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The Agreement on the Conservation of Populations of European Bats

National report 2014 on the implementation of the agreement in Norway

This report covers activities undertaken by Norway since June 2010 in relation to its obligations under the Agreement.

A. General information

Name of Party:	Norway
Date of Report:	June 2014
Period covered:	June 2010 – June 2014
Competent Authority:	Norwegian Environment Agency P.O. Box 5672 Sluppen, NO-7485 Trondheim, Norway.
Advisory Committee Member:	Per Ole Syvertsen (Norwegian Zoological Society - NZF)
Compilers of report:	Coordinator and Principal Adviser Øystein Størkersen (Norwegian Environmental Agency) and the Norwegian Zoological Society (Mr. P.O. Syvertsen, Mr. K. Isaksen and Mr. T.C. Michaelsen).

B. Status of bats in Norway

1. Summary of species occurring in Norway

Thirteen species of bats have been reliably recorded in Norway. One species (*Eptesicus serotinus*) has been added since the previous report, but the single record from 2011 is considered to be likely ship-assisted. At least eight species are known or believed to have regularly reproducing populations, while the remaining are possibly rare or irregular visitors. Seven species were included in the most recent National Red List 2010 (available also at the time of the previous report), while nine were listed in 1999 and six in 2006. Of these one was placed in the Near Threatened (NT) category and one in the Data Deficient (DD) category, cf. Kålås et al. (2010). Publication of a new Norwegian Red List for Species is scheduled for 2015.

The following brief description of status and trends for each species recorded in Norway is an update of the review given in the last national report (June 2010):

Myotis mystacinus
Whiskered bat/skjeggflaggermus
This species has been recorded from most counties in southern Norway, north to approximately 63°N on the coast, 62°N in the interior east. In western Norway *M. mystacinus* has been found to be not uncommon, although the status and distribution of this and the next species remain poorly known on a national scale. Relatively few colonies have been located. Wintering individuals are found in a number of localities. In SE Norway these are largely in abandoned mines. Autumn use of screes have been noted in western Norway, and it is likely that bats also hibernate in such.
Norwegian Red List status 2010: DD – Data Deficient.

Myotis brandtii
Brandt's bat/skogflaggermus (previously brandtflaggermus)
Records are dispersed over eastern and central Norway, north to approximately 63°50'N. The species appears to be absent or very rare in western Norway. Some colonies have been located in central and SE Norway. Wintering individuals are known from several localities in SE Norway.
Norwegian Red List status 2010: LC – Least Concern.

M. mystacinus/M. brandtii
Available data on distribution of *M. mystacinus* and *M. brandtii* in Norway show overlap of the two species in eastern Norway, but with a tendency for *M. brandtii* to have a more northern (boreal) distribution than *M. mystacinus*. Field records of unidentified *Myotis*, probably largely this species pair, indicate that occurrence may be more frequent than currently acknowledged.

Myotis nattereri
Natterer's bat/børsteflaggermus
Until the winter 2009/2010 only a few old records existed, the last from Oslo in 1961. More recently a hibernating individual was found in an old mine in SE Norway in January 2010, but there has been no further records. Status in Norway remains uncertain.
Norwegian Red List status 2010: CR – Critically Endangered.

Myotis daubentonii
Daubenton's bat/vannflaggermus
Daubenton's bat is now known to occur sparsely north to approximately 63°45'N in central Norway (i.e. near Trondheim). The species is widespread in sheltered localities along the coast southward from at least 62°30'N. In the interior east of the country it reaches right up to the foothills of the mountains at approximately 62°N. Search for colonies have been relatively limited, but roosts are known from, e.g., bridges and tree hollows. Its winter distribution is still poorly known, due to lack of investigations, and most records are from SE Norway.
Norwegian Red List status 2010: LC – Least Concern.

Pipistrellus pygmaeus
Soprano pipistrelle/dvergflaggermus

Distributed over large parts of S Norway, including the interior east where recorded north to approximately 61°30'N. On the west coast the species is found in sheltered localities north at least to about 62°30'N. It has also been encountered in central Norway, at approximately 63°N. Maternity colonies or indications of such are common in houses in S Norway. Hibernation of the species was unknown from Norway until February 2007 when an estimated 200 individuals were found hibernating in the brick walls of an old barn in SW Norway. Hibernation in Norway, perhaps primarily in buildings but also in bat boxes, may be more common than hitherto acknowledged, at least along the west coast.
Norwegian Red List status 2010: LC – Least Concern.

Pipistrellus pipistrellus
Common pipistrelle/tusseflaggermus
The first definite Norwegian records were made in 2007, when hunting animals on several occasions were encountered in Stavanger, SW Norway, based on analysis of recordings (by the observer and independently by a panel of international experts). No confirmed records exist so far from other areas in Norway.
Norwegian Red List status 2010: VU – Vulnerable.

Pipistrellus nathusii
Nathusius' pipistrelle/trollflaggermus
First recorded on the west coast in the 1990s, confirmed records in recent years have been made along the west and south coast from Ålesund in Møre og Romdal county to Vestfold county. Records exist from April to October. There are also autumn records from oil rigs off SW and central Norway. Whether records represent migration only, or if a breeding population also exist, is so far unknown.
Norwegian Red List status 2010: VU – Vulnerable.

Nyctalus noctula
Noctule/storflaggermus
First recorded in Rogaland county, SW Norway in 1987 (confirmed in 1995). Since 1992 recorded annually in E Norway where the species has been encountered north to 62°00’ N. Assumed to be breeding and migratory, but no colonies have yet been located.
Norwegian Red List status 2010: VU – Vulnerable.

Eptesicus nilssonii
Northern bat/nordflaggermus
The most common bat species in Norway, distributed over most of the country, frequently also in higher elevated regions and locally common even north of the Arctic Circle (although few records from Finnmark county and perhaps only vagrant north of 69°N). Colonies, often in houses, are widespread. Wintering localities mostly known from underground sites in S Norway, particularly in the SE where most surveys have been carried out, but also north to Nordland county in the north. Numbers found in such environs are, however, low, and screes may possibly be of greater importance.
Norwegian Red List status 2010: LC – Least Concern.

Eptesicus serotinus
Serotine bat/sørflaggermus

The first and so far only record of this species in Norway concerns an individual that was documented by sound recording on the coast at about 62°30' N in 2011. It is conceivable that the occurrence in this unexpected locality was due to ship-assisted transport.
Norwegian Red List status 2010: Not applicable.

Vespertilio murinus
Parti-coloured bat/skimmelflaggermus
Scattered records along the coast from SE Norway to Trondheim in the north, mostly of displaying males in autumn, with one single vagrant near the Barents Sea coast. No breeding colonies have as yet been conclusively identified. Probably hibernates regularly in buildings, with the first record made in 1996, but may also be partly migratory.
Norwegian Red List status 2010: NT – Near Threatened.

Barbastella barbastellus
Barbastelle/bredøre (previously bredøreflaggermus)
Known from four old records, all from inner parts of the Oslo Fiord and most recently in 1949, until rediscovered in December 2006 when a single individual was found hibernating in an old disused water tunnel in Larvik, Vestfold county, SE Norway. The species has wintered here most winter since (with a maximum of two individuals). Searches for summer hunting grounds have so far not been successful.
Norwegian Red List status 2010: CR – Critically Endangered.

Plecotus auritus
Brown long-eared bat/brunlangøre (previously langøreflaggermus)
Widely distributed in S Norway with a few scattered records also from Central Norway (to about 64°N). Roosts have to a large extent been found in churches. Hibernating animals are mainly known from SE Norway with a few records also from the west coast.
Norwegian Red List status 2010: LC – Least Concern.

2. General population status and population trends

Most information on bat distribution in Norway result from surveys over the last 20-25 years, surveys that have had occurrence mapping as their main objective. A limited summer monitoring project based on transect lines was initiated in 2005, while a continuous time series for a few selected hibernation sites exists back to 1991. The data sets have not yet been analysed for trends. Tentative assessments are, however, indicated in Table 1.

Species	Distribution	Status/pop. trends
M. mystacinus	Widespread	Stable?
M. brandtii	Local/Widespread	Stable?
M. nattereri	Local/Rare	?
M. daubentonii	Widespread	Stable?
P. pygmaeus	Local/Widespread	Stable?
P. pipistrellus	Local/Rare	?

P. nathusii	Local?	?
N. noctula	Local	Stable?
E. nilssonii	Widespread	Stable?
V. murinus	Local	?
B. barbastellus	Local/Rare	?
P. auritus	Widespread	Stable?

Table 1. Summary of distribution and status of all bat species in Norway in 2014. Scant information exist on the status and in particular population trends for the species in Norway, the information in the table is thus only tentative (based on data from NZF)

3. Habitats and roosts

A national Government program for mapping of important sites for biological diversity (flora and fauna) ran in the period 1998-2004, and was superseded by the establishment of the Norwegian Biodiversity Information Centre (www.artsdatabanken.no) in 2006. Sectors and land planners and users can access the information from the national Portal "Naturbase" (http://www.miljødirektoratet.no/no/Tjenester-og-verktoy/Database/Naturbase/). Identification of important bat sites, such as maternity or wintering sites, form part of the site registry. This information must be used by planners and other sectors involved in any potential use of identified sites, cf. requirements by the Nature Diversity Act (2009). The mapping of important sites is regarded as one of the most important activities by bat researchers in Norway. Current status is far from representing a near-complete coverage of the country, although some effort has been directed to all 19 counties.

Concerning summer roosts buildings of different types is important for some species, and may contain colonies of large groups of bats. Buildings, including church attics and towers, seem to be favoured at least by Northern bats, Soprano pipistrelles and Brown long-eared bats. Tree hollows are, however, also likely to be important for several species. Increased use of bat boxes or bat houses in recent years indicates that these may be preferred over buildings in some areas. Winter hibernation sites are mostly known in abandoned mines, probably due to ease of access for researches. The apparent importance of screes is also becoming increasingly acknowledged and would merit further study.

4. Threats

1. The most well known threats in the summer are against colonies and during the winter by disturbance inside mines or caves.
2. Restoration of old houses and closing of cavities and entrance holes are probably important negative factors in relation to private houses. Removal of bats from houses by extermination companies were banned in 1981. No exception to the ban has been issued after 1990.

3. General deterioration of the cultural landscape by continued drainage, removal of "waste land" etc. in combination with intensification of cultivation and use of pesticides has probably contributed much to deterioration of foraging possibilities. Abandonment of grazing in the areas outside of the more intensively cultivated areas has changed the cultural landscape of Norway dramatically in the latter half of the last century. The effects on bat populations cannot be ascertained today. A reduction in the occurrence of old trees with cavities suitable as roosts for bats has taken place both in the cultural landscape and in forested areas.
4. The use of chemical treatment on fresh timber has been abandoned, while the use of preservatives on building materials may still be a cause of concern if this is used in parts of houses where bats occur. Norway adheres to EU regulation on chemical treatment of materials.
5. The disturbance in mines and caves (often unwittingly) can be a serious problem for bats. Closure of winter sites may alleviate the situation. Whether such disturbances have any serious effects on Norwegian bat populations is not known.
6. General lack of knowledge among the public may in some instances give cause for concern.

5. Data collection, analysis, interpretation and dissemination

The Norwegian Zoological Society (NZF) is the main actor in collection of distributional data on bats in Norway. An atlas project, covering all wild mammals, was initiated in 1994, and the database currently holds an extensive number of records. In May 2008 a web-portal for registration of observations of mammals, reptiles and amphibians was launched by The Norwegian Biodiversity Information Centre ("Artsdatabanken"), and the NZF then assumed the role of verifying agency for records of bats. Furthermore, bat specimens are held in public natural history museums all over Norway. Several of these institutions are also contributing to the data sets maintained by the Global Biodiversity Information Facility.

C. Measures to implement Article III of the Agreement

6. Legal measures for the conservation of bats and their implementation

The Wildlife Act of 1981 gave total protection to all species of bats. With the entry into force in 2009 of a Nature Diversity Act, focus shifted more to management of species and habitat in order to maintain viable populations. Nevertheless, intentional killing or removal of bats is banned under both statutes. Every year, however, a number of inquiries on this subject are still presented to the authorities. These are sought solved through advice and consultation with parties concerned, cf. NZF's alarm telephone for bat inquiries and a national network of bat specialists. Catching of bats for scientific purposes is not exempt from the Wildlife Act/Nature Diversity Act as special permits must be issued by the Norwegian Environment Agency (as the national wildlife authority). In the period 2010-2014 nine permits to catch bats for identification and ringing in different studies were issued. One study also included tagging with radio transmitters. Permits to ring bats in low numbers have been given annually, including ringing of bats released after being handled at the national rescue centre.

On June 19th 2009 a new Nature Diversity Act was accepted by the Parliament, and entered into effect from July 1st 2009. One main goal is to increase the protection of rare species and their sites, and fundamental to this is the collation of information and involvement of other sectors. A concrete follow up of this new legislation is the implementation of the new national action plan for bats, a draft of which was produced by the Norwegian Zoological Society in 2009 and this still forms the basis for implementation of requirements of MoP6 Resolution 16.

As part of the nationwide mapping of biological diversity and important sites, the focus has been to supply information on sites in relation to the requirements of the Nature Diversity Act in relation to all planning and building activities. Information and guidelines in relation to this are being developed continuously.

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

Grilling or locking of caves/mines used by bats is among the most concrete examples of actions in relation to bat protection. However, so far this has been conducted only at two sites, by initiative of the Norwegian Zoological Society (one of which sponsored by the Norwegian Environment Agency). In addition conservation measures have been implemented to protect and conserve important maternity colonies in some churches in Norway. These efforts have been conducted in cooperation between involved parties like NGOs, church wardens and government institutions. No conservation area (nature reserve or habitat management area) specifically for bats has been established in Norway.

8. Consideration given to habitats which are important to bats

The knowledge of bat distribution and status is still too scanty to play an important role in the establishment of nature protection sites, other than being a contributing factor. However, as a follow up of EU's Natura 2000 and the Emerald Network of the Bern Convention, important sites for bats forms part of the implementation of Emerald Network in Norway.

Initiatives for developing a new national action plan for all species of bats started in 2009. The plan contains a systematic plan for mapping, monitoring and protecting bats in Norway. The plan is managed by the Norwegian Environment Agency in close collaboration with the Norwegian Zoological Society. The following tasks are included in the action plan:

1. Project on mapping and monitoring; strategy and review of existing data.
2. Continued support towards ongoing projects on bat boxes.
3. Monitoring of bat boxes, and issuance of manual on bat boxes
4. Radio telemetric studies to identify new habitats used during winter hibernation
5. Monitoring of underground sites with infrared sensors/camera
6. Bat boxes at important migration sites
7. Research in a large colony of pipistrelle bats
8. Public awareness activities

9. Measures to raise public awareness and bat conservation

The Norwegian Environment Agency annually support activities in Norway on public awareness and in relation to bat conservation in general. In particular these activities include:

1. A 24hrs alarm telephone for bat inquiries operated by NZF. Many calls and e-mails have been handled in the report period (in 2012 and 2013 in the range of 150 to 200), of which most were concerns about maternity colonies. These requests also give an opportunity to map colonies and species, and importantly to give best advice on maintenance. Most people react positively to the advice given.
2. The International Bat Night in late summer has become an annual event, usually held ca. 12 places around the country and drawing some 500-700 participants.
3. Bat-pages on the Internet are continuously updated, cf. www.zoologi.no.
4. Information has been distributed through numerous articles in newspapers and through radio- and TV-interviews.
5. A national rescue centre for injured or disabled bats was established in 2001 near Oslo (operated by NZF) and has frequently been utilised by the media. Although the number of bats held there at any time is low, eight species has now treated at the centre.
6. A small building constructed as a combined maternity and winter site was erected in cooperation with a private enterprise in 2009. The building was meant as a substitute for a demolished barn previously used as a maternity roost. Although not yet occupied by bats, it is also a visitor centre.

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

The Norwegian Zoological Society (NZF) was appointed as the Norwegian member of the Advisory Committee in 2001. The society will appoint a representative to the meetings and conduct intersessional work. Mr. Per Ole Syvertsen has been appointed as such and still acts as the Norwegian representative to the AC. He commenced his work in 2000 and has participated in most AC meetings since 2001. Jeroen van der Kooij was the Norwegian representative at the meeting in Lithuania in 2004, and Øystein Størkersen in Germany in 2010. Norway did not participate in the AC meeting in Greece in 2014.

The Norwegian Environment Agency acts as the national management authority coordinator and in relation to issues handled by the Advisory Committee and delegates from Norway.

11. Additional measures for bat conservation

With regard to national mapping of the distribution of vertebrate species (cf. national mammal atlas and mapping of biodiversity projects by the municipalities), and evaluation of their important sites, emphasis has been put on dissemination of information to relevant authorities in relation to activities by the local municipalities

and the sectors in general. As a further follow up of the Convention on Biodiversity a national mapping programme in each municipality was concluded in 2004, but is still supplemented by other major programmes. Known important sites for bats, be it maternity sites, roosts or feeding areas, are included. Particular emphasis is on the protection of sites with red listed species. A national threatened species unit (Norwegian Biodiversity Information Centre) was established in January 2006 and has been tasked to continue mapping of sites and collate observations. This unit focus on collection and maintaining databases and serve as a focus point for further information on distribution and population status. The first and second national red list from this unit was published in 2006 and 2010.

In relation to resolutions accepted by the Parties at MoPs, the Norwegian Environment Agency expects further cooperation in relevant fields with important sectors such as maintenance of cultural heritage sites and road constructors.

12. Existing and planned programmes for bat conservation

Main initiatives have been:

Due to a lack of knowledge of bat distribution and their status in Norway, the emphasis has so far been on the general mapping of the distribution of the different species. A number of county governors and municipalities have in recent years sponsored such mapping activities. As a consequence of the decisions made by the Parties to the MoP2 the Norwegian Environment Agency has funded an evaluation of the resolutions in relation to national implementation and in particular Res. no. 4 from MoP2 on habitat proposals (published 1999).

In 2006 the Norwegian Environment Agency initiated work on a new national action plan for bats. A draft was submitted in 2009 and implementation is ongoing. The plan also includes an update of the knowledge on bats in Norway.

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

No specific instances of harm towards bats due to the use of pesticides or the effects of wood preservatives have been registered in Norway. The current impact of these chemicals is probably low, due to a ban on the use of the most dangerous chemicals. However, if the use of wood preservatives is a source of concern, points of recommendation should be implemented. More strict regulations on wood preservatives were implemented as of 2003 to comply with the EU Directive 201/82/EC. A separate report on the use of different substances in Norway has been forwarded to a EUROBATS working group.

The Norwegian Environment Agency has contacted the national veterinary authorities relating to the use of antiparasitic drugs for livestock. Apparently level of use is low (if any at all) and comply with EU-standards.

D. Functioning of the Agreement

14. Cooperation with other Range States

Except participation in international meetings of the Agreement or relevant seminars/symposiums, and activities within intersessional working groups, no specific contact with other Parties or nations have been conducted.

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

Comments on current and relevant resolutions:

MoP2 Resolution No. 2: Consistent Monitoring Methods
No national initiative. Norwegian bat researchers will normally adhere to international standards. A project on selecting consistent monitoring methods will be carried out as part of the new national action plan.

MoP3 Resolution 4: Guidelines for the issue of permits for bat ringing
The Norwegian Zoological Society is working on a manual, which will form the basis for training and licensing of personnel.

MoP4 Resolution 4: Bat conservation and sustainable forest management
The sustainable management of forests is a prerequisite for all planning in the agricultural sector. To aid the sector a brochure on forests and bats has been issued in cooperation with the Ministry for Agriculture (2003). A study into summer habitat preferences of forest bats in western Norway has been completed and publication of results is under preparation (T.C. Michaelsen).

MoP4 Resolution 5: Guidelines for the use of remedial timber treatment
Norway implements the EU directive on the use of chemical components. Further cooperation with the cultural heritage sector is planned within the new national action plan.

MoP4 Resolution 6: Guidelines for the issue of permits for the capture of wild bats
The guidelines have been the basis for handling of application for exemption from the ban of catching bats for scientific studies.

MoP4 Resolution 11: Recognizing the role of NGOs
The national management authority relies on close cooperation with the Norwegian Zoological Society (NZF) regarding bat issues. The NZF acts as the Norwegian representative to the Advisory Committee.

MoP5 Resolution 2: Bat rabies in Europe
Awareness has been raised among involved bat workers, and Imovax inoculations have at times been offered by the authorities.

MoP6 Resolution 5: Guidelines on ethics for research and field work practices

A draft code of conduct was established in Norway 1997 in relation to the need for ringing and handling activities. The code contains similar pre-cautionary approaches and terms for projects and ringing activities as the resolution.

MoP6 Resolution 7: Conservation and management of critical feeding areas, core areas around colonies and commuting routes
Any available information (cf. the national Portal "Naturbase") on eg. bats must be considered in land use planning, and mitigation or avoidance must be implemented, cf. Nature Diversity Act (2009). Update of "Naturbase" relies on continued mapping and other projects.

MoP6 Resolution 8: Monitoring of daily and seasonal movements of bats
Identified in the draft national action plan for bats as a prioritized item. Depends on project funding and capacity.

MoP5 Resolution 6: Wind turbines and bat populations
Bats are included in the evaluation programmes for new sites for wind turbines. Ongoing research aim at mapping the occurrence and possible migration routes of *P. nathusii* along the south coast, in order to evaluate potential conflict with wind turbine projects. Such mapping needs to be carried out in other geographic areas as well.

MoP6 Resolution 11: Wind turbines and bat populations
Acknowledged as an issue by the industry and an compulsory part of any IA-studies. Eurobats Publication Series no 3 is of helpful assistance.

MoP6 Resolution 12: Bat conservation and sustainable forest management
Cf. MoP6 res. 7.Heavily dependent on available information if guidance is to be specifically implemented on identified sites.

MoP6 Resolution 15: Impact on bat population of the use of antiparasitic drugs for livestock
Norway complies to the EU Directive 2001/82/EC (6. Nov. 2001). Further guidance is needed to strengthen national compliance and approach.

MoP6 Resolution 6.16: Implementation of the conservation and management plan (2011-2014)
A draft national action plan from 2009, although not formally finalized, is still underpinning national priorities according to activities in the resolution.

1. Legal requirements: All bats are protected. The Nature Diversity Act (2009) has improved the situation regarding protection of sites.
2. Population survey and monitoring: General mapping of the distribution of bats has continued in the period, and remains a priority. A proposal to focus on migratory routes and critical foraging sites has been evaluated and will be a part of the draft national action plan for bats. The national Red List (2010) produced by the Threatened Species Unit and their select expert committee has screened information and species status.
3. Roosts, cf. point 2 above and our separate report to Eurobats.
4. Foraging habitats, cf. point 2 above.
5. Promoting public awareness: Much effort has been put into public awareness. Mainly through the use of web sites and interviews with the

media (TV, radio and newspapers). The International Bat Night is arranged a number of places each year. A national alarm telephone is operative, as is a national rescue centre for temporarily disabled bats. Both acts as effective channels for public awareness. Both acts as effective channels for public awareness.

6. Pesticides: Information from the national animal health authority indicates that this is generally not in use. The use of such chemicals will have to follow relevant EU directive.
7. International co-operation: Appointed experts from the Norwegian Zoological Society have participated in relevant meetings.

E. Selected new literature (2010-2013)

The following publications relate to Norwegian bats, their distribution or ecology. Only publications with at least a summary in an international language are included.

Michaelsen, T.C. & Almstad, J. 2010. Can soprano pipistrelles *Pipistrellus pygmaeus* help fruit growers to reduce impact of the apple fruit moth *Argyresthia conjugella*? – *Fauna*, Oslo 62 (3): 118–121. (In Norwegian with English summary).

Michaelsen, T.C. & Almstad, J. 2010. A successful bat box for soprano pipistrelles *Pipistrellus pygmaeus*. – *Fauna*, Oslo 62 (3): 122–125. (In Norwegian with English summary).

Michaelsen, T.C. 2010. Steep altitudinal gradients can benefit lowland bats. – *Folia Zoologica*, Brno 59 (3): 203–205.

Syvertsen, P.O., Isaksen, K., Olsen, K.M., Ree, V., Solheim, R. & Wiig, Ø. 2010. New Norwegian names for mammals, with an updated national species list. – *Fauna*, Oslo 63 (2): 50–59. (In Norwegian with English summary).

Isaksen, K. & Nyfors, E. 2011. Winter activity pattern of Soprano Pipistrelles *Pipistrellus pygmaeus* in a colony in Southwest Norway. – Poster at 12th European Bat Research Symposium, Vilnius, Lithuania 22-26 August 2011.

Michaelsen, T.C. 2011. Movements of bats in western Norway. – *Fauna*, Oslo 64 (1): 31–43. (In Norwegian with English summary).

Michaelsen, T.C. 2011. Bat activity along a Norwegian fiord. – *Fauna*, Oslo 64 (2–4): 80–83. (In Norwegian with English summary).

Michaelsen, T.C. 2011. BCI bat houses pay off in Norway. – *Bats*, Austin, Texas 29 (3): 9–11.

Michaelsen, T.C. & Olsen, O. 2011. Northern bats *Eptesicus nilssonii* with untypical pulse intervals and high peak frequencies. – *Fauna*, Oslo 64 (2–4): 84–87. (In Norwegian with English summary).

Michaelsen, T.C., Jensen, K.H. & Högstedt, G. 2011. Topography is a limiting distributional factor in the soprano pipistrelle at its latitudinal extreme. – *Mammalian Biology* 76 (3): 295–301.

Michaelsen, T.C., Olsen, O. & Bjordal, H. 2011. Winter records of soprano pipistrelles *Pipistrellus pygmaeus* in their maternity roosts in western Norway. – *Fauna*, Oslo 64 (2–4): 88–92. (In Norwegian with English summary).

Frafjord, K. 2012. Observations of a merlin (*Falco columbarius*) hunting northern bats (*Eptesicus nilssonii*) in midnight sun (Northern Norway) – *Nyctalus (*N.F.), Berlin 17 (1-2): 120–124.

Michaelsen, T.C. 2012. Bat diversity in a fiord landscape in Norway. – *Fauna*, Oslo 65 (1–2): 22–29. (In Norwegian with English summary).

Michaelsen, T.C. & Grimstad, K.J. 2012. A suitability test of bat boxes at northern latitudes in Scandinavia. – *Fauna*, Oslo 65 (1–2): 30–38. (In Norwegian with English summary).

Michaelsen, T.C. & Olsen, O. 2012. Tagesaktivitäten, Nutzung ungewöhnlicher Habitate und Verhalten der Kleinen Bartfledermaus (*Myotis mystacinus*) in den nördlichen Breiten von West-Norwegen. – *Nyctalus (*N.F.), Berlin 17 (1-2): 64–67.

Frafjord, K. 2013. Climate change reduces the world's northernmost bat population. Pp. 75–87 *in*: Geyer, G.A. (Ed.). *Bats: phylogeny and evolutionary insights, conservation strategies and role in disease transmission*. – Nova Science Publishers, New York.

Frafjord, K. 2013. Influence of night length on home range size in the northern bat *Eptesicus nilssonii*. – *Mammalian Biology* 78 (3): 205–211.

Michaelsen, T.C., Olsen, O. & Grimstad, K.J. 2013. Roosts used by bats in late autumn and winter at northern latitudes in Norway. – *Folia Zoologica*, Brno 62 (4): 297–303.