National Report on Bat Conservation

in the Federal Republic of Germany

2006-2009

A. General information

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B. Germany's bats

1 Summary of information about species occurring in Germany

Occurance / frequency / estimated population size / population trends	*Rhinolophus ferrumequinum*	*Rhinolophus hipposideros*	*Barbastella barbastellus*	*Eptesicus nilssonii*	*Eptesicus serotinus*
Baden-Württemberg BW	✓	✓	✓	✓	✓
Bavaria BY	max. 100 / +	500 / +	only regionally large / +	only regionally large / ?	small / ?
Berlin BE			extinct	extremely rare / ?	regular summer populations / o
Brandenburg BB			✓ / +	extremely rare	widespread, common in some areas
Lower Saxony NI			✓	100 maternity roosts; only central uplands	✓
North Rhine - Westphalia NW	individual sightings	extinct	4 maternity roosts	n. e.	n. e.
Saarland SL	15-40 / +		individual sightings	extremely rare	widespread / -
Saxony SN		12 maternity roosts with about 1,000 adult individuals / o	✓ / ?	sighted only in mountain areas / o	✓ / ?
Saxony-Anhalt ST	extinct	8 maternity roosts with 158 adult females / o	✓ / o	n.e. / o	n.e. / o
Schleswig-Holstein SH					widespread
Thuringia TH		1.796	a few maternity roosts	rare	widespread

Trends:

o = population stable

- = population in decline

+ = positive population trend

? = population trend unclear / no assessment possible

Other:

✓ = occurring, but no estimate of population size

x = listed, but not / no longer occurring, population uncertain

n. e. = no (new) information / reference to relevant remarks in previous reports

Occurance / frequency / estimated population size / population trends	*Hypsugo savii*	*Myotis alcathoe*	*Myotis bechsteinii*	*Myotis brandtii*	*Myotis dasycneme*
Baden-Württemberg BW		n. e.	✓	✓	
Bavaria BY	individual sightings in 2007, 2008, 2009		only regionally large / ?	small / ?	
Berlin BE			rare / ?	rare / ?	extremely rare / ?
Brandenburg BB			✓	rare	extremely rare
Lower Saxony NI			✓	✓	10 maternity roosts
North Rhine - Westphalia NW	individual find from 2008		750-800 / +	n. e.	300 overwintering bats; no maternity roost
Saarland SL			✓	✓	
Saxony SN		first instance of reproduction proven	✓ / ?	✓ / o	individual sightings, no proof of reproduction
Saxony-Anhalt ST	individual find from 2006	110 / ?	n.e. / o	n.e. / o	✓ / ?
Schleswig-Holstein SH			maternity roosts known	1 maternity roost	6 maternity roosts
Thuringia TH		✓	✓	rare	individual sightings

Trends:

o = population stable

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Other:

✓ = occurring, but no estimate of population size

x = listed, but not / no longer occurring, population uncertain

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Occurance / frequency / estimated population size / population trends	*Myotis daubentonii*	*Myotis emarginatus*	*Myotis myotis*	*Myotis mystacinus*	*Myotis nattereri*
Baden-Württemberg BW	✓	✓	✓	✓	✓
Bayern BY	large / +	3,000-4,000 / o	large / o	large / +	large / +
Berlin BE	regular / +		rare in summer, regular in winter / +	rare / ?	rare in summer, common in winter / +
Brandenburg BB	common in some areas / in winter roosts o to -		1,200 adult females / o	extremely rare	very widespread
Lower Saxony NI	✓		22,000	✓	✓
North Rhine - Westphalia NW	✓ / -	more-frequent individual sightings; first maternity roost	23 maternity roosts / +	n. e.	n. e.
Saarland SL	✓ / o	individual sightings	450-500 adult females / o	✓ / o	✓
Saxony SN	✓ / ?		4,600 / o	✓ / o	✓ / ?
Saxony-Anhalt ST	n.e. / o		n. e. / o	n.e. / o	n.e. / o
Schleswig-Holstein SH	✓		individual sightings	1 maternity roost	maternity roosts present; regularly occurring in winter
Thuringia TH	widespread		30,000 / +	widespread / +	a few maternity roosts

Trends:

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Other:

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x = listed, but not / no longer occurring, population uncertain

n. e. = no (new) information / reference to relevant remarks in previous reports

Occurance / frequency / estimated population size / population trends	*Nyctalus lasiopterus*	*Nyctalus leisleri*	*Nyctalus noctula*	*Pipistrellus kuhlii*	*Pipistrellus nathusii*
Baden-Württemberg BW		✓	✓	✓	✓
Bavaria BY	n. e.	small / o	large / ?	only regionally large / +	✓ / o
Berlin BE		extremely rare / ?	regular / o		regular during migration period / o
Brandenburg BB		rare	✓		✓
Lower Saxony NI		✓	✓		✓
North Rhine - Westphalia NW		n. e.	✓ / -		60 / o
Saarland SL		widespread / o	widespread / ?		individual sightings
Saxony SN		✓ / ?	✓ / ?		✓
Saxony-Anhalt ST		n.e. / o	n.e. / o		n.e. / o
Schleswig-Holstein SH		lactating females found	regular		maternity roosts
Thuringia TH		very widespread	a few maternity roosts		first proofs of reproduction

Trends:

o = population stable

\- = population in decline

\+ = positive population trend

? = population trend unclear / no assessment possible

Other:

✓ = occurring, but no estimate of population size

x = listed, but not / no longer occurring, population uncertain

n. e. = no (new) information / reference to relevant remarks in previous reports

Occurance / frequency / estimated population size / population trends	*Pipistrellus pipistrellus*	*Pipistrellus pygmaeus*	*Plecotus auritus*	*Plecotus austriacus*	*Vespertilio murinus*
Baden-Württemberg BW	✓	✓	✓	✓	✓
Bavaria BY	large / o	presumably small / ?	large / o	small / ?	small / ?
Berlin BE	regular / - ?	x	regular / o	rare / ?	rare / o
Brandenburg BB	✓	presumably not small	common, widespread throughout the state / o	locally, rare to widespread	extremely rare / +
Lower Saxony NI	n. e.	✓	✓ / ?	rather rare	first proofs of reproduction
North Rhine - Westphalia NW	n. e.	n. e.	n. e.	n. e.	presumably, one maternity roost
Saarland SL	common / o	✓	widespread / o	✓	individual sightings
Saxony SN	✓ / ?	✓ / ?	✓ / o	✓ / ?	first proof of reproduction
Saxony-Anhalt ST	n.e. / o	< 1,000	n.e. / o	n.e. / o	✓ / ?
Schleswig-Holstein SH	very widespread	maternity roosts with many individuals	regular		extremely rare
Thuringia TH	widespread	✓	very widespread	widespread	rare

Trends:

o = population stable

\- = population in decline

\+ = positive population trend

? = population trend unclear / no assessment possible

Other:

✓ = occurring, but no estimate of population size

x = listed, but not / no longer occurring, population uncertain

n. e. = no (new) information / reference to relevant remarks in previous reports

2 General population status and trends

2.1 Population trends

The second National Report (2001-2006 report period) on the conservation status of the relevant habitat types and species, prepared in the framework of the EU's Fauna-Flora-Habitat Directive, was submitted in 2007. The conservation status for Natterer's bat, Nathusius' bat, Daubenton's bat, pipistrelle bat and brown long-eared bat is favourable. For all other bat species – with the exception of the soprano pipistrelle, whose conservation status is unknown – it is unfavourable in at least one biogeographic region in Germany. Further information, all results and the National Report itself are available at the Website http://bfn.de/0316_bericht2007.html.

Baden-Württemberg:
Before any conclusions can be drawn regarding the population trends for the occurring species, the number of samples will have to be increased, and a state-wide monitoring programme will have to be established.

Bavaria:

The population trends for bat species have been positive, or at least stable, both over the long term (the period 1985 to 2009) and the short term (in the reporting period). For no species have there been indications of negative population developments that would be a cause for concern.

Lower Saxony:

The population status of building-dwelling species depends, in each case, on the tolerance shown by the relevant building owner. Because the care and support provided for roosts differ greatly from region to region, sub-populations of bats, at least, remain vulnerable. In Lower Saxony, the bats affected especially include the pond bat, serotine bat, brown long-eared bat and, to a lesser extent, the greater mouse-eared bat and the northern bat.

For species that dwell predominantly in forests, the population situation in Lower Saxony must still be considered relatively favourable at present. Conversion of coniferous forest into mixed forest and deciduous forest and, in many areas, permission of natural succession – for example, in windthrow areas in state forests – have considerably improved the feeding conditions for bats. On the other hand, in some regions intensive wood use has led to removal of too many hollow-bearing trees. In some areas, the available numbers of hollow-bearing trees are not sufficient for species that require large numbers of alternative roosts within relatively small areas. Conservation of old-wood islands needs to be further improved. Trends in forest management need to be watched.

North Rhine – Westphalia:

During the report period, hibernating individuals of the greater horseshoe bat, which for over 50 years has been considered extinct in North Rhine – Westphalia, were again sighted.

For only one species has a marked worsening of the population situation been observed over the past decade: the serotine bat population has decreased moderately on a regional basis, and the precise extent of the decrease is still unknown. Human-caused habitat losses are assumed to be the reason for the decrease.

Considerable increases have been seen for 5 species in recent years: Natterer's bat, greater mouse-eared bat, Geoffroy's bat, Nathusius' bat (migrating) and the parti-coloured bat.

For the other species, populations have remained (approximately) the same.

Saarland*:*

Hardly any marked changes have been seen in comparison to the situation in the last report period. There seems to be a decreasing trend in populations of the serotine bat and the common noctule bat. Slight population increases have been seen, in the past 10 years, for the greater horseshoe bat. Intensified population surveys in FFH areas, during the report period, have produced initial sightings of Geoffroy's bat, Brandt's bat and the barbastelle bat.

Saxony*:*

Efforts to determine the population trends for individual species are still being hampered by a number of limitations (of methods, of knowledge and of financial and human resources). As a result, data from population monitoring and from the first round of FFH species monitoring (2004 bis 2009) are available only for certain species (especially the greater mouse-eared bat and the lesser horseshoe bat). For the greater mouse-eared bat, an increasing trend has been seen since the beginning of the 1980s, although the population's growth seems to have been stagnating since about 2003. A positive population trend has been observed for the lesser horseshoe bat since the mid-1980s. After reaching a maximum in 2007, the population size has been stagnating, however. Experts see negative population trends for species that roost in buildings and, especially, in crevices in façades and roofs (such as grey long-eared bat, serotine bat, whiskered bat, pipistrelle bat).

Saxony-Anhalt*:*

A constant population size can be assumed for 17 of the 21 documented species. The population trends for the pond bat, Alcathoe's bat, parti-coloured bat and Savi's pipistrelle cannot be assessed at present. Population trends are known to be influenced by anthropogenic environmental changes, however. It is thus likely that intensifying loss of roosts will affect population trends. Current recommendations relative to execution of the national bat monitoring programme are inadequate for some species, since they usually entail surveying of winter roosts only, not of maternity roosts.

Schleswig-Holstein:

During the 2006-2009 period, it remained difficult to assess the population status of some native bat species. A systematic means of collecting data for the state's entire territory, using a suitable area-based mapping method, is still being prepared.

During the reporting period, more-precise summer data for the pond bat and Bechstein's bat were obtained. The population figures for known colonies may be considered stable at present. Maternity roosts for the whiskered bat and Brandt's bat were documented for the first time. In addition, important overwintering habitats equipped with automatic data-recording systems have yielded data. Here as well, the population figures may be considered stable to increasing, although it has not been possible to break the figures down by individual bat species.

Thuringia:

Continuing positive trend for the greater mouse-eared bat and the lesser horseshoe bat.

The possibilities for documenting population trends are inadequate for crevice-dwelling species (such as species that dwell in tree hollows or in buildings) that do not use "conventional" winter roosts, and for migratory species, of which no populations, or only small populations, are present in Thuringia. Plans call for reducing these shortcomings, however.

2.2 Red List

In 2009, during the report period, the "Red List of Germany's endangered vertebrates" ("Rote Liste gefährdeter Wirbeltiere Deutschlands") was revised and republished. The following table shows how relevant bat species are classified in the old Red List and in the new Red List:

Red List status		D (1998)[1]	D (2009)[2]
Rhinolophus ferrumequinum	Greater horseshoe bat	1	1
Rhinolophus hipposideros	Lesser horseshoe bat	1	1
Barbastella barbastellus	Barbastelle (bat)	1	2
Eptesicus nilssonii	Northern bat	2	G
Eptesicus serotinus	Serotine bat	V	G
Hypsugo savii	Savi's pipistrelle	0	D
Myotis alcathoe	Alcathoe's bat		1
Myotis bechsteinii	Bechstein's bat	3	2
Myotis brandtii	Brandt's bat	2	V
Myotis dasycneme	Pond bat	G	D
Myotis daubentonii	Daubenton's bat		*
Myotis emarginatus	Geoffroy's bat	1	2
Myotis myotis	Greater mouse-eared bat	3	V
Myotis mystacinus	Whiskered bat	3	V
Myotis nattereri	Natterer's bat	3	*
Nyctalus leisleri	Leisler's bat	G	D
Nyctalus noctula	Greater noctule bat	3	V
Pipistrellus kuhlii	Kuhl's pipistrelle		*
Pipistrellus nathusii	Nathusius' bat	G	*
Pipistrellus pipistrellus	Pipistrelle bat		*
Pipistrellus pygmaeus	Soprano pipistrelle	D	D
Plecotus auritus	Brown long-eared bat	V	V
Plecotus austriacus	Grey long-eared bat	2	2
Vespertilio murinus	Parti-coloured bat	G	D

Categories of threat in Germany	**IUCN categories**
	Ex = Extinct
0 = Extinct or disappeared	EW = Extinct in the wild
1 = Critically endangered	CR = Critically Endangered
2 = Endangered	EN = Endangered
3 = Vulnerable	VU = Vulnerable
R = extremely rare	
G = Threat of unknown extent	
V = Watch list	NT = Near threatened
* = not threatened	LC = Least concern
D = Data deficient	DD = Data deficient
	NE = Not evaluated

[1] FELDMANN, R., HUTTERER, R. & VIERHAUS, H. (1998): Rote Liste der Säugetiere (Mammalia). - Schr.-R. Landschaftspflege und Naturschutz, H. 55, 33-39.

[2] MEINIG, H., BOYE, P. & HUTTERER, R. (2009): Rote Liste und Gesamtartenliste der Säugetiere (Mammalia) von Berlin. – Naturschutz und Biologische Vielfalt, H. 70, 115-153.

At present, 24 bat species are considered to be established in Germany. For a number of bat species (such as the greater mouse-eared bat, Daubenton's bat and Natterer's bat), positive population trends have been seen over the past 10 to 25 years. Currently, five species have been classified as not threatened, and an additional five have been placed on the watch list. In addition, populations of Geoffroy's bat, which is extremely rare in Germany, reach into the country from the Netherlands, while populations of the greater horseshoe bat and of Geoffroy's bat reach in from Luxembourg (Rhineland-Palatinate, Saarland) and France (Saarland). The greater horseshoe bat and the lesser horseshoe bat, and Alcathoe's bat, are critically endangered. An additional four species are considered to be vulnerable. For five species, the available data are inadequate for any assessment of the situation.

3 Habitats and roosts

The following section describes, by way of example, special bat habitats in the various Länder.

3.1 Roosts

Bavaria:

Many examples can be cited in which bat-colony roosts in or on buildings have been renovated in accordance with requirements of nature conservation authorities and under the supervision of co-ordination offices for bat conservation. One example: A survey of bat roosts on facilities of the ten Danube-River power stations between Neu-Ulm and Donauwörth, carried out from 2007 to 2008, found supra-regionally important bat populations on most of the structures concerned (up to 450 Leisler's bats or greater noctule bats). The importance of these roosts is greatest when bats pass through the area in the spring. In the past, the operator of the facilities has complained that the bats are a nuisance. Consequently, a conservation concept was developed that provides for protecting and supporting these roosts at all ten barrages. Such renovation, and the success of relevant efforts at protection, are described in the annual reports of the co-ordination offices for bat conservation. The relevant findings to date were assessed in the framework of an Interreg project carried out in 2007 (cf. Chapter 14).

Studies of forest-dwelling bat species in the Neustadt/Waldnaab administrative district show that the bat populations are strongly dependent on artificial roosts – especially old bird nesting boxes. The nesting boxes are gradually reaching the end of their useful lifetimes, however, and they are hardly being maintained or replaced. Consequently, an acute shortage of roosts can be expected to occur within a few years in the pine forests of the Upper Palatinate, which offer few natural roosts, and in other coniferous forests. As a result, the bat populations in those regions, which are considerably dense in some areas, can be expected to decline.

Lower Saxony:

Example of a building renovation: The historic Rathaus (town hall) in Duderstadt, which houses an important maternity roost of the greater mouse-eared bat, was renovated over a period of several years. To protect the bats, special deadlines were set, and special measures were taken in the building's attic, measures which included use of some materials from the old roost site (old moulding and beams; and bat dung). As a result of frequent non-compliance with the schedule, and of continual (moderate) disturbances, nearly no bat reproduction occurred. The following year, the colony did not use the building at all. Neither did the bats accept a "fly-in tunnel" that passed through a construction area and was connected to the bats' old attic entryway. Once the construction was completed, the roost's microclimate was left as intact and unchanged as possible. The following year, the entire colony was again sighted in the building.

North Rhine – Westphalia:

In recent years, the remnants of the former Siegfried Line (Westwall) have again become a focus of attention in their function as a refuge for threatened species (bats, wildcat, amphibians, etc.). The importance of bunker systems as winter-roost sites for bats was first recognised in the 1990s. Since the end of World War II, a majority of the some 18,000 systems originally in place have been removed, however, because such systems can be hazards. In 2004, the North Rhine – Westphalia chapter of Friends of the Earth Germany (BUND NRW) initiated the project "Green Wall in the West" ("Grüner Wall im Westen") (http://www.gruenerwallimwesten.de). The project's results achieved by 2005 included a multi-year moratorium on such demolition. In 2009, the state of North Rhine – Westphalia, working in co-operation with the Federal Ministry of Finance (BMF), developed a procedural regulation relative to the identification, assessment and renovation of Siegfried-Line bunker systems. In future, any planned measures to eliminate hazards from such systems must be individually reviewed in light of the regulation's provisions pertaining to nature conservation and monument preservation.

Saarland:

In 2008 and 2009, the bat fauna of the former Gersheim limestone mine, located within the Bliesgau biosphere reserve, were studied in detail (under commission to the Saar-Bliesgau/Auf der Lohe special-

purpose association). In spring and fall, regular net captures were carried out in front of the two entrances to the mine, which have been closed with grates. In each of the two years of the effort, some 150 bats, representing a total of 12 species, were captured. In all seasons, and in all captures, the predominant species, far and away, was Bechstein's bat. Individuals of the two mouse-eared bat species and of Geoffroy's bat, which are also included in Annex II of the FFH Directive, were also captured. Further protective measures need to be taken for this supra-regionally important roost, especially in light of current discussion pertaining to renewed use of the industrial site.

Saxony:

In spring 2009, the numbers and species of bats leaving the Thelersberger Stollen roost (in the Mittelsachsen administrative district), for migration, were determined via a camera-trap. Initial findings show that that roost, with some 3,000 overwintering bats, is the largest winter roost in Saxony.[3]

Saxony-Anhalt:

The most important swarming site and winter roost in the Vorfläming area is located on two cellar levels of the Zerbst castle ruins. It is one of the 100 most important subterranean roosts in Germany. Via a long and drawn-out process, it has been possible to implement protective measures in co-operation with the owner of the premises. The measures have included removal of barbed wire in front of entry windows; installation of a protective fence and protective doors; creation of two connecting ways between the two cellar levels; installation of a basin that is always kept filled with water; and installation of supporting walls. The effectiveness of the protective measures is being assured via monitoring by nature conservation personnel.

Schleswig-Holstein:

The largest maternity roost in Schleswig-Holstein was discovered in the course of studies carried out in preparation for conversion of a former Federal Armed Forces shooting range, near Kasseedorf, into a privately operated centre for shooting sports. Maternity roosts of four species (pond bat, pipistrelle bat, soprano pipistrelle and Nathusius' bat) were discovered behind partitions in the former shooting range. The total population comprises some 1,200 females. The relevant planning calls for removal of some of the partitions. In 2008, in the context of CEF measures, numerous new replacement roosts were installed. By 2009, the new roosts had already been accepted by the bats.

Thuringia:

The Kohnstein area, near Nordhausen, contains a large system of tunnels (known as "Mittelbau Dora") that were built by concentration-camp prisoners. Parts of that system are now part of the memorial site (chambers for rocket assembly), and other parts are now being used for various storage purposes. In connection with the installation of a depot for explosives, special measures had to be taken to ensure that the tunnels would remain useful for bats. In addition, security systems had to be adapted in accordance with the bats' presence (for example, the alarm system had to be made insensitive to bats).

3.2 Hunting biotopes

Bavaria:

During the period under review, hunting habitats were studied in the framework of a number of diploma theses and special studies. For example, telemetric studies were conducted of Brandt's bats, and a number of habitat analyses were carried out with the help of bat detectors and bat-call recordings.

Saxony:

In 2007, telemetric studies were carried out in three different areas, with a view to adding to knowledge about summer roosts and hunting biotopes of Bechstein's bat in Saxony.[4]

Surveys aimed at identifying hunting habitats of the pond bat and Alcathoe's bat, both of which are rare species, were carried out via private initiative.[5, 6]

Schleswig-Holstein:

No new findings regarding hunting habitats in Schleswig-Holstein were obtained during the report period.

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[3] ZÖPHEL, U., SCHULENBURG, J. & LIEBSCHER, T. (2009): Fotofalle zur Registrierung überwinternder Fledermäuse im Thelersberger Stolln bei Freiberg. – Mitt. Sächs. Säugetierfreunde, p. 48.

[4] FRANK, T. & SCHMIDT, C. (2007): Erkundung und telemetrische Untersuchung von Vorkommen der Bechsteinfledermaus (Myotis bechsteinii) in Sachsen. – Bericht im Auftrag des LfULG, 13 p.

[5] POCHA, S. (2009): Weitere Nachweise der Teichfledermaus (*Myotis dasycneme*) im Landkreis Riesa-Großenhain 2008. – Mitt. Sächs. Säugetierfreunde, p. 45.

[6] OHLENDORF, B, FRANCKE, R., MEISEL, F., SCHMIDT, S., WOITON, A. & HINKEL, A. (2008): Nachweise der Nymphenfledermaus (*Myotis alcathoe*) in Sachsen. – Nyctalus N. F. 7: 239-242.

4. Threats

As described in the last report, in 2005 the Federal Agency for Nature Conservation (BfN) published a study that analyses the threats for all of the bat species (inter alia) occurring in Germany.[7] Surveys of experts, and research in the relevant literature, indicate that the major threats to bats include renovations of buildings, forestry measures and tourist disturbance of underground winter roosts. The impacts, on bats, of intensified animal husbandry in the agricultural sector, of road traffic and of wind turbines have not yet been adequately assessed. More detailed studies relative to these issues are required. With respect to wind turbines in particular, recent findings indicate that such devices can be significant local threats for bats. A state-wide study conducted in 2006 in Saxony found very high numbers of dead individuals in seven of 26 wind farms studied.[8] Pursuant to information provided by R. Brinkmann, Freiburg, the numbers of bats killed by wind turbines can be very high (between 0 and 54 individuals per wind turbine in the period from July to September).[9] In North Rhine – Westphalia, 22 bats killed by wind turbines had been found as of the end of 2009 (4 common noctule bats, 4 Leisler's bats, 11 pipistrelle bats, 2 serotine bats and 1 Nathusius' bat)[10]; and 16 of those animals were killed in the current report period alone.

Other threats that continue to be reported by the Länder include:

- A lack of suitable roosts
- Roost loss via demolition of buildings and tree care / felling
- Losses of hunting grounds via land development
- Intensified planting of monocultures, and corresponding use of pesticides

The new threats reported by the Länder include:

- A lack of substitute roosts (nesting boxes), and disrepair of such roosts, in forests
- New recreational trends (geocaching, bouldering)
- Reactivation of decommissioned railway tunnels, especially in connection with conversion of former railway lines into bicycle paths
- Nature conservation measures for birds of prey (owl nesting boxes in churches)

5 Data collection

The following table provides an overview of collection of bat data in the various Länder:

Baden-Württemberg BW	Data are collected by the members of the **Working Group on Bat Conservation in Baden-Württemberg (AGF)** (in north Baden, they are collected by members of the **North Baden Co-ordination Office for Bat Conservation** (**Koordinationsstelle für Fledermausschutz Nordbaden)** and by volunteers of the **Working Group on Bat Conservation in North Baden AG / volunteer bat-conservation experts (Fledermausschutz Nordbaden / ehrenamtliche Sachverständigen im Fledermausschutz))** and centrally collected and evaluated by the **Bat Conservation Co-ordination Office** (**Koordinationsstelle für Fledermausschutz)**. The **Karlsruhe Natural History Museum** maintains a database for its scientific collection of bat evidence (some 6,800 specimens and some 2,000 dung samples for analysis purposes).
Bavaria BY	As of the end of the 2009 report period, the **Bavarian bat database (Fledermaus-Datenbank Bayern)** listed 24,027 find sites (up from 20,088 as of 1 January 2006) and 103,085 species sightings (up from 85,544 as of 1 January 2006). Data are collected and entered by the **North and South Bavarian co-ordination agencies for bat conservation**, by **volunteer bat conservationists** and by persons working in the framework of **commissioned studies / expert opinions** and **scientific studies**. **The state-wide bat-monitoring programme is being carried out by the co-ordination agencies for bat conservation, under commission to the state environmental agency (LfU).** It covers colonies of the greater and lesser horseshoe bats, greater mouse-eared bat, Geoffroy's bat and barbastelle bat, along with a number of winter roosts. Since 2009, that monitoring programme has been complemented by **monitoring pursuant to Article 17 of the FFH Directive**. In Bavaria, that effort covers about 200 additional roosts. Since 2005, the state's **forest administration**, working under the technical direction of the Bavarian State Institute for Forests and Forest Management (Bayerische Landesanstalt für Wald und Forstwirtschaft - LWF), and with the support of the bat conservation co-ordination offices, has carried

[7] GÜNTHER, A., NIGMANN, U., ACHTZIGER, R. & GRUTTKE, H. (ed.) (2005): Analyse der Gefährdungsursachen planungsrelevanter Tiergruppen in Deutschland. Naturschutz und Biologische Vielfalt 21.
[8] SEICHE, K., ENDL, P. & LEIN, M. (2008): Fledermäuse und Windenergieanlagen in Sachsen 2006. – Materialien zu Naturschutz und Landschaftspflege Dresden.
[9] Lecture delivered on 09 June 2009, in Hanover, at a conference on the study and reduction of bats' risk of collision with on-shore wind turbines.
[10] DÜRR (2010): Fledermausverluste an Windenergieanlagen. www.mugv.brandenburg.de/cms/media.php/2334/wka_fmaus.xls

	out extensive surveys of **bats in forests** (FFH areas).
Berlin BE	Population data are regularly collected in winter roosts in connection with Berlin's species-assistance programme for bats, **and under commission to the state of Berlin's supreme nature conservation authority (Senate Administration for Urban Development)**. Bat boxes in forests are checked in part by **volunteer bat conservationists** (for example, members of the German Nature Conservation Association (NABU)) and in part (at larger intervals) within the framework of the **species assistance programme**.
Brandenburg BB	Collected data are maintained by the **State environmental agency / Zippelsförde nature conservation station,** working in co-operation with the **State committee on mammalian studies (Landesfachausschuss Säugetierkunde) of the German Nature Conservation Association (NABU)**, Brandenburg state chapter.
Lower Saxony NI	**Lower Saxony's state office for water-resources management, coastal protection and nature conservation (NLWKN)**, a specialised authority, collects bat data via **Lower Saxony's volunteer-based animal-species-survey programme**, via evaluation of reports and via efforts that it initiates via issuance of work contracts. The collected data include data on species status, numbers, find sites, threat, protection measures and "other special aspects". In addition, the NLWKN carries out **population monitoring** for some species: greater mouse-eared bat, pond bat, serotine bat and, to a lesser extent, for the barbastelle bat, Bechstein's bat and northern bat.
North Rhine - Westphalia NW	Bat-population data are collected primarily by **volunteer bat experts working on a regional basis**. Such data are archived within the state-wide **sighting location cadastre (Fundortkataster; FOK), which is housed within the LÖBF**. Since the 1980s, censuses have been carried out regularly by **volunteers**, with focuses especially on a number of winter roosts and maternity roosts. A state-wide **population-monitoring programme**, being carried out within the framework of **FFH reporting obligations**, has been underway since 2004 and covers all bat species. It is now being run in accordance with specifications of the Federal Agency for Nature Conservation (BfN) that were agreed on in 2008. The programme is being co-ordinated by North Rhine – Westphalia's state office for nature conservation, the environment and consumer protection (LANUV), while the relevant population surveys are carried out by local bat experts, by biological stations and by specialised bureaus working under commission to the LANUV. Since the winter of 2008/09, monitoring in accordance with national obligations has been supplemented by **additional studies** of selected species, carried out on the same schedule, and with the same survey scope, as apply under the national monitoring programme. In 2009, the **LWL Natural History Museum in Münster** began establishing a state-wide **genetic database** (including data on bats).
Saarland SL	In the area of volunteer work, bat data are collected primarily by members of the **bat conservation working group within the German Society for Nature Conservation (NABU)** and by the **bat section of the DELATTINIA society for nature research**. The collected data are made available to the relevant specialised authority. Data are also collected in the framework of **studies relative to impact regulation under nature conservation law**. The entities who commission such studies do not always provide the resulting raw data to state authorities, however. During the report period, the State **environment ministry** and the **State office for environmental protection and occupational safety** (**Landesamt für Umwelt- und Arbeitsschutz (Biodocumentation Centre – ZfB))** commissioned several studies aimed at surveying **species listed in Annex II of the FFH Directive** in selected FFH areas and in the framework of work contracts. Additional studies were commissioned on behalf of the **Saar-Bliesgau / Auf der Lohe special-purpose association**, with regard to the Gersheim limestone mine. The **bat-conservation co-ordination office (Koordinationsstelle Fledermausschutz)** is responsible for **compiling and administrating all collected data**, at the ZfB.
Saxony SN	Support for existing bat roosts, and exploration relative to new roosts (including suitable data collection), is carried out mainly by **volunteer bat conservationists**, under the auspices of the Saxony chapter of the **German Nature Conservation Association (NABU),** and/or the **Saxony Association for Bat Research and Conservation (Sächsischer Verband für Fledermausforschung und -schutz e. V. - SVF)**. Such activities are **supported** by **nature conservation authorities** and, to some extent, are integrated within official nature conservation services. Current population and threat data for selected species (greater mouse-eared bat, barbastelle bat, Bechstein's bat, lesser horseshoe bat) and for selected important bat roosts are collected in the framework of a **support system for endangered animal species,** under the auspices of the **State Agency for Environment and Geology (Landesamt für Umwelt und Geologie - LfUG)**. Furthermore, the **LfUG has commissioned** roost checks and transect studies **in the framework of FFH-related species-monitoring** (1x per report period). In connection with initial FFH-related surveys, within the framework of management planning, pertinent data surveys are carried out by **offices commissioned for that purpose**. Bat-population information obtained in the framework of the "bat come inside" campaign ("Fledermaus komm ins Haus") is collected by the **Nature conservation fund foundation (Stiftung Naturschutzfonds)** and also provided to the LfUG for its records. In the framework of tasks of a bat-marking centre for the five new German Länder, the **LfUG** maintains a **database for bat marking and repeat finds**.

Saxony-Anhalt ST	Data surveys in the field are carried out by: • Saxony Anhalt's state resource agency for bat conservation (Landesreferenzstelle für Fledermausschutz Sachsen-Anhalt) (monitoring programmes as well as co-ordination), • Volunteer species specialists and banding personnel, primarily under the auspices of the Saxony-Anhalt Working Group on Bats (Arbeitskreis Fledermäuse Sachsen-Anhalt e. V.). Relevant support is provided by the state resource agency for bat conservation (Landesreferenzstelle für Fledermausschutz) and the state agency for environmental protection (Landesamt für Umweltschutz). • To a lesser extent, by **experts preparing reports** in the context of planning procedures. Data compilations and evaluations are prepared, on a project-oriented basis, and commissioned as studies, by the **State resource agency for bat conservation** and by the **State agency for environmental protection**.
Schleswig-Holstein SH	All bat data are collected centrally by the **Faunistic-Ecological Working Group (Faunistisch-Ökologische Arbeitsgemeinschaft – FÖAG)**), in co-operation with **Schleswig-Holstein's working group for bat conservation and bat research** (**Arbeitsgruppe Fledermausschutz und Fledermausforschung Schleswig-Holsteins - AGF)**. In addition, all data are entered with pinpoint precision onto 1:25,000 topographical maps, with the aid of the Winart" programme. The **FÖAG**, and **volunteers of the bat conservation working group**, carry out systematic **net captures**. Such efforts focus especially on the species pond bat (*Myotis dasycneme*) and Bechstein's bat (*Myotis bechsteinii*). In addition, when other rare and vulnerable bat species are discovered (including the parti-coloured bat Brandt's bat and the whiskered bat), targeted net captures are carried out in the vicinity of finds in an attempt to obtain further data. Six important **underground overwintering roosts** are being automatically monitored with light-barrier systems. In the winter, automatic counting is supplemented by manual counts. Data surveys relative to the greater noctule bat are carried out by means of both automatic counting systems (light barriers) and banding. In connection with the "bat-friendly house" campaign ("fledermausfreundliches Haus"), all known roosts in houses are being recorded and entered into the aforementioned database.
Thuringia TH	A majority of the current data on bat populations in Thuringia is obtained **via studies relative to projects involving interventions**. On the other hand, for a period of about 2 years, neither the LINFOS (Thuringian landscape information system – Thüringer Landschaftsinformationssystem) nor the bat database has received significant input from such sources. The new data currently being obtained is being provided primarily voluntarily by **volunteer bat conservationists**. The data surveys that Thuringia initiated and paid for during the report period focussed especially on **telemetric studies** of the lesser horseshoe bat, on counts of populations of Alcathoe's bat and on counts of populations of the soprano pipistrelle. In addition, population data are regularly obtained via **monitoring activities** carried out in Thuringia by **the bat-conservation and bat-research interest association** (**Interessengemeinschaft Fledermausschutz und –forschung) in the framework of work contracts with the state of Thuringia**. All records of bat sightings are entered into the **central bat-data archive of the bat co-ordination office (Fledermauskoordinationsstelle)**. That office regularly updates the LINFOS database, which is made available to all nature conservation authorities. During the report period, the bat-data archive was updated and corrected in the framework of data checks / data compilation relative to preparation of the **"bat" section of the new catalogue of Thuringian fauna**. The archive currently contains some 60,000 records, covering some 8,500 bat-find sites.

C. Measures relative to implementation of Article III of the Regional agreement

6 Legal measures for protection of bats, and enforcement of such measures

All bat species occurring in Germany are strictly protected under the Federal Nature Conservation Act (Bundesnaturschutzgesetz - BNatSchG). Provisions relative to strictly protected species apply directly in the Länder.

Pursuant to Art. 12 (1) letter d) of the FFH Directive, resting and reproduction sites of Annex IV animal species may not be damaged or destroyed.

The previously valid general exceptions pursuant to Article 43 (4) BNatSchG, relative to actions in the context of agriculture, silviculture and fisheries management that are considered to be good practice, and in which animals, or their reproduction and resting sites, are not *intentionally* damaged or destroyed, has been deleted. The Federal Nature Conservation Act now conforms to Article 12 of the FFH Directive.
Changes, new information and additions relative to the previous report from the Länder:

Berlin:

In the framework of nationally standardised provisions, exceptional permission to visit animals' habitats, and to capture animals for scientific purposes etc., is granted only to properly knowledgeable persons.

Where bat roosts are to be removed, in connection with façade renovations or other types of work on buildings, the relevant exemption, under nature conservation law, from the prohibition of roost destruction always includes the requirement that suitable replacement roosts must be provided.

North Rhine – Westphalia:

As part of the last amendment of the NRW Landscape Act (amended via Art. I of the Act of 19 June 2007), the Art. 62 mentioned in the 2006 report, pursuant to which certain biotopes are protected, was amended in the following manner: caves and tunnels were deleted from the list of legally protected biotopes.

In 2009, the state of NRW revised the "Administrative regulation for application of the FFH Directive and the Wild Birds Directive" of 26 April 2000, thereby adding a topic area on "species conservation".

Relevant court rulings:

- Minden Higher Administrative Court, ruling of 30 July 2009 – 8 A 2358/08.11 K 2530/07: Action brought by a wind-turbine operator for retention of his permit to erect and operate a wind turbine. The case was dismissed for the time being, since no final assessment of possible significant adverse impacts on strictly protected species was possible, because relevant bat populations have been inadequately mapped to date.
- Münster Higher Administrative Court, ruling of 19 March 2008 – 11 B 289/08.AK: Action brought by a recogniszed nature conservation association against the construction of a 380-kV high-voltage line. The complaint was dismissed, for reasons that included the fact that the plaintiff had not communicated his detailed knowledge of populations of strictly protected species in the planning area on time. (Details in: Natur u. Recht (2008) 30: 431-434)
- Federal Administrative Court, ruling of 13 May 2009 - 9 A 73.07: Action brought by a nature conservation association, recognised in North Rhine – Westphalia, against the plan approval for widening and relocating of a section of Federal Motorway (Bundesautobahn) 4. The project would worsen the conservation status of the population of Bechstein's bat in affected FFH areas. The complaint was dismissed. (Details in: Natur u. Recht (2009) 31: 711-719)

Saarland:

Although Saarland's Nature Conservation Act provides for protection of bats and their habitats, it must be assumed that large numbers of bat roosts in buildings are destroyed (the actual figures are unknown). Where private property is involved – as opposed to public property – it tends to be more difficult to ensure that protective measures are taken. As a result, destruction of roosts (for example, in connection with renovation), following bats' rearing of young in the summer, is often seen as permissible and is accepted without compensatory measures. In many cases, authorities are not even aware of the violations of applicable prohibitions that occur. Additional efforts need to be made to reach agreements with homeowners, to establish a catalogue of suitable compensation and substitution measures and to require implementation of such measures in individual cases.

Saxony:

Relevant court rulings:

- Bautzen Higher Administrative Court, ruling of 12 November 2007 – 5 BS 336/07 relative to the Waldschlösschenbrücke bridge: Requirements pertaining to protection of the lesser horseshoe bat were imposed. This opened the way for commencement of construction of the Waldschlösschenbrücke bridge in Dresden.

Thuringia:

The "Ordinance for determination of natural habitats and species of Community interest and of European bird species pursuant to Art. 26 (3a) and Art. 26a (2) of the Thuringian Nature and Landscape Act", which entered into force on 15 July 2008 (Thuringian Natura 2000 conservation aims ordinance – Thüringer Natura 2000-Erhaltungsziele-Verordnung – ThürNEzVO, Law and Ordinance Gazette p. 181), formally places the FFH and Special Areas of (bird) Conservation reported by Thuringia for the Natura 2000 European system under protection. For bat species listed in Annex II, a total of 47 highly localised FFH objects have been listed. Bats are listed among the species-conservation aims for some 70 % of the 212 FFH areas in Thuringia.

The "Guidelines for implementation of the "Natura 2000" European network of protected areas in Thuringia", which the Thuringian Ministry for agriculture, forests, environment and nature conservation (TMLFUN) updated in July 2009, also specify requirements pertaining to protection of bat species.

Other court decisions of relevance to bat conservation may be accessed in the Juris database (http://www.juris.de), under the search term "Fledermaus" ("bat").

7 Protected areas of special importance with regard to bat conservation

Nationwide, the following numbers of proposed Sites of Community Importance (pSCI) for bat species listed in Annex II of the FFH Directive have been notified (status as of July 2009) [11]:

Species	Number of sites
Greater horseshoe bat (*Rhinolophus ferrumequinum*)	28
Lesser horseshoe bat (*Rhinolophus hipposideros*)	87
Barbastelle bat (*Barbastella barbastellus*)	361
Bechstein's bat (*Myotis bechsteinii*)	491
Pond bat (*Myotis dasycneme*)	124
Geoffroy's bat (*Myotis emarginatus*)	41
Greater mouse-eared bat (*Myotis myotis*)	843

An overview map of all notified FFH sites is available at

http://www.bfn.de/fileadmin/MDB/documents/themen/natura2000/ffhawz_2008.pdf

In the framework of designation of FFH sites as nature conservation areas, in Lower Saxony forest areas with important bat habitats, including open-land habitats, have been placed under protection.

In 2009, efforts began in Saxony-Anhalt to set aside three nature conservation areas that have a special emphasis on bat conservation. The designation process is to be completed in 2010.

8 Taking account of habitats as important bat biotopes

Many important bat habitats enjoy special protection under state nature conservation laws (see the previous reports). Bat habitats have also been taken account of in connection with the following measures:

- Preparation of management plans for FFH sites (Bavaria, Thuringia)
- Immediate-measures concepts, for forests in FFH sites, specifying protection, management and development measures for species listed in the FFH Directive (North Rhine – Westphalia)
- Preparation of concrete information relative to management planning, from the perspective of bat conservation (planning guidelines), for forested FFH sites (Thuringia)
- Programmes / agreements for contractual nature conservation in forests that benefit bats by helping to protect/establish trees with hollows (Bavaria)
- Designation of feeding habitats as landscape or nature conservation areas (Berlin)
- Consideration of bats in intervention planning / environmental impact assessment and FFH-compatibility review, including consideration in connection with compensation and substitution measures (Bavaria, Saarland, Saxony-Anhalt).
- Consideration of bats in management plans (Lower Saxony)
- Greater consideration of bats in preparation of new protection ordinances for nature conservation areas and in new designation of such areas (Saxony).

9 Measures to raise public awareness about bat conservation

The Federal Agency for Nature Conservation (BfN) has published German translations of the resolutions taken at the 4th Conference of the Parties to the EUROBATS agreement and of Germany's national reports for the two periods 2000-2003 and 1998-2000.[12] A German version of the national report for the 2003-2006 period has been published on the Web site of the Federal Agency for Nature Conservation (BfN).[13] The resolutions taken at the 5th and 6th Conferences of the Parties to the EUROBATS agreement, and Germany's national reports for the 2003-2006 and 2006-2009 periods, are also to be published, together and in German, in the "BfN-Skripten" series. The compilations, which will be available

[11] Database of the Federal Agency for Nature Conservation (BfN).

[12] German Federal Agency for Nature Conservation (ed.): (2005): Fledermausschutz in Europa: Beschlüsse der 4. EUROBATS-Vertragsstaatenkonferenz und Berichte zum Fledermausschutz in Deutschland 1998–2003. BfN-Skripten 150.

[13] http://www.bfn.de/fileadmin/MDB/documents/service/Nationaler_Bericht_Eurobats_2006.pdf

to interested parties free of charge, are intended especially for volunteers and staff of local nature conservation authorities, as sources of information about bat conservation and the EUROBATS agreement.

The following current measures have been reported by the Länder:

	BW	BY	BE	BB	NI	NW	SL	SN	ST	SH	TH
Seminars / workshops / training courses / conferences	x	x		x		x	x	x	x	x	x
Lectures/presentations		x						x			
Excursions / guided tours		x	x				x	x		x	
Discussion events											
Informational material /brochures	x	1		x	x	3		x		x	x
Exhibitions		x	x	x							
Posters		x								x	
Instructional bat trail							x				
Bat festivals			x							x	
"Bat nights"	x	x	x	x			x	x	x	x	x
Bat-project days in schools								x			x
Press articles / discussions		x	x							x	
TV / radio reports		x							x	x	x
Publications				2							
Newsletters		x									x
Information systems	x					x			x		x
Campaigns to create / protect bat roosts in and on buildings	x	x	x	x			x	x	x	x	x
Bat conservation foundation											4
Other events aimed at raising public awareness											x

1 The 2008 brochure "Fledermäuse – Lebensweise, Arten, Schutz" ("Bats – Behaviour, Species, Conservation"); available at http://www.lfu.bayern.de/natur/fachinformationen/artenhilfsprogramm_fledermaus/index.htm

2 TEUBNER, J., TEUBNER, J., DOLCH, D. & G. HEISE (2008): Säugetierfauna des Landes Brandenburg - Teil 1. Naturschutz und Landschaftspflege in Brandenburg 17 (2/3): 46-165.

3 MUNLV (2008): Geschützte Arten in Nordrhein-Westfalen - Vorkommen, Erhaltungszustand, Gefährdungen, Maßnahmen. – Düsseldorf: 257 p.

4 In 2009, the first German foundation for bat conservation was founded in Thuringia; further information is available at http://www.stiftung-fledermaus.de

10 The body pursuant to Article III.5 of the Agreement

During the report period, the body of experts appointed by the Federal Government and the Länder, pursuant to Article III.5 of the Agreement, met on 30 May 2006 in Berlin, on 10 October 2006 in Erfurt, on 25 April 2007 in Bonn, on 2 July 2007 in Frankfurt/Main and on 5 June 2008 and on 29 September 2009 in Bonn. The body is chaired by Johannes Tress (Thuringia), and the deputy chairman is Bernd-Ulrich Rudolph (Bavaria). On 17 March 2006, the "Recommendations for bat marking with armbands (bat rings) in Germany" ("Empfehlungen zur Fledermausmarkierung mit Armklammern (Fledermausringen) in Deutschland"), which the body prepared and co-ordinated with the Länder, were approved in Hamburg by LANA, the ministerial working group of the Länder for nature conservation issues. As a result, they have become the offcial nation-wide guidelines for approval and execution of bat marking (banding).

11 Additional measures for protection of bats

In determination of responsibility for conservation of central-European species, it was found that the Federal Republic of Germany has a high degree of responsibility for the following bat species: *Barbastella*

barbastellus, *Myotis bechsteinii*, *Myotis myotis*, *Myotis dasycneme* and *Rhinolophus hipposideros*. Assessment with regard to *Nyctalus noctula* remains to be carried out, since it has not yet been possible to reliably determine the population status of individuals overwintering in Schleswig-Holstein.[14,15]

The Länder have reported the following additional measures for the period under review:

Baden-Württemberg:

- Various protection measures, especially measures to protect winter roosts

Bavaria:

In the framework of the "bats" species assistance programme, various projects were contracted out, including work in the following topic areas:

- Survey and monitoring of bat roosts in crevices and in barns
- Survey of forest bats
- Analyses of the diet of the greater horseshoe bat (*Rhinolophus ferrumequinum*)
- Search for roosts of the lesser horseshoe bat (*Rhinolophus hipposideros*)
- Test of methods for proving the presence of Bechstein's bats *(Myotis bechsteinii)*

During the report period, research was carried out in the following topic areas, in the framework of diploma and state-examination theses (the most important methods used are included in parentheses: A = Analysis of distribution data; D = Detector; N = Net capture; R = Call analyses; V = Behaviour study):

- Three-dimensional survey of use of space by bats, as a basis for planning of forestry measures beneficial to bats (D, R)
- Possibilities for, and limitations to, identification of European bat species (not including the *Myotis* genus) via call analysis (D, R)
- Computer-aided identification of central European bat species of the genus *Myotis*, including pertinent call modelling (D, R)
- Occurrence of alternating call volumes in *Pipistrellus pipistrellus*: occurrence, origins and benefits (D, R).
- Habitat use and niche occupation by three pipistrelle species – *Pipistrellus nathusii, Pipistrellus pipistrellus* and *Pipistrellus pygmaeus* – on the Herreninsel (Chiemsee) (D, R, V)
- Activity and species spectrum of bats at Lake Chiemsee – study of selected shoreline regions and open lake areas (D, R)
- Habitat use by bats in the Munich urban area (D, R)
- Microhabitat use by syntopic forest bats – a comparison of structures used in anthropogenically shaped forest biotopes of central Europe (D, N, R)
- Bat distribution in Bavaria. Influence of landscape and climate (A)

Berlin:

- Within the framework of the "bats" species assistance programme, monitoring of winter roosts with regard to population sizes and population protection
- Advising of authorities and building companies, as well as some private building owners, regarding bat conservation
- Installation of man-made roosts on buildings, especially for pipistrelle bats (*Pipistrellus pipistrellus*)

Brandenburg:

- Continuation of activities carried out regularly in recent years
- Continued support for studies by the Federal Research Centre for Virus Diseases of Animals relative to bat rabies in the state of Brandenburg, via sampling and via provision of dead-bat finds

[14] GRUTTKE, H. (ed.) (2004): Ermittlung der Verantwortlichkeit für die Erhaltung mitteleuropäischer Arten. – Naturschutz und Biologische Vielfalt 8, 1-280.
[15] MEINIG, H., BOYE, P. & HUTTERER, R. (2009): Rote Liste und Gesamtartenliste der Säugetiere (Mammalia) Deutschlands. – Naturschutz und Biologische Vielfalt 70, 115-153.

Lower Saxony:

- Restoration of maternity roosts
- Construction and optimisation of winter roosts
- Cleaning of roosts
- Efforts to combat bat mites
- Support for the WHO (Wusterhausen) in a bat-rabies project

North Rhine – Westphalia:

Research projects:

- Studies of space and roost use by a Bechstein's bat colony in the Hanloer Mark area, in the district of Coesfeld
- Bats in the Baumberge region
- Studies of Bechstein's bat (*Myotis bechsteinii*) in the Baumberge region
- Studies of the phenology, habitat use and roosts use by Natterer's bat (*Myotis nattereri*) in the Westphalian Bight

Species conservation project:

- Concept for co-ordinating traffic-safety measures with bat conservation in the area of the Sieg-River mouth / Rheidter Werth peninsula: protection of hollow-bearing trees for the common noctule bat and Nathusius' bat

Banding projects:

- From summer 2005 to the end of 2009, over 400 bats, representing 10 different species (primarily Bechstein's bat, Leisler's bat, Brandt's bat, brown long-eared bat and greater mouse-eared bat), were banded

Telemetric studies:

- In the framework of the 2007-2009 FFH-monitoring programme, location of maternity roosts, and determination of colony sizes, in 10 areas of occurrence of Bechstein's bat and in one habitat of the barbastelle bat
- In the framework of the research project accompanying the project "Protection of bat populations in the area and environs of the Hambach open-pit mine", studies were carried out in the Hambach Forest and surrounding area (Bechstein's bat, Brandt's bat, brown long-eared bat, Leisler's bat, Daubenton's bat and pond bat)

Saarland:

- Survey and assessment of bat populations in FFH sites
- Telemetric studies for identification of maternity roosts of FFH Annex II species
- Monitoring of populations of FFH Annex II species
- Surveys of bats, and study of their swarming behaviour, at the Gersheim (former) limestone mine
- Regular monitoring of known winter roosts, carried out by volunteers
- Advising of private persons in matters pertaining to bat conservation (renovations, found animals)
- Construction and operation of a bat-rehabilitation aviary

Saxony:

- Local measures to create roosts, in the framework of substitution and support measures
- Requirements for appraisals relevant to species protection, in connection with demolitions of buildings
- Installation of bat shelter blocks in connection with insulation of façades in the Dresden municipal area

- Optimisation of conditions for maternity roosts of the lesser horseshoe bat, in connection with usage changes, via installation of thermal chambers with temporary electrical heating.

Saxony-Anhalt:

- Modification of closures over old-mine shafts, in keeping with the needs of bats
- Development of a concept for restoration of selected bat roosts (with an emphasis on roosts of the lesser horseshoe bat)

Schleswig-Holstein:

- Purchase and long-term leasing of forest areas, for conservation of forest-dwelling bat species

Thuringia:

- Protection of summer roosts of the lesser horseshoe bat

12 Existing and planned programmes for bat conservation

As part of preparations for regular reporting on the status of species and habitats pursuant to the EU's Fauna-Flora-Habitat Directive, a working group consisting of representatives of specialised Länder authorities and of the Federal Agency for Nature Conservation (BfN) has compiled basic principles relative to surveys and monitoring of species. The prepared recommendations were published by the Federal Agency for Nature Conservation (BfN).[16] [17] In the framework of nation-wide FFH monitoring, bat populations are surveyed and assessed in accordance with common standards.

Bavaria:

- Since 1985, the two co-ordination agencies for bat conservation, representing northern and southern Bavaria, have operated Bavaria's "bats" species assistance programme
- The co-ordination agencies have been holding regular teaching events at universities, with the aim of enhancing the role of bat conservation in training of biologists, forest rangers and landscape managers – i.e. of persons active in nature conservation by virtue of their occupations. The Bavarian Forest Institute (Landesanstalt für Wald und Forstwirtschaft), working in co-operation with the co-ordination agencies, is preparing a training course, for forest rangers, on surveying of bats in FFH sites.

Berlin:

No changes since the previous report.

Brandenburg:

- Co-ordination and organisation of mammal surveys and conservation, including all bat species, by the Zippelsförde nature conservation station of the Brandenburg state environmental authority; the nature conservation station performs this task with respect to both the lower nature conservation authorities and volunteer conservationists. It also co-ordinates scientific studies in this area, and it is responsible for approving, guiding and advising banding programmes in the state.
- Continuation of the programme for monitoring maternity roosts of the greater mouse-eared bat.
- Continuation of the programme for monitoring important bat winter roosts and selected maternity roosts.
- Continuation of the long-term studies being carried out by bat banders working in the state of Brandenburg (including studies on the population structures of individual bat species, the relationships between summer and winter roosts, roost loyalty in winter roosts, possibilities for using bat houses to encourage bats to settle in specific areas, age structures of individual bat species, importance of different roost types, interactions between different roosts of individual species, etc.).

[16] DOERPINGHAUS, A., EICHEN, C., GUNNEMANN, H., LEOPOLD, P., NEUKIRCHEN, M., PETERMANN, J. & SCHRÖDER, E. (Ed.) (2005): Methoden zur Erfassung von Arten der Anhänge IV und V der Fauna-Flora-Habitat-Richtlinie. Naturschutz und Biologische Vielfalt 20.

[17] SCHNITTER, P., EICHEN, C., ELLWANGER, G., NEUKIRCHEN, M., SCHRÖDER, E. & BUND-LÄNDER-ARBEITSKREIS ARTEN (Bearb.) (2006): Empfehlungen für die Erfassung und Bewertung von Arten als Basis für das Monitoring nach Artikel 11 und 17 der FFH-Richtlinie in Deutschland. Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt, Sonderheft 2.

Lower Saxony:

- Continuation of telemetric studies to identify roosts of the serotine bat, pond bat, barbastelle bat and Bechstein's bat

North Rhine – Westphalia:

- At present, a total of 11 biological stations care for bat roosts and carry out measures to raise public awareness about bats. 7 of these stations are also involved in long-term FFH-based monitoring of bats

Saarland:

- Monitoring of populations of FFH species
- Responding to enquiries submitted by the local population; the co-ordination office for bat conservation manages the bat database
- Continuation of volunteer programmes for survey and care of bat roosts
- Continuation of the "bat-friendly" ("Fledermausfreundlich") campaign, an effort of the German Society for Nature Conservation (NABU)
- Activities of the Saar chapter of Friends of the Earth Germany (BUND) for the overall preservation of bunker systems in the Siegfried Line (Westwall)

Saxony:

- Continuation of programmes for survey and care of bat roosts, by volunteers and private persons
- Continuation of the campaign "Come on in, Bat" ("Fledermaus komm ins Haus"), an effort of the Naturschutzfonds (nature conservation fund) for protection of building-dwelling bat species
- Continuation of service as a bat-marking centre for the eastern German Länder

Saxony-Anhalt:

- Continuation of performance of tasks as a state resource centre for bat conservation
- Co-operation with the Friedrich Löffler Institute in the area of active rabies monitoring

Schleswig-Holstein:

- The central co-ordination office for volunteer bat conservation supports monitoring in the framework of FFH reporting.
- The Noctalis bat centre, in Bad Segeberg, works intensively to promote public awareness and maintains a research department.

Thuringia:

- Co-ordination agency for bat conservation (since 1996); supports and develops bat conservation programmes.

13 Activities relative to the impacts of pesticides and wood preservatives on bats

Changes and additions to known Länder activities, with respect to the previous report:

Berlin:

During the report period, no adverse impacts of wood preservatives, on bats, have come to light

Lower Saxony:

In connection with renovation of the town hall (Rathaus) in Duderstadt, a roost for mouse-eared bats, dead young bats were inspected for contact with pesticides. Those inspections did not produce any conclusive findings, however.

Thuringia:

In recent years, wood samples (shavings) have been taken from important maternity roosts of the two mouse-eared bat species and of the lesser horseshoe bat. In 2009, some of these wood samples collected in the framework of monitoring activities were tested for contamination with DDT and relevant degradation products. Analyses carried out by Thuringia's state institute for environment and geology (TLUG) showed that one-third of the analysed samples were contaminated with DDT-degradation products (max. of 1400 µg/kg). In 2010, samples will again be taken (especially from the FFH sites in

question) and analysis will be conducted to determine whether the bats' dung shows traces of DDT residues.

D. Functioning of the Agreement

14 International co-operation

Changes, new information and additions relative to the previous report from the Länder:

Bavaria:

The Southern Bavarian Co-ordination Office for Bat Conservation, and the Bavarian Academy for Nature Conservation and Landscape Management (ANL), located in Laufen, engage in regular expert exchanges with staff of the bat conservation co-ordination office of the state of Salzburg (Austria).

Saarland:

The state's bat experts have long maintained contacts with experts in neighbouring countries (Luxembourg, Lorraine, Wallonia). Activities in the framework of such contacts include regular participation in joint excursions, and participation in workshops and conferences in such other countries. In one pertinent effort, jointly conducted telemetric studies of greater horseshoe bats provided conclusive evidence that such bats are using a certain roost in Lorraine. In another example, telemetric studies of barbastelle bats in the Berus FFH site, near the French border, revealed the locations of tree roosts in Lorraine. As a result of the state's close proximity to three neighbouring countries, a number of the important roosts in Saarland are also of importance for the neighbouring countries. Saarland's bat populations along its border with Lorraine (France) have been included in Lorraine's bat atlas.

Saxony:

In September 2006, Saxony's state chapter of the German Society for Nature Conservation (NABU) held a trilateral conference (involving Poland, the Czech Republic and Germany) entitled "Bats in the Sudety Mts.". In October 2008, the group participated in a conference in Poland. Such co-operation is being continued.

Saxony-Anhalt:

Volunteer staff of the Saxony-Anhalt working group on bats (Arbeitskreis Fledermäuse Saxony-Anhalt e. V.) regularly take part in bilateral and international projects and conferences. Their efforts include supporting working groups in eastern European countries with literature and resources.

Excursions conducted by the Saxony-Anhalt working group on bats during the report period included an excursion to Denmark in 2007, an excursion to Austria in 2008 and an excursion to Slovenia in 2009. As part of such excursions, working group staff collected data, in co-operation with local experts, for the host countries involved.

Schleswig-Holstein:

During the report period, the research department of the Noctalis bat centre (Florian Gloza) initiated and supported a number of international research projects.

- Research project on coronaviruses, with Prof. Drosten, University of Bonn, and involving contacts with researchers in Ghana, Bulgaria and Romania
- Research project on the greater mouse-eared bat in Romania. Deutsche Bundestiftung Umwelt (DBU) is supporting this project, which consists of protection and public awareness measures.
- Exchange project with Strandja Nature Park, Bulgaria. This project is being run in the Eurobats framework.
- Research project on pond-bat genetics. In co-operation with the Mønsted Limestone Caves in Denmark, a range of scientific studies and a joint travelling exhibit were prepared.

Thuringia:

Since December 2008, the bat conservation co-ordination office (Koordinationsstelle für Fledermausschutz), and partners in the Czech Republic and Slovakia, have been carrying out a joint project, entitled "Promotion of European co-operation in bat conservation" ("Förderung der Europäischen Zusammenarbeit im Fledermausschutz"). The project is being supported by Deutsche Bundesstiftung Umwelt (DBU). The aim of the multi-year co-operation with the Czech bat conservation organisation CESON (http://www.ceson.org) and the Slovak organisation SON (http://www.netopiere.sk) is to establish co-ordination agencies for bat conservation in the two countries.

15 Measures for implementation of the resolutions of the Meeting of the Parties

15.1 MOP 2 Resolution No. 2: Consistent monitoring methodologies

Changes, new information and additions relative to the previous report from the Länder:

Bavaria:

- *Myotis myotis:* For counts, see the previous report. About 80 % of the colonies are visited once per year; along with the 141 winter roosts under permanent monitoring, over 200 additional roosts with sightings of the greater mouse-eared bat are checked once annually.
- *Rhinolophus hipposideros, Myotis bechsteinii, Nyctalus noctula, Eptesicus serotinus, Eptesicus nilssonii:* No changes from the previous report, except that monitoring pursuant to Art. 17 FFH Directive began in 2009 for the last four of these species

Berlin:

No changes from the previous report.

Brandenburg:

No changes from the previous report.

Lower Saxony:

- *Myotis myotis*: Two emergence counts, in June and in July, and on-site inspections with photo-based counts of the two mouse-eared bat species
- *Myotis bechsteinii*: Regular monitoring has not yet been carried out. Some basic population surveys have been carried out. And bat box checks have been carried out in a reference area
- *Eptesicus serotinus*: Two emergence counts, in June and July. In addition, telemetric identification of alternative roosts
- *Eptesicus nilssonii*: Regular monitoring has not yet been carried out. Two emergence counts, in June and July.
- *Nyctalus noctula*: Regular monitoring has not yet been carried out.

North Rhine – Westphalia:

No changes from the previous report.

Saarland:

- *Rhinolophus hipposideros*: no population
- *Myotis myotis*: In the framework of FFH monitoring, population surveys of one maternity roost are carried out (annual survey in July, involving emergence counts and roost checks); other maternity roosts, along with winter roosts, are checked by volunteers
- *Myotis bechsteinii*: Population surveys are carried out in forests, via net capture, but no systematic surveys are conducted. In cases in which a maternity roost is discovered via telemetry, the emerging individuals are counted
- *Eptesicus serotinus*: In the framework of FFH monitoring, population surveys of one maternity roost are carried out
- *Eptesicus nilssonii*: No systematic surveys to date. In addition to evidence obtained via detectors, only young individuals that have just become capable of flight have been found. No roosts are known
- *Nyctalus noctula*: No systematic surveys to date. Saarland's location is outside of the species' range for reproduction. Most of the available evidence has been obtained via detectors.

Saxony:

Checks of roosts of the greater mouse-eared bat and lesser horseshoe bat are carried out in accordance with the so-called "Vilm criteria"[18].

[18] BIEDERMANN, M., MEYER, I. & BOYE, P. (2003). Nation-wide monitoring of bat populations is to begin with the greater mouse-eared bat. At a scientific conference held at the Island of Vilm, it was agreed that a two-year test phase would be carried out. Natur und Landschaft 78, H. 3, 89-92.

- Rhinolophus hipposideros, Myotis myotis, Eptesicus nilssonii: No changes from the previous report.
- Myotis bechsteinii: Emergence counts following roost search, via telemetry, in the framework of FFH monitoring in 2007
- Eptesicus serotinus: two emergence counts: end of May, beginning of June (adapted count)
- Nyctalus noctula: two emergence counts: end of May, beginning of June (adapted count); transect counts with bat detector

Saxony-Anhalt:

In Saxony-Anhalt, species are surveyed in accordance with a standardised method. Saxony-Anhalt's state resource office for bat conservation (Landesreferenzstelle für Fledermausschutz Sachsen-Anhalt) provides the necessary instruction.

- *Rhinolophus hipposideros*: Counts in maternity roosts, at the end of July / beginning of August; counts in winter roosts, January and February; roost searches, surveys of households; emergence counts as of the 4th week of July
- *Myotis myotis*: Counts in maternity roosts, as of the 3rd week of July; counts in winter roosts, January and February; roost searches, surveys of households; emergence counts as of the 3rd week of July
- *Myotis bechsteinii*: Counts in winter roosts, January and February; telemetry until mid-May and as of the 2nd week of July: emergence counts as of the 2nd week of July
- *Eptesicus serotinus*: Counts in maternity roosts, as of the 2nd week of July; roost searches, surveys of households; emergence counts as of the 2nd week of July
- *Eptesicus nilssonii*: Counts in maternity roosts, as of the 2nd week of July; counts in winter roosts, January and February; roost searches, surveys of households; emergence counts as of the 2nd week of July
- *Nyctalus noctula*: Counts in maternity roosts, as of the 3rd week of July; emergence counts as of the 3rd week of July; captures in the 3rd week of July – camp for study of the common noctule bat

Schleswig-Holstein:

No changes from the previous report.

Thuringia:

- *Rhinolophus hipposideros, Myotis myotis*: No changes from the previous report.
- *Myotis bechsteinii, Eptesicus serotinus, Eptesicus nilssonii*: These species are surveyed in the framework of monitoring of winter roosts
- *Nyctalus noctula*: Population monitoring is inadequate, due to limitations of the methods used

As of the time of reporting, the fine concept is being prepared for a BfN-monitoring effort that may begin as early as 2010 and that may yield findings about other species as well.

15.2 MOP 2 Resolution No. 3: transboundary programmes, proposals relevant to species

Bavaria:

No changes from the previous report.

Berlin:

No changes from the previous report.

Brandenburg:

- *Pipistrellus nathusii:* Findings from studies of Nathusius' bat have been assessed[19]

Lower Saxony:

No changes from the previous report.

Saarland:

[19] TEUBNER, J., TEUBNER, J., DOLCH, D. & G. HEISE (2008): Säugetierfauna des Landes Brandenburg - Teil 1: Fledermäuse. Natursch. Landschaftspfl. Bbg. (17) 2, 3: 148-152

- *Myotis dasycneme*: No population
- *Pipistrellus nathusii*: Sightings are very rare, and no roosts have been found

Additional proposals, relative to a transboundary programme, that would be of great significance for the region:

- *Rhinolophus ferrumequinum*: This species has been proven to form a joint population (metapopulation) with colonies in Lorraine. Those colonies are located some 25 km from the find sites in Saarland. Presumably, the Luxembourgian colony in the Moselle valley, in Bech-Kleinmacher, belongs to that population as well, since it is only about 30 km from the find sites in question. All three sites are interconnected via a river system comprising the Moselle itself and smaller rivers (in the present case, the Nied), as well as via a structurally rich cultural landscape that is used in traditional ways. All of the greater region profits from protection provided for this population. If the species is to again extend its range to the east and north, the cultural landscape must be managed in properly adapted ways, and suitable roosts need to be protected, maintained and restored. A transboundary protection programme – for example, via an Interreg project – would be one means of studying the colonies' movements throughout the greater region and their connections with each other.
- *Myotis emarginatus*: In the region in question, this species usually occurs together with the greater horseshoe bat. The colony in Bech-Kleinmacher (Luxemburg) and the colony in Veckring (Lorraine) each have several hundred female Geoffroy's bats. The two species could be protected via a joint project.
- *Barbastella barbastellus*: The known populations of the barbastelle bat in western Saarland also are located on the border to Lorraine, and thus they may be assumed to be part of a common population.

Saxony:

- *Myotis dasycneme*: Current findings on this species' populations and distribution were published in the "Atlas der Säugetiere Sachsens" ("Atlas of Saxony's mammals")[20]
- *Pipistrellus nathusii*: Current findings on this species' populations, distribution and migrations were also published in the "Atlas der Säugetiere Sachsens" ("Atlas of Saxony's mammals")

Schleswig-Holstein:

- *Myotis dasycneme*: The pond bat occurs more regularly than was previously supposed. At the same time, it occurs only a few parts of the state, however. With six known maternity roost colonies, and numerous additional field sightings along transit routes and in hunting habitats, Schleswig-Holstein (along with Lower Saxony) is Germany's most important *Land* (federal state) for this bat species. In light of how little is known about other populations, and of the problems that homeowners encounter at roost sites, the threat level for this species must be considered very high.
- *Pipistrellus nathusii*: No important new findings during the report period.

Since 2008, a great deal of data on bat migration have been, and are being, collected in the framework of studies relative to planning of wind farms. Analysis of those data may yield new findings, and thus it may be possible to report such findings in the next report period.

Thuringia:

- *Myotis dasycneme*: continues to occur only sporadically.
- *Pipistrellus nathusii*: In recent years, this species has increasingly been sighted (individual finds – usually, injured animals) in early and late winter. Such sightings point to a possibility of winter populations in future. The large numbers of dead collision victims found under wind turbines support the presumption that this species migrates in broad swaths through Thuringia.

15.3 MOP 2 Resolution No. 4: transboundary programmes, proposals relevant to biotopes

Special measures reported by the Länder, and undertaken during the report period, for protecting important reported underground habitats and for preserving forest habitats:

[20] HAUER, S., ANSORGE, H. & ZÖPHEL, U. (2009): Atlas der Säugetiere Sachsens. – In: LFULG (Hrsg.): Naturschutz und Landschaftspflege, 416 S.

	Underground habitats	Forests
Bavaria BY	Most roosts notified as FFH sites	
Berlin BE		cf. Chapter 15.5
Brandenburg BB	Notification of a large percentage as an FFH site; designation as a nature conservation area	
Lower Saxony NI		Follow-up notification of forests as FFH sites
Saarland SL	Designation of FFH sites	Designation of FFH sites
Saxony SN	Notification of important underground habitats as FFH sites; confirmation as sites of special Community importance (SCI), planning of conservation and development measures in the framework of FFH-management planning	Notification of important forest areas as FFH sites; confirmation as sites of special Community importance (SCI), planning of conservation and development measures in the framework of FFH-management planning
Schleswig-Holstein SH		cf. Chapter 15.5
Thuringia TH	Designation of FFH objects / FFH sites; draft management plans have been prepared for 20 objects	Designation of FFH sites; guidelines for management planning with a view to bat conservation have been prepared

15.4 MOP 4 Resolution No. 4.3: Guidelines for the protection and management of important underground bat habitats

Important underground bat habitats in Germany enjoy legal protection pursuant to Art. 42 Federal Nature Conservation Act (BnatSchG).

Länder information about the protection status of important underground bat habitats, and about relevant conservation measures:

	Protection status	Conservation measures
Bavaria BY	Notification of most roosts as FFH sites; protection pursuant to Art. 13e and 42(3) of Bavaria Nature Conservation Act (BayNatSchG)	Some sites protected with bat-friendly closures; some closed to the public
Berlin BE	Roosts notified as FFH sites	Structural optimisation measures
Brandenburg BB	Most roosts notified as FFH sites	
Lower Saxony NI	Protected as "habitats of strictly protected species"	Cf. 11.
Saarland SL	The most-important roosts have been notified as FFH sites	If necessary, roost optimisation
Saxony SN	Notification of FFH site / confirmation as SCI; protection pursuant to Art. 26 Saxony Nature Conservation Act (SächsNatSchG)	Conservation and development measures in the framework of FFH-management planning
Saxony-Anhalt ST	No changes from the previous report	No changes from the previous report
Schleswig-Holstein SH	5 sites are not protected (2 are secured by owners, however), 1 site is an FFH site and a natural monument, 1 site is an FFH site	Supported by bat conservationists; monitoring carried out – in part, with automatic detection equipment; annual manual checks
Thuringia TH	11 of 12 multi-species sites are FFH sites; 41 of 96 single-species sites are FFH sites	Preparation of management plans for the point sites notified in the FFH-Directive framework; for some of these, measures have been specified.

15.5 MOP 4 Resolution No. 4.4: Bat conservation and sustainable forest management

Activities reported by the Länder:

Bavaria:

In spite of their small average size, only 44 hectares, natural forest reserves (Naturwaldreservate) are highly valuable habitat components, primarily because of the large numbers of roost sites they provide. Currently, Bavaria has a total of 156 natural forest reserves. Their total area amounts to 6,790 ha.

In the framework of management planning and area management, the Bavarian Forest Administration has installed bat boxes in 45 "forest FFH sites" and monitored them over a period of several years (to date).

Since 2005, Bavaria's state forests (30% of Bavaria's forest area, amounting to a total of 720,000 ha) have been managed by the enterprise "Bayerische Staatsforsten" (BaySF). In 2009, BaySF adapted a nature conservation concept of its own. The primary aims of the concept include protecting old forests and managing dead wood and biotope trees. Thoroughgoing implementation of the relevant criteria would be highly beneficial with regard to bat conservation. In 2007, a contractual nature conservation programme (Vertragsnaturschutzprogramm – VNP) that had been established in 2005 was revised. That programme is designed to compensate private or municipal forest owners for voluntary services in the area of biotope / species protection, and such services can also be of importance with regard to bat conservation.

Berlin:

Berlin's forests have been certified in accordance with FSC and Naturland criteria. Since the necessary reference areas for such certification amount to 10% of the total forest areas in question and, as a rule, are located outside of existing protected areas, the situation for bats has improved markedly. On the reference areas, which total 1,700 ha, and which have an average area of 51 ha, no uses are permitted. Large parts of Berlin's state forests that are of importance for bats have been notified as FFH sites (for example, Spandauer Forst DE-3445-301, Grunewald DE-3545-301, Pfaueninsel DE-3544-301).

Brandenburg:

Preparation of a management plan for forest-dwelling bat species has been commissioned. The plan is to take account especially of the species Bechstein's bat, barbastelle bat and northern bat. Ongoing logging of old-wood stands, especially those in beech forests, runs counter to the interests of bat conservation, and it must be considered a negative factor. In another problematic development, areas with bat boxes are increasingly being set up as compensation for bat-harmful interventions. Such compensation is acceptable, if at all, only in combination with forest acquisition (old-growth trees).

Lower Saxony:

Procedures for logging in oak stands have been co-ordinated with the forest administration. Plans for management of forests in FFH areas have been co-ordinated with the relevant specialised authorities.

North Rhine – Westphalia:

In October 2009, Landesbetrieb Wald und Holz (state enterprise for the forest and wood sector), working in co-operation with North Rhine – Westphalia's state office for nature conservation, the environment and consumer protection (LANUV), began preparing guidelines for species and biotope protection in forests. The guidelines, which are to serve as a work aid for the state's own forest operations, are to be in accordance with current applicable laws. The guidelines include a positive list of common forest-management measures that – as long as certain conditions are met – are legally acceptable. Where a measure is not included in the positive list, or where it is not possible to observe the listed applicable conditions, it must be approved by the competent lower-level landscape authority. The guidelines are to enter into force in 2010.

Saarland:

A total of 20 FFH-protected forests in Saarland have been studied with regard to their bat populations. Since 1988, the state forest has been managed in accordance with principles for semi-natural forest management. Hollow-bearing trees and standing dead wood are left intact (exception: removal in keeping with traffic-safety requirements). Bechstein's bat is considered to be one of the lead species for semi-natural forest management in Saarland.

Saxony:

In the framework of management planning and initial surveys in FFH sites of community interest (SCI) that are predominantly forested, the presence of relevant species – especially Annex II species – is determined via use of detector transects. In individual cases, net captures are commissioned with a view to checking the status of a species. Habitat areas surrounding the sites of such positive identification are identified throughout ranges (defined via species-specific radii) within the boundaries of the relevant SCI. Agreements are then reached with the forest-management sector regarding the management principles to be applied to such habitat areas. The subjects covered by relevant measures include forest conversion over the medium-to-long terms; ongoing use of existing old wood; extensive, contiguous and largely unfragmented forest stands; preservation of potential roost trees in connection with thinning programmes; use of pesticides only in exceptional situations.

Saxony-Anhalt:

The Federal Government's biodiversity strategy includes the aim of developing forest areas that are kept free of intervention. This aim is a necessary one from the standpoint of bat conservation. At present, it

seems to provide a feasible approach for practicing bat conservation, with a long-term focus, in managed forests.

Schleswig-Holstein:

In 2009, the state agency for agriculture and rural areas (Landesamt für Landwirtschaft und ländliche Räume), working in co-operation with Schleswig-Holsteinische Landesforsten (the state's forest-management enterprise), established guidelines for species and habitat conservation Natura 2000 forest areas in Schleswig-Holstein's state forests. Inter alia, the guidelines call for maintaining certain reserves of dead wood and of habitat trees, for forest-dwelling bat species.

Thuringia:

Thuringia has undertaken special efforts to protect valuable forest habitats, for bats, as FFH areas. The relevant resolution is being implemented primarily in the framework of implementation of the FFH Directive. For example, forest officials charged with management planning for forest areas have undergone special training in bat conservation. In addition, the FFH-implementation concept for forests provides for special bat-conservation measures, including even special purchase of individual trees.

15.6 MOP 4 Resolution No. 4.6: Guidelines for the issue of permits for the capture and study of captured wild bats

The nationally valid guidelines "Recommendations for bat marking with armbands (bat banding) in Germany" largely implement EUROBATS resolution 4.6 (cf. Chap. 10). The band sizes to be used for the various bat species are determined by the two German banding centres, located in Bonn and Dresden, and are communicated to banders when bands are handed out.

Länder information regarding the competent authorities for permits relative to capture of wild bats and study of captured bats:

	Permits issued by	**Conformance with above recommendations**
Bavaria BY	Higher nature conservation authority (administrative districts - Regierungsbezirke)	Yes
Berlin BE	Highest nature conservation authority	Yes
Brandenburg BB	State environmental agency (Landesumweltamt)	Yes
Lower Saxony NI	Lower-level nature conservation authorities	Yes
Saarland SL	Highest nature conservation authority	(No application for approval submitted to date)
Saxony SN	Regional councils; since 2008, lower-level nature conservation authorities	Yes, for the most part
Saxony-Anhalt ST	State agency for environmental protection (Landesamt für Umweltschutz)	Yes
Schleswig-Holstein SH	State office for agriculture, environment and rural areas	In part
Thuringia TH	Highest nature conservation authority; since 2008, lower-level nature conservation authorities	Own guidelines

15.7 MOP 4 Resolution No. 4.7: Wind turbines and bat populations

It is increasingly being appreciated in Germany that wind turbines can pose a threat to bat populations. In their "EUROBATS-Leitfaden für die Berücksichtigung von Fledermäusen bei Windenergieprojekten" ("EUROBATS guide to consideration of bats in connection with wind-energy projects"; EUROBATS Publication Series No 3), which was published in 2008, Christine Harbusch and Lothar Bach made use of important relevant findings and experience gained in Germany.

In a project carried out in 2007 and 2008, under the direction of the University of Hanover, and financed by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), comprehensive, representative data on bats' risks of collision with wind turbines were collected systematically for a total of 84 onshore wind turbines, located in a total of 42 wind farms throughout the entire national territory.[21] The study found that the collision risks apply only to a group of bat species that prefer to hunt in open airspace and tend to have migratory behaviour. At present, the most effective method for reducing the collision risk is to shut off wind turbines during periods of high bat activity in the vicinity of rotors. In addition, the research project found significant correlations between a) such activity

[21] http://www.umwelt.uni-hannover.de/fileadmin/institut/Kurzfassungen_Kollisionsrisiko_Fledermaeuse_WEA.pdf

and b) certain time and weather parameters (wind speed, temperature, rainfall). When such correlations are known, bat activity near specific wind-energy systems can be predicted relatively precisely with regard to time. A model has been developed for optimising shutdown periods in line with the twin aims of reducing collisions to the greatest possible extent and minimising losses of energy production.

The Länder also provided the following additional current information on this subject:

Baden-Württemberg:

Following the construction of a wind farm in the Alb-Donau district, a multi-year monitoring programme is underway to determine actual levels of adverse impacts on bats – for example, deaths and injuries from impacts – during operation, with a view to taking protective measures as necessary.

Bavaria:

No special studies on wind farms' impacts on bats have been carried out yet.

Berlin:

No research on wind farms' impacts on bats have been carried out yet.

Brandenburg:

The precautionary principle is applied in connection with construction of wind farms that could have adverse impacts on bat populations. To that end, the state environmental office is preparing specific assessments and is documenting finds of dead bats in the vicinity of wind turbines. Experts are highly critical of a trend whereby wind turbines are increasingly also being erected in forests.

Lower Saxony:

To date, the precautionary principle is being applied solely on an individual-case basis. No relevant research has yet been carried out.

Saarland:

Studies on bat populations near sites of planned wind farms have been carried out only recently in Saarland, in response to pressure to fulfil EUROBATS obligations. Current standard procedure does not call for preliminary scoping prior to construction of such systems, however. In many cases, relevant studies are commissioned in advance of construction, but the state's office for environmental protection and occupational safety (Landesamt für Umwelt- und Arbeitsschutz) does not learn about the project itself until the relevant application is submitted. Bat experts complain that evidence of the presence of relevant species with regard to wind farms seldom leads to any consequences for permits, and that compensation, impact-reduction and impact-prevention measures tend to be inadequate with regard to population-conservation requirements. No research on this area has been carried out to date.

Saxony:

The precautionary principle is applied in connection with construction of wind farms that could have adverse impacts on bat populations. A state-wide study conducted in 2006 found very high numbers of dead individuals in seven of 26 wind farms studied.[22]

Schleswig-Holstein

In 2008, the state's office for agriculture, environment and rural areas issued "Recommendations for taking account of faunal-ecological criteria in connection with planning of wind-energy systems in Schleswig-Holstein" ("Empfehlungen zur Berücksichtigung tierökologischer Belange bei Windenenergieplanungen in Schleswig-Holstein").[23] The recommendations prescribe detailed studies relative to local bat populations and bat migration, in connection with approval of new wind farms. In addition, areas of special importance with regard to bat conservation are being set aside. The relevant studies are producing a wealth of new data, especially with regard to bat migration.

Thuringia:

Findings to date show that bat collisions with wind turbines can be expected in many parts of Thuringia. In many cases, it is not possible to assess the relevant hazards in advance, however. For this reason, the authorities responsible for issuing relevant permits are increasingly imposing requirements, as permit conditions, for monitoring during wind farm operations. On the other hand, such conditions will have no legal consequences until policy-makers issue binding standards for species protection (significance

[22] Seiche, K., Endl, P. & Lein, M. (2008): Fledermäuse und Windenergieanlagen in Sachsen 2006. – Materialien zu Naturschutz und Landschaftspflege Dresden.
[23] Landesamt für Natur und Umwelt des Landes Schleswig-Holstein (2008): Empfehlungen zur Berücksichtigung tierökologischer Belan-ge bei Windenergieplanungen in Schleswig-Holstein / Schriftenreihe LANU SH - Natur 13: 90 p.

thresholds for numbers of killed animals permitted per wind turbine) and precisely define the term "local population" with regard to species with large ranges (migratory species).

The cases listed below were mentioned in the last report. With regard to those cases, two administrative-court rulings have been handed down that provide for intensified consideration of bat conservation criteria in connection with permits for wind farms: Denial of preliminary decision on construction, due to the presence of bat populations (Ruling of Gera Administrative Court, 28 April 2005 Az. 4 K 1071/02 GE); ruling for suspending a permit due to doubt regarding the approvability of the relevant construction application – inter alia, because the wind farms were not in compliance with the minimum required distance of 300 m to the edge of the forest (ruling of Meiningen Administrative Court, 25 January 2006 Az. 5 E 386/05 Me). The two cases have not yet been resolved.

15.8 MOP 4 Resolution 4.12: Priority species for autecological studies

Länder information on completed studies of horseshoe bats and Geoffroy's bat:

	Greater horseshoe bat	**Lesser horseshoe bat**	**Geoffroy's bat**
Bavaria BY	Species-assistance programme, including monitoring of maternity roost and winter roosts	Species-assistance programme, including monitoring of maternity roost and winter roosts	Monitoring of maternity roosts, research studies relative to hunting-habitat selection and roost use[24]
North Rhine - Westphalia NW			Study planned for 2010
Saarland SL	Studies on population ecology		
Saxony SN		Ecological studies, especially studies on roost use	
Saxony-Anhalt ST		Population-ecological data, in the framework of monitoring	
Thuringia TH		Regular studies of the species, and collection of population data; monitoring activities, mapping in gap areas, telemetric searches for roosts; three diploma theses on autoecology	

[24] ZAHN, A., BAUER, S., KRINER, E. & HOLZHAIDER, J. (2010): Foraging habitats of *Myotis emarginatus* in Central Europe. - European Journal of Wildlife Research 56, 395-400.