between 30 and 60 females and juveniles, up to a maximum of 80. The winter roosting sites are in tunnels and mines, and the population is approximately stable.

In Saxony-Anhalt, the species occurs almost exclusively in the Harz region. At present, there are six known maternity roosts on buildings, the highest of which is 570 m above sea level in Friedrichsbrunn. Winter sightings have been made in all larger rocky regions of the Harz district with dry, cold slopes where cold air accumulates. Colonies with up to eight bats have been found in the winter roosting site. Northern bats marked in the Harz region have been sighted in the Thuringian Forest.

In Thuringia, the species is rare and populations are confined to the Central German Upland (Mittelgebirge) regions of the Thüringer Wald, Schiefergebirge (Rhenish Slate Mountains) and southern Harz region. There are signs of a slight increase in population in the winter roosts.

1.24 *Miniopterus schreibersii*
Schreiber´s bat

In the period under review, the species was not recorded in Germany.
German Red List: Category 0 = Extinct in the Wild.

2 General population status and population trends

2.1 Population trends

The status of bats in Germany has improved significantly in recent decades. Today, there are no signs of a significant population decline for any species, and some species even indicate population growth. For most species, the population trends are neither clear nor identical in all regions. However, the complete disappearance of species from areas where they had been regularly observed in the past has only been ascertained in exceptional cases. In the case of the Brandt's bat, whiskered bat, noctule bat, soprano pipistrelle and grey long-eared bat, population trends are very unclear.

The recovery amongst many bat populations in recent decades is attributable to the following factors:

I. Conservation measures for bats, including an increase in tolerance amongst the general population for these animals.
2 The disappearance of DDT and its by-products from the food chain.
3 The use of modern, more specific-acting wood preservatives and pesticides which break down more rapidly in the environment and which are less toxic to mammals than their predecessors; in most cases timber treatment chemicals are not used at all due to the application of technical wood preservation.
4 Hot summers in Central Europe in the Eighties and Nineties.
5 The promotion of certain species of insects which provide food for bats, e.g. via the reduced use of plant protection products, renaturation of wetland areas, and new forms of forest damage.

The situation in Germany remains critical for the greater and lesser horseshoe bat, the Geoffroy's bat and the Barbastelle bat. Although the more recent populations of the greater horseshoe bat and the Geoffroy's bat are comparatively stable, the remaining populations would not have survived without targeted support. The lesser horseshoe bat, which has likewise been reduced to small residual populations, may continue to decline despite extensive conservation efforts. It is also threatened by developments leading to the loss of important winter roosting sites at the centre of its distribution. Bat conservation in Germany must therefore concentrate primarily on the lesser horseshoe bat as a matter of utmost priority.

2.2 Red List

The "Red List of Germany's Endangered Animals" (*Rote Liste gefährdeter Tiere Deutschlands*) was published in 1998 by the Federal Agency for Nature Conservation (BfN). It also includes the bats classified in chapters 1.1 to 1.24. The regional risk status is evaluated by the *Länder*. Saxony published a new Red List for vertebrates in 1999. North Rhine-Westphalia has drawn up a new Red

List, due for publication in the year 2000. This year, Schleswig-Holstein and Thuringia are also planning to revise their Red Lists for mammals.

3. Habitats and roosts

3.1 Roosts

Because natural caves are rare in some *Länder*, disused bunkers and mines represent important bat roosts, particularly as winter roosts e.g. of the greater horseshoe bat and greater mouse-eared bat in Saarland.

In Saxony, work contracts were drawn up specifying the necessary conservation action for known area-wide and regionally significant bat roosts. The materials are prepared for distribution to the respective nature conservation authorities. However, the monitoring of underground roosts is made more difficult by the Saxony Caves Ordinance.

In Schleswig-Holstein, the Levensau viaduct across the North Sea-Baltic Canal near Kiel is the largest known winter roost for noctule bats in Central Europe, with at least 6,000 individuals. Between twelve and fifteen thousand Daubenton's and Natterer's bats (approximately equal numbers of each) spend the winter in the Segeberg cave with its limestone crevices and hollows . The cave is the most important winter roost in Central Europe for these species, and there is no larger known roost for the Natterer's bat anywhere in the world. The Segeberg cave is also the world's largest known winter roost for the Bechstein's bat, with up to 500 individuals. The cave also serves as a courtship and mating roost for several thousand Daubenton's bats and Natterrer's bats.

In Hesse, the importance of offering a variety of roost types has been reiterated. In buildings, these are primarily undeveloped lofts, uninsulated wall cladding and wall cavities in historic buildings and barns. The hollow trees in forests and parks are important roosts for tree-dwelling species, which is the reason why woodpecker holes and crevices must be preserved.

A research and development project by the Federal Office for Nature Conservation has led to the following bat conservation recommendations for the forestry industry, depending on the forest type and bat population:

1 There should be no open spaces larger than 0.5 to 1 ha.

2 Creation of an interlinked system of roosts on two levels with the aim of providing a permanent, long-term supply of hollows with 35-30 hollows per hectare of old growth, equivalent to 7-10 trees (labelling of the trees):

Level 1: Securing a network of hollow trees which already contain woodpecker holes or rotten hollows, trunk cracks, protruding bark etc. The distance between the centres of the hollows should not exceed 1000 m

Level 2: Creation of a follow-on network for level 1 trees. Preference should be given to individual trees which already exhibit signs of hollows or ecological qualities such as fungi (likely candidates).

1 Clear labelling and preservation of known bat roost trees.

2 Conversion of coniferous woodlands into mixed woodlands with native species, plus increased rotation time or target thickness.

3 In the case of trees felled due to traffic safety considerations or pest infestations, the trees or tree parts (branches) occupied by bats should be protected / supported.

4 Nesting boxes should only be used as an interim solution until an adequate number of hollow trees has grown to maturity; the creation of a new box area is not an appropriate long-term solution to compensate for a lack of natural roosts.

5 Depending on the specific situation, there are in addition various subsidy measures available to protect foraging territory:

- For air foragers, by means of clearings and gaps and the use of trees in groups
- For species which forage in the vegetation, by deliberately encouraging understoreys and intermediate storeys up to a coverage level of approximately 20-30%, loosening the canopy in some cases to increase the incidence of light
- Promoting an obstacle-free airspace at a height of approximately 1 metre above the ground by clearing the undergrowth and single-layer stock development (similar to a "cathedral forest")
- Encouraging tree top areas with a high level of food production; leaving ancient trees to stand and increasing the incidence of light in their immediate environment
- Promoting structures and food sources at the inner edges of forests along paths (e.g. floriferous borders), "natural development" of the outer edges of the forests to a width of approximately 30 metres, creation of ponds (at least 100 – 200 m) and forest glades, allowing formerly damp areas in the forest to become waterlogged once more
- No use of wood preservatives, particularly insecticides.

Other proposals for bat conservation measures in the forests include bat counts, periodic tree hollow plotting (within the context of forest planting and forest biotope plotting), training courses for forest owners, forest managers and forest workers, and the establishment of a network of caretakers.

3.2 Foraging habitats

There is very little new information from individual *Länder* since the last National Report:

In Saxony, habitat structures in a 1 km radius around 11 maternity roosts of the lesser horseshoe bat were plotted within the context of a works contract and a university dissertation.

In Schleswig-Holstein, several forests in the Plöner Seenplatte district are particularly significant as bat habitats. For example, a total of 7 bat species were found alongside one another in nesting boxes in the "Rixdorfer Tannen" district. A similar diversity of species is found in the forests of the "Aukrug nature park" and in the vicinity of the town of Segeberg with its forests, lakes and flood plains. The significance of deciduous forests in the eastern part of the *Land* is underlined by the discovery of the first maternity roost of a Bechstein's bat in Schleswig-Holstein, in the Ostholstein district.

4 Causes of threat

The causes of threat cited in the first and second National Reports continue to apply. Obvious factors which adversely affect the population of bats include:

1 The loss of roosts due to the escalating modernisation and demolition of buildings, particularly in the eastern *Länder*, tree "maintenance" and felling, the sealing or use of underground caves, the colonisation of barn owls in churches, intolerance and vandalism, as well as

1 Habitat changes and reduction in the food supply as a result of construction work, dissection and intensive agricultural use, and in the case of the Daubenton's bat, the development of waterbodies.

In Bavaria, regular contacts to educate the owners or users of roosting sites have proven to be an important aspect of bat conservation. Where bat colonies are included in this monitoring programme, impairments only rarely occur.

According to information provided by the Bavarian State Institute for Environmental Protection, for the lesser horseshoe bat in Bavaria the use of biological controls against mosquitoes on the Chiemsee lake (including the Herreninsel islands) poses the risk of serious intervention into the food chain, with unpredictable consequences. One would have to assume that the large quantities of mosquitoes occurring in damp years provide an important source of food for the lesser horseshoe bat on the Chiemsee lake.

Evaluation of data on the Barbastelle bat in Bavaria revealed a strikingly high number of road traffic victims compared with other crevice-dwelling bats. Between 1989 and 1997, there were four cases registered in each of the districts Coburg and Rottal-Inn, where there is also a prevalence of maternity roosts. These findings were made both on little-used forest roads and on roads with heavy traffic, and cast fresh light on the potential risk to the large winter and autumn population of this species in the Bavarian Forest near Bodenmais. The bypass around Bodenmais cited in the last National Report has since been built, and investigations are currently underway to assess the risk to the Barbastelle bat.

In Saxony-Anhalt, large roosts of the Barbastelle bat are currently at acute risk. In Heimkehle, one of the most important caves in the Gipskarst region, an advent service and festival of lights was held on Christmas Eve, with over two thousand visitors. In the castle ruins of Zerbst, the most important winter roost in the Elb region, a steel grating has repeatedly had to be replaced in order to protect the largest cellar. Ownership disputes have so far prevented long-term clarification of the situation in this roost.

Two other known bat roosts in Saxony-Anhalt are threatened by the expansion of the neighbouring "Kuhberg" lime pit.

In Thuringia, a large number of impairments to bat roosts have been ascertained. A few examples are listed below:

1 Approval to demolish a large maternity roost for the mouse-eared bat in the Eichsfeld district was granted without imposing any conditions on conservation of the species.
2 In the Jena district, approval was granted for an overground sand mine, which caused increased ingress of surface water into the Altendorf china clay tunnels below. There have been records of the roof collapsing in the cave, which is a winter roost to over 100 lesser horseshoe bats.
3 On Christmas Eve 1999, a Christmas concert was held in the Barbarossa cave in the Kyffhäuser district.
4 Guided tours began last winter of the Götzhöhle cave in Meiningen, a fissure cave with a winter population of around 20 mouse-eared bats.
5 In the Walpersberg cave in the Jena district, car tyres were set alight. As a result, the large system of caves was inaccessible for several months. The number of lesser horseshoe bats which consequently lost their lives in this significant winter roosting site has not yet been precisely determined. Several animals hanging close to the entrance were found to be dead.
6 The Haineck castle ruins near Nazza in the Warburgkreis district has been renovated, as a result of which nearly all the fissures in the wall were sealed with mortar.

In forests, large-scale construction projects and road traffic safety concerns are the principal factors leading to the loss of roosting sites. The planned expansion of Frankfurt airport alone will destroy some 1,000 ha of coherent forest land.

5 Data compilation

The collection and evaluation of data in the *Länder* is still carried out in collaboration between nature conservation authorities, coordination offices for bat conservation, specialist organisations and interested individuals. For methodological reasons, evaluating the summer population development of forest or tree-dwelling bats tends to be imprecise. The same applies to species whose winter population is difficult to ascertain and whose summer roosts are located in inaccessible crevices, such as the common pipistrelle, the grey long-eared bat and the serotine bat.

In implementing the EUROBATS resolutions, the body established under Article III.5 for monitoring the mouse-eared bat, the lesser horseshoe bat and other bat species will be co-ordinated with the overall concept of a species monitoring programme for nature conservation in Germany. This development is part of an on-going research project by the Federal Office for Nature Conservation.

Special regional data surveys have been conducted in the maternity roosts of certain species or in the winter roosts of a certain area (e.g. Hesse, Saarland, Saxony, Saxony-Anhalt and Schleswig-Holstein). In Bavaria, a significant proportion of the data is acquired within the context of the monitoring programme for the research project "Population development and conservation of bats in Bavaria".

The Coordination Office for Bat Conservation in Thuringia manages an electronic database of bats. This database currently contains details of some 2,600 findings with around 12,000 data records of species sightings. Selected data may be made available to other users by means of a search and retrieval module. The Thuringian Species and Biotope Protection Programme will soon have an interface to facilitate the direct import of data from the bat database. Data may also be made available to users of geographical information systems in a variety of GIS formats.

The status of knowledge about bats in Saxony was compiled and published in 1999. Similar publications are currently under preparation in Baden-Württemberg, Bavaria, North Rhine-Westphalia and Thuringia.

C Measures to implement Article III of the Agreement

6 Legal measures for the conservation of bats and their implementation

All bat species occurring in Germany are strictly protected by the Federal Nature Conservation Act in the version dated 21 September 1998 and the individual Nature Conservation Acts of the *Länder*. The regulations are specified by an ordinance dated 14 October 1999 concerning the adoption of regulations relating to the conservation of species. Disturbance to the roosts of bats is prohibited. In Bavaria and Berlin, for example, exemption licences under the Nature Conservation Act for the identification of bat roosts, capture of bats for the purpose of species identification, care of weak animals etc. are only granted to experts. In Berlin, exemptions from the ruling which prohibits the destruction of roosts granted in isolated cases, e.g. within the context of building renovation, always contain the proviso that a replacement must be created for the roosts eliminated.

7 Bat habitats under special protection

Within the context of selecting and delimiting territories for the European system of protected areas "Natura 2000" in accordance with the EC Directive on the conservation of natural habitats and of wild fauna and flora (Habitat Directive), the *Länder* have also designated certain areas as being important for the conservation of bats, including the following:

1 Ostbrauerei brewery in Frankfurt an der Oder as an important winter roost with currently the largest known population of hibernating mouse-eared bats (Brandenburg)

- Heidehof in Lower Fläming (former military training area Jüterborg Ost), as a foraging, reproduction and winter habitat for at least 15 species, including the Bechstein's bat, northern bat and Barbastelle bat (Brandenburg)

- Bat roosts protected as winter roosts under the LIFE project "Transboundary programme for the conservation of bats in western Europe", including 16 old bunker installations and mines with built-in safety grilles or other protective equipment (Saarland)

- 48 regions (Table 7) with populations of the lesser horseshoe bat, mouse-eared bat, Bechstein's bat, pond bat or Barbastelle bat (Saxony-Anhalt).

For implementation of the Habitat Directive, Bavaria has drawn up a list of criteria for designating bat roosts as "special protection areas". They are currently under debate in collaboration with local governments, associations, churches, landowners etc. for reporting and registering.

In Thuringia, it is felt that the designated territory under the Habitat Directive provides adequate land for protection of the lesser horseshoe bat and the current focal points of distribution are particularly well-represented. Habitats close to the principal colonies of the greater mouse-eared bat, the Barbastelle bat and the Bechstein's bat are likewise adequately represented.

Important habitats for bats also include many existing conservation areas, such as the Sächsische Schweiz national park and the Upper Lusatia (Oberlausitz) biosphere reserve, as well as heathland and pond areas in Saxony. In Baden-Wuerttemberg, 190 rock crevices within nature conservation areas are protected, whilst a further 160 caves are designated national landmarks. Many of these caves are managed by local nature and environmental conservation groups. In Saxony-Anhalt, the "Jederitzer Holz" nature conservation area, which contains 11 species of bat, is to be incorporated into protection zone 1 of the "Elbe riverine landscape" biosphere reserve, where silvicultural use is confined to the removal of non-native tree species.

Other measures in recent years designed to protect the specific habitats of bats include:

- Tourist use of the Segeberg cave and adjoining Kalkberg mountain has been coordinated in line with bat conservation requirements. The Segeberg cave is the only natural rock crevice in Germany's most northerly *Land*. The protection provisions are based on the requirements of the bats. Public access to the cave has been limited, and 2/3 of it is blocked off to visitors all year round, whilst between 1 October and 31 March each year, 2000 metres of its total length is out of bounds. Concerts and festivals are likewise restricted (Schleswig-Holstein).

- Long-term protection of the Levensau viaduct as the most important winter roosting site for the noctule bat, by co-ordinating the necessary protection and maintenance work with the bat conservation programme (Schleswig-Holstein).

- Creation of new winter roosts for bats by converting a cellar in the Aukrug Clinic which was once used to store medicines and the former underground air-raid shelter in the vicinity of Neumünster, and by preserving and opening two ice cellars in Bad Schwartau and Gut Petersdorf (Schleswig-Holstein).

- Designation of more than 200 protected areas, including numerous large-scale areas, which are highly significant for bat conservation, particularly the protection of foraging grounds (Brandenburg).

- Designation of nature conservation areas, which are protected or expanded on the basis of data concerning bat populations, e.g. in the case of the "Landgraben-Dumme valley" nature

conservation area, the significant populations of Brandt's bat and Nathusius' pipistrelle, or in the case of the "Upper Selke Valley" and "Bode Valley" nature conservation areas, the Bechstein's bat and the Leisler's bat (Saxony-Anhalt).

1 Protection of 30 bunker installations and cellars in the Salzwedel district and of four old mining shafts in the Harz region (Saxony-Anhalt).

1 Expansion and protection of eleven bunkers formerly used for military purposes and which now serve as bat roosts near Bad Mergentheim, Wort and Waldstetten (Baden-Württemberg).

1 Preservation, conversion and renovation of former ice cellars in the Tübingen district (Baden-Württemberg).

1 Funding and installation of cave grilles to protect hibernating bats in the Swabian Alb district (Baden-Württemberg).

1 Regular inspections of winter roosts, particularly to ensure that they are undisturbed. Existing roosts are gradually being upgraded with an additional choice of hiding places or improvement of the climatic conditions (Berlin).

1 Regular monitoring of winter roosts as the basis for evaluating their significance to bat conservation (Hesse).

1 Establishment of a roost management system for summer roosts which are particularly at risk, especially to protect mouse-eared bat maternity roosts and the roosts of the lesser horseshoe bat (Thuringia).

1 Search for suspected roosts of the lesser horseshoe bat in the Kochel region (Bad Tölz district, Bavaria).

Table 7: Special protection areas pursuant to the Habitat Directive created in Saxony-Anhalt partly because of the bat population.

Table 7: Continued.

Table 7: Continued.

8 Consideration of habitats as important biotopes for bats

Many important habitats for bats enjoy special protection under the Federal Nature Conservation Act. These primarily include biotopes which have special significance as foraging areas for bats, including fen woodlands, moor woodlands, swamp woodlands and riparian forests, reed beds, water meadows, ravine forests, orchard meadows, springs, semi-natural and undeveloped sections of streams and rivers, bayous on flowing stretches of water, semi-natural stagnant small bodies of water, heathlands, dry lawns and herbaceous fields. Additionally, in Saxony for example, open rock formations, former mineshafts, groups of old trees and individual trees with plenty of crevices which may potentially contain bat roosts enjoy special protection. In Thuringia, the same applies to caves and tunnels, where these are no longer intended for use. In Schleswig-Holstein, the Nature Conservation Act prohibits the felling or destruction of trees with large breeding hollows (e.g. belonging to woodpeckers). In Bavaria, Article 13 e), para 1, No. 5 of the revised Nature Conservation Act of 1998 grants protection i.a. to caves and open, artificial underground cavities in the wild which must not be removed or substantially disrupted.

It is also hoped that certain agricultural measures by the *Länder* will bring about an improvement in the habitat conditions for bats in forests, e.g.

1 The management of government-owned forests, and increasingly also privately owned and local authority forests, according to the principles of semi-natural silviculture and the binding Directive of 1999 governing semi-natural forest development in the state-owned forests of Schleswig-Holstein.

2• The forest conversion programme begun in Brandenburg.

3• The introduction of semi-natural silviculture in the government-owned forest of Baden-Württemberg.

Other Federal *Länder* have similar programmes.

Since the previous National Report, the *Länder* have also taken the following action to protect the habitats of bats:

1 Planning protective measures for bat roosts in buildings and underground caves (Saxony).

1• Improving the habitats for bats by remediating those parts of the *Land* which had been heavily damaged by open-cast lignite mining (Saxony).

1• Supporting the natural supply of caves by hanging large numbers of bat boxes in suitable regions (Schleswig-Holstein).

1• Survey amongst government and forestry agencies with regard to bat populations, particularly winter roosts and foraging territories, as well as local protection activities (North Rhine-Westphalia).

1• Continuation of the programme to log Bavaria's bat population, which has since revealed some 285 mouse-eared bat colonies and 11 maternity roosts of the Geoffroy's bat, for example (Bavaria).

In many cases, however, the protection requirements of bats and their habitats are still given inadequate consideration in *Land* and local government planning. It is therefore pleasing that greater allowance is being made for the requirements of bat conservation in Thuringia, with planned government intervention. As well as stipulating provisions on roost protection in individual cases, landscape plans now also include provisions on habitat protection, gleaned from corresponding expert reports.

9. Measures to raise public awareness of bat conservation

In the period under review, brochures, posters and other publications were drafted and distributed by nature conservation authorities, associations and committed individuals; furthermore, exhibitions were staged, lectures held, and guided tours organised. The following deserve particular mention:

1 Information and education events for local bat conservationists (Bavaria, Hesse, Lower Saxony, Rhineland-Palatinate)
2 Publicity for the creation of bat roosts on buildings within the context of an "Aid programme for species which breed in buildings" in Berlin and the "Bat-friendly campaign" in Thuringia
3 Creation of a bat museum in the Märkische Schweiz nature park (Brandenburg)
4 Two full-day education seminars for around 100 employees of the forestry administration (Hesse)
5 Organisation of video projections in churches, allowing visitors to see the maternity roost colony coming to life in the roof of the church (Hesse)
6 Preparation of a "Practical bat conservation manual" to inform the general public and, in particular, authorities, associations and countryside groups, about the requirements, risks and opportunities for protection of these animals (North Rhine-Westphalia)
7 Information boards sited at important, publicly accessible bat roosts (Saarland)
8 Annual organisation of a "noctule bat camp" (Saxony-Anhalt)
9 Publication of a conference volume on "The situation of the Barbastelle bat in Europe" and preparation of a conference on "The situation of the Leisler's bat in Europe" (Saxony-Anhalt)
10 A bat project to record and protect all roosts in the town of Neumünster with the involvement of the general public (Schleswig-Holstein)
11 Planning of a bat conservation centre on the Kalkberg mount at Bad Segeberg (Schleswig-Holstein)
12 Development of Internet versions of the public relations material and other information on bat conservation (Thuringia)
13 A conference by the *Bundesarbeitsgemeinschaft Fledermausschutz* <Federal Working Party on Bat Conservation> at NABU (10 – 12 September 1999) in Gießen (Hesse)
14 An international expert conference on the biology and conservation of endangered migratory species of Central European bat using the Nathusius' pipistrelle and the pond bat as examples (2 – 3 December 1998) at the Gut Sunder NABU Academy.
15 Publication of a stamp by the German post office with the greater horseshoe bat as its motif
16 Development of information leaflets, a teachers' folder and a rucksack for project work, as well as work instructions for architects outlining the contents and objectives of bat conservation, as part of the trial and development project "Creation of an interlinked system of roosts for building-dwelling bat species" by the Federal Office for Nature Conservation.

In Berlin, members of the NGO "Vespertilio e.V." held a second "European Bat Festival" at Spandau Citadel in 1998, which was followed by a third festival in 1999. Over 10,000 people attended the event and enjoyed the broad range of information on offer. This was the central closing event and the highlight of the "European Bat Night" in Germany. It had previously begun in numerous towns and cities and with the support of numerous volunteer bat conservationists, encompassing a wide range of campaigns and events.

In Hesse the government ornithological station organised an evening-long programme in Frankfurt as part of the European Bat Night. Technical information about bats was linked to cultural and mythological components, particularly with reference to J. W. Goethe.

10 Advisory committee established under Article III.5 of the Agreement

In the period under review, the expert committee appointed by the Federal Government and *Länder* pursuant to Article III.5 of the Agreement convened on 21 January 1998 in Magdeburg, on 22 February 1999 in Magdeburg, on 6 September 1999 in Berlin and on 14 February 2000 in Dresden. In 1999, Dr. Wolfgang Wendt (Saxony-Anhalt) handed over the Chair to Johannes Schwarz (Berlin). Topics of the meetings included:

1 Improving bat conservation in residential areas
2 Developing programmes for monitoring the populations of bat species in Germany in accordance with the Advisory Committee on the Agreement
3 Determining nationally and internationally significant underground habitats of bats in Germany
4 Rabies amongst bats in Germany
5 International Bat Night and Bat Festival in Berlin.

The *Länder* receive additional expert advice from specialist institutions, associations and interested individuals, such as:

1 Coordination offices for bat conservation (Baden-Württemberg, Bavaria, Thuringia) or nature conservation stations (Brandenburg)
2 Nature conservation NGOs such as the *Naturschutzbund Deutschlands e.V.*, particularly its expert committees on bat conservation (Brandenburg, Saarland, Saxony *inter alia*), the *Bund Umwelt und Naturschutz Deutschland e.V.* (Brandenburg), *Vespertilio e.V.* (Berlin), the *Arbeitsgemeinschaft für Fledermausschutz in Hessen*, the *Interessengemeinschaft Fledermausschutz und –forschung in Thüringen* and other working parties and associations dedicated to bat conservation (Saarland, Saxony, Saxony-Anhalt, Schleswig-Holstein).
3 Caretakers for selected regions, species or roosts (Brandenburg, Lower Saxony, Saxony, Thuringia).

In Thuringia, extra staff were successfully recruited within the context of job creation schemes designed partially or principally for bat conservation activities.

11 Additional measures for bat conservation

The *Länder* have implemented a number of additional measures for bat conservation. The principal focus is on preserving existing roosts and creating new ones:

1 Occasional financial support for associations, working parties and work groups aimed at the conservation of native bats, e.g. using funds from the Ministry for the Countryside, the *Stiftung Naturschutzfonds* or the Regional Offices for Nature Conservation and Landscape Management (Baden-Württemberg).

1 Channelling of public and private funds into special conservation projects and measures such as the renovation of ice cellars, roofs and former air-raid bunkers (Schleswig-Holstein).

1 Promoting the monitoring, protection and renovation of residual military properties, particularly bunkers, as winter bat roosts (Brandenburg).

1 Promoting local projects for the creation of roosts e.g. by installing bat stones whilst insulating concrete block structures in Borna, Leipzig and Dresden and placing grilles across winter roosts in Sächsische Schweiz (Saxony).

1 Converting a former annular furnace in a brickworks, the ruins of which have been demolished, to a bat roost in Oberspreewald-Lausitz (Brandenburg).

1 Stepping up efforts to protect the roost and foraging habitats of the lesser horseshoe bats resident on Herreninsel island in the Chiemsee lake, particularly by investigating roost behaviour, space utilisation and population size of the bats as part of a university dissertation, and intensifying contacts to the government castle and lake administration (Bavaria).

1 Visiting former air-raid installations together with forestry and civil protection authorities to investigate their suitability as bat roosts, recommending protection and security measures, and in several cases, designing these installations and protecting them against unauthorised access (Saarland).

1 Plotting churches, drafting renovation conditions, and managing renovation projects in the Konstanz district (Baden-Württemberg).

1 Continuing the special species protection programme for the greater horseshoe bat, the lesser horseshoe bat and the Geoffroy's bat (Bavaria).

1 Managing maternity roosts (particularly of mouse-eared bats) in the Tübingen district (Baden-Württemberg).

1 Conducting investigations into contaminant levels in bats and fauna/ecology studies within the context of the available staff and funds, in collaboration with volunteer bat experts and conservationists (Lower Saxony).

1 Developing and implementing a selective monitoring programme for the lesser horseshoe bat, mouse-eared bat, Brandt's bat, noctule bat, Leisler's bat, Barbastelle bat and Nathusius' pipistrelle (Saxony-Anhalt).

1 Volunteer management of many bat box areas, some of which were provided by the Regional Environment Agency (Brandenburg).

1 Checking some 4,500 bat boxes in Saxony-Anhalt.

1 Creating special bat boxes as substitute roosts for tree hollow-dwelling species (Baden-Württemberg).

1 Funding of a central capture and care station for bats which are injured or in need of assistance (Baden-Württemberg).

1 Preparing a project to integrate bat conservation into all relevant official procedures of the Schmalkalden-Meiningen district. In collaboration with building authorities, a procedure is to be developed to effectively incorporate existing knowledge on bat populations into the planning process.

12. Existing and planned programmes for bat conservation

In the period under review, a number of different conservation and research programmes were taking place in Germany, which were initiated and supported by the Federal Government, *Länder*, conservation groups or committed individuals. Examples include:

1 Research and development project by the Federal Office for Nature Conservation entitled "Studies and recommendations for the conservation of bats in forests", completed in 1998, with publication of the results in 2000 and 2001

1 Research and development project by the Federal Office for Nature Conservation entitled "Population-genetic examination on the structure of bat populations in the case of the noctule bat (*Nyctalus noctula*)", completed in 1998, with publication of the results in 2000

1 Trial and development project by the Federal Office for Nature Conservation in collaboration with the *Regierungspräsidium Gießen* and the *Stiftung Hessischer Naturschutz* entitled "Creating a roosting site network for building-dwelling bat species by securing and extending the roosting opportunities in and on buildings", scheduled for completion in 2001

1 Research and development project by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety entitled, "Bat roosts on both sides of the River Oder".

1 LIFE project entitled "Transboundary programme on the conservation of bats in the west of central Europe", completed in 1998, final report now available (Saarland, Rhineland-Palatinate and North Rhine-Westphalia)

1 Research project entitled "Population development and conservation of bats in Bavaria" with monitoring counts in the maternity roosts of the greater and lesser horseshoe bat, the mouse-eared bat and the Geoffroy's bat and in selected winter roosts, focussing primarily on Northern Bavaria

1 Investigation of the rabies situation amongst bats in Brandenburg

1 Species aid programmes for the lesser horseshoe bat in Saxony-Anhalt and Thuringia

1 Monitoring programme to investigate the significance of limestone caves in Bad Segeberg for hibernating bat species (Schleswig-Holstein)

1 Monitoring programme to investigate the significance of the Levensau viaduct in Kiel for hibernating noctule bats and common pipistrelles (Schleswig-Holstein)

1 Regional research projects on the distribution and ecology of selected species, such as the parti-coloured bat in Brandenburg, the greater horseshoe bat and soprano pipistrelle in Baden-Württemberg, the lesser horseshoe bat, mouse-eared bat, serotine bat and others in Thuringia, and the noctule bat in the Philosophenwald forest in Gießen (Hesse)

1 Investigation of winter bat roosts in summer (Baden-Württemberg)

1 Project on "Wild mammals in Baden-Württemberg", to determine, *inter alia*, the distribution, risk and protection requirements of bats in Baden-Württemberg

1 "Bat atlas" project to provide the foundations for bat conservation in Bavaria

1 "Elbe species and biotope conservation programme" in Saxony-Anhalt, with an explicit focus on bat conservation and a catalogue of measures

1 Recognition of the function of a bat ringing centre for the east German *Länder* by the State Office for the Environment and Geology in Saxony, which in 1999 made corresponding agreements with the responsible State Offices of Mecklenburg-Upper Pomerania, Brandenburg,

Thuringia and Saxony-Anhalt. A ringing programme has been co-ordinated between the *Länder* involved and is being carried out by some 20 volunteers

1 Recognition of the function of a bat marking centre for Central Europe by the Alexander Koenig Zoological Research Institute and Museum in Bonn.

13 Activities regarding the effects on bats of pesticides and wood preservatives

During the period under review, the nature conservation authorities and coordination offices for bat conservation in the *Länder* did not become aware of any cases where bat colonies were harmed by the use of wood preservatives. Effects on greater mouse-eared bats can be traced back to the treatment of roofs with substances containing Lindane during the era of the former GDR. The risk from wood preservatives in Germany continues to decline, thanks to the increasing use of technical wood protection measures in construction and renovation work.In Thuringia, since 1997, any conspicuous numbers of young dead amongst mouse-eared bat colonies have been collected and held for later analysis to determine whether they suffered from the effects of wood preservatives and plant protection products. Parallel to this, wood samples are collected from churches for a planned cross-sectional analysis to determine the levels of wood preservative contamination in this important type of roost.

D Operation of the Agreement

14 International co-operation

The Federal Environment Ministry and the Federal Office for Nature Conservation are endeavouring to step up international cooperation. This includes:

1 The provision of technical information. To this end, in 1999 the National Reports of 1996 and 1998 were summarised and published in both German and English under the title "Fledermäuse und Fledermausschutz in Deutschland / Bats and Bat Conservation in Germany".

2 Improving research and conservation opportunities for bat experts in eastern and south-eastern Europe. To this end, a training project was carried out (cf. chapter 15.2).

3 The coordination of conservation action in Europe. To this end, funding was made available to the international conference of the GUT Sunder NABUJ Academy "Biology and conservation of endangered migrating bat species using the Nathusius' pipestrelle and the pond bat as examples".

As part of the LIFE project, "Transboundary programme on the conservation of bats living in the west of central Europe", the *Länder* of North Rhine-Westphalia, Rhineland-Palatinate and Saarland are cooperating closely with Germany's neighbours France, Luxembourg and Belgium.

As part of a transboundary project to protect potential winter bat roosts, the *Länder* of Brandenburg, Mecklenburg-Upper Pomerania and Saxony are cooperating with Poland and the Czech Republic.

The organisation "*Arbeitskreis Fledermäuse Sachsen-Anhalt e.V.*" supported the "Karpaten 1998" and "Karpaten 2000" workshops, as well as other bat conservation projects in the Ukraine and the Slovak Republic.

15 Measures to implement the Resolutions of the Meeting of Parties

15.1 MOP 2 Resolution No. 2: Consistent Monitoring Methods

In the *Länder*, bat species and their roosts are ascertained using certain methods recommended in the Resolution. However, the monitoring programmes are not all uniform, since nearly all the work is carried out by volunteers. The Committee pursuant to Article III.5 of the Agreement is endeavouring to develop uniform national monitoring programmes for those species which were particularly highlighted in Resolution No. 2. In a first step, corresponding programmes were prepared for the greater mouse-eared bat and the lesser horseshoe bat.

15.2 MOP 2 Resolution No. 3: Transboundary Programme: Species Proposals

The recommendation for the pond bat has been met in part by the action plan of the Berne Convention to conserve the pond bat in Europe. Investigations are now needed in Germany to determine where the species occurs and the status of its population. This monitoring work is currently in full swing, as volunteer bat experts in several regions are systematically searching for populations and roosts.

Implementation of the recommendations regarding the Nathusius' pipistrelle was discussed at the international conference on "Biology and conservation of endangered migrating bat species using the Nathusius' pipestrelle and the pond bat as examples". The ringing of migrating bats is carried out in several regions where there are known mating territories. In some of these regions, farther-reaching research is also carried out into the ecology of the Nathusius' pipistrelle, the results of which are due to be published shortly.

At international level, in 1999 and 2000, implementation of the resolution was promoted by the project "Bat conservation expert training in eastern and south-eastern European countries". The project was submitted to the advisory committee (Inf.EUROBATS.AC4.15) and carried out by Herman J.G.A. Limpens, Eco Consult & Project Management (Wageningen). Mr Limpens conducted training workshops in Bulgaria, Croatia, the Ukraine, Georgia, Slovenia, Rumania and Moldavia, and supplied each of the participants with a number of bat detectors for further bat monitoring work. At the workshops, data was collected on the prevalence of pond bats, Nathusius' pipistrelles, Schreiber's bats and other species.

15.3 MOP 2 Resolution No. 4: Transboundary Programme: Habitat Proposals

A list of significant underground habitats for bats in Germany is currently under preparation. Bavaria, Berlin, Brandenburg, Hesse, Saxony, Saxony-Anhalt and Schleswig-Holstein have already reported their roosts to the Federal Environment Ministry. The complete list will meet the recommendations of the advisory committee (Doc.EUROBATS.AC5.9).

The research programme "Investigations and recommendations on the conservation of bats in forests" has created important foundations for meeting the required activities for forests as bat habitats. The results of the project will be published shortly. A brochure containing information on bats in forests, the risks faced by bats and the conservation measures required was drawn up as part of the project and has since been distributed to all government forestry agencies in Germany.