Annex 1 to Resolution 6.4, amended by Resolution 7.15

Standard Format for Final Reports

1. **Project title/ Name of the Country** Exploring and mitigating the threat of Lloviu virus re-emergence in Central European *Miniopterus schreibersii* populations / Hungary, Austria, Slovakia, Romania, Serbia, Croatia, Slovenia, Bulgaria, Bosnia & Herzegovina
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5. **Region of project implementation** Central and East Europe, the Balkans
6. **Project period** July 2019 – December 2019 (originally planned for three years duration and we plan to continue conservation and science dissemination work in the following years)
7. **Report on implementation and development**

   a) Monitoring of *M. schreibersii* colonies

   More than 40 sites were visited in the project area and colony countings were made more than 60 times. Threatening factors and other information were collected from every site.

1. Figure Colony in a Romanian cave

2. Figure One of the largest Hungarian colony

b) Population genetic analysis of the species

Samples were collected from sites in Hungary, Romania, Bosnia and Herzegovina, Serbia, Slovenia, and Bulgaria. The preliminary analysis of the samples shows that there are no deep divergences between these colonies. As Schreiber's bat is a migratory species, direct gene-flow may occur between closer areas.

3. Figure Researchers during work

4. Figure Handheld Schreiber's bat in Romania

5. Figure Tissue sampling for population genetic study

c) Viral study

We collected information on dead bats found in caves, but fortunately no other places are threatened by the virus, it occurred only in one Hungarian place since the project start. The virology group, together with the Hungarian Defence Forces searched for infected bats in the field. Samples from Schreiber's bats were taken after catching in front of the roost and were molecularly screened immediately. Samples from positive bats allowed the isolation of Lloviu virus, which was the second time of a successful isolation of a Filovirus from a bat (the earlier was Marburg virus). Ectoparasites were also found positive and may play a role in the infection of the bats. These are all ground-breaking results which can help to hinder larger epidemics.

6. Figure Blood sampling for virology study. The bats do not feel anything from the process

7. Figure After sampling a coagulant immediately stops bleeding

d) Raising public awareness

Radio interviews were made in Hungary and several bat protection activities were conducted in the project countries which included non-professionals participants and children. More work can be done in relation with the virus after getting the final results of the project.

Without the collaborative partners, the site surveys (including description of threatening factors), the colony countings and the tissue sampling could not have been done. This program underlines the need of cooperation across borders as nature, including bats and their viruses do not know artificial boundaries.

8. Problems occurred during the project, species concerned

As many partners are included in the project sampling was not always easy to organize in this short period of time. Some countries could not included into the analysis as sampling permissions were not available due to the short time.

9. Contribution of the project to the objectives of the EUROBATS Agreement (with special reference to bat conservation, research, public awareness and international cooperation, recommendation (if applicable))

Resolution 2.4: Transboundary Programme: Habitat Proposals
Resolution 4.11: Recognising the Important Role of Non-Governmental Organisations (NGOs) in Bat Conservation
Resolution 5.4: Monitoring Bats across Europe
Resolution 5.11: Geographical Scope of the Agreement
Resolution 6.8: Monitoring of Daily and Seasonal Movements of Bats

Resolution 7.6: Conservation and Management of Important Underground Sites for Bats
Resolution 7.8: Conservation and Management of critical Feeding Areas, Core Areas around Colonies and Commuting Routes
Resolution 7.13: Implementation of the Conservation and Management Plan
2. Population Survey and Monitoring
3. Roosts
4. Habitats
5. Promoting Public Awareness of Bats and their Conservation and Providing Advice
7. International co-operation
8. Diseases

10. **Products (e.g. records, publications, workshops, seminars) and other outcomes of the project** (identify the host or local authorities that received or will receive copies of the information).

Detailed reports on the results of both the monitoring, the population genetic study and the virological part are under writing. A scientific article about the new virological findings is almost ready and is intended to be submitted into a high-ranking journal. Local authorities will be informed about how they can maintain their *Miniopterus schreibersii* populations and what should they do to prevent further spreading of the disease.

11. **Detailed financial report** (all expenditures explained and copy of receipts enclosed)

Task/item	**Cost (In-kind or from other resources, indicate)**	**EPI funding obtained**	**EPI funding used**
Population genetics laboratory costs	500 €	3200 €	3200 €
Virological laboratory costs	6000 €		
Per diem (incl. fuel costs, etc.)		4600 €	4600 €
Field equipment (mist-nets, harp-traps, lamps, etc.)	3000 €	1300 €	1700 €
Sampling material (sterile tubes, silica gel, etc.)	500 €	500 €	
Publication	1000 €		

Current expenses (postage, etc.)		200 €	300 €
Sum	11000 €	9800 €	9800 €
Total sum		20800€	

Population genetics laboratory costs were used for sequencing and microsatellite analysis of samples collected in the frame of the project.

Per diem costs were used to cover the per diem and transport costs of the project participants to be able to do the field work.

We got in-kind funding for sampling materials and split the 500 EUR EUROBATS support between field equipment and current expenses rows.

Equipment costs were raised with 400 EUR. Equipment costs include batteries, lamps, power chargers, and a field notebook.

Current expenses were higher than expected, altogether 300 EUR.

12. Summary (a short article with the most important outcomes to be put online on the EUROBATS website. The final report and the summary should contain acknowledgements to the donor countries that funded the project).

In the frame of the EUROBATS EPI, “Exploring and mitigating the threat of Lloviu virus re-emergence in Central European *Miniopterus schreibersii* populations” most of the Schreiber’s bats’ roosts were visited and surveyed in six Central European and Balkan countries. These surveys included colony counting and the analysis of threatening factors, as well as tissue sampling for population genetic study of the species.

Deaths as the result of Lloviu-virus infection occurred also after the submission of the proposal to EUROBATS. Fortunately, only few dead bats were found in this further case. Our collaborative virology team, together with the Hungarian Defence Forces managed to find the virus on-site with molecular methods and samples from several infected individuals allowed us to isolate the virus. This is the second case of isolation of a Filovirus from bats beside Marburg filovirus.

The preliminary population genetic results show that there is no well-supported structuring between the different Schreiber’s bat colonies included into the analysis. This indicates that there is gene-flow between different geographic areas, which is not surprising as the species can cover long distances during migration. According to the virological results, bats which seem to be healthy can also be infected with the virus, hence they may transport the disease between colonies. This result is alarming as the species is threatened by several different factors throughout its distribution.

We are indebted to the German Government for the support of this project.