

Agreement on the conservation of populations of European bats

National implementation report of Finland

A. General Information

Party: Finland

Date of Report: August 2014

Period covered by report: January 2010 – August 2014

Competent Authority: Ministry of the Environment, P. O. Box 380, FI-00131 Helsinki, Finland

Appointed Member of the Standing Committee: Senior Adviser Matti Osara, Ministry of the Environment, P. O. Box 380, FI-00131 Helsinki, Finland

Appointed Member of the Advisory Committee: Eeva-Maria Kyheröinen, Finnish Museum of Natural History, P.O. Box 17; FI-00014 University of Helsinki

This report was compiled by: Eeva-Maria Kyheröinen, Matti Osara, Torsten Stjernberg

B. Status of Bats within the Territory of the Party

1. Summary Details of Resident Species

No changes in the number of species have occurred since the report to the MoP6. Thirteen species of bats have been observed in Finland. Five of them are widespread in southern and central Finland and occur with regularly reproducing populations (see Table 1). The rest of the species are rarer, migratory or have been observed only occasionally in the country. During recent years, lots of observations have been made on some of these species, mainly based on passive acoustic monitoring. Records from new areas have been obtained especially for *Nathusius' pipistrelle*. Despite of the new data, no new maternity colonies or hibernacula of the rarer species have been found. Only two maternity colonies of *Nathusius' pipistrelle* have been found; for *Natterer's bat* breeding has not been confirmed since 1850's (an old museum specimen of a juvenile from 1850's), though the species is regularly encountered in Finland. The only record of *Noctule* breeding in Finland is from a museum specimen, a pregnant female from the 1960's. *Noctule* is observed yearly in Finland, mainly in southern Finland and coastal areas, but also in inland.

2. Status and Trends

The distribution and status of bat species recorded in Finland is summarized in Table 1. Data on the occurrence and other aspects of the bat species ecology has been collated for the reporting of the Habitats Directive Article 17 in 2013. During this process, effort was put in preparing up to date distribution maps of the bat species. Data were extracted from over 100 survey reports and articles as well as from different databases (museum specimens, ringing data etc.). There is no data available to assess population trends for several species or changes in the species' habitats. The overall conservation statuses of the species are included in Table 1. The species reports are available at <http://bd.eionet.europa.eu/article17/reports2012>.

The Finnish Red Data Book was published in December 2010. The book is completely bilingual (Finnish and English) and available in print as well as online (Part II, assessments:

<http://www.ym.fi/download/noname/%7BB30F0E5D-6863-4CDE-9F9E-62574925785E%7D/32853>). Natterer's bat was classified as endangered (EN), as it was also in the earlier red lists. Nathusius' Pipistrelle was put in to the class vulnerable (VU) due to the apparently small population size. Whiskered bat and Brandt's bat were classified as least concern, while in the previous assessment they had the status of data deficient. Six rare or vagrant species could not be assessed (NA).

Table 1. Status and distribution of the bat species recorded in Finland. Red list status according to Liukko *et al.* (2010).

Species	Distribution	Red list status 2010	Conservation Status, Boreal Region (Habitats Directive Art. 17 reporting)
<i>Eptesicus nilssonii</i>	widespread, to S Lapland, some records even further north	LC	FV
<i>Eptesicus serotinus</i>	restricted, S Finland, first record 2008, few observations	NA	N/A
<i>Myotis brandtii</i>	widespread, S & Central Finland, circa to 66° N lat.	LC	XX
<i>Myotis dasycneme</i>	restricted, E Finland, first record 2002, few observations	NA	N/A
<i>Myotis daubentonii</i>	widespread, S & Central Finland, to 66° N lat.	LC	FV
<i>Myotis mystacinus</i>	widespread, S & Central Finland, circa to 66° N lat.	LC	XX
<i>Myotis nattereri</i>	rare, S Finland	EN	XX
<i>Nyctalus noctula</i>	restricted, S Finland, migratory	NA	XX
<i>Pipistrellus nathusii</i>	restricted, S Finland, migratory. First record reported in 1982; retrospectively identified first observation by I. Ahlén (1979), first maternity colony found 2006	VU	XX
<i>Pipistrellus pipistrellus</i>	restricted, S Finland, first record 2001, migratory	NA	N/A
<i>Pipistrellus pygmaeus</i>	restricted, S Finland, first record 2007, migratory	NA	N/A
<i>Plecotus auritus</i>	widespread, S & Central Finland, circa to 64° N lat.	LC	FV
<i>Vespertilio murinus</i>	restricted, S Finland, migratory	NA	N/A

3. Habitats and Roost Sites

Data on bat habitats and roost sites in Finland has been accumulated from recent research projects and surveys as well as from the public. Still, knowledge on habitat use and roost selection of many bat species is deficient, or based on local or regional data only.

In Finland, winters are long and cold, even in the southern parts of the country. Bats typically hibernate from October-November till April-May. Therefore hibernacula with stable conditions and little disturbance are crucial for the survival of bats. Due to the geology of the Finnish bed rock, there are not many natural caves. Natural caves are typically small not offering good microclimatic conditions for hibernating bats. Bats therefore hibernate in other underground structures such as mines, bunkers and cellars. Data on hibernating sites of bats is collected by the

Finnish Museum of Natural History in co-operation with researchers and amateurs. Many sites in south-western and south-eastern parts of Finland are surveyed yearly.

In the summertime several bat species roost in buildings (at least Northern bat, Whiskered bat and Brandts' bat, Brown Longeared bat, Nathusius' Pipistrelle), while Daubenton's bats use tree holes, bird/bat boxes and bridges as roosts. Some species use also bat boxes as roosts (mostly Daubenton's bats and Longeared bats), though these are typically not used by maternity colonies.

Feeding habitats of bats differ by species, but generally riparian environments and forests as well as cultural landscapes are good bat habitats.

4. Threats

Threats against nursery colonies and roosts are:

- forestry practices such as felling of trees with cavities, monocultures and evenly aged forests
- rebuilding and repairing of houses, both private wooden houses and summer cottages, but in some extent also houses built of stone
- rebuilding of old bridges might also be disastrous for bats
- chemicals: according to a recent PhD thesis organic tin compounds may accumulate in bats (Lilley 2012)

Threats against hibernating sites:

- disturbance by people making fire in caves or using them for other activities. Also curiosity among people combined in recent years with nature tourism has caused some disturbance.

Threats against feeding areas:

- intensive forest management and planning procedures that don't take bats' needs into consideration.
- building of new settlements, if the planning does not take bats' feeding areas and commuting routes into consideration
- wind energy facilities may pose a threat to migrating bats as well as local, foraging bats, if located in areas important for bats
- abandoning of traditional pastures and meadows may have affected the feeding habitats of some species of bats but this topic has not been investigated. The change of agricultural habitats due to structural changes in agriculture, partly due to the regulations of European Union, may have affected bats as rural landscapes now have less small scale mosaic of habitats which may offer better feeding areas for bats than large uniform areas.

Lack of knowledge among the public of bats and their ecological needs might also be considered a threat.

5. Data Collection

Data on bats is collected in the Zoological Museum, Finnish Museum of Natural History LUOMUS, P. O. Box 26, FI-00014 University of Helsinki. The museum also has a database (www.hatikka.fi) open for the public, for all kinds of nature observations. Bat specimens (dead bats found mostly by the public) are deposited in the collections of FMNH and regional museums.

Data on banded bats is collected in the ringing centre of LUOMUS, as is the bird ringing data. The NGO Finnish Chiropterological Society has also collected data on bat observations in a webbased database, but decided in spring 2014 not to maintain the database anymore. Instead, the society encourages people to submit their observations in the database Hatikka.

Data used in Habitats Directive reporting (from reports, articles, personal comments etc.) are stored by the Finnish Environment Institute (SYKE).

C. Measures Taken to Implement Article III of the Agreement

6. Legal measures taken to prevent the deliberate capture, keeping or killing bats, including details of enforcement actions used to support such measures

The legislation concerning bat conservation is similar to previous report.

All bats in Finland have been protected by law since 1923 (Nature Conservation Act 71/1923). All bats, both regularly occurring and vagrant species (bats), are protected according to the Nature Conservation Act (1096/1996). According to its § 39, concerning individuals of a protected species, following are forbidden: deliberate killing and capture, deliberate harming, deliberate disturbance particularly during the breeding or on any other sites of significance to their life cycles. The regulations arising from the Habitats Directive are included in the § 49 of the Nature Conservation Act, prohibiting the e.g. the destruction and deterioration of the breeding and resting sites deterioration or destruction of breeding sites or resting places of the Annex IV species.

Licences for catching and handling bats are issued by regional Centre for Economic Development, Transport and the Environment. In order to get a licence, the applicant has to pass a ringing exam, submit a research/project plan in which methods aimed to be used in the study as well as the species concerned and other relevant details have to be described. Regarding ringing licences see point 15, Resolution 4.6. For research projects involving invasive methods a licence according to the Act on Animal Testing (includes regulations about methods used in the study of wildlife) needs to be applied for.

The Natterer's bat is considered as a species under strict protection (Nature Conservation Decree (160/1997, § 22, Appendix 4), hence a special action plan for its protection can be made. The deterioration and destruction of a habitat important for the survival of the Natterer's bat is prohibited after the regional Centre for Economic Development, Transport and the Environment has made an official decision of the borders of the site.

All bat species in Finland belong to those species mentioned in the EC Council directive 92/43/EEC, Annex IV (a). Hence, according to Nature Conservation Act (1096/1996) § 49 following is forbidden:

- the destruction and deterioration of breeding sites and resting places
- to keep bats
- to transport bats
- to sell or exchange bats or to offer them for selling or exchange

It is possible to derogate from these provisions only for reasons mentioned in the habitats directive Article 16 (1). The permission can be given by the regional Centre for Economic Development, Transport and the Environment or the Finnish Environment Institute.

Finland is a member of the Bern convention (since 21.3.1986), the Bonn convention (since 1.1.1989) and EUROBATS (since 20.10.1999).

The Åland Islands have a legislation of their own on nature conservation. According to the Nature Conservation Act of the Åland Islands (82/1998), § 14, all mammals except game species, are permanently protected.

7. Sites identified and protected which are important to the conservation of bats

No specific sites important for bat conservation have been legally protected by establishing nature conservation areas.

Some hibernation sites are known to be important for bats. Data on important underground sites were submitted in winter 2014 to the database maintained by the secretariat. So far only 5 sites are reported as important sites as there at least 20 bats hibernating in them. Of the reported sites, Heikkilä cave in Turku, south-western Finland is one of the best hibernation sites known in Finland. Circa 80 bats hibernate there yearly. As the cave is located on a property of the Defence Forces, the site has been free of disturbance. At the moment, the Defence Forces cannot allow bat workers to investigate the site as there is some construction work going on. Few sites in south-eastern Finland also inhabit tens of hibernating bats.

8. Consideration given to habitats which are important to bats

In recent years bat surveys as such or in connection with other nature surveys (vegetation, bird surveys etc.) have become more and more common in planning and building processes. This makes it possible to take into consideration the needs of bats – for example good feeding areas – in the land use. However, it is not always the case that the recommendations of the survey report are fully taken into account in the planning process.

9. Activities carried out to promote the awareness of the importance of the conservation of bats

The dissemination of information about bats via e-mail posting lists as well as through articles in magazines, newspapers, radio and television programmes and during excursions has continued actively. This work has been conducted by researchers and amateurs engaged in bats as well as the staff of different museums and nature conservation authorities.

A new edition on the bat brochure by the Ministry of the Environment was issued in 2011 (<http://www.ymparisto.fi/download.asp?contentid=126848&lan=fi>). This brochure has been sent to people asking for information on bats as well as to people participating bat walks and other events. Lots of questions concerning bats in building are answered especially in summertime and advice is also given on reconstruction practices safeguarding bats. Also information on how to build and where to put bat boxes has been distributed during many years.

Several bat walks and lectures about bats have been organized to celebrate the International Bat Night in different localities. These and other bat events have often been very popular. The NGO Finnish Chiropterological Society has been active in promoting awareness of bats by many activities. For example, the ‘Spot a bat’ event has been organized in late July, four times now with growing popularity. The aim is simply to encourage people to observe bats and submit their observations, whether they could identify the species or not. See point 15 for The Year of the Bat activities.

10. Responsible bodies, in accordance with Article III.5 of the Agreement, nominated for the provision of advice on bat conservation and management

(a) Finnish Museum of Natural History LUOMUS, Zoology, P.O. Box 17, FI-00014 University of Helsinki.

(b) The Finnish Environment Institute, P. O. Box 140, FI-00251 Helsinki.

11. Additional action undertaken to safeguard populations of bats

The topic ‘bats in buildings’ has aroused quite a lot of discussion and guidelines for these situations are needed to safeguard house dwelling bat colonies. Factsheet on bats in buildings is available online on the Chiropterological Society’s webpage (www.lepakko.fi). Guidelines for property owners and others are in preparation based on the EUROBATS guidelines published in 2009.

12. Recent ongoing programmes (including research) relating to the conservation and management of bats

In 2012, a three year study on ecology and conservation of forest bats was started in the University of Turku by PhD Thomas Lilley. The study is part of the Research programme of deficiently known and threatened forest species (PUTTE).

A bat migration study coordinated by the Finnish Chiropterological Society was launched in 2008. Passive monitoring on coastal and island sites is used in Southern and South-Western Finland. The results so far are interesting. For example Nathusius' pipistrelle seemed to be more common than previously known. Co-operation within the area of the Baltic Sea was launched in a meeting in Lund November 2009 with circa 30 participants from Sweden, Finland, Denmark, Germany, Estonia, Latvia and Poland. A review article of the results from bat migration studies in these countries was published recently (Rydell *et al.* 2014). Bat migration is studied in the archipelago between Finland and Sweden, near Vaasa. First results of activity of migratory bats are published in Fritzen (2011).

Several Master's theses on bat ecology have been conducted or are in preparation in different universities (Helsinki, Turku and Eastern Finland).

In November 2012, Thomas Lilley from the University of Turku defended his PhD thesis with the title 'Butyltin compounds in the foodweb: impacts on chironomids and Daubenton's bats' (Lilley 2012). Eero Vesterinen from University of Turku is working on his PhD thesis Bat Food Project (BATFP): Multidisciplinary analysis of Daubenton's bat's diet.

Several bat surveys were conducted during the reporting period. Bat ringing is also used in some research projects to obtain basic ecological data about bats.

13. Consideration being given to the potential effects of pesticides on bats, and efforts to replace timber treatment chemicals which are highly toxic to bats

The situation is similar to previous reports. The most harmful pesticides are forbidden in Finland.

D. Functioning of the Agreement

14. Co-operation with other Range States

During the past ten years, bat workers have visited *e.g.* Sweden, Germany, UK and USA to attend conferences and workshops, to discuss with other bat workers and to learn new methods of bat research.

15. Measures taken to implement Resolutions adopted by Meetings of Parties

Resolution 2.1 Consistent Monitoring Methodologies.

So far, no systematic large scale bat monitoring is going on in Finland. A monitoring scheme based on detector surveys (transects and point counts, similar to field survey of BCT) and winter counts in hibernacula, has been drafted. Transects have been tested during summer 2012 and 2013. Successful recruiting of volunteers from different parts of the country is crucial for the monitoring scheme.

Resolution 2.4. Transboundary Programme: Habitat Proposals

Data on important underground sites were submitted in winter 2014 to the database maintained by the secretariat. So far only 5 sites are considered important as there at least 20 bats

hibernating in them. In Finland, typically only few till 10 bats are found in the hibernacula. There are not many sites known where larger numbers of bats hibernate. The list may be updated later if new information on hibernacula is obtained.

Resolution 4.3 Guidelines for the protection and Management of Important Underground Habitats

So far, only some underground sites with more than a few bats have been found in Finland. However, the guidelines will be taken into consideration when managing underground hibernacula. Some sites with tens of bats might benefit of grilling to minimize disturbance.

Resolution 4.4 Bat Conservation and Sustainable Forest Management

The Forest Act safeguards, in principle, the key biotopes of forests, *e.g.* small bodies of water, which could be of great importance also for bats. A study by Nummi *et al.* (2011) found that bats use more beaver ponds than ponds without beavers, highlighting the importance of wetlands for bats.

In 2012, a three year study on ecology and conservation of forest bats was started in the University of Turku by PhD Thomas Lilley. The study is part of the Research programme of deficiently known and threatened forest species (PUTTE).

More research on bats using forest habitats and active co-operation between bat workers, forest managers and authorities is needed.

Resolution 4.5 Guidelines for the Use of Remedial Timber Treatment

See point 13.

Resolution 4.6 and 5.5 Guidelines for the Issue of Permits for the Capture and Study of captured Wild Bats

Referring to this resolution, the Ministry of the Environment asked the Finnish Museum of Natural History to organize ringing and marking of bats in Finland. Ringing of bats in Finland started as a pilot project in 2004, according to the Guidelines in EUROBATS Resolution No. 4.6. The guidelines have been translated into Finnish and supplemented with guidelines concerning license practices etc. in Finland. All ringing of bats in Finland is coordinated by the Finnish Museum of Natural History. All bat ringers must have a special bat ringer's license which presupposes an examination on identification, sexing and ageing as well as on the legislative status of bats. The bat ringer's license also presupposes a proper research/project plan, proved ability to handle living bats as well as vaccination against rabies.

Resolution 5.2: Bat Rabies in Europe

A rabid bat was found in Finland for the first time in 2009. The sick Daubenton's bat was caught in a mist net in August 2009 in southwestern Finland. The European bat lyssavirus type 2 isolated from the bat was genetically almost identical with the one isolated from the late bat scientist who died of rabies in 1985 in Finland (Jakava-Viljanen *et al.* 2009). This indicates that bat rabies may have been present in bat populations in Finland for years. After this finding, an active sampling study funded by the Ministry of Agriculture and Forestry was started. Sampling of six bat species was carried out mainly in southern Finland, resulting in 774 saliva samples and 423 blood samples. In the laboratory analysis for viral RNA and antibodies, no EBLVs were found but antibodies were detected in South-western Finland. The results of the study are published in Nokireki *et al.* (2013). Passive sampling is conducted after the project.

Resolution 5.4: Monitoring Bats across Europe

Finland would like to join the PEMBUS project focusing on monitoring bats in underground sites.

Almost 100 hibernation sites, mainly in Southern Finland, are checked yearly. Numbers of bats are typically low in each site.

Resolution 5.7: Guidelines for the Protection of Overground Roosts, with Particular Reference to Roosts in Buildings of Cultural Heritage Importance

See point 11.

Resolution 6.6: Guidelines for the Prevention, Detection and Control of Lethal Fungal Infections in Bats

Bat workers are generally informed about the fungal infections. Few samples from hibernacula (sediment and walls) have been provided to the study by Dr. Puechemaille.

Resolution 6.7: Conservation and management of critical feeding areas, core areas around colonies and commuting routes

Recommendations concerning feeding areas are given in bat survey reports, if important feeding areas are identified.

Resolution 6.8: Monitoring daily and seasonal movements of bats

Monitoring of bat migration mainly in the coastal areas is continuing. First results of the studies in 2007–2009 in the Baltic area are included in the review article Rydell *et al.* (2014). Bat migration has also been studied in the archipelago between Finland and Sweden, near Vaasa. Bats might use this route in their migration as well (Fritzen 2013).

Resolution 6.11: Wind turbines and bat populations (Repeals Resolution 4.7: Wind Turbines and bat Populations; Resolution 5.6: Wind Turbines and Bat Populations: guidelines for the planning process and impact assessments)

The EUROBATS guidance on wind turbines has been circulated widely to bat workers and authorities as well as to wind energy companies and consultancies in Finland. There is no published data about the impacts of wind turbines on bats in Finland. Lots of new wind power facilities are in different stages of the planning process, so data is needed on bat migration routes and other important areas that should be avoided in the site selection for wind farms. A bat migration study co-ordinated by the Finnish Chiropterological Society aims at finding important migratory routes for bats. This knowledge can be used in wind farm planning. Few of wind farm Environmental Impact Assessments including bat monitoring are going on mainly in southern Finland and in the Åland islands.

The EUROBATS guidelines are distributed widely. However, the pre-construction surveys conducted in Finland are usually not as detailed as in the EUROBATS guidance. This is due to geographical differences: active season for bats is much shorter in Finland than in Central Europe. Also the high cost of thorough surveys seems to be an obstacle. Suitable carcass searching methods for the Finnish conditions are developed in a project in Southern Finland. The methods used in Central Europe may not be directly applicable to the boreal conditions.

Resolution 6.9: Year of the Bat

During 2011 and 2012, Year of the Bat activities were coordinated by a working group, which prepared an action plan and schedule of press releases for the year. The bat night organized in co-operation with local nature conservation NGOs was very successful: several bat walks and lectures took place in late August and early September gathering around 2,000 people. A themed

exhibition on bats, *Bats – Veiled as Vampires*, was inaugurated in the Finnish Museum of Natural History in November 2012 and was open till the beginning of 2014. After that the exhibition is circulating in and displayed by other museums.

References

- Fritzén, N. 2013: *Kvarken*Bats – migrerande fladdermöss i Kvarken. – *Ostrobothnia Australis* 16: 30–41.
- Jakava-Viljanen, M., Lilley, T., Kyheröinen, E-M. & Huovilainen, A. 2010: First encounter of European bat lyssavirus type 2 (EBLV-2) in a bat in Finland. – *Epidemiology and Infection* 138(11): 1581–1585.
- Lilley, T. 2012: Butyltin compounds in the food web: impacts on chironomids and Daubenton's bats. TURUN YLIOPISTON JULKAISUJA. ANNALES UNIVERSITATIS TURKUENSIS SARJA - SER. AII OSA - TOM. 273 BIOLOGICA - GEOGRAPHICA - GEOLOGICA. 116 p.
URL:
[<http://www.doria.fi/bitstream/handle/10024/84978/AII273LilleyDISS.pdf?sequence=1>]
- Liukko, U-M., Henttonen, H., Hanski, I. K., Kauhala, K., Kojola, I. & Kyheröinen, E-M. 2010: Nisäkkäät. In: Rassi, P., Hyvärinen, E., Juslén, A., & Mannerkoski, I. (eds.). Suomen lajien uhanalaisuus. Punainen kirja 2010. /The 2010 Red List of Finnish Species. Ympäristöministeriö & Suomen ympäristökeskus, Helsinki. pp. 311–319.
- Nokireki, T., Huovilainen, A., Lilley, T., Kyheröinen, E-M., Ek-Kommonen, C., Sihvonen, L. H. & Jakava-Viljanen, M. 2013: Bat rabies surveillance in Finland. *BMC Veterinary Research*. doi: 10.1186/1746-6148-9-174.
- Nummi, P., Kattainen, S., Ulander, P. & Hahtola, A. 2011: Bats benefit from beavers: a facilitative link between aquatic and terrestrial food webs. *Biodiversity and Conservation* 20:851–859.
- Rydell, J., Bach, L., Bach, P., Guia Diaz, L., Furmankiewicz, J. Hagner-Wahlsten, N., Kyheröinen, E-M., Lilley, T., Masing, M., Meyer, M.M., Petersons, G., Šuba, J., Vasko, V., Vintulis, V. & Hedenström, A. 2014: Phenology of migratory bat activity across the Baltic Sea and the south-eastern North Sea. – *Acta Chiropterologica* 16(1): 139–147.
DOI:10.3161/150811014X683354