



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère du Développement durable
et des Infrastructures

Administration de la nature et des forêts



7th Session of the Meeting of Parties

Brussels, 15 - 17 September 2014

National Implementation Report of Luxembourg

A. General Information

| | |
|------------------------------------|--|
| Name of Party: | Luxembourg |
| Date of Report: | 10 th August 2014 |
| Period covered: | June 2010 - May 2014 |
| Competent Authority: | Dr. Laurent Schley / Dr. Jan Herr, <i>Administration de la nature et des forêts</i> , 16 rue Eugène Ruppert, L-2453 Luxembourg |
| Member of the Advisory Committee: | Ms. Edmée Engel / Mr Jacques Pir (<i>Musée national d'histoire naturelle</i> , 25 rue Münster, L-2160 Luxembourg) |
| Abbreviations used in this report: | ANF - Administration de la nature et des forêts MNHNL - Musée national d'histoire naturelle |

B. Status of Bats within the Territory of the Party

1. Summary Details of Resident Species

21 bat species have been recorded in Luxembourg, of which one species, *Rhinolophus hipposideros*, is considered to be extinct. This leaves the number of bat species currently known to be present in Luxembourg at 20.

Table 1: Bat species recorded in Luxembourg and number of the known summer nursing roosts/colonies and winter roosts.

0: extinct; 1: threatened by extinction; 2: highly threatened; 3: threatened; V: near threatened; DD: data deficiency.

* no discrimination of *Myotis mystacinus/brandtii* were made during winter census

** newly discovered during the reporting period (see Gessner 2012 under C.12)

| species | National red list status (cat.: | Nb. of known summer roosts/colonies | Number of known winter roosts |
|---|---------------------------------|-------------------------------------|-------------------------------|
| 1. <i>Rhinolophus ferrumequinum</i> | 1 | 1 | 18 |
| 2. <i>Rhinolophus hipposideros</i> | 0 | -- | -- |
| 3. <i>Barbastella barbastellus</i> | 1 | 1 | 1 |
| 4. <i>Eptesicus nilssonii</i> | DD | (1) | 0 |
| 5. <i>Eptesicus serotinus</i> | 3 | >16 | 9 |
| ** 6. <i>Myotis alcathoe</i> | DD | 0 | 1 |
| 7. <i>Myotis bechsteinii</i> | 2 | 18 | 10 |
| 8. <i>Myotis brandtii</i> | 1 | (1) | 57* |
| ** 9. <i>Myotis dasycneme</i> | DD | 0 | 1 |
| 10. <i>Myotis daubentonii</i> | 3 | 3 | 17 |
| 11. <i>Myotis emarginatus</i> | 1 | 10 | 10 |
| 12. <i>Myotis myotis</i> | 2 | 13 | 34 |
| 13. <i>Myotis mystacinus</i> | 2 | 1(2) | 57* |
| 14. <i>Myotis nattereri</i> | 2 | >5 | 3 |
| 15. <i>Nyctalus leisleri</i> | 3 | >5 | 0 |
| 16. <i>Nyctalus noctula</i> | 2 | 0 | 3 |
| 17. <i>Pipistrellus nathusii</i> | DD | 0 | 0 |
| 18. <i>Pipistrellus pipistrellus</i> | V | >50 | >5 |
| 19. <i>Plecotus auritus</i> | 3 | 6 | 11 |
| 20. <i>Plecotus austriacus</i> | 2 | 14 | 11 |
| 21. <i>Vespertilio murinus</i> | DD | 0 | 0 |

2. Status and Trends

Table 2: Assessment of the conservation status of bat species in Luxembourg including national red list status and accordance to the National report to Habitat Directive (92/43/CEE) in 2013 (period 2007-2012).

Red list categories: 0: extinct; 1: threatened by extinction; 2: highly threatened; 3: threatened; V: potentially endangered; DD: data deficiency.

Conservation status: FV: favourable; U1: unfavourable – inadequate; U2: unfavourable – bad; XX: not known.

Trend in conservation status: =: stable; ?: unknown; -: declining

| species | National red list status (cat.) | Assessment conservation status (Habitat Directive) | Trend conservation status (Habitat Directive) |
|--------------------------------------|---------------------------------|--|---|
| 1. <i>Rhinolophus ferrumequinum</i> | 1 | U1 | = |
| 2. <i>Rhinolophus hipposideros</i> | 0 | U2 | = |
| 3. <i>Barbastella barbastellus</i> | 1 | U2 | ? |
| 4. <i>Eptesicus nilssonii</i> | DD | U1 | ? |
| 5. <i>Eptesicus serotinus</i> | 3 | U1 | - |
| ** 6. <i>Myotis alcathoe</i> | DD | / | / |
| 7. <i>Myotis bechsteinii</i> | 2 | U1 | = |
| 8. <i>Myotis brandtii</i> | 1 | XX | ? |
| ** 9. <i>Myotis dasycneme</i> | DD | XX | ? |
| 10. <i>Myotis daubentonii</i> | 3 | FV | / |
| 11. <i>Myotis emarginatus</i> | 1 | U1 | = |
| 12. <i>Myotis myotis</i> | 2 | U1 | - |
| 13. <i>Myotis mystacinus</i> | 2 | XX | ? |
| 14. <i>Myotis nattereri</i> | 2 | U1 | ? |
| 15. <i>Nyctalus leisleri</i> | 3 | U1 | ? |
| 16. <i>Nyctalus noctula</i> | 2 | U2 | - |
| 17. <i>Pipistrellus nathusii</i> | DD | XX | ? |
| 18. <i>Pipistrellus pipistrellus</i> | V | FV | / |
| 19. <i>Plecotus auritus</i> | 3 | U1 | ? |
| 20. <i>Plecotus austriacus</i> | 2 | U1 | ? |
| 21. <i>Vespertilio murinus</i> | DD | U2 | ? |

3. Habitats and Roost Sites

The habitats and habitat trends of all bat species were included in the 2013 National report to the Habitat Directive.

Table 3: Assessment of the habitat and habitat trend of all bat species of Luxembourg in accordance to the National report to Habitat Directive (92/43/CEE) in 2013 (period 2007-2012).

Conservation status: FV: favourable; U1: unfavourable – inadequate; U2: unfavourable – bad; XX: not known.
Trend in conservation status: =: stable; ?: unknown; -: declining

| species | National red list status (cat.) | Habitat assessment (Habitat Directive) | Habitat trend (Habitat Directive) |
|--------------------------------------|---------------------------------|--|-----------------------------------|
| 1. <i>Rhinolophus ferrumequinum</i> | 1 | U1 | ? |
| 2. <i>Rhinolophus hipposideros</i> | 0 | XX | / |
| 3. <i>Barbastella barbastellus</i> | 1 | U2 | = |
| 4. <i>Eptesicus nilssonii</i> | DD | U1 | ? |
| 5. <i>Eptesicus serotinus</i> | 3 | U1 | - |
| ** 6. <i>Myotis alcaethoe</i> | DD | / | / |
| 7. <i>Myotis bechsteinii</i> | 2 | U1 | ? |
| 8. <i>Myotis brandtii</i> | 1 | XX | / |
| ** 9. <i>Myotis dasycneme</i> | DD | XX | / |
| 10. <i>Myotis daubentonii</i> | 3 | FV | / |
| 11. <i>Myotis emarginatus</i> | 1 | U1 | - |
| 12. <i>Myotis myotis</i> | 2 | U1 | = |
| 13. <i>Myotis mystacinus</i> | 2 | FV | ? |
| 14. <i>Myotis nattereri</i> | 2 | U1 | ? |
| 15. <i>Nyctalus leisleri</i> | 3 | U1 | ? |
| 16. <i>Nyctalus noctula</i> | 2 | U2 | - |
| 17. <i>Pipistrellus nathusii</i> | DD | XX | / |
| 18. <i>Pipistrellus pipistrellus</i> | V | FV | / |
| 19. <i>Plecotus auritus</i> | 3 | U1 | ? |
| 20. <i>Plecotus austriacus</i> | 2 | U1 | ? |
| 21. <i>Vespertilio murinus</i> | DD | U2 | ? |

4. Threats

Pressures and threats to bat populations in Luxembourg are as follows; major pressures and threats to bats are highlighted in bold.

- **use of biocides**, hormones and **chemicals**;
- **removal of hedgerows, copses and scrub**;
- artificial planting on open ground (non-native trees);
- **removal of dead and dying trees**;
- **construction of roads, motorways**;
- recreational cave visits;
- other outdoor sports and leisure activities;
- **closures of caves or galleries**;
- different forms of pollution;
- **reduction of prey availability**;
- **reduction or loss of specific habitat features (demolition or renovation of traditional constructions)**;
- **anthropogenic reduction of habitat connectivity**;
- **wind energy production.**

5. Data Collection, analysis, interpretation and dissemination

Since 2010/2011 a national monitoring programme for bats was set up under the '*Plan national pour la protection de la nature (PNPN)*'. All known reproduction sites of the five bat species of appendix II under Habitat Directive occurring in Luxembourg are monitored in a regular turn by Biological stations and bat workers under the coordination of Ministry of sustainable development and infrastructures (MDDI, Environment department). The results will be collected in the national database of MNHNL so that population trends and success of conservation measures of species actions plans can be measured.

C. Measures Taken to Implement Article III of the Agreement

6. Legal measures taken to protect bats, including enforcement action

The Bat Agreement came into force on 5th August 1993. All bat species are protected by law in Luxembourg (law of 19th January 2004 and ruling of 9th January 2009). A five-year nature protection plan was presented in May 2007 by the Ministry of Environment (PNPN1). Within this framework, the Mammal Group of the MNHNL proposed action plans for various endangered bat species (*R. ferrumequinum*, *M. emarginatus* and *M. myotis*). The following species action plans have been written up: *R. ferrumequinum*, *M. emarginatus*, *B. barbastellus* and *M. bechsteinii*).

A second five-year nature protection plan (PNPN2) is currently in preparation.

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

Whereas the major roosting sites of house dwelling bats and most of the underground hibernating sites are well known, the same is not true for tree-roosting bats. For this reason, more survey work was undertaken to identify key sites for tree-dwelling bats (e.g. *M. bechsteinii* and *B. barbastellus*) in forests. An additional 8 *M. bechsteinii* roost sites have been located since 2009 as well as the first known nursing colony of *B. barbastellus*. Moreover, new nursing colonies are detected in urban areas through public awareness campaigns. During the reporting period new reproduction sites/colonies could be detected for *M. bechsteinii* (total number of known colonies n = 18), *B. barbastellus* (n = 1) and *M. emarginatus* (total number of known colonies n = 9-10). The discovery of the first known maternity roost of *B. barbastellus* in Luxembourg, during a study initiated by the MNHNL, was a special highlight.

8. Consideration given to habitats, which are important to bats

A solution to secure the last reproduction colony of *R. ferrumequinum* was found. The Government of Luxembourg acquired the building holding this important colony of 150 adults together with some 630 adults of *M. emarginatus*. Habitat management for bats within the home range of that colony is ongoing.

In the former iron ore mining region of southern Luxembourg special consideration is given to securing the former underground mines as important wintering sites for bats. Through monitoring activity at secured sites and sites to be secured in the future it is hoped to develop more viable solutions for bats, while not neglecting addressing public safety concerns.

The ANF released instructions for designating and protecting patches of old growth forest with old trees and dead wood within all public forests. While these instructions are not solely directed at bat protection, their implementation should also be beneficial for forest dwelling bat species.

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

Several International bat nights and bat events were organized throughout the country during the reporting period: in Remerschen (26.06.2010); Bech-Kleinmacher (2.07.2011); Kockelscheuer/Luxembourg (16.06.2012); Bettendorf (16.06.2013); Koerich (21.06.2013); Ellergronn/Esch-sur-Alzette (28.06.2013 & 7.06.2014); Soleuvre (11.07.2014). Interested people watched live infrared camera transmission from a nursing colony of bats. This was followed by a bat detector watch. Several hundreds of people attended these happenings and observed bats emerging from the roosts. Infrared video projection, workshops for children and bat-walks gave the visitors an insight into the biology of bats.

In February 2014, the ANF published a French version of an existing booklet (previously only available in German) about house-dwelling bats, which informs private owners on the importance of conservation of urban bats. This publication can be downloaded at www.emwelt.lu. The Germany version of this booklet was also reedited.

Moreover, the MNHNL developed a mobile exhibition on bats destined for museums, schools, nature visitor centres, which will be available soon.

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

In accordance with article III.5 of the Agreement, the responsible body is the ANF. In collaboration with the MNHNL, advice is given to people having bats in their houses.

A bat line (bat@anf.etat.lu) has been active since 2005, to consult bat experts to indicate presence of bats in their buildings and to get advice or help of all kind relating to bats.

11. Additional action undertaken to safeguard populations of bats

- The project '*combles & clochers*' to open attics of churches and public buildings was carried on by the Biological stations with financial support of the Ministry of sustainable development and infrastructures (MDDI) and ANF with now over 75 attics opened as potential roost sites for bats.
- Transformation of 2 derelict buildings into bat houses, carried out by the ANF.

12. Recent and ongoing programmes (including research and policy initiatives) relating to the conservation and management of bats. In the case of research, summaries of completed projects should be provided, giving references where possible and acknowledging the sources of funding.

The national species action plan for *M. bechsteinii* could be finished in 2014. It includes habitat requirements as well as an actual overview of all known summer colonies (n=18) for Luxembourg. A summary of conservation recommendations and photographs of characteristic colony trees and habitats should help foresters to identify and protect the habitats of this endangered leading target species for old grown deciduous forest ecosystems in Luxembourg. Finally a potential habitat modelling map was established for *M. bechsteinii* to integrate its conservation needs countrywide in forest management plans.

A national species protection programme was set up in order to preserve commuting flight paths and hunting areas of the last reproduction colony of *R. ferrumequinum* in the upper Moselle valley. While first protection actions could be implemented (orchards planted, extensive cattle grazing contracts with farmers, opening of old barns etc.), a research project financed by the ANF had the aim to calculate a modelling approach of the habitat connectivity by cost-distance analysis of the population of greater horseshoe bats in Luxembourg, Northern France and Western parts of Germany. These results should identify areas with high habitat connectivity potential to allow transboundary conservation measures to preserve this endangered bat species for our region.

After having nearly been extinct for Luxembourg, a nursing colony of *B. barbastellus* could be detected in the Southeast of Luxembourg in a study commissioned by the MNHNL. By radiotracking, a colony of 31 adult individuals could be found behind the bark of oaks in a mixed deciduous forest. The results of this study should enlarge the knowledge of ecological habitat requirements of one of the rarest bat species of Luxembourg and suggest first implications for conservation of its wooded habitats.

The MNHNL initiated a 3-year project on *M. myotis* to detect reasons for the ongoing decline or even disappearance of known maternity colonies throughout the country.

The 1st case of bat rabies (EBLV-1b strain) for Luxembourg was detected in May 2013. A serotine bat (*Eptesicus serotinus*) bit a man in the head while he was asleep. The bat was caught and sent to a laboratory in France for testing. The results were published in *Zoonoses and Public Health* (see below).

Research papers and books published:

- Dawo, B., E.K.V. Kalko & M. Dietz, 2013. Spatial organization reflects the social organization in Bechstein's bats. *Annales Zoologici Fennici* 50: 356-370.
- Dietz, M. & J.B. Pir, 2011. Distribution, Ecology and Habitat Selection by Bechstein's Bat (*Myotis bechsteinii*) in Luxembourg. *Ökologie der Säugetiere* 6, Laurenti Verlag Bielefeld, 88 pp.
- Dietz, M., J.B. Pir & J. Hillen, 2013. Does the survival of greater horseshoe bats and Geoffroy's bats in Western Europe depend on traditional cultural landscapes? *Biodiversity and Conservation* 22: 3007-3025.
- Gessner, B., 2012. Teichfledermaus (*Myotis dasycneme* Boie, 1825) und Nymphenfledermaus (*Myotis alcathoe* Helversen & Heller, 2001), zwei neue Fledermausarten für Luxemburg. *Bull. Soc. Nat. luxemb.* 113 : 137-140. http://snl.lu/publications/bulletin/SNL_2012_113_137_140.pdf
- Harbusch, C. & D. Weber : Fledermäuse (Mammalia , Chiroptera) aus Höhlen des Großherzogtums Luxemburg. IN : Weber, D. (ed.) : Die Höhlenfauna Luxemburgs. *Trav. Sci. Mus. Nat. Hist. Nat., Lux., Ferrantia* 69 : 395 – 406.
- Mestdagh, X., H. Baltus, L. Hoffmann & N. Titeux, 2012. Découverte de chauves-souris au nez blanc au Luxembourg. *Bulletin de la Société des naturalistes luxembourgeois* 113: 141-149. http://www.snl.lu/publications/bulletin/SNL_2012_113_141_149.pdf
- Pir , J.B., 2013: Vorkommen der Bechsteinfledermaus (*Myotis bechsteinii*, Kuhl 1817) an ihrer westlichen Verbreitungsgrenze in Europa. In: Dietz, M. (Hrsg.): Populationsökologie und Habitatansprüche der Bechsteinfledermaus *Myotis bechsteinii*. – Beiträge zur Fachtagung Bad Nauheim 25.-26.02.2011: 193-203.
- Pir, J.B. & M. Dietz, in press. Erste Wochenstubenkolonie der Mopsfledermaus (*Barbastella barbastellus* Schreber, 1774) in Luxembourg. *Bulletin de la Société des naturalistes luxembourgeois*.
- Servat A., J. Herr, E. Picard-Meyer, L. Schley, C. Harbusch, C. Michaux, J. Pir, E. Robardet, E. Engel, F. Cliquet, in press. First isolation of a rabid bat infected with European bat lyssavirus in Luxembourg. *Zoonoses and Public Health*.

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

To date, no research has been carried out on the effects of pesticides on bats in Luxembourg. However, pesticides are no longer used in public forests. A list of harmless timber treatment products is available upon demand.

D. Functioning of the Agreement

14. Cooperation with other Range States

- For species action plan *R. ferrumequinum* faecal samples were analysed by a common project on the diet of the species by the 'Bayrisches Landesamt für Umwelt'.
- Voluntary contribution for EPI projects in other range states.

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

15.1. MOP 2 Resolution No. 2.2 / MOP 5 Resolution 5.4: Consistent Monitoring Methodologies, Monitoring of Bats Across Europe

- In order to fulfil reporting obligations in relation to article 17 of the Habitats Directive, a nationwide monitoring programme is carried out since 2010/2011 (s.o.) and first results are expected for the next reporting period of the Bat Agreement.

15.3 MOP 2 Resolution No. 4: Transboundary Programmes, Habitat Proposals / MOP 4 Resolution No. 4.3: Guidelines for the Protection and Management of Important Underground Habitats

- New perspectives were achieved together with ARCELOR/MITTAL and the 'Inspection du Travail et des Mines (ITM)' for the protection of some 150 abandoned iron ore mines in the South of Luxembourg for bats. Fenced entry protections will now allow both to secure and protect problematic mine entries as hibernating sites for endangered bat species as *R. ferrumequinum*, *M. emarginatus*, *M. myotis* and several other bat species.

15.4 MOP 4 Resolution No. 4.4 / MOP 6 Resolution 6.12: Bat Conservation and Sustainable Forest Management

- Species action plan on *Myotis bechsteinii* mostly directed at sustainable forest management for this species.
- Internal instruction for the designation and protection of old growth forest patches with large trees and dead standing wood in all publicly owned forests.

15.5 MOP 4 Resolution No. 4.6 / MOP 5 Resolution 5.5: Guidelines for the Issue of Permits for the Capture and Study of Captured Wild Bats

- Article 33 of the Nature protection bill (Loi modifiée du 10 janvier 2004 concernant la protection de la nature et des ressources naturelles)

15.6 MOP 4 Resolution No. 4.7 / MOP 6 Resolution 6.11: Wind Turbines and Bat Populations

- Pre-construction impact assessments are required and routinely done for all wind turbine projects

15.7 MOP 4 Resolution 4.12: Priority Species for Autecological Studies

- Species action programme for *Rhinolophus ferrumequinum* was carried on with studies on commuting flight paths and habitat use by radiotracking several individuals and completing radiotracking studies carried out 15 years ago. Areas with ecological deficits could be identified, conservation measures proposed and further nature compensation measures proposed (Dietz et al. 2013).

15.8 MOP 5 Resolution No. 5.2: Bat Rabies in Europe

- In May 2013, bat rabies was evidenced for the first time in Luxembourg (southern city of Differdange). The rabies virus, an EBLV-1b strain, was diagnosed in a serotine bat that bit a 29-year-old male person while he was asleep. The man received rapidly a post-exposure RABV treatment and was put under strict medical supervision (Servat et al. In press).

15.11 MOP 6 Resolution No. 6.6: Guidelines for the Prevention, Detection and Control of Lethal Fungus Infections in Bats

- A bat monitoring programme in Luxembourg has been initiated in 2010-2011 and this programme includes an underground, hibernation sites survey. This study summarizes the state-of-the-art knowledge of the white-nose syndrome. Mesdagh et al (2012, full reference above) provide an indication of the existence of *Geomyces destructans* in Luxembourg through visual clues (white fungal growth around the nose of several hibernating bats), but did not carry out genetic identification of the fungus.

15.12 MOP 6 Resolution No. 6.7: Conservation and Management of Critical Feeding Areas, Core Areas around Colonies and Commuting Routes

- Guidance document identifying all known and potential commuting and migration routes between the roost site, critical feeding areas and potential wintering sites of the sole *Rhinolophus ferrumequinum* colony in Luxembourg
- Bats and their feeding areas are one of the most important factors being taken into account in the ongoing revision of all legally binding land-use plans in Luxembourg

15.13 MOP 6 Resolution No. 6.8: Monitoring of Daily and Seasonal Movements of Bats

- No bat banding projects were carried out in Luxembourg during the reporting period.

15.14 MOP 6 Resolution No. 6.9: Year of the Bat

- Public awareness raising through press releases, radio interviews and bat walks in 2011 and 2012

15.17 MOP 6 Resolution No. 6.15: Impact on Bat Populations of the Use of Antiparasitic Drugs for Livestock

Livestock kept in pastures is regularly treated for parasites, even in areas with special bat species action plan.

The following measures were taken:

- Organization of a workshop for cattle breeders on the use of antiparasitic drugs and their effects on biodiversity and the environment
- Awareness raising of this issue with the veterinary administration in Luxembourg
- Training for veterinary practitioners on the effects of antiparasitic drugs on dung fauna and biodiversity in general.
- Contract with a cattle breeder preventing the use of antiparasitic drugs in two key foraging areas of the sole colony of *Rhinolophus ferrumequinum* in Luxembourg