

19th Meeting of the Standing Committee
26th Meeting of the Advisory Committee

Online Meeting, 9 – 12 May 2022

Record of the Advisory Committee Meeting



1. Attendance

This is listed in Annex 1 to the Record.

2. Opening remarks

In opening the meeting, Mr. Andreas Streit, EUROBATS Executive Secretary, explained that Ms. Barbara Geschier, EUROBATS administrative Focal Point for Belgium and Chair of the Standing Committee (StC), would preside over the plenary part of the joint meeting on Monday and that Professor Danilo Russo, EUROBATS scientific Focal Point for Italy and the Chair of the Advisory Committee (AC), would lead the plenary on Thursday.

Ms. Geschier greeted all the delegates. As she was new to EUROBATS, she had been very much looking forward to meeting all the participants, but unfortunately, it was this time not possible to meet in person. She mentioned that EUROBATS had shown enormous flexibility in switching quickly to an online meeting and thanked the Secretariat for its support in this regard. She concluded by wishing all the participants a fruitful meeting.

Professor Russo expressed his pleasure to be together with the EUROBATS focal points and experts. It would have been much better if everybody could finally meet in person after two years of COVID-19 pandemic, but Professor Russo was optimistic that the following meeting would be a face-to-face one. Finally, he emphasised the importance of this meeting and expressed his hope that the goals to be achieved would be formulated during the next few days. He also wished success to all the participants.

Mr. Streit addressed the delegates as well. He regretted that, in the end, the meeting had to be held online. Unfortunately, under the circumstances, video

conference was the only plausible option, but the Secretariat hoped and asked all the participants to prepare for the upcoming 9th Session of the Meeting of the Parties (MoP9) in October being held in person. Mr. Streit was glad to see all the participants. The previous day marked the end of World War II. It made him sad to see that Europe was again being ravaged by a new war. However, he was glad that the friends from Ukraine, though under difficult conditions, were both doing well and could join the meeting.

3. Adoption of the Agenda

(Doc.EUROBATS.StC19-AC26.1a.rev.2)

Ms. Geschier asked whether there were any remarks on the agenda. There being no comments, the agenda was adopted unanimously.

4. Adoption of the Rules of Procedure

(Doc.EUROBATS.StC19-AC26.3a)

Mr. Streit explained that the Rules of Procedure for the Advisory Committee remained unchanged. In the Rules of Procedure for the Standing Committee there was only a minor amendment which the StC requested at their previous meeting. Namely, it was added to the rules that every second StC meeting should be held online. There being no remarks, the rules were adopted unanimously.

5. Summary reports by the represented Parties and Non-Party Range States

Representatives of the Parties, Non-Party Range States, and observers of the meeting gave a short report of their activities since AC25.

BELGIUM

During the winter of 2019-2020 normal bat census counts were done in the large number of bat hibernation sites in all 3 regions. In Flanders, numbers of *M. daubentonii* are still only half of what they were at the beginning of the millennium, with no clear reason(s) identified for the decline.

In April 2020, following the advice of the IUCN SSC Bat Specialist Group on the prevention of risks related to COVID-19, all bat activity in the field was put on hold. All regions put a lot of effort in drafting procedures which would allow a limited number of long-term field studies to continue. Wallonia allowed a controlled restart, while the Flanders and Brussels regions shut down all activities until the second half of 2021. With high infection rates of minks and other mammals, the risk to

have the bat population become a reservoir for COVID-19 was evaluated as too high. Co-ordinated by the Agency for Nature and Forest (www.natuurenbos.be), Flanders put up two schemes of COVID testing: Firstly, bats (n = 116) and other mammals in rescue centres were tested for SARSCoV2 prior to release and were all negative. Secondly, bats found dead in Flanders were collected and tested on SARSCoV2 (n = 240). These were also all tested negative.

Some other work was carried on during the COVID pandemic. The red list of bats in Wallonia was updated in 2021. Belgium (Wallonia) contributed to the French project related to bat migration by sending large amounts of automatic recordings of bats.

After the rediscovery of colonies in Flanders in the previous reporting period, and within the work of the EU-LIFE Belgian Nature Integrated Project (www.life-bnip.be), a first colony of Barbastelle bats has been found in Wallonia. An action plan for the Barbastelle is currently being developed. Within the same framework of the LIFE BNIP, a new action plan for the conservation of horseshoe bats in Wallonia has been drafted, to be launched in 2022 for the two horseshoe bats species involved.

In the framework of the EU-LIFE vallées Ardennaises project, a small section to advance the local knowledge of *M. bechsteinii*, *M. dasycneme* and *M. myotis* has been included, with special focus on structures near rivers (bridges) and forest management. Three specific Walloon actions plans will be drafted.

In 2021, Plecotus (www.natagora.be) and Natagriwal (www.natagriwal.be) launched a study on cattle stables as bat hunting sites. This study proposes to assess the importance of this form of anthropogenic habitat for Belgian bat populations. It is hoped that this might lead to new perspectives, new management practices, and specific arrangements for bats in farm buildings. By the beginning of 2022, authors from Natuurpunt (www.natuurpunt.be), the Flemish Research Institute for Nature and Forest (www.vlaanderen.be/inbo), and the Radboud Institute for Biological and Environmental Sciences (RIBES), Nijmegen NL (www.ru.nl/ribes), submitted a ground-breaking paper on the automated registration of bat hibernation numbers in large man-made hibernation structures, and the consequences for the extrapolation to overall bat numbers. A PhD thesis

is running at the University of Liège on the microbiome of selected European bats species.

BOSNIA AND HERZEGOVINA

The problems with the deposit of the instrument of accession of Bosnia and Herzegovina have finally been resolved. The winter monitoring of bats throughout Bosnia and Herzegovina has been completed owing to a project supported by the German Federal Ministry of the Environment, Nature Conservation, Nuclear Safety and Consumer Protection. Additionally, a regional conference using the Zoom platform has been organised. The number of species of bats in Bosnia and Herzegovina is 32. The Ministry of Environment has been warned that the number of protected bat species is far below the number of known species in Bosnia and Herzegovina. The publication of the Journal for bat research of Balkans “Hypsugo” has continued.

CROATIA

The Croatian fauna database (that will include all bat data) as part of the Nature Protection Information System is still under development and its finalisation is planned by the end of 2023.

Development and testing of the national bat-monitoring programme started end of December 2021. It is conducted by Geonatura d.o.o. and should be finished by September 2023. Important results are updates of internationally important underground sites and a list of internationally important overground roosts.

Croatia is currently implementing the national strategic project “Development of Natura 2000 management framework in Croatia”. One of the activities of this project is the elaboration of management plans for 40% of Natura 2000 areas in Croatia, including Natura 2000 sites designated for bat conservation.

Due to the COVID-19 pandemic, on the 3rd June 2020, the Institute for Environment and Nature published and distributed recommendations for researchers and cavers regarding precautionary measures to minimize the risk of transmitting SARS-CoV-2 from humans to bats, (<http://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/bioraznolikost/sismisi/preporuke-iz-mjera>) which are included in all new permissions for bat research issued by the Ministry. Research was not forbidden, as well as caving or cave research, since it

was impossible to control such measures. Therefore, it was recommended that people should not visit caves when huge colonies were present (a list of underground sites was included in the recommendation). Nevertheless, most bat monitoring stopped in the year of 2020 due to the pandemic of COVID-19 or was performed on a limited basis.

Overground roosts are continuing to be under significant threats, even those in which bats are conservation targets.

Regarding the implementation of mitigation measures for the windfarm Jelinak (with one of the highest mortality rates recorded compared to EUROBATS collisions/mortality data), the legal options to prescribe mitigation measures that are different from the ones in the construction permit are still being considered by the Ministry, although certain mitigation measures are proposed based on the monitoring results and implemented by the owner.

Regarding light pollution, two new regulations are under preparation: 1) lighting plans and 2) measurement of emitted light. It is expected that, together with the law on protection against light pollution from 2019 and regulation on enlightenment zones, permitted lighting values and methods of managing of enlightenment systems from 2020 light pollution will be minimized in the next decade (<https://www.ecolex.org/details/legislation/law-on-the-protection-against-light-pollution-lex-faoc191885/>).

CZECH REPUBLIC

All the bat related activities have been influenced by COVID-19 lockdown and restrictions. The following bat monitoring and survey programs have started and continue:

- Long-term monitoring (hibernacula; maternity colonies);
- Short-term monitoring (occurrence of bats in buildings across the whole country as well as bats in old trees in parks);
- Local surveys;
- Cooperation with France on pan European monitoring of migration routes (<https://bat-migration-europe.netlify.app/>);

- Cooperation in LIFE PODKOWIEC PLUS project with Poland, Czech Republic, and Slovakia concerning *Rhinolophus hipposideros*.

The following conservation projects have been concluded:

Bats, Buildings and Insulation:

- An online workshop has been organized by the Ministry of Environment together with CBCT members on Bats, Insulation and Lining Material for Parties and Non-Party Range States. Applications were received from 18 countries.
- Six online workshops focused on bats in buildings for stakeholders.
- Project on conservation of bats in towns.

Bats and traffic:

- Two bachelor theses on bat mortality surveys (mostly *Myotis* sp. and *Pipistrellus* sp.); research on acoustic activity recorded by automatic bat detectors placed around and under bridges.

Bats and forests:

- Online workshops focused on bats in old trees with participation of stakeholders.

Education, public events, promotion:

Most of the promotion work has been done by the NGO Czech Bat Conservation Trust (ČESON), and, locally in Prague, also by the NGO Nyctalus. Lots of activities have been conducted online or were designed as a family activity with instructions on the internet:

- IBN at 46 sites
- public events and programs for schools involving bats (more than 100)
- Itinerant exhibition „Bats – mysterious and vulnerable “
- Gradual translation of the website www.napude.sousednetopyr.cz into English
- Inter-branch biological excursion concerning European ecosystems (including bats) – in cooperation with Bulgaria

- Norway funding – the project „Winged neighbours “
- Questing and geocaching routes for families with instructions on the internet
- Online educational programs „Bat evening-party “
- Project „Learn a mysterious life of the bats“ for maternity and grammar schools
- Project „Hidden life insights“
- Annual award to bat-friendly sites (buildings, schools, castles, etc.)
- Update and print of the brochure ”Methodology of care for found, injured and handicapped bats” (the Czech version).

ESTONIA

The Action Plan for protection of bats has been completed and will be presented for public hearings soon. Bats are included in conservation objectives of 32 Natura 2000 sites in Estonia.

Species status according to IUCN red list criteria was assessed in 2020 (https://loodusveeb.ee/sites/default/files/inline-files/elk_2020_est.pdf):

Pipistrellus pipistrellus LC, *Nyctalus noctula* NT, *Eptesicus nilssonii* LC, *Myotis daubentonii* LC, *Pipistrellus nathusii* LC, *Myotis dasycneme* LC, *Myotis brandtii* LC, *Myotis nattereri* DD, *Plecotus auritus* LC, *Myotis mystacinus* DD, *Vespertilio murinus* LC.

Project LIFE EstBat

The four-year project LIFE EstBat has been successfully finalised. Four *Myotis dasycneme* wintering sites have better conditions now. All entrances in all project sites are secured with temporary electronic security systems (off-grid video surveillance by security company) and all entrances are also fenced. A 24m long culvert (with 2m in diameter) has been placed into Piusa caves against the collapsing roof of the cave. Three project sites have included cleaning work with voluntary camps. Securing environmental conditions in the Humala project site was done in the summer of 2021. Permanent electricity connections into all project sites and security systems for securing site entrances have been installed.

Raising Public Awareness

The Night Flyers exhibition has opened in the Estonian Museum of Natural History and was very popular in 2021 and 2022. In the museum there is a special programme for smaller children about the secret life of bats:

<https://www.loodusmuuseum.ee/et/classes/nahkhiirte-salajane-elu>

An open Facebook group is active to inform public about how to handle bats.

International Bat Night was celebrated with public excursions in 5 old parks.

FINLAND

The 15th European Bat Research Symposium was organized in May 2021 as an online congress due to the COVID-19 pandemic. The organizers were researchers and students of the BatLab Finland research group. Though an online symposium is not the same as meeting people in person, many efforts were made to include social activities and relaxing moments to the programme. The feedback was very positive.

Compared to previous years, a bigger funding for bat monitoring and other tasks related to bat conservation and research of the Finnish Museum of Natural History Luomus has been received. For example, this enables acoustic bat monitoring at research stations across Finland, launching a new monitoring scheme for volunteers as well as continuing winter censuses and coordinating bat banding activities.

Concerning NGOs' activities, the association devoted to bat conservation, the Finnish Chiropterological Society, has been accepted as a member to the Federation of the Finnish Learned Societies (www.tsv.fi). The society was established in 2002 and is celebrating 20 years of work for bats. In 2019, the society started publishing a yearly magazine on bat research, conservation, surveys, public outreach, and other topics related to bats.

FRANCE

With relation to the National Action Plan 2016-2025 (<https://plan-actions-chiropteres.fr/>), the following points should be highlighted: meeting of the stakeholders of the regional action plans (24-26 November); revision of the roost site ranking (from international to a local concern), web-conference on light

pollution (166 attendants); new exhibition on bats in buildings; dissemination of three newsletters per year

(<https://plan-actions-chiropteres.fr/publications/chiropteres-infos>).

A biennial meeting of French bat workers was organized by the Natural History Museum of Bourges in March 2022 – It was a web conference attended by ca. 300 people. The museum has collected the published reports and papers on French bat research and conservation (<http://www.museum-bourges.net/chauve-souris-bibliographie-fran%C3%A7aise-80.html>).

The Atlas of the French Wild Mammals: After marine mammals, ungulates and Lagomorphs, Carnivores and Primates, the fourth volume devoted to bats has been launched, covering 175 species on ca. 800 pages.

Concerning the annual meeting of the national bat representatives, the following should be highlighted: National project on Schreibers' bat monitoring by acoustic counting at roost entrance; evaluation of feasibility of a national project on noctule bat study and conservation; call for implementing the national synthesis on tree roosts for bats; draft of a leaflet on creative conservation of bats in underground sites.

The international project on bat migration routes in Europe coordinated by the National Museum of Natural History: This project relies on the analysis of overnight acoustic recordings from many places owing to a European collaborative network (the first video meeting took place last autumn).

Publications: two issues of *Envol des Chiros* (numbers 30 and 31) have been published by SFEPM (free for members of the Society, available on request), including:

a final report on forest rivers as bat foraging areas, impact of wind farms on bats, assembling Teensy Recorders, and regional news:

(<https://www.sfepm.org/publications-sur-les-chauves-souris.html>);

Report on improving a dark sky network including bat conservation:

(http://www.trameverteetbleue.fr/sites/default/files/references_bibliographiques/guide_trame_noire_ofb_ums_cpa39_mai.pdf);

Report of the bat SOS network prepared as master thesis; numerous unpublished reports or papers in local journals.

GEORGIA

From the activities that have been carried out in Georgia since the last meeting, the following should be highlighted:

- Georgia is updating the National Red List. In the new Red List, six species of bats are considered as threatened species.
- A project on small mammal's DNA-barcoding and verification of faunal composition is being implemented. In the frame of this project, samples of 25 bat species have been collected and results of sequencing will be uploaded in the GenBank.
- In 2021, two new maternity colonies were found: one of *Myotis blythii* and another mixed maternity colony of *Rhinolophus ferrumequinum* and *Myotis emarginatus*.

GERMANY

Several projects are ongoing on the federal level as well as on the level of the federal states, as already mentioned last year: e.g. on the grey long-eared bat and insect decline, on the barbastelle, on bat migration across the North and the Baltic Sea.

A new project on bats and light has just been assigned to the IZW (Leibniz-Institute for Zoo and Wildlife Research) and will start in the next days. It focuses on the brown long-eared bat and commuting routes.

After federal elections in autumn and the formation of a new government, the Ministry for Environment is now under the leadership of a Green Minister and has gained the responsibility for Consumer Protection too.

The new German government consistently pursues the expansion of the renewable energies in accordance with species protection laws. Some legal adjustments are to be expected. Many federal states are already in the process of updating their guidelines on wind turbines and species conservation.

In parts this is accompanied by research projects of the Federal Agency for Nature Conservation, e. g. on the question of disturbance of bats by operating wind turbines, highlighting the question of threshold values and the discussion on how the protection of bats can be ensured best.

Concerning individual species, there seems to be a very positive trend for the lesser horseshoe bat. For example, in one winter roost in Saxony-Anhalt the number of bats has risen from under 200 specimens in 2010 to more than 1,300 specimens last winter. This is also due to successful measures for exclusion of predators being implemented. The positive trend has been observed also in other federal states.

For the barbastelle, it has been observed that the species often chose colder sites for hibernation, which could be interpreted as a reaction to the more moderate temperatures in the last winters.

HUNGARY

A wide range of bat conservation activities were carried out in 2021 and 2022 in Hungary, including research, practical conservation, and education (public awareness raising). A brief overview of these is presented below. It is important to mention that the field research and public events in the recent period were greatly limited due to the pandemic. Precautionary measures were recommended for researchers and cavers to minimize the risk of transmitting COVID from humans to bats, including the temporary suspension of all ringing activities.

Research activities:

- A countrywide monitoring programme was launched in 2004 which includes the long-term survey on the trends in bat populations to introduce effective conservation management based on the collected data. The programme involves the regular monitoring of hibernating sites (e.g. caves, mine tunnels), summer roosts in buildings (e.g. churches, castles), swarming sites, the regular checking of the roosts of the Schreibers's bat (*Miniopterus schreibersii*) and the monitoring of the impact of different bat conservation activities. The programme is still ongoing. In 2021-2022, 49 different hibernating sites (caves or mine tunnels), 141 roosts in buildings, 9 swarming sites and 9 roosts of Schreiber's bat were surveyed. Most of the statistical analyses have not indicated significant changes in population sizes, but the decline in the number of large *Myotis* is alarming.
- Outstanding results have been achieved in the research of diseases threatening bats, particularly in the case of the recently discovered Lloviu cuevavirus (LLOV), which caused massive die-offs in the Mediterranean

region in the early 2000s. In 2016, LLOV also was detected during the investigation of *Miniopterus schreibersii* fatalities in Hungary. In 2021 and 2022, significant information was gained about the distribution, biology, genetics, and pathogenic potential of the virus in the country.

- Microclimate is measured at 10 different sites to assess and evaluate the impact of climate change on bats in maternity roosts.
- Between the 15th and 17th of October 2021 the XIIIth Hungarian Bat Research and Protection conference was held in Kecskemét. About 20 presentations were held during the three days. There was also a short field trip during which participants installed bat boxes.

Conservation activities:

- At least 30 summer roosts in buildings have been cleaned and maintained for bats.
- Progress has been made in regulating the renovation of buildings. As bat protection measures became more widely known, many buildings have been renovated this way.
- Numerous bat boxes and other artificial roosts have been placed in forests and on buildings. At least 200 boxes have been made in recent years.
- In 2021, the number of bats in need of rescue increased at an unprecedented rate. This could be the result of a growing aversion due to the epidemic situation. Approximately 1,000 animals were rescued and some 200 received longer or short-term care and treatment.
- As an indirect conservation activity, but a relevant achievement, a new guide entitled 'Public lighting and wildlife protection' was published in 2019. The publication includes a section on bats. This is a professional guide for nature conservation authorities and national park directorates to support decision-making on applications for the installation or replacement of outdoor lights or light sources. Even though it is not obligatory, nature conservation authorities and national park directorates use this guideline for environmental impact assessment, other ecological assessment, project planning, etc.

Public awareness raising activities:

- International Bat Nights have been organized by national park directorates.
- Permanent and temporary poster and photo exhibitions have been organised by national park directorates and the BirdLife Hungary Mammal Working Group.
- An educational booklet 'Batmania' has been published in Hungary in Hungarian, Slovak, Romanian and Ukrainian as a result of an international project.
- A small new exhibition about bats has been established in Northeast Hungary (Szinpetri), with interactive elements, beside the Bat Museum which is in Southwest Hungary (Abaliget). So, there are now two such exhibitions in the country.
- More than 50 presentations and lectures have been held in primary schools about bats.
- News about bats (e.g. 'The bat species of the month' series) and different guidelines on the protection of bats (e.g. how to save bats, how to make bat boxes) are published regularly on the website of BirdLife Hungary (<https://www.mme.hu/tevekenyseg/denevervedelem>).

IRELAND

The report on the latest phase of the National Bat Monitoring Programme (2018-2021) has just been published

<https://www.npws.ie/sites/default/files/publications/pdf/IWM137.pdf>. It brings together the results of four separate bat monitoring schemes which between them provide trend data on seven of nine bat species occurring in Ireland: car transect monitoring; waterways monitoring and roost monitoring for both lesser horseshoe bat and long-eared bats. The trends for most species are positive or at least stable. Despite an increasing population trend, however, the range of the lesser horseshoe bat is contracting. Addressing this issue will be a focus of conservation measures over the coming years. A second concern is that a robust monitoring method for two of the species – *Myotis nattereri* and *M. mystacinus* – has still not been found. Woodland trials for these species were conducted in 2021 using Audiomoth and the voluminous data gathered by this method is still being

analysed. It remains to be seen whether this approach may have potential for wider roll-out. The contract to manage the National Bat Monitoring Programmes for the next five years has been advertised online and this new contract is expected to be up and running in time for the 2022 summer monitoring season.

A small project to survey for migrating Nathusius' pipistrelles was undertaken by the Irish Nathusius' Pipistrelle Group in 2021 with funding from the National Parks & Wildlife Service. The project involved the deployment of 10 Audiomoth recording devices at 10 coastal sites in the south-east of the country. Nathusius' pipistrelles were recorded at several locations, including in quite large numbers at one coastal lake, but it was not clear if these were resident or migrating individuals. Follow up monitoring is planned for this site in 2022.

Some modelling on the likely impact of climate change on Irish bats has also been completed and it led to a scientific publication which can be viewed on open access here:

<https://www.sciencedirect.com/science/article/pii/S2666900521000113?via%3Dihub>

In 2021 a new project looking at the ecosystem service provided by bats was begun in University College Dublin, co-ordinated by Prof. Emma Teeling. This project will investigate the invertebrate prey of widespread bat species in Ireland using DNA bar-coding. It will provide a deeper understanding of the diet of these species and provide insights into how this predation may help with the control of agricultural pests. More information about the project can be found here: <https://www.ucd.ie/earth/newsevents/news/body,562733,en.html>.

Finally, an updated version of the Irish national Bat Mitigation Guidelines has just been published. The Guidelines are aimed at developers and their ecological consultants in particular. These guidelines take into account the latest advice and publications from EUROBATS, particularly in relation to wind farms, light pollution and the importance of foraging and commuting routes. The new guidelines can be found here:

<https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf>.

ISRAEL

The Israel Nature and Parks Authority (INPA) together with the Mammal Center of the Society for Protection of Nature in Israel (an NGO) have continued expanding

the National Monitoring Plan for Israel's bat species. During the ninth year of monitoring, more than 100 sites (roost and foraging sites) throughout the country were surveyed. No significant trends were observed compared to previous years for most cave roosts.

The INPA is currently working on revising the Israeli Red Data Book for mammals and conducting dedicated surveys for this purpose.

In mid-May 2020, the Israel Nature & Parks Authority (INPA) closed three caves inhabited in large numbers by multiple bat species, for public visitation during the COVID-19 lockdown in Israel, following consultation with EUROBATS and other experts. The INPA also issued safety instructions for scientific work on bats and for bat rehabilitators. The cave visitation restrictions were lifted in mid-April 2021, following a reassessment by the INPA.

Wind Farm Planning: The Israeli National Planning Commission has formally adopted a comprehensive methodology for minimizing risk to both bats and birds, as part of a master plan for energy infrastructure (TAMA 41). Suggested by INPA together with the Environmental ministry, the methodology includes sensitivity mapping, proper survey techniques and methodology, mortality thresholds, collision-risk modelling (for birds), requirements for an annual take permit by the INPA, post-construction surveys and commitment for increased monitoring and active measures if mortality thresholds are exceeded. The 2014 EUROBATS Guidelines for wind turbines were translated to Hebrew and have been greatly implemented for both the planning and operational stages.

142 bats of 6 species have been discovered so far in monitoring of two small windfarms now operational: *Pipistrellus kuhlii*, *Rhinolophus ferrumequinum*, *Rhinopoma cystops*, *Rhinopoma macrophylum*, *Tadarida teniotis*, *Taphozous nudiventris*. Calculated mortality for 2020 was 4.3 bats/turbine/year at Gilboa wind farm and exceeded 10 bats/turbine/year at Sirin wind farm.

Major efforts have been successfully made to combat light pollution in protected areas and with major infrastructure projects. Current knowledge on the effects on nocturnal wildlife and in particular bats, as detailed in the 2018 published EUROBATS Guidelines on light pollution, is incorporated in addressing the issue.

International Bat Night was not celebrated during 2021 because of COVID-19 restrictions.

ITALY

The Italian Agency for Environmental Research and Protection has developed a monitoring protocol for the Habitats Directive species, including bats, to be applied to collect the data needed for art. 17 reporting. Several Parks and reserves are already applying this protocol. A study recently published in Biodiversity and Conservation has shown that *Plecotus sardus*, the only bat species endemic to Italy and among the few European endemic bats, has undergone a population crash in the last 20 years caused by a combination of wildfires, alteration of precipitation regime, heat waves and roost disturbance. On such basis, the species should now be classified as CR in the IUCN Red List and immediate, effective protection must be secured.

LUXEMBOURG

The following points should be highlighted:

1. Research: The results of the genetic structure analysis of 74 nursing colonies of *Myotis emarginatus* across Europe have been published:

Frantz, A.C., Viglino, A., Wilwert, E. et al. Conservation by trans-border cooperation: population genetic structure and diversity of Geoffroy's bat (*Myotis emarginatus*) at its north-western European range edge. Biodiversity and Conservation (2022). <https://doi.org/10.1007/s10531-022-02371-3>.
2. Monitoring: The nationwide bat-monitoring program (mist netting, telemetry, surveys in attics of churches and public buildings) to assess population trends of several species, mainly of *Myotis emarginatus* and *Myotis myotis*, has continued and has been strengthened by simultaneous counts. Monitoring of *M. bechsteinii*, *Eptesicus serotinus*, and *Plecotus auritus/austriacus* has also continued, but the methodology needs to be improved in the future. Improvement of standard data sheets regarding bat species to complete management plans within Natura2000 sites is necessary. Monitoring of hibernation sites has also continued.
3. Implementation of protection measures: Conservation and improvement of maternity roosts in attics of churches and public buildings in 22 communes has taken place. The action plan for *Myotis emarginatus* has been

implemented. Trees and hedgerows have been planted in favour of the only maternity roost of *Rhinolophus ferrumequinum* near Bech-Kleinmacher (implementation species action plan). A general concept for integrative forest management has been prepared, focusing on bat conservation, production of quality wood and regeneration of oak in the forest “Friemholz”. 8310 Habitat survey protection program has begun with the collaboration of Natural History Museum and speleological Society in Luxembourg, 576 bat boxes have been installed and surveyed. The Ministry of the Environment, Climate and Sustainable Development (MECDD) and the Administration de la nature et des forêts are currently preparing the third National Nature Protection Plan (PNPN3) together with other nature conservation actors.

4. Public awareness raising: The five inter-communal biological stations, financed by the MECDD and the communes, have continued raising public awareness and counselling the members of the public with bats in their houses. A public online conference on bats has been organised by the Société des Naturalistes luxembourgeois. The International Bat Night has been cancelled due to COVID-19.

NETHERLANDS

Working with protocols, codes of conduct and covenants between stakeholders is sought after in the Netherlands. Synergy between policies regarding ‘building and climate adaptation’, ‘the energy transition and targets to reduce carbon emission’ as well as ‘conservation of biodiversity, nature and species, and nitrogen emissions’ is actively pursued. Stakeholders are the competent authorities, the building industry, the wind industry, the solar panel industry, green consultancies, agriculture industry, species conservation organisations, universities and research institutes.

- Nature inclusive building has become the standard. Nonetheless attention is needed to make sure no opportunities are missed.
- A mission statement from stakeholders in building, architecture, city planning and species conservation organisations, to build nature inclusive, wherever possible, is being broadly communicated.
- A commission to arrange for bats to be able to enter and use buildings as a roost is included in the official building regulations.

- A code of conduct to work with bird and bat species roosting in buildings in the context of the large programmes targeting insulation of private and institution owners is being developed.
- Different models of collecting data are being tested and developed, from expert judgement, fieldwork, to data modelling of roost potential.
- A protocol regarding base line fieldwork to assess potential impact of a development on bats (and their populations) is in place and being evaluated on a yearly basis. Guidelines for base line fieldwork targeting larger areas, such as larger housing estates in a municipality, or an entire municipality, are being drafted.
- The development, for e.g., of municipalities or housing associations, to work on the basis of (pro)active Species Management Plans (SMP), potentially in combination with a generic exemption, rather than case by case and reactive assessment of impact, planning of mitigation, and assessment of feasibility of exemptions, is being furthered.
- Beside conservation effort in the context of the Habitats Directive, improvement of general biodiversity by working towards a base line of nature quality and biodiversity is being targeted. This is expected to also enhance the food availability for bats.
- Larger programmes of planting and reforestation, both outside and inside the built environment, are being executed to reduce carbon emission and enhance biodiversity. Smart planting and management will enhance both roost and food availability for bats.
- Since reducing carbon emission is extremely urgent, action is needed. Therefore, private house owners are being stimulated to e.g., insulate their house, and citizens could be unintendedly breaking the law. Approaches to work with a 'pre-SMP' are being piloted: mitigation requirement for house owners is based on modelling the 'risk of affecting a bat roost', smaller mitigation measures are taken by the house owner and larger measures by the municipality, whilst developing a full SMP.
- A large analysis of 1) the status of information (data and methods) regarding data for the conservation status indicators needed to assess the

Conservation Status of bat species, and 2) the status of available information needed for evidence-based mitigation of bat roosts in buildings, in the process of the energy transition in the built environment (such as insulation measures, and all electric houses), has been completed.

- Large nationwide research programmes to increase information for CS-assessment (fieldwork, development of estimators, HSI models) and for evidence-based mitigation for priority species in the build environment (monitoring protocol, material, size, surrounding environment) are being started.
- Research regarding bats and offshore wind parks at the North Sea is ongoing.
- In a mutual gain approach, a covenant between stakeholders regarding on shore wind park development (industry, competent authorities, nature conservation organisations) is being drafted, and a research programme furthering monitoring and effective mitigation of impact is being launched. This programme is accompanied by measures to strengthen the population of the species suffering an impact from wind turbines.
- A research programme assessing the potential effects of solar panels and solar parks on species has been started.
- Research on the impact of ALAN on bats and the possibilities to mitigate effects is ongoing.
- The situation that bats and bat roosts are an issue in large numbers of development and planning projects, has enormously enlarged the demand for consultants knowledgeable of bats. This puts a strain on the available capacity, and thus on the quantity of projects that can be assessed, their process time, as well as on the quality of consultancy work. Courses and efforts to train fieldworkers and consultants are, and need to be, intensified.
- NEM-VTT, the car-based monitoring scheme for species not being monitored in e.g. (winter/summer) roost counts, is at the needed full capacity since 2015 (a total of 90, 25 km transects, sampled twice late summer/early autumn). Unfortunately, the negative trend for the Serotine bat, expected based on expert judgement, is now explicit in the data.

- Maternity roosts of the pond bat are being lost, e.g., due to insulation measures without due ecological supervision, and although some groups are found again in other roosts, the data so far indicate declining numbers.
- A larger multidisciplinary (PhD) project on bats and viruses has been executed. Papers are in the process of editing and acceptance.
- The SARS-CoV-2 virus has, in its first stages in the early 2020, spiked mistrust against bats. However, over the last two years most private persons and relevant professionals have demonstrated a high level of understanding of the ecological importance of bats, and the role of humans and their handling of nature, in the risk of zoonotic virus transfer.

NORWAY

The Norwegian Red List for Species was updated in 2021. Of the 11 bat species with confirmed occurrences on the Norwegian mainland, four are categorized as threatened and two as near threatened. Notably, the northern bat *Eptesicus nilssonii* has changed its status from Least Concern to Vulnerable since the 2015 Red List.

The knowledge about bats in Norway is limited but increasing. When revising the national Red List, the mammal committee reached out to everyone who does bat surveys or monitors bats in Norway to compile data which are not already published on the Norwegian Biodiversity Information Centre's (Artsdatabanken) platforms or in scientific publications. The estimated population decline for the northern bat is based on unpublished (in prep.) long-term acoustic data and monitoring of hibernating bats in mines.

In the last few years, there has been a revitalization of bat surveys and monitoring organized by NGOs. The Norwegian Zoological Society arranged a two-day symposium including a validation workshop in autumn 2021, which gathered most of the people from inside and outside academia who had done some form of bat work in Norway. Johnny de Jong from Sweden was the keynote speaker. A group of Norwegian bat ecologists participated in the BatLife Sweden conference in November 2021. The aim was to increase collaboration with bat ecologists in the other Nordic countries.

Bat research in Norway has been strengthened by the recent establishment of bat research groups at the Norwegian University of Life Sciences (NMBU) and the Norwegian University of Science and Technology (NTNU). The NTNU group focuses on bat physiology, including individual responses to environmental change. The NMBU research group carries out general ecological studies to increase the knowledge on bats in Norway, as well as studies of impacts of land use, including wind turbines in forest habitats and forestry. Research activities carried out by independent researchers include spatial prediction modelling of different bat species (based on acoustic surveys) and impacts of light pollution in churchyards.

The Norwegian Water Resources and Energy Directorate and the Norwegian Environment Agency are currently working together to implement pre- and post-construction monitoring to assess impacts on bats at wind facilities in Norway, which has not been done previously. The two agencies have also jointly developed and published evidence-based information on their webpages about impacts of onshore wind energy, including impacts of wind turbines on bats.

As for mitigation measures, the Norwegian Environment Agency – in collaboration with the Norwegian Defense Estates Agency – has funded the design and construction of a bat-house purposefully built to attract a colony of *Pipistrellus pygmaeus* to move out of a protected building in a military camp.

Currently, there is no bat rehabilitation centre in Norway, but the Norwegian Environment Agency is working on putting one in place.

POLAND

The 28th Polish Bat Conference took place In November 2019 in Góra Świętej Anny. About 100 bat researchers, and other activists were present there. Since then, due to the pandemic, there has been a break in organising such events.

The 27th bat species – *Miniopterus schreibersii* – was recorded in 2020 by Krzysztof Piksa in southern Poland. The occurrence of this species in Poland was suspected but has only recently been confirmed.

The year 2021 was the year of monitoring of 6 bat species listed in Annex II of the Habitat's Directive.

PORTUGAL

In 2021 and 2022 all field work for the Red Data Book of Vertebrates of Portugal, including bats, was concluded. Under that scope, more than 180 field work nights were organised, with 27 species captured. All species identification is concluded, and now the evaluation of the species' conservation status is being conducted. By the end of 2022, a book with the new updated conservation status for Portuguese bats is planned to be published.

Due to COVID-19 restrictions, the underground roosts bat monitoring program (winter and breeding) was suspended in 2020 (breeding) and 2021, being resumed in 2022 for the hibernation season, with some restrictions in place, such as the use of disposable masks and gloves. In the 2020 breeding season and in 2021, ultrasound recordings at the entrance to the roosts of national importance were performed, to assess the presence of bats. Since its start in 1987, the monitoring has never been put on hold for such a long period of time as during the COVID-19 pandemic.

Several educational activities have been conducted in the country, despite the pandemic.

In the Azores Autonomous Region, the LIFE IP AZORES NATURA project is ongoing, with specific actions towards *Nyctalus azoreum*, an Azorean endemic species, as one of the target species, as well as actions to improve several protected habitats. These actions include acoustic sampling, mist net sampling, roost monitoring and the elaboration of a Regional Action Plan for the conservation of *Nyctalus azoreum*. In the scope of this project already 53 awareness-raising actions have been conducted, with 702 participants. Every year the International Bat Night is celebrated, with field trips organised in some Azorean urban areas and protected areas to show the monitoring methodologies to the public.

In the Madeira Autonomous Region, the organisation of the official International Bat Night was interrupted in 2020 and 2021 due to the pandemic crisis, with the intention to reestablish it in 2022.

There is an ongoing LIFE4BEST-ORs project in Madeira, entitled "Use of the endangered Madeira Pipistrelle as one of the emblematic species of the Natura 2000 Conservation SAC Laurissilva of Madeira (PTMAD0001)". The main objective of this project is to improve the conservation status of the Madeira

Pipistrelle (*Pipistrellus maderensis*). The main actions to be developed are monitoring and inventory; identification of pressures and threats; elaboration of an action plan for the conservation of the Madeira Pipistrelle; awareness raising and dissemination among the public. The total amount of funding is about 40,000 EUR and the project will last 14 months, between July 2021 and August 2022 (with the possibility of being extended until October 2022). Several other education and monitoring activities have also been conducted in Madeira.

ROMANIA

Since the last online meeting in 2021, the monitoring of key underground roosts has continued in Romania within the framework of several projects and/or voluntarily by several bat NGOs. In parallel, the national bat monitoring programme has been gathering data in Natura 2000 sites with Annex II bat species, for reporting under Art. 17 of the Habitats Directive. Nationwide, bat experts take part in POIM projects (Large Infrastructure Operational Programme), to create or to renew the management plans of Natura 2000 sites. In the frame of these activities, new colonies are constantly being discovered, even large nurseries, but also serious declines in the size of some continentally important bat colonies have been observed (e.g., at Cloșani cave: 1.500+ medium-sized *Rhinolophus* to just 250+ bats since 2015).

The Myotis Bat Conservation Group is taking part in the survey and monitoring of several Natura 2000 sites in Romania, especially in Harghita county, where they survey overground and underground bat roosts in key seasons, as well as undertake the longest swarming monitoring in Romania, at the caves of the Vârghiș Gorge.

In the reporting period, the Wilderness Research and Conservation (WRC), together with the Visul Luanei Wild Animal Rehab Center from Bucharest, have managed to save 12 colonies from insulation sealing during the past year. From isolated cases, 85 injured bats belonging to 7 species were received (*Plecotus auritus* 1, *Pipistrellus kuhlii* 37, *Myotis* sp. 1, *Nyctalus noctula* 38, *Vespertilio murinus* 7, *Pipistrellus pipistrellus* 1), with 78% rehab success and release. The NGO has started a collaboration with the National Museum of Natural History from Paris, France, on the project “Bat Migration Routes in Europe”, where full-night ultrasound data were collected, and the information distributed for further analysis.

Work is currently being done on a proposal that would help Bucharest reduce the number of bat fatalities resulting from insulation projects.

In 2021 several transboundary projects were underway, some of them continued or started only in 2022. A project, funded by the Conservation Leadership Programme, involving the CBRC, the Myotis Group, and the National History Museum of Belgrade, aims at transboundary conservation of *Rhinolophus* species in the Romanian – Serbian Iron Gates region. In addition, a EUROBATS EPI project, involving the CBRC, the Myotis Group, and bat researchers from the Academy of Sciences of Moldova, advances transboundary bat conservation in Romania and Moldova and creates the first online database of local bats at www.chirohub.ro. This initiative has also received funds from the European Mammal Foundation. Data for the upcoming second edition of the Atlas of European Mammals has continued to be gathered. The CBRC also supplies full-night ultrasound data for the project of the National Museum of Natural History (Paris, France) “Bat Migration Routes in Europe”. A transboundary project (Bat4Man) is being run jointly by NGOs in Romania, Hungary, Ukraine, and Slovakia. It aims to conserve colonies in historical buildings, as well as to inform and educate the public. The CBRC is an associated beneficiary in the recently launched international LIFE+ project “LIFE PODKOWIEC PLUS: Back to the forest – holistic conservation of bat breeding habitats”, together with bat NGOs from Poland, Czech Republic, and Slovakia: <https://lifepodkowiectowers.pl/en/>. The project is coordinated by the Polish PTPP “Pro Natura” and is running in the period from 2021 to 2026, with a budget of 4,924,974 EUR.

In 2021 and early 2022, the CBRC continued to promote bat conservation through the Bat of the Year initiative. In 2022 the public vote chose *Plecotus austriacus* as the Bat of the Years 2022-2023 in Romania. In the next two years, the CBRC will disseminate printed and online materials about the species to tens of locations in Romania and Europe (protected areas, universities, NGOs, Ministry of Environment, ROMSILVA, EUROBATS, BatLife Europe, etc.). The CBRC has also been approached by the ProPark – Foundation for Protected Areas, to create a short video about the work of bat researchers, accessible here (with English captions): <https://youtu.be/NvEYDhIf50>.

SERBIA

The Ministry of Environment Protection is responsible for environmental issues in Serbia, including EUROBATS. There is still a total of 32 bat species in the national fauna. The first Red Book of Mammals of Serbia, including 15 bat species, is being prepared and is due to be published later in 2022, as a joint effort of several institutions and the entire mammologist community of Serbia. The national mammologist community is also taking part in the preparations of the Atlas of European Mammals. Winter monitoring was undertaken as planned, mostly in February 2022, despite the lack of any formal funding, by the bat research team gathered around the Natural History Museum and the Wildlife Conservation Society “Mustela”. The joined project “Transboundary conservation of horseshoe bats in Romanian-Serbian Iron Gates”, financed by the Conservation Leadership Programme, has continued: Some bat species have been reordered for the first time in several sites, the importance of certain caves as bat roosts has been confirmed, and few new roosts have been discovered. Education and training of biology students in bat research methodology has continued and courses were conducted twice in 2021. After a year of COVID-19 break, the International Bat Night was successfully organised by the Natural History Museum in Belgrade on the 3rd of October 2021.

SWEDEN

In Sweden, bats have been monitored systematically for about 20 years. Since 2010, this also includes surveys with automatic registration. The monitoring covers many short-term surveys (1-3 nights per site) distributed in many parts of south Sweden, as well as a small number of sites with long-term surveys (the whole year). Of the 19 species, 12 are red-listed, and of these, six species are considered as threatened. On the other hand, some of the very common species are considered as increasing. This is especially true for the three species of *Pipistrellus* occurring in Sweden. Unfortunately, the threatened species are seldomly recorded within the monitoring programme, and there is no data on colonies. Because of this, special conservation programs for the rarest species are being planned for, which include trapping, radio tracking, and bat box surveys.

In the past years, Swedish bat research has mainly focused on light pollution, virus monitoring – including lyssaviruses – as well as wind-power and bat populations.

There is also an emphasis on attitudes to bats, population trends and survey methods. Ongoing research projects include mitigation within infrastructure projects and environmental pollution. The Transportation Agency, The Energy Agency and the Swedish Environmental Protection Agency mainly support the research.

Currently, there are about 200 amateurs working with bats, and about 30 professionals. Especially, wind-power and large infrastructure projects result in a large number of bat surveys. The bat work is organised in a cooperation between the newly founded NGO BatLife Sweden, the Swedish Species Information Centre, the Swedish Environmental Protection Agency, and the respective County administrations. So far, this cooperation has resulted in courses in identification based on heterodyne and time-expansion detectors, trapping and handling, morphological differences, survey techniques and several other subjects. There is also a very active open Facebook group “Fladdermöss I Sverige” (Bats in Sweden) with nearly 4,000 members.

Last year BatLife Sweden organised the first Swedish national bat conference with 140 participants on site in Gothenburg in November 2021, with invited keynote speakers from Finland, Norway, Denmark, Germany, and Poland. The next national bat conference is already planned for November 2022, shortly after the EUROBATS MoP9.

Since 2020, a specialist group validates all bat observations reported to the Swedish Species Observation System (Artportalen). This group consists of 20 of the most skilled professional bat workers. Based on these reports, Sweden will update the distribution maps for all bat species every year, and it will be an important tool for the work on the Red List as well as other conservation projects.

Due to COVID-19 restrictions, just a few events on the International Bat Night have been organised.

SWITZERLAND

As in many other countries, bat protection in Switzerland in 2021 was still under the influence of COVID-19 pandemic, especially concerning education (workshops & courses; public events). Therefore, the offer on courses and events for public was reduced. Thanks to our intensive media offensive in 2020 and 2021, bats came with a very positive image out of the pandemic.

Further important developments in 2021:

- Modelling 250 flight corridors of very important bat roosts in the settlement to the hunting habitat with GIS based methods. In 2022, the corridors shall be validated by experts and integrated in the maps for the implementation in the Swiss ecological infrastructure project (dark corridors).
- Continuation of implementation of the validation standards of the Swiss Bat Bioacoustic Group SBBG, concerning bioacoustic evidence.
- Publication of the new Swiss Mammalian Atlas with current information about distribution and knowledge about the 30 bat species occurring in Switzerland.
- End of 2021, more than 1,300 volunteers were working to help protecting bats in Switzerland (mainly monitoring of important bat roosts, public relations, animal welfare and rehabilitation).
- Professional support for more than 400 renovations of buildings with bat roosts.
- Publication of a scientific paper about viruses in Swiss bats (together with the University of Zurich).
- More than 80,000 bat observations in the central database.
- Continuation of national protection and monitoring programs for *Myotis myotis*, 2 species of *Rhinolophus* and 3 species of *Plecotus*.

UKRAINE

The wide-range war of the Russian Federation against Ukraine has divided time and affected lives of millions of Ukrainian people as well as its nature. It divided everything in Ukraine into “before”, “during” and “after”, including all activities in bat research and conservation.

“Before”: There were different activities in bat research and conservation, both at the local and the national levels, including those in cooperation with bat experts from other countries. In 2021, two more bat species were added to the Red Data Book of Ukraine. Thus, all resident bat species of Ukraine are now strictly protected by the national legislation.

Among other things, the progress in the realm of the environment impact assessment, generally and with regard to bats, should be pointed out.

In 2021, the Ministry of Environmental Protection and Natural Resources of Ukraine adopted the general recommendations of the EIA and the recommendations of the EIA on mining projects. These documents refer inter alia to the EUROBATS Agreement.

At the same time, the Ukrainian NGO “Ukrainian Nature Conservation Group” (UNCG) developed and published extensive guidelines on the EIA at the territories of the Emerald Network (https://uncg.org.ua/wp-content/uploads/2021/07/Otsinka-vplyvu_kolir_2021.pdf). The guidelines included a detailed review for consideration of bats during EIA of the corresponding projects. The UNCG has recently reported that, in 2020-2021, their volunteers checked the contents of about 2,000 EIA-reports on the planned projects in Ukraine (including those which may have impact on bats). Many reports were assigned for further research; some were banned.

“During”: It is difficult to estimate the direct consequences of the war on bats. Three underground bat sites of international importance (NOD-K, OSK-K, Zavody in Mykolayiv, Kherson and Kharkiv provinces; two of them are important hibernacula) are situated at the front-line of the battle. There is no information in which state the sites are.

Bat rehabilitation centres and bat carers in the zone of direct military actions have faced huge difficulties and threat to life, both of bats and of carers. The most critical situation was in Kharkiv bat rehabilitation center which, at the beginning of the military actions from the side of the Russian Federation, cared for over 3, 000 bats.

The time “after” is uncertain. However, it is already now clear that performing of fieldwork and conducting monitoring at the territories currently occupied by the Russian Federation will not be possible for years, in particular because of the landmines and unexploded shells.

NON-PARTY RANGE STATES

ALGERIA

26 species of bats live in Algeria, some of which have become very rare (*Rhinolophus clivosus*, *Otonycteris hemprichii*, *Tadarida aegyptiaca*) and others have not been recorded for at least 10 years (*Nyctalus noctula*, *Taphozous*

nudiventris, *Pipistrellus rueppellii*). With the help of echolocation, calls of other species have been recorded, though they have not been captured so far. These include *Pipistrellus nathusii*, *Pipistrellus pygmaeus*, *Barbastella barbastelle*.

In terms of research work, the creation of a research team on the biology and ecology of chiroptera and other terrestrial animals (BÉCAN) should be mentioned. Four doctoral students are currently enrolled and are working on the immune system of Algerian bats, ectoparasites, the ecology of semi-arid highland species, and the ecology of bats in a Zen oak forest (*Quercus faginea*). Yearly, five master's theses are being supervised at the University of Bejaia.

Regarding events, in 2016 the first workshop on the importance of chiroptera for agriculture, public health, and forestry was organised. In 2021, on June 15-16, an online seminar entitled "The bats of North Africa, State of knowledge and Perspectives" was conducted. There was participation from different countries (Tunisia, Egypt, France, Libya, Algeria, Great Britain). A complete chapter, giving information about bats, was contributed to the book entitled "The wild mammals of Algeria: Biology of conservation and distribution". The book was edited by the NET EDITIONS and is available for free at: <https://hal.archives-ouvertes.fr/hal-02375326/document>. It gives the current state of knowledge on bats with a distribution map (old distribution, new distribution) for 26 Algerian bat species. An organization working on bats has existed for some years, it is the ALGERIAN BAT GROUP (<http://algerian-bat-group.e-monsite.com/>).

AZERBAIJAN

Over the period of 2020-2021, there was no progress by the Azerbaijani Government regarding the ratification of the EUROBATS Agreement as well as the CMS. Due to COVID-19 restrictions and associated conditions, the ratification subject was not particularly on the agenda of the regulatory body, which is the Ministry of Environment and Natural Resources - MENR. However, meetings with the environmental authorities are being held to discuss the way forward. Currently the focus is on the CMS rather than the EUROBATS Agreement and it is being considered as the starting stage to proceed further.

From the scientific studies perspective, in 2021, the two-year ESIA survey on bats and birds associated with the proposed wind turbines and transmission lines

installation projects was completed. It was the first ESIA baseline survey on bats in Azerbaijan linked to the wind turbines.

In 2021, under Dr Hasanov's coordination and based on the cooperation agreement between EHA-Eco Health Alliance (USA) and the Institute of Zoology, a 3-year collaborative research project "Understanding the Risk of Bat-Borne Zoonotic Disease Emergence in Western Asia" was completed. Bat samples obtained during the three-years' survey (540 individuals of 13 species) were safely transferred to the lab in Georgia for further analysis, particularly on coronaviruses.

The National Academy of Sciences, in cooperation with the MENR, has also launched studying of terrestrial vertebrates (including bats) assessment for review and update of the National Red Data Book. It is expected that the new edition of RDB will include 9 bat species.

A number of new hibernation sites for certain bat species has been revealed during the conducting of the above-mentioned projects.

No public awareness sessions were organized by the NGOs or by the National Academy of Sciences in 2021. And no bat night was arranged in 2021. Hopefully, this will change in 2022.

One Health Multisectoral Biosurveillance and Biodefense Online Workshop took place in December 2021, within the GHERI Regional Project. It was a national workshop, the goal of which was bringing together experts from diverse sectors to improve coordination to prevent, detect, and respond to emerging pathogens (and those associated with bats), as well as to validate existing strategies and gaps. The workshop aimed to strengthen collaboration across disciplines and among national stakeholders to improve national biodefense and biosurveillance efforts.

BELARUS

Since the last AC meeting, the following bat research projects and activities have been conducted in Belarus:

- joint Armenian-Belarusian project «Past and present expansion of model vertebrate species under climate change in Eastern Europe and the South Caucasus». This project involved phylogenetic research of *Pipistrellus kuhlii*;

- the Belarusian bat rehabilitation centre “Kazhanapolis” has continued its activity. In this season, more than 60 individuals (*V. murinus*, *E. serotinus*, *E. nilssonii*, *N. noctula*) have been rescued.

In addition, the usual popularization activities have been carried out, such as International Bat Night events and popular bat-lectures, interviews in the media, etc. Most of the IBN events are usually supported by APB-BirdLife Belarus.

Unfortunately, during the last year, a lot of problems and difficulties have been faced. In particular due to the liquidation of the APB-BirdLife, a lot of opportunities have been lost and many projects have been terminated. However, every opportunity to continue with bat conservation activities will be further sought.

MOROCCO

The bat fauna of Morocco consists of about 30 species. At least 18 species are within the range of European bats such as *Pipistrellus pipistrellus*, *Eptesicus isabellinus*, *Miniopterus schreibersii*, *Rhinolophus ferrumequinum*, *Rhinolophus hipposideros*, *Rhinolophus euryale*, *Myotis capaccinii*, *Myotis emarginatus*, etc.

All Moroccan bats are protected by the environmental law on conservation of wild fauna and flora and the control of their trade in Morocco. All species are included in the local listings of protected species. There is an important programme for the implementation of protection initiatives.

There is a very fruitful partnership with the association of speleologists of Morocco, who show great interest in the protection of bats. A conference on bats is always included in the meetings of speleologists organized at the national or international level. There is also an ambitious cooperation program with speleologists planned for the future.

A first Association for Study and Protection of Mammals in Morocco has just been created where bats retain a major interest in the action program of the association considering the increased expansion of wind turbine projects in Morocco, and it is mandatory to follow the EUROBATS guidelines. Monitoring of bats at wind farms during planning, construction, and operational phases of the project is now becoming unavoidable.

Current research on Moroccan bats focuses on their ecology and distribution. There are two doctoral theses in preparation. Further studies are needed to update

Morocco's bat fauna, in addition to the urgent awareness raising efforts required for public/schools and policy makers.

Finally, there has been contact with the Natural History Museum of Gibraltar and organizations in Spain for setting up a program on the possibilities of migration of bats between the two Mediterranean shores (<https://bat-migration-europe.netlify.app/>).

TÜRKIYE

There is no news about the ratification of the EUROBATS Agreement. An acoustic monitoring programme, named "Acoustic Anatolia", has been started. The project aims at identifying the migration routes and the distribution of bats in Türkiye, using acoustic methods.

TUNISIA

Bat survey and monitoring has continued by exploring caves and the forest area in the Northern part of Tunisia, and in the south towards the Libyan border. There were successful celebrations of Bat Nights in five departments in Tunisia in 2020 and 2021 led by an NGO and private people who work in the tourism sector. Bat Night events were attended by more than 400 participants (mainly because of the interest after COVID-19). Tunisia is one of the countries that want to develop green energy: More than 30 windfarms are planned, which seems worrisome. Several meetings were held with the Tunisian Electricity and Gas Company. An awareness plan is under preparation to be implemented later in 2022. Regarding ratification of the EUROBATS Agreement: All information was passed to the Secretariat in 2019. However, no update has been received whether there was contact with the Ministry on Foreign Affairs in Tunisia.

A new master's thesis was prepared by Mouna Bouhani and presented at the end of 2020. Ms. Bouhani continues preparing her PhD thesis on bats at the university of Carthage in partnership with the Laboratoire Comportement et Ecologie de la Faune Sauvage du Centre INRAE Occitanie de Toulouse.

OBSERVERS

Croatian Association for Bat Conservation Tragus

Tragus has continued with the monitoring of bat fauna in three protected areas. In Vrlovka cave, a Natura 2000 site that also has a visiting program, Tragus has

continually monitored bats since 2017. The number of bats present in the cave has fluctuated from year to year but no negative impact due to visitors could be observed. Tragus has also conducted research on selected localities in the National Park Brijuni, which has so far resulted in the proven presence of 16 species on the island. The research once again focused on *Nyctalus lasiopterus* as six individuals (4 males and 2 females) were captured in October for the very first time. Additionally, high resolution 3D radar technology, developed for bird protection at wind farms, were tested for detection of bats in flight with very promising results. Preliminary results and the whole idea of adopting bird radar for bats was presented at the 6th Conference on Wind Energy and Wildlife Impacts (CWW). Bat colonies at Kamenjak, another Natura 2000 site, have also been monitored. Using mist nets, *Plecotus kolombatovici* has been recorded for the first time at this site. Pre-construction bat survey has been conducted for two solar power plants for the purposes of appropriate assessment of the projects for the Natura 2000 network. A bat monitoring program during construction has been completed at one and another post-construction monitoring program at another wind farm project. Mitigation measures proposed by Tragus and partners in 2020 successfully reduced bat fatalities by over 90%. Tragus has also been involved in monitoring one of the most sensitive wind farms at Jelinak for the second consecutive year and has helped propose new adapted mitigation measures. Tragus has co-organised the International Bat Night events in the National Park Brijuni and on cape Kamenjak. Its members led guided tours with bat-detectors, presented other bat research methods and took part in creative activities for children. In cooperation with the public institution Sjeverni Velebit National Park, Tragus has organized a workshop for school kids. Tragus is supporting the local experts in Bosnia and Herzegovina with bat research on windfarm projects, as well as starting bat research in Vjetrenica cave protected area.

Croatian Consultancy on Nature Protection Geonatura

Geonatura has specialized in consultancy services for nature protection, and, among other things, it includes a bat research group which has conducted more than 50 different projects in the last 10 years concerning bat fauna baseline surveys and monitoring. During post-construction monitoring at wind farms in Croatia, Geonatura has detected more than 500 bat fatalities and has continued to work on methods to design effective mitigation measures for bats. Since December

2021, Geonatura has also been working together with its associates for the Croatian Ministry of Economy and Sustainable Development to develop a proposal of national bat monitoring programme and collect new data for bat species to report under Article 17 of the Habitats Directive. Monitoring methods will include roost surveys at more than 150 locations (overground and underground sites), mist netting near freshwater bodies, bat activity monitoring using ultrasound detectors and other additional methods.

BatLife Europe

BatLife was due to have its rescheduled three-yearly partner meeting in late 2021 but this was postponed as there were very few trustee nominations to replace outgoing trustees. BatLife is keen to get at least three more nominations from partner organisations before scheduling the partner meeting this year. Anybody interested in becoming a BatLife trustee, should contact BatLife at batlifeeurope@bats.org.uk for more information. The nominees need to be proposed by a partner organisation, but they do not necessarily need to work for this organisation.

In other news, the BatLife bat of the year for 2022 and 2023 is the brown long-eared bat. BatLife will be working on infographics for social media as it has done in the previous years.

German Bat Observatory / Deutsche Fledermauswarte e.V.

In the reporting period 2021-2022, the NGO continued working on some long-term projects and activities related to EUROBATS, which were:

Bat population monitoring:

- some of the NGO's members do long-term population monitoring in Eastern Germany, hibernacula counting, bat box monitoring, and mist netting in combination with banding.
- In relation to these activities, the NGO is cooperating with the University of Greifswald on a research project to analyse long-term data in order to estimate bat population trends (title: Endangered data of endangered species, funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection and Federal Agency for Nature Conservation), see:

<https://zoologie.uni-greifswald.de/en/organization/departments/applied-zoology-and-nature-conservation/research/endangered-data-of-endangered-species/>

Bats and COVID-19:

- Together with other bat NGO's from Germany, the German Bat Observatory has updated the COVID-19 measure recommendations for bat workers, see details: <https://www.deutsche-fledermauswarte.org/information-on-bats-and-sars-cov-2-version-2-0-as-well-as-recommendations-for-bat-workers-in-germany/?lang=en>

Bats and Wind Turbines:

- Research cooperation with the French Museum of Natural History on the implementation of EUROBATS guidelines has taken place, with the manuscript being under review.
- The NGO has supported the Federal Association for Bat Conservation (BVF) in statements and position papers concerning the improvement of bat conservation in wind turbine development, see details: <https://www.deutsche-fledermauswarte.org/federal-association-for-bat-conservation-germany-bvf-questions-plans-of-the-new-government-with-regard-to-the-weighing-of-species-protection-in-favor-of-wind-energy/?lang=en> and <https://www.deutsche-fledermauswarte.org/nabu-statement-about-bat-conservation-and-wind-turbines/?lang=en>

Bats and Light pollution:

- The NGO has contributed to a published review article of the members of the IWG on bats and light pollution (Voigt et al. 2021. The Impact of Light Pollution on Bats Varies According to Foraging Guild and Habitat Context. Bioscience 71(10), 1103-1109)
- Work is being done on the improvement of the implementation of the light pollution topic. The NGO has worked out a literature review in German which is currently under review.
- Additionally, the German Bat Observatory has applied the EUROBATS guidelines in two practical examples in expert surveys, one for the Zitadelle

Spandau (Berlin) and one in the Heimkehle Cave (Harz Mountains) - two touristic places which needed a bat friendly lighting regime.

Bat Migration:

- Long-term monitoring is being done (mist netting, bat boxes, bioacoustics)
- Cooperation with the Arbeitskreis Fledermäuse Sachsen-Anhalt has taken place, see www.fledermauszug-deutschland.de
- Cooperation with French Museum of Natural History has also taken place; see: <https://bat-migration-europe.netlify.app/partners/>

Bats and Climate Change:

- A study has been published: Röse, N., Sauerbier, W. Fritze, M. (2021): Long-term data of microclimate and barbastelle bats show an effect of climate change in bat hibernacula | Langzeitdaten von Mikroklima und Mopsfledermäusen zeigen einen Effekt des Klimawandels in Fledermaus-Winterquartieren. Nyctalus (N.F.) 19 (4-5), S. 330-342. <https://nyctalus.com/alle-hefte/band-19-heft-4-5/>

White-nose syndrome:

- Cooperation has taken place with the University of Munich, Uni Montpellier, and IZW Berlin on research and development of a new molecular detection method for field work (Manuscript under Review)
- Nyctalus Review-Article has been produced concerning overview and has suggested long-term disease monitoring (accepted for the next issue Nyctalus 20 (1))

Nyctalus journal:

- Members of the Bat Observatory and the Arbeitskreis Fledermäuse Sachsen-Anhalt e.V. have founded a new Nyctalus society which has the purpose to run and further develop the journal
- more Open Access articles have been uploaded: <https://nyctalus.com/alle-hefte/>

Conferences:

- Two conferences have been organized: Summer conference in Berlin and Herbsttagung Schloss Mansfeld (together with Arbeitskreis Fledermäuse Sachsen-Anhalt)

Bat Nights:

- Different bat nights (also European Bat Nights) have been conducted by the NGO's members in Berlin, Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt

Other: Support of Ukrainian Bat Rehabilitation Center in Kharkiv:

- Cooperation on eco-immunology research (manuscript under review)
- Referee support
- Financial and mental support during war

Leibniz Institute for Zoo and Wildlife Research (IZW), Germany

Over the past year, IZW has continued its research on migratory bats in collaboration with Prof. Gunars Pētersons from Latvia, and particularly on offshore bat migration with NABU Mecklenburg-Vorpommern; a project financed by the Federal Agency for Nature Conservation (BfN). In the latter project the Leibniz-IZW aims at providing recommendations to mitigate bat fatalities at offshore wind turbines.

The Leibniz-IZW has published various papers on the effect of wind turbines on bats, the adverse effect of light pollution on bats, and on the effectiveness of citizen science projects (see supplement). One paper published in *Bioscience* emerged out of the EUROBATS guidelines.

Voigt, C.C., Dekker, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., ... & Zgama, M. (2021). The impact of light pollution on bats varies according to foraging guild and habitat context. *BioScience*, 71(10), 1103-1109.

The Leibniz-IZW is currently running three projects on the effect of light pollution on bats; the one funded by the German Ministry on Education and Research is about communicating knowledge on the adverse effect of light pollution on bats via video material to pupils. The second one, funded by the Federal Agency for Nature Conservation (BfN), is about the effect of artificial light on Long-eared bats. The

third project, funded by the German Ministry on Digital and Transport, is about the effect of context dependent lighting schemes on bats.

The Leibniz-IZW has offered two training workshops on light pollution and bat conservation (one in English and one in German). Additionally, it has provided the platform for further workshops offered by the Federal Association of Bat Experts in Germany (acoustic analysis, wind turbines).

The Leibniz-IZW has advised members of the CMS convention in their efforts to formulate guidelines to mitigate the impact of light pollution on birds, bats, and insects. Further the Leibniz-IZW has advised the World Bank and the KfW to formulate guidelines on developing fatality estimates in wind energy projects worldwide.

The IZW is about to publish a German book on evidence-based wildlife conservation, in which two articles relate to bats:

Voigt, C.C., Lewanzik, D. (2022) Evidenzbasierter Fledermausschutz bei Beleuchtungsvorhaben im Außenbereich. In: Evidenzbasiertes Wildtiermanagement (ed. Voigt, C.C.) SpringerSpektrum. in press.

Veith, M., et al. (2022) Windkraft und Fledermausschutz im Wald – eine kritische Betrachtung der Planungs- und Zulassungspraxis. In: Evidenzbasiertes Wildtiermanagement (ed. Voigt, C.C.) SpringerSpektrum. in press.

The IZW has organized a German one-day online conference with about 400 participants on the newest findings about the wind energy-bat conflict. Lastly, the IZW has hosted the 1st International Bat Research Online Symposium on the wind-energy bat conflict that reviewed the issue from a global perspective.

Supplement:

Greving, H., Bruckermann, T., Schumann, A., Straka, T. M., Lewanzik, D., Voigt-Heucke, S. L., ... & Kimmerle, J. (2022). Improving attitudes and knowledge in a Citizen Science project on urban bat ecology. *Ecology and Society*. published

Kruszynski, C., Bailey, L. D., Bach, L., Bach, P., Fritze, M., Lindecke, O., ... & Voigt, C. C. (2022). High vulnerability of juvenile *Nathusius' pipistrelle* bats (*Pipistrellus nathusii*) at wind turbines. *Ecological Applications*, 32(2), e2513.

Lewanzik, D., Straka, T. M., Lorenz, J., Marggraf, L., Voigt-Heucke, S., Schumann, A., ... & Voigt, C. C. (2022). Evaluating the potential of urban areas for bat conservation with citizen science data. *Environmental Pollution*, 297, 118785.

Reusch, C., Lozar, M., Kramer-Schadt, S., & Voigt, C. C. (2022). Coastal onshore wind turbines lead to habitat loss for bats in Northern Germany. *Journal of Environmental Management*, 310, 114715.

Scholz, C., Voigt, C.C. (2022). Diet analysis of bats killed at wind turbines suggest large-scale losses of trophic interactions. *Global Ecology and Conservation*. In press

Voigt, C.C., Kaiser, K., Look, S., Scharnweber, K., Scholz, C. (2022). Wind turbines without curtailment produce large numbers of bat fatalities throughout their lifetime: A call against ignorance and neglect. *Conservation Science and Practice*. In press

Polish Society for Nature Conservation Salamandra

In Poland, activities related to bat monitoring and conservation, as well as education on bats, are mainly carried out by non-governmental organisations.

The international LIFE project (with Romania, Slovakia, and the Czech Republic) is coordinated by the Society of Friends of Nature "pro Natura". It includes, among other things, the construction of many special towers for bats, containing both roosts for breeding colonies and underground wintering sites.

Another large project is funded by the Norwegian Funds. It is coordinated by the Polish Society for the Protection of Bats (OTON) and concerns the monitoring and protection of barbastelle bats.

The Polish Society for Nature Protection "Salamandra" has started another large project funded by the Norwegian Funds and related to the protection of bat habitats. It includes, among other things:

- a programme of cooperation with the owners of buildings hosting bat colonies,
- cooperation with the owners of tourist facilities visited by bats,
- training for municipal police officers throughout the country on how to intervene with bats in cases reported by citizens;
- 24-hour national bat helpline, operated by bat specialists.

Last year further monitoring of 6 bat species from Annex II of the Habitats Directive took place. The most worrying result is for *Myotis myotis*, for which for most of the country a decline in numbers has been observed. This applies both to summer colonies, many of which have disappeared or are being reduced in number, and to the decline in numbers of this species in most hibernacula, except for "Nietoperek" Reserve, which is the largest Polish wintering grounds of this species, but to which probably a significant proportion of bats arrive for hibernation from Germany.

Finally, an update of the National Red List of Mammals and other land vertebrates will start this year, coordinated by the "Salamandra" Society, and should be completed next year.

Spanish Bat Society (SECEMU)

SECEMU thanks the Secretariat for facilitating its participation in the EUROBATs meetings in 2022. Regarding the Spanish accession to the EUROBATs Agreement, there are no news from the Ministry.

Most of SECEMU's bat-related activities seem to be recovering from the pandemic, and many of its bat workers have been able to re-start their projects. Therefore, the following tasks undertaken by SECEMU during the period 2021/2022 should be highlighted:

- A new dataset has been sent to the European Mammal Foundation with information on bat species distribution in Spain to be included in the Atlas of Mammals, which will be published by 2024. 279 squares (50x50) were covered and a total of 3,200 reports was provided.
- As reported last year, there is still a continuous effort by a large number of members of the society together with local media, newspapers, journals, TV, radio, and social networks, as well as political institutions (e.g. Health Ministry and CSIC), to clarify the distinction between the evolutionary origin of the virus and the epidemiological source of the pandemic. The video campaign "Don't Blame Bats" was presented under this context at the SciFilmIt festival.
- Regarding the educational initiatives, more than 50 International Bat Night events have been organized across the country, either coordinated by SECEMU or by local groups, despite the pandemic.

- The society's website has been updated and renewed, and is open to include new information, footage or news provided by any member (<https://secemu.org/>).
- In terms of bats and wind turbines, the specific commission of Bat and Wind Turbines has been presenting allegations to approximately 300 wind farm projects across the country which have not done with proper risk (or impact) assessment or have not presented appropriate mitigation tasks. Members of this commission have also participated in several meetings with the Ministry (MITECO) and the Directive Secretariat of the Ministry (DG) to prepare new guidelines to assess bat mortality at wind farms. Thanks to these activities, some Autonomous Communities and the Ministry itself are beginning to require the start-up of wind turbines above 5-6 m/s and the study of mortality using trained dogs. A specific section on wind farms and bats has been set up on the SECEMU website: (<https://secemu.org/comision-parques-eolicos/>). The commission members have also participated in a couple of conferences (CONAMA y AEIA) and training courses for the administration.
- Regarding the biannual Bat Conference that SECEMU usually organizes, intending to put in contact bat researchers and conservationists from Spain, Portugal, Gibraltar, and Andorra, it finally took place in southern Spain in Murcia after being postponed due to the pandemics. The next conference will take place in 2024.
- The Journal of Bat Research & Conservation, edited by the Spanish Bat Society, published its 14th issue with a total of 20 new papers from several countries across the globe. The editorial team and associate reviewers have been partly renewed. SECEMU highly encourages EUROBATS experts to use the journal to disseminate their studies and actively contribute to it: www.secemu.org/journal-of-bat-research-and-conservation/
- Many other scientific projects from independent research teams have started across the country: The establishment of monitoring programmes using citizen science for several migratory cave-dwelling bat species, specific surveys for *Rhinolophus euryale* and other species, specific marking projects of forest-dwelling species like *Nyctalus lasiopterus*, impact

of light pollution in the Pyrennés on bat activity, etc. For more specific information, please contact the SECEMU secretariat by email.

BatLife Sweden

BatLife Sweden was founded on the 1st of March 2019. Today, this non-profit organisation has approximately 250 members. BatLife Sweden's purpose is to increase interest and spread knowledge about bats and to contribute to their conservation. Almost all professional bat-workers in Sweden are members, but there are also a number of amateurs.

In addition to the purely administrative work in the association, for which the board is responsible, most of the activities are carried out within eight different working groups: Swedish Observations group, Taxonomy and Morphology group, Species Identification and Monitoring group, Bat Box group, Inventory group, Swedish Bat Conference group, International Collaboration group and Local Activities group.

The organisation has an active cooperation with the Swedish Species Information Centre concerning:

a) Validation of bat observations b) red-listing of bat species c) Providing information about bats to the public d) Producing reports from Sweden to the EU about status and conservation of bats in Sweden in relation to the Habitat Directive.

BatLife Sweden also collects long-term data on bat activity through eight permanent monitoring-stations. These are monitored by automatic bat detectors during the main bat activity period (01 March - 30 November). Now consultant companies manage all of these, and different authorities support the data collection. In the future the NGO will also manage the stations through voluntary contributions from members of BatLife Sweden. The NGO also organizes a wide range of bat courses and a national bat conference. This year BatLife Sweden is running a basic course for beginners in analysing bat calls and in spring there will be a course on how to construct bat boxes. Later this summer the NGO will hold an advanced course in bat trapping and handling aimed at professional bat workers and in autumn it will run a bat morphology course to help with species identification. In November 2021 the first Swedish bat conference in Gothenburg was organised. There were approximately 150 attendees from across all the Nordic countries. The conference covered bat research, bat surveys and other bat studies carried out

both by scientists and bat professionals. The second conference will be held in November 2022 in Uppsala.

The NGO has also organised excursions and this year there will be an excursion to Germany aimed at more advanced bat workers to gain more experience with species difficult to identify. BatLife Sweden will also run a bat survey weekend in Sweden for those interested in learning new techniques for surveying bats.

International collaboration is also an important aspect to BatLife Sweden's work and it has become a member of BatLife Europe, and intends to develop this collaboration in 2022. During the year, the NGO will also collaborate with researchers in France to map bat migration throughout Europe and is collaborating on a radiotracking project in Finland to monitor the movements of bats across the Baltic Sea.

Bat Conservation Trust, United Kingdom

Over the past year, BCT has continued to collaborate with international colleagues on COVID-19 guidance for bat rehabilitators, researchers, and cavers, as well as information for a wider general audience, through participation in the IUCN Species Survival Commission Bat Specialist Group and the Global Union of Bat Diversity Networks (GBatNet).

BCT has continued to develop its sound classification system which automates the processing of large volumes of sound recordings. This system has been used for ongoing work with Forestry England and Forest Research, as well as a new community science project called Nightwatch, which aims to engage people with nature, particularly those from an urban environment.

BCT has been involved in a number of guidance documents over the past year:

- Work is underway on the 4th edition of 'Bat Surveys for Professional Ecologists: Good Practice Guidelines, and this will be published later in 2022.
- BCT contributed to an updated version of 'Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation' which was published on the NatureScot website last year.
- BCT also sits on the Advisory Group for updating the 'Bat Mitigation Guidelines', alongside a variety of stakeholders including the Statutory

Nature Conservation Bodies. The results of BCT mitigation project were fed into the new guidelines. The guidance should be published later in 2022.

BCT is involved with two research projects relating to bats and insects. Both are looking at the drivers and repercussions of UK insect population declines, including making an assessment of the state of the UK's insect populations, and looking at the links between long-term insect population changes and population changes in insect predator populations (bats and birds).

BCT's Bat Roost Tree Tag Scheme web pages went live in May 2021. The primary purpose of this scheme is to ensure trees containing confirmed bat roosts are easily identifiable by woodland workers and site managers. When a woodland operative sees a tag, they will know they need to seek advice before proceeding with any work, giving a significantly increased level of protection for bat roosts in trees. Additionally, all tree roost and species records collected through the scheme will support current and future work studying bats' use of different tree species and roosting opportunities.

University of Sussex, United Kingdom

There are a variety of research projects that are potentially of interest to the EUROBATS Advisory Committee. These include:

- Research in the UK on the prevalence of SARS-CoV2 and other coronaviruses in greater and lesser horseshoe bats. To date, no SARS-CoV2 positive animals have been identified.
- Setting up a new static telemetry system for bats in England. The 433MHz frequency is currently being used, as antennas are more readily available and much cheaper; but the use of 160 MHz in order to detect Nathusius's pipistrelle carrying tags of this frequency from work in continental Europe is also being investigated.
- Flight path tracking using infra-red imagery to assess road vehicle collision risks for bats.
- Identifying woodlands occupied by barbastelle bats using a combination of citizen-science acoustic monitoring and trapping/radiotracking.

Vincent Wildlife Trust, United Kingdom

As part of the UK government's response to the COVID-19 outbreak and attempts to build the economy back in a green way, in 2021 they launched a scheme called the Green Recovery Challenge Fund to promote green jobs and generally support the sector. Vincent Wildlife Trust was awarded £180,000 to adapt its network of horseshoe bat reserves in England to mitigate the effects of climate change. This work involved increasing the range of micro-climates available in the roost buildings by constructing insulated cool rooms as well as creating warmer areas through the provision of hot boxes in roof voids. These adaptations are being monitored with temperature data loggers.

The research work, which VWT conducts in partnership with the University of Sussex, continues. The Trust has one PhD study on landscape selection by barbastelle that is in its final stages. A new project started in September 2021 deploying the Motus system to monitor movements of bats, mainly greater horseshoe bats, in southern England. VWT PhD students and staff have published five new peer reviewed bat papers over the last year, and these are available on the VWT website:

https://www.vwt.org.uk/download_category/scientific-publications/.

The discovery of a small maternity colony of greater horseshoe bats in a derelict stable block in Sussex in the south-east of England has generated a great deal of interest in the bat sector in the UK. This is the first time the species is known to have bred in the county for over 100 years. Sussex Bat Group and Vincent Wildlife have launched a successful fund-raising appeal to buy the property. This site is now a VWT bat reserve, and the Trust and the Bat Group are working to raise funds to allow the building to be renovated and adapted for the colony.

The Trust has been successful in gaining some top-up funding from a European Innovation Partnership project in the west of Ireland. This project will see the construction of a network of small roosts in 2022 targeted at lesser horseshoe bats in Co. Limerick. There is a gap in the species' range in this area of Ireland and a lack of suitable roosting sites has been one of the suggested reasons. It is hoped that the adoption of these sites will act as steppingstones reconnecting the populations to the north and south. VWT staff have also been working with the

National Parks and Wildlife Service in Ireland to produce a National Action Plan for the species, which should be published later in 2022.

6. Secretariat report – Part I

(Doc.EUROBATS.StC19-AC26.5)

Mr. Streit referred to the written report available on the EUROBATS website as Doc.EUROBATS.StC19-AC26.5 and highlighted only the most important information.

a) Agreement membership

There had been no changes in the Agreement membership. At the previous AC meeting it was already mentioned that Bosnia and Herzegovina had joined the Agreement and the Secretariat hoped for more Parties to come.

b) Ongoing projects

The information on the projects could be found in the written document and details on many of the projects had also been included in the reports given by the represented Parties, Non-Party Range States, and observers. Mr. Streit used the opportunity to thank all the countries that continued to make voluntary contributions for this purpose, these being mainly Germany and Luxembourg.

c) Publicity

Referring to the outreach activities, Mr. Streit mentioned the publicity material that was produced upon the occasion of the anniversaries of the Agreement as well as the International Bat Night. This material was produced owing to a significant voluntary contribution from Germany. The material had already been distributed, however, with the demand for it being very high, the Secretariat continued reprinting it.

7. Report on the preparations for the 9th Session of the Meeting of Parties

Ms. Zrinka Domazetović, EUROBATS administrative focal point for Croatia, was given the floor. She was glad to be able to report that, together with the Secretariat, Croatia was planning to host MoP9 on the island of Brijuni. Brijuni was a national park, rich in nature as well as cultural heritage for hundreds of years. Ms. Domazetović expressed her hope that the delegates would have a fruitful meeting there but would also be able to enjoy what Brijuni had to offer.

Mr. Streit said he was very glad that the following MoP would take place in Croatia. He reminded the delegates that the dates for MoP9, 10-13 October 2022, had already been communicated and that further details would be coming soon. In June he planned to visit the venue and discuss all the details with the hotel, however, with the help of Ms. Domazetović, a provisional hotel reservation for the meeting had already been made. The nearest airport to Brijuni was in Pula, which belonged to a tourist area, so it should not be a problem to reach the MoP9 destination.

8. Reports from the Intersessional Working Groups

Mr. Anthony Hutson, the Convenor of the **IWG on the Amendment of the Annex to the Agreement**, reported that the IWG had prepared a draft resolution presented as Doc.EUROBATS.StC19-AC26.11. The draft resolution proposed the addition of four species to the list of species to which the Agreement applied as well as three small 'technical' changes. This list would be considered during the IWG meeting at AC26.

Dr Lena Godlevska, the Convenor of the **IWG on Bat Rescue and Rehabilitation**, informed that the draft guidelines had been updated. Changes concerning re-phrasing, adding new information and figures, had been made. The updated version would be considered and discussed at the IWG meeting during AC26.

Dr Helena Jahelková, the Convenor of the **IWG on Bats, Insulation, and Lining material**, explained that the guidelines were being finalized. The version including updates from the online webinar about bats and insulation, organised for the Parties and Non-Party Range States in the Czech Republic in December 2021, was sent for language corrections. The corrected version would be forwarded to the Secretariat and circulated among the Parties and Non-Party Range States prior to MoP9. The IWG would not meet during AC26.

Ms. Ruth Petermann, one of the Convenors of the **IWG on Evaluation Criteria for Assessment Reports Concerning Bats**, reported that, after the last meeting of the Advisory Committee, the Convenors waited for additional feedback on the checklist that had been discussed. The checklist was then revised, and a resolution was drafted which would be considered during AC26.

One of the Convenor of the **IWG on Bats and Climate Change**, Ms. Daniela Hamidović, presented the report which had been produced by Dr Hugo Rebelo, Dr Orly Razgour, Mr. Xavier Puig-Montserrat, and Ms. Hamidović herself.

Ms. Hamidović stated that, after AC25, the Secretariat was asked to send a questionnaire on the current climate change evidence bats were experiencing across the EUROBATS range. The IWG had received replies from ten countries and 16 experts so far. The positive replies regarding data availability for bat wintering patterns, population and roost counts, and for bat body size were highlighted. However, the coverage of bat species was rather scattered, with very few species with data available for several countries. The challenge of this group was to select the bat species whose available data would allow a better understanding of climate change impacts on bats.

Dr Orly Razgour was collecting the literature on the impact of climate change on bats. The IWG would meet during AC26 to discuss further steps.

Update from the ClimBats (<https://climbats.eu/>):

During 2021, two workshops were held in Portugal: “Species Distribution Modelling Training School” and “DNA Metabarcoding workshop for early-career researchers.”

Within the scope of the Working Group 2 (WG2), a Bat Monitoring Workshop and Training School would be held in Malta, 13-15 June 2022. A one-day workshop would be a hybrid one and would be held on the 13th of June 2022. Scientists, conservation managers, NGOs, environmental agencies, and other relevant stakeholders from all over Europe were invited to join this event. More details could be found at <https://www.um.edu.mt/events/climbats2022>.

The Working Group 1 (WG1) had completed the systematic review of the literature on bat responses to climate change. The manuscript had been submitted and was currently under review. WG1 had also completed compiling the trait database for European bats (EuroBaTrait 1.0). The group was currently finalising the format of the database, the manuscript, and the Shiny App that would make the database more accessible. The manuscript should be submitted shortly. Finally, WG1 had generated species distribution models for 37 European bats species under present and future conditions. The models were being used to calculate changes in patterns of diversity, community composition, and functional diversity. These models would inform the monitoring programme designed by WG2 and WG3’s analysis of impacts of climate change on the provision of ecosystem services by European bats.

The Working Group 3 (WG3) had compiled a database on the molecular evidence of pest prey-bat predator interactions in Europe both from published and unpublished sources. WG3 had also completed a systematic review of the literature regarding the methods to value the regulatory ecosystem services provided by bats in agroecosystems, from which conceptual framework to provide a first assessment of the value of insectivory bats in the European agroecosystems was currently being designed. Finally, WG3 had done a systematic review on the published data on the biology, ecology, and economic impact of a set of 20 common pest species that frequently appeared in the diet of European bats. This data would be used to generate pest distribution models in cooperation with WG1, which would be used in the final valuation of the ecosystem services provided by European bats.

Ms. Jean Matthews, the Convenor of the **IWG on the Impact on Bats of Roads and other Traffic Infrastructure** reported that a draft of the guidance document had been presented to AC25. The Convenor thanked the colleagues who gave comments on the draft after the meeting. A small sub-group of the IWG had met online since then and was continuing to revise the draft document. The current draft would be circulated for discussion before the IWG meeting at AC26. Further help was still needed in finalising the guidance, so that offers of help and proof-reading were welcome.

Dr Christian Voigt, one of the Convenors of the **IWG on Daily and Seasonal Movements of Bats**, summarised the past work of the second Convenor, Dr Dino Scaravelli, which referred to retrieving information on bat movements from the national reports. Additionally, Dr Scaravelli had approached the focal points and asked for submission of references about bat movements, however, his efforts remained unanswered. The IWG planned to meet during AC26 to discuss future steps.

Dr Christian Voigt, the Convenor of the **IWG on Bats and Light Pollution**, reported that, together with other EUROBATs members, he contributed to the CMS guidelines on mitigating the effect of light pollution on migratory bats, birds, and insects. The IWG had formulated a questionnaire about aspects of artificial light at night and bat conservation. The questionnaire was sent out in late 2021

with the help of the EUROBATS Secretariat. The Convenor also sent out requests to IWG members to review the literature.

Professor Paul Racey, the Convenor of the **IWG on Communication, Bat Conservation, and Public Health**, explained that the IWG had started as an initiative to call out published papers that presented disinformation with regard to bats spreading diseases and it had achieved a few successes so far. In the meantime, it had evolved into calling out papers that got the story wrong but also events causing concern. An example of the latter was the move of president Bolsonaro to remove the protection of caves in Brazil, and 95 people including the Convenor published a letter in the journal Science to complain about that. This and further recent cases would be considered at the IWG meeting during AC26.

The Convenor of the **IWG on Monitoring and Indicators**, Dr Adrià López-Baucells, explained that the group continued its work on the guidelines, mainly on chapter 2. For producing chapter 3, a questionnaire collecting specifics of the protocols being used across Europe in monitoring programmes had been circulated, to which 13 countries had responded so far. In the meeting, the group would discuss the status of chapters 2 and 3 and how to proceed with the guidelines.

Dr Henry Schofield, the Convenor of the **IWG on Man-made Purpose-built Bat Roosts**, explained that the IWG had completed its work on the guidance, which was further updated last year. The Convenor asked what the EUROBATS Secretariat planned to do with the guidance and whether it was intended for publication. He further stated that the text was being downloaded and there were references to it in some documents in Britain, but the question remained if this guidance was to be published under EUROBATS publication series. Dr Suren Gazaryan confirmed that an online publication was always possible, but he was not certain whether the text could also be a printed. Dr Ferdia Marnell offered to do the final proofreading after which the guidance would be formally handed over to the Secretariat for formatting and printing.

9. Schedule of working groups during the Meeting, establishment of ad hoc working groups

A schedule for the meeting of the Working Groups during AC26 was provided at the meeting and made available on the EUROBATS website as Inf.EUROBATS.StC19-AC26.4.Rev.1.

Agenda Items 10 to 18 (listed as 9 to 17 in Doc.EUROBATS.StC19-AC26.1b.rev.3: Provisional Agenda for the Advisory Committee) are not dealt with separately but are summarised under Agenda Item 19.

19. Joint plenary session with the Advisory Committee to mutually report on results and progress achieved

Ms. Geschier reported on what the Standing Committee had achieved during the past few days. She firstly thanked all the StC members, as well as Mr. Streit and the Secretariat for their support since she was new to EUROBATS and was chairing the Standing Committee for the first time. Ms. Geschier mentioned that many topics were discussed in the past two days, such as preparations for the next MoP, and that she was very much looking forward to meeting all personally in Croatia. Of course, the Draft Resolution 9.1: Financial and Administrative Matters – Budget 2023 – 2026 was considered in detail, which was very challenging. The Standing Committee had a good discussion on it and there were a lot of new ideas and propositions how to handle this draft resolution at MoP9. The StC Chair also thanked Monaco, Germany, and Luxembourg for their voluntary contributions and concluded by informing all the participants that Mr. Streit had announced his retirement in two years' time.

The Chair of the Advisory Committee asked the Convenors of the Intersessional Working Groups to briefly report on the achievements during the AC meeting.

The Convenor of the **IWG on Education**, Dr Hossein Zohoori, informed that the IWG had a productive meeting during which the members discussed their activities over the past two years. The group would continue working on a new short educational video, which should also be translated in other languages, and for which, with the support of EUROBATS, an application for EPI and other funding would be prepared. The group continued working on other educational material as well.

Ms. Ruth Petermann explained that, during its meeting, the **IWG on Evaluation Criteria for Assessment Reports Concerning Bats** discussed the prepared draft resolution. Some minor amendments were agreed upon and the altered version would be presented in the plenary at a later stage. The annex to the resolution still needed some improvement. It was shared at:

https://docs.google.com/document/d/1gd-l-kkxQMhhOSCFr6u7_zEwRPf6-5tJ/edit?usp=sharing&oid=102501164031287040507&rtpof=true&sd=true

IWG members were asked to comment on this document and make suggestions until the end of May 2022.

Dr Christian Voigt reported that, during its meeting, the **IWG on Daily and Seasonal Movements of Bats** discussed the following points:

1. Report on Past Activities: See Agenda item 8.
2. Review of the IWG Membership

The participants interested in joining the IWG were asked to approach the EUROBATS Secretariat, namely Dr Suren Gazaryan, to have their names included in the official list of members. Those members who no longer wished to contribute to the IWG should ask for their removal from the list in order to have an efficient working group for the upcoming tasks.

3. Resolution

The IWG was asked whether a new resolution was needed. Additionally, Dr Scaravelli's suggestion to add a sentence to the resolution was put forward. It was agreed that the resolution should not be revised at this point, since the changes might be minor, and the resolution was still valid.

4. Scheduling a Digital Meeting for Drafting Handbook

Both Convenors suggested to organize a two-day digital meeting in January 2023 to discuss daily and seasonal movements of European bats. The aim of this conference would be twofold, (i) summarize the most recent knowledge about movements of European bats, (ii) draft a handbook about daily and seasonal movements of bats, similar to what had been achieved by the Hutterer et al. 2005 publication.

The following tentative schedule was proposed:

Day One (Public): Daily Movements (Commuting)

Current state of knowledge:

- Commuting distances of European Bats, e.g., definition of commuting, home range sizes;
- Techniques for surveying commuting behaviour, e.g., VHF and GPS tracking, acoustic recordings, thermal imagery;
- Landscape features relevant for daily movements/commuting;
- Anthropogenic factors impacting daily movements and adequate mitigation strategies.

Day Two (Public): Migratory Movements

Current state of knowledge:

- Migratory behaviour of European bats, e.g., distances, definition of long-distance migration, species of concern, connectivity (summer and wintering populations);
- Techniques for surveying migratory behaviour, e.g., banding, acoustic recording, MOTUS tracking, isotopic geographic assignment;
- Landscape features relevant for seasonal movements;
- Anthropogenic factors impacting seasonal movements and corresponding mitigation strategies.

Day Three (Internal for Selected Experts; Presence in Berlin): Schedule to be announced

- Compilation of data and updating of information from the conference;
- Preparation of handbook;
- Defining tasks and schedule for publication.

5. Literature Review: Organization of Subgroups

It was suggested to split up in subgroups to review the literature on movements of European bats. This was also seen as a first step towards identifying the experts who would likely contribute to the handbook. The following topics as well as adequate experts for them were identified.

- Banding data: Gunars Petersons (confirmed)
- VHF transmitters (including Motus): La Forget (to be contacted) and Fiona Mathews (confirmed)
- GPS: Christian Voigt (or his postdoctoral student), with possible help of Dina Dechmann (to be contacted)
- Isotopic geographic assignments: Christian Voigt (confirmed)
- Acoustic data: Charlotte Roemer (to be contacted)
- Population genetics: Orly Razgour (confirmed for after Sept 2022)
- Analytical and modelling approaches: a postdoctoral student of Fiona Mathews (confirmed)

6. Suggestions, comments

It was suggested that the content of the conference should be specified and included in the written report of the IWG.

Dr Christian Voigt, as the Convenor of the **IWG on Bats and Light Pollution**, invited the participants who wanted to join the IWG to contact the EUROBATs Secretariat and have their names included in the IWG's members list. Further, Dr Voigt reported that, during its meeting, the IWG discussed the following points:

1. Report on Past Activities: See Agenda Item 8.
2. Resolution

Following a brief discussion about the need to revise the current resolution from 2018, a consensus was made that no revision was needed. The Convenor pointed out that the resolution formulated specific tasks for the IWG which included collating information on the effects of artificial light at night on bats, and on revising the guidelines if needed.

3. Revising Guidelines

IWG members discussed the current guidelines. It was stressed out that a simpler language would help in a revised version. Additionally, specific recommendations should be formulated that refer to threshold values and measurable parameters. It was mentioned that a revision should cover the

diversity of impact assessment procedures practiced in Europe. The Convenor mentioned that the EUROBATS guidelines proved to be helpful for stakeholders beyond Europe, e.g., New Zealand. It was brought to the attention of the IWG that a translation into Croatian was underway.

Efforts to get guidelines translated into French suffered from a lack of money. A concerted effort should be made to raise funds from all French-speaking countries, such as Monaco, parts of Switzerland, Luxembourg, and Belgium.

It was suggested to report on case studies where measures for protecting bats were successfully implemented in outdoor lighting schemes. A revision of the Bat Conservation Trust (BCT) guidelines on light pollution was scheduled for publication in November 2022.

It was also mentioned that in some countries (e.g., Croatia) light pollution zones were established across the country. Further, it was stressed out that a section on how to measure lighting would be advisable in a revision. BCT offered help to contact qualified engineers who could contribute to a revision.

Clashes between safety regulations and bat conservation were mentioned for several countries. Legal frameworks, among others about appropriate outdoor lighting intensities, were on the way. The Convenor stressed out the importance to contribute to such discussions from a bat conservation perspective.

It was suggested to include case studies in a revision of the guidelines. The Convenor called for help asking the members of the IWG to submit such case studies (both successful and disastrous from a bat conservation point of view).

Referring to distinct threshold parameters, using the same language as engineers was considered to be most efficient in disseminating the recommendations from the guidelines. E.g., it was stated how useful the reference to the lux intensity of a full moon light was as a measurable parameter for the amount of artificial light at night compatible with bat conservation.

It was highlighted that warm light colours were more energy consuming than cold light colours, which should be considered in a revision of guidelines.

An IWG member mentioned that critical correlated colour temperature (CCT) of 700 K was advised for some critical areas.

It was stressed out that the highest priority recommendation should be to avoid artificial light at night. It was further suggested to collaborate with lighting engineers who aimed at reducing the glare of light sources.

With respect to the question whether and when to revise guidelines, it was suggested to wait for more evidence from scientific research, e.g., related to CCT and light intensities used in the public.

The summarizing consensus of the discussion was to wait until the AC meeting in 2023 to see what new scientific evidence was generated and then decide on whether to revise guidelines.

4. Questionnaire: Feedback Received

The following countries responded to the questionnaire formulated by the IWG members: Germany, France, Spain, Hungary, Azores, Denmark.

It was suggested to include some of the questions in the national report questionnaire, so that the answers could then be provided in the national reports.

The timing of the questionnaire was criticized since it left a limited period for countries to put the recommendations of the last resolution into practice. The optimal timing identified for formulating another questionnaire was around 2024/25, ahead of the MoP10 in 2026.

The lack of response from most of the countries was briefly discussed. It was considered to reflect the overall low level of responsiveness to such questionnaires. It was suggested to send out reminders while the questionnaires were with the target countries.

5. Literature Review

The Convenor pointed out that according to the resolution the IWG should collate information on light pollution and bat conservation which was done by only a few people responsible for specific topics. The Convenor displayed the list of topical sections and suggested to the IWG to update this list as soon as possible.

6. Suggestions, Comments

The Convenor suggested to engage in national workshops to promote the EUROBATS guidelines and to interact with stakeholders. No further suggestions were brought to the attention of the IWG.

Professor Fiona Mathews, who took over leading the **IWG on Bats and Wind Turbines** during the absence of its Convenor, Dr Luisa Rodrigues, reported that the IWG had a large membership and a very good discussion, during which it considered in detail the previous resolution on wind turbines. It was agreed that several additions to the resolution were needed. Offshore facilities were developing extremely rapidly and generally lacked appropriate monitoring. Concerns were also raised about repowering schemes which often were subject to low levels of assessment prior to permitting and did not make the best use of the opportunity to gather information from the existing turbines. It was, therefore, agreed to draw the Parties' attention to these issues.

The IWG noted that there was widespread lack of appropriate monitoring, mitigation, and supply of information on wind turbine casualties across many countries. Thus, it was considered appropriate to include additional reminders of relevant policies and directives to the resolution. In addition, some aspects of wording were changed to improve clarity and to provide a greater imperative for action.

Limited time was available for discussion of the IWG report. The report involved numerous contributors, many of whom were not members or observers of the Advisory Committee to EUROBATS. It was agreed that it was necessary to provide an overview of the state of knowledge in each section, rather than simply give an update on the information that had become available since the last report, to avoid missing crucial information. The IWG members considered that an update to the wind turbine and bats guidance would be needed in the near future but that the immediate priority was the annual report.

Mr. Jacques Pir, the Convenor of the **IWG on Insect Decline as a Threat to Bat Populations in Europe**, reported that the group discussed the work in progress during its meeting. Professor Stéphane Aulagnier did a compilation of literature on the diet of different species covered by the Agreement. This list should be circulated and completed by Dr Orly Razgour and other members of the IWG. Ms.

Ruth Petermann reported on an auto-ecological study commissioned by the German Federal Agency for Nature Conservation on the impact of insect loss on *Plecotus austriacus*, with results expected by the end of 2023. There was an exchange on similar projects in other countries. Since there was a lack of further data/literature on quantitative insect loss, on scientific evidence-based reasons for insect loss, on ecological demands of key prey species, and on good practice examples for insect biomass restoration, the IWG decided to continue collecting such data. For this purpose, a request was made to the Secretariat to provide the group with a common place/cloud where it could collect literature as well as work simultaneously on documents.

The Convenor of the IWG on **Bat Rescue and Rehabilitation**, Dr Lena Godlevska, thanked the Secretariat for having circulated the updated version of the guidelines on bat rescue and rehabilitation, which was shortly presented during the IWG meeting. Some missing sections were identified to be added to the guidelines (e.g., marking bats, COVID-19 and bats). BCT kindly agreed to help providing the text on the “COVID-19 and bats” section. It was also agreed that an update was needed for the list of national bat centers, as well as the list of guidelines and other (in particular web-) resources for the “further reading” section. Involved authors of already inserted case studies were asked to revise the texts and update them with new information. More case studies were still being looked for by the members of the IWG.

The group approved the plan for its further work on the guidelines:

1. To check and indicate important missing information for including it in the guidelines;
2. To collect comments on the already provided version;
3. To ask the Secretariat to circulate among the Parties and Non-Party Range States the request for updating or providing the information on the national bat rescue centers, as well as recently published guidelines, and corresponding web-resources;
4. To update the corresponding sections with the obtained information;
5. To revise the cases studies;

6. To hold an online meeting of the IWG in four weeks to discuss further work on finalising the draft before MoP9.

Reporting on the meeting the **IWG on Communication, Bat Conservation and Public Health** held during AC26, Professor Paul Racey stated that ill-informed reports in the media and scientific literature about the role of bats in zoonotic disease seemed to have diminished. Nevertheless, the members of the IWG had remained vigilant regarding disinformation about other aspects of bat biology appearing in the scientific literature and had joined with colleagues outside EUROBATS in challenging these.

An example was: K C. Tanalgo, K. McConkey, P.A.Racey, S. Abdul Aziz, T. Sritongchuay, A. C. Hughes and T. Mildenstein 2022. Understanding bat ecosystem services on a global scale requires caution and wider collaboration: a critical evaluation of Ramírez-Francel et al. (2022). Letter to the editor Integrative Zoology 00:1-6; DOI: 10.1111/1749-4877.12646

The global bat community was alarmed by reports that protection for caves would be rescinded by the government of Brazil and the Convenor joined 95 colleagues in a letter of protest to Science: Ferreira, R.L. and 95 authors including P A Racey 2022. Brazilian Cave Heritage under siege. Science 375 issue 6586. 16 March 2022 (<https://www.science.org/doi/10.1126/science.abo1973>).

Professor Stéphane Aulagnier, the Convenor of the **IWG on Priority Species for Autecological Studies**, explained that, during its meeting, the IWG discussed the draft resolution (Doc.EUROBATS.StC19-AC26.12). After the discussion, Professor Aulagnier had given a short presentation of the report (Doc.EUROBATS.StC19-AC26.13). It was agreed that there was no need for a new resolution and that only the annex should be updated at MoP9.

Several members made suggestions to amend the list regarding ecological differences of some species throughout the EUROBATS range, as well as to evaluate the factors of decline of some populations. Recalling that the list must be kept short to contain only priority species, i.e., species whose ecology is unknown or very poorly known, it was agreed that the monitoring and trend of bat populations should be investigated by a new IWG that could be established by the Advisory Committee after MoP9.

It was then decided that the members of the IWG on Autecological Studies for Priority Species (and any participant of the AC meeting) should, by the end of June 2022, send to the Convenor proposals for deleting and/or adding species to the list annexed to Doc.EUROBATS.StC19-AC26.12, together with strong evidence of the lack of knowledge at the species level (or regional species level) on the topics covered by action 8 of the EUROBATS Action Plan: Roosts (winter, summer, swarming), Migration, Habitat and Spatial Use, Foraging Behaviour and Diet. A new list (annex of Resolution 7.12) of the most poorly known species would then be drafted and discussed at MoP9.

Mr. Anthony Hutson, reporting on the meeting of the **IWG on the Amendment of the Annex to the Agreement**, stated that the Advisory Committee had discussed the draft resolution and agreed to it as presented (Doc.EUROBATS.StC19-AC26.11). The resolution comprised a preamble that was almost as used previously, with the operative part proposing the addition of four species to the list of species to which the Agreement applied and also proposing three small 'technical' changes: one relating to the first valid description of *Rhinolophus hipposideros*, and two related to linguistics of author names. An Annex I was the MoP8 list of species to be amended following decisions of MoP9, and an Annex II discussed the background information and way the proposals for the amendment of the list were reached.

A number of other related matters were discussed but none affected the Annex of Species at this time.

Dr Adrià López-Baucells reported that the **IWG on Monitoring and Indicators** had reviewed all the tasks established during its previous online meeting in 2021, with special emphasis regarding the update of the Bat Monitoring Programmes Guidelines. Only the relevant outcomes, ideas, and decisions were reported hereafter.

The advances in Chapter 2 were rather positive, with ca. 50 percent of the sections being drafted. The sections within this chapter that were still missing were reassigned to new members of the group, and the inclusion of some others was discussed (e.g. VHF or GPS Radiotracking). All the new responsibilities were assigned as well and specified in the online version of the Guidelines.

Link to documents:

https://docs.google.com/document/d/1ljARxnbJw42nouVJ0BJE2phlJC_F4DLyGfBIEgrJmag/edit?usp=sharing

Regarding Chapter 3, the results collected during the last year through the online questionnaire and form were presented and discussed. Information about monitoring programmes were compiled from Spain (Catalonia and Basque Country), Algeria, Slovakia, Ireland, Germany, Bulgaria, Romania, United Kingdom, Norway, and France. This covered monitoring programmes for under- and overground roosts, trawling bats, bat boxes and foraging habitats by using bioacoustics. Additionally, information about the posterior analyses and indicators used in the different countries were also summarised and discussed.

Link to documents:

<https://docs.google.com/spreadsheets/d/13CDVzAkWEZHfgdcS8M2wX2GRZBDPoEXjvehHVmUwHWE/edit?usp=sharing>

The IWG discussed the possibility of creating a comprehensive table that would provide information about the best techniques that can be used to monitor each species population. The limitations to establish common recommendations were highlighted and discussed (both at temporal and geographical scale). In order to do so, a new IWG meeting should take place online during summer (probably in July 2022).

Link to documents:

https://docs.google.com/spreadsheets/d/1Bltuk_EXY7WnYEDFTh_56CyD6oKlCJJcuKJhLTqCNk/edit?usp=sharing

Finally, the creation of the www.batmonitoring.org platform was presented to the IWG members. This was a new tool to be used by both professionals and amateurs to collect, store, and handle bat research data (roosts visits, bat boxes, checks, waterway surveys and acoustics).

The Convenor of the **IWG on the Impact of Roads and Other Traffic Infrastructures on Bats**, Ms. Jean Matthews, thanked the participants of the IWG meeting for a useful and encouraging discussion. She would be contacting people for assistance in finalising the draft guidance document. The meeting discussed the possibility of the EUROBATS Secretariat providing a platform for standardised recording templates (e.g., for recording the results of casualty surveys) which could

then be made publicly available. Such a platform would be relevant to other IWGs as well.

Ms. Daniela Hamidović, who together with Dr Hugo Rebelo, convened the **IWG on Bats and Climate Change**, reported that, as an introduction to the IWG meeting, Dr Rebelo presented the main outcome of the answered questionnaires distributed after AC25 to the scientific focal points and observers. The aim of this questionnaire was to collect data on the evidence of possible effects of the climate change on bats during the last few decades. The questionnaire included few questions focusing on the main issues of the influence of climate change on bats.

A short discussion during the meeting dealt with how to get experts that answered the questionnaire more involved and what was needed from them; how to engage more people into the network to answer the questionnaire and whether EUROBATS had a cloud storage for all gathered information. This possibility should be explored by the Secretariat and the IWG should be informed in the near future.

A second round of the questionnaire was also discussed and whether there were additional questions to be included.

Dr Henry Schofield proposed adding a question regarding adaptation of existing overground roosts to overheating (securing cooler areas), which was already being monitored in the UK. The same initiative may exist in other countries as well. Mr. Jacques Pir pointed out the change in the behaviour of hibernating bats – staying in cooler areas of overground roosts in Luxemburg. This change was also observed in southern Germany by Mr. Rudi Leitl. The same was noted in the UK by Professor Fiona Mathews, Mr. Tom Kitching, and Dr Henry Schofield. Since summer roosts were not at all or rarely visited during hibernation, there was a discussion regarding monitoring such change in the behaviour.

Several members pointed out the expansion of certain species, for example: *Myotis myotis* and pipistrelle species in Sweden, *Hypsugo savii* in the UK and the Czech Republic, *Pipistrellus kuhlii* in the UK, *Pipistrellus nathusii* in Finland, *Myotis emarginatus* in the Netherlands, noted also in the UK, etc. Some members said that roost availability and flexibility (especially bat species roosting in buildings) may have contributed to the expansion and that it was difficult to pinpoint it solely to the climate change impact. Dr Rebelo emphasised that range expansions and

change in the behaviour of hibernating bats needed to be confirmed happening simultaneously in most of the countries. This could be proven only if the monitoring network was developed. It was still difficult to propose bat species as climate change indicators as suggested by Dr Schofield (for example, concerning barbastelle species) but if such a network could be developed, this might be possible in the future.

It was concluded that the IWG should add two more questions to the questionnaire:

1. Regarding change in the behaviour of hibernating bats
2. Regarding adaptation of existing overground roosts to counterpart the overheating

A short presentation of the answered questionnaire is available from the Secretariat upon request.

Draft Resolutions emerging from the Advisory Committee

Mr. Anthony Hutson presented **Draft Resolution 9.2: Amendment of the Annex to the Agreement** (Doc. EUROBATS.StC19-AC26.11) to the plenary and reminded the delegates of what had been discussed during the IWG meeting. It was agreed by the plenary to put forward the draft resolution to MoP9. Dr Ferdia Marnell reinforced the wish to maintain the same list for EUROBATS as that used for the forthcoming Atlas of European Mammals.

Professor Stéphane Aulagnier stated that **Draft Resolution 9.3: Priority Species for Autecological Studies** (Doc. EUROBATS.StC19-AC26.12) would be kept the same as the former resolution and only the annex to it would be modified at MoP9. In that sense, there was no need for a new resolution. Dr Laurent Schley asked how to deal with it in terms of procedure. There was a consensus in the plenary that the annex to a resolution could not be changed without having a new resolution that would bring it into being. Mr Streit explained that in case the previous resolution did not need to be repealed but just the annex had to be amended, there should be a resolution amending the previous resolution.

Ms. Ruth Petermann presented **Draft Resolution 9.9: Support to Authorities dealing with Bat Assessment Reports** (Doc. EUROBATS.StC19-AC26.14.Rev.1). She stated that the task of the IWG was to set up a list of criteria for evaluating the quality of assessment reports, for these to be complete, sound

and to fulfil the needs. The title of the draft resolution was chosen to avoid the misunderstanding that the check list, which would be an integral part of the resolution, was something that had to be done. In the preamble, similar to Resolution 8.10: Recommended Experience and Skills of Experts with regard to Quality of Assessments, it was stated why the resolution was necessary, followed by the part stating what needed to be done. Ms. Petermann concluded that it was a rather simple but quite important resolution, in which the checklist would be included as an annex. The checklist still needed some improvement and was not meant to be obliging, but just a suggestion from which the Parties could pick out what they needed. Ms. Domazetović noted that it was very important to have this checklist, which was the crucial part of the resolution. Since people working within the competent authorities were not bat experts themselves and the studies were supposed to be done by bat experts, it was important that the check list took this into consideration and that it was realistic in the level of expertise required to fill in the check list. Ms. Nedinge supported the intervention of Ms. Domazetović and emphasised that the draft resolution should be circulated before the end of June. Ms. Petermann agreed with the previous remarks and pointed out that the link to the google document containing the annex to the draft resolution would be included in the record of the meeting, so that everybody could have an early glance at the draft resolution. In addition to it, the check list was conceived as a template and was not obliging, so that the Parties could adapt it to their own needs.

Professor Fiona Mathews presented **Draft Resolution 9.5: Wind Turbines and Bat Populations** and commented that the main priority of the IWG was to ensure that assessments were done appropriately across the Parties and that data was made available, since without data it was impossible to assess the impact of wind turbines on bat populations across the whole of the EUROBATS range. The primary concern of the IWG was to make the resolution stronger, which was the reason why quite some additions were made to the text of the previous resolution.

In the first part of the draft resolution the relevant pieces of legislation were recalled that had previously been missing, including, for example, the EU Commission's Notice Guidance Document on Wind Energy Developments and EU Nature Legislation as well as the Aarhus Convention. Since this convention was rather long, it was suggested to narrow down the attention of the Parties to its most relevant articles.

The draft resolution also included a part addressing the energy insecurity in Europe and the renewal of interest in wind energy production. Another part was added to address the repeatedly raised concerns about the offshore developments and the difficulty of monitoring and making assessments for offshore facilities.

In addition, some aspects of wording were changed to improve clarity and to call for more interaction. Regarding wording, Mr. Branko Karapandza noted that “appropriate impact assessment” could be understood in the sense as used by the Habitats Directive and that “assessed appropriately” might be a better choice here.

Finally, Ms. Matthews referred to the text added to the draft resolution mentioning the failure of many Parties to comply with Resolution 8.4 (to provide information on casualty rates; to implement appropriate monitoring; to ensure that proper mitigation measures are prescribed during the approval procedure and are being implemented and are effective; to make data on prescribed mitigation publicly available). She said that there was quite some debate whether to include this point and she opened it up for discussion. Ms. Nedinge expressed her personal agreement with this paragraph, however, she was concerned whether she could get the approval for it from the Swedish government, because there might be a carry-over to other species, not only bats, dwelling around wind turbines. Ms. Domazetović remarked that, if the failure of the Parties to provide information should be mentioned in the resolution text, she would urge the Secretariat to, in the future, officially request data, i.e., formally approach the Parties through their administrative focal points. This concerned all the reporting requirements, also for other conventions. It was the national administrative focal points who should get the reporting requirement, and regardless of who was to prepare the report, the national competent authority needed to be involved in the process. Ms. Mathews inquired whether it was necessary to add this point to the draft resolution. Ms. Domazetović replied that it was up to the Secretariat to solve this and that it did not only concern this resolution, but that it was necessary to find a way how to address the reporting tasks to the Parties and how to formalise the process. In some countries, there were no administrative focal points and it all depended on one person and how involved they were. There needed to be a way to put this reporting obligation on a Party. Ms. Hamidović explained that in this very case the questionnaire was sent to the administrative focal points. Ms. Matthews stated that this did not only refer to the questionnaire but also to the lack of update of reporting

on causality rates. Dr Marnell commented that a lot of work had been done to produce a very detailed reporting structure for all the Parties. He assumed that the Secretariat would circulate the latest version of the national report or make it available online before MoP9. Dr Marnell explained that reporting between MoPs was voluntary, but that there was an obligation for each member state to report to the MoP. While initially the report was quite informal, in the meantime, a detailed online format had been prepared. However, the challenge with the online reporting system was that it had to be updated every time a new resolution was produced and provided new requirements. It was necessary to make sure that all the requirements were summarized and effectively included in the report for the next MoP. Ms. Petermann supported the argument of Dr Marnell. As a scientific focal point, she saw the need for the information, but she was also aware of the difficulties related to gathering it. Ms. Petermann also commented that, since EUROBATS online reporting system was not yet functional, Germany was reaching the point where it would be difficult for it to deliver the report in time for MoP9. Mr. Streit commented that the online reporting system for the national reports was a big concern. As this was a CMS family initiative, CMS had contracted an external organisation to set up the system, which was shared by the entire CMS family. Unfortunately, the EUROBATS Secretariat neither had direct access to the system to modify and repair it, nor did it have the necessary knowledge to do so. Mr. Streit promised that the Secretariat would again contact those in charge of the system to ask them to make it operational again. In case this did not happen soon, it would be necessary to go back to the written document as it was before. The Secretariat apologised for the inconveniences and promised to keep the Parties informed about the developments in this regard. Ms. Petermann wanted to know who was responsible for developing and including into the report the questions regarding the implementation of the resolutions from the previous MoP. She also suggested that it would be possible to circulate these questions, for example, per email, even if the online reporting system was not functioning. Dr Gazaryan responded that he had already included all the questions from the previous resolution on the implementation of the conservation and management plan into the questionnaire which was currently not functioning. Ms. Petermann insisted that these questions could be circulated in advance. Dr Gazaryan explained that this

could be done immediately, however, that it implied the answers to the questions would need to be re-inserted into the online report once this was functioning again. Bringing the discussion back to the topic of Draft Resolution 9.5, Professor Mathews pointed out that several countries individually had legislation which provided access to data. One example was the Norwegian Environmental Information Act. Professor Mathews was interested in the views whether it would be worth noting in the draft resolution all the additional country-level pieces of legislation or whether this would make the document too long. Though she saw the advantage of including the information on country-level legislation, she was afraid that she did not have a comprehensive list of it, especially not for the countries outside of the EU, and that it would be a very big task to compile such a list. Professor Russo suggested to avoid doing this for practical reasons. Ms. Jean Matthews suggested that a generic reference to any possible national obligation to report could be added into one of the clauses.

Professor Mathews proceeded commenting on the draft resolution and explaining the rationale behind the further new points included in the draft resolution. Referring to the fact that in some paragraphs the word “encourage” was replaced by a stronger word “ensure”, Ms. Heather Wood reminded the participants that in the case of the Resolution on Bats and Light pollution the word “encourage” was used. It could indicate that it was more important to provide data on the impact of wind turbines on bats in comparison to lighting. Professor Mathews explained that, whereas lighting certainly had a negative impact on bats, there was a much more direct and more obvious causation of fatalities from wind turbines, which justified the use of a stronger word. Ms. Kit Stoner supported this argument.

The last new point included in the draft resolution referred to the requests made to the Secretariat. It had been discussed that one way of achieving better implementation was through the pressure exerted by the banks providing the funds for wind energy developments. The World Bank, being a fellow organization of the United Nations, was the most appropriate one to approach in order to develop strategies for ensuring that funding for wind energy developments was contingent on the implementation of these resolutions.

There being no further comments on the draft resolutions, the Chair of the Advisory Committee closed this part of the discussion.

Mr. Streit expressed his surprise that the Advisory Committee finished its work so quickly and that there were so few draft resolutions. The Secretariat had asked the IWGs before the joint meeting if they intended to present a draft resolution, and even a part of those announced draft resolutions was now missing. Thus, the Executive Secretary requested that it was clarified which additional draft resolutions were to be expected at MoP9, and when they would be made available, since these needed to be discussed first with the Parties. This situation was surely due to the COVID-19 pandemic, which slowed down the activities everywhere, as well as the fact that no in-person meetings took place during the last few years, but it was necessary to find a solution to it and to get some answers still during this meeting. Professor Russo fully shared the concerns of Mr. Streit.

Ms. Hamidović expressed her surprise at the fact that the IWG on Bats and Climate Change was listed in the agenda as one of the IWGs to provide a draft resolution, since she had clearly communicated to the Secretariat that the existing resolution was still valid and that there was no need for a new one. The reason why there was no new draft resolution had nothing to do with the pandemic, but with the fact that the IWG on Bats and Climate Change was a fairly new group. Only after the national reports were submitted and analysed would the IWG be able to check whether there was a need for a new resolution.

Dr Marnell believed the meeting was a good one considering that the work was done online. During in-person meetings much more had been achieved. Though last minute, the IWGs usually managed to produce reports just before the AC meetings, and then during the meetings the Advisory Committee worked hard to improve the IWGs and to produce draft resolutions. The ambition of the Secretariat had been to organise an in-person meeting, and a lot of AC members were keen on that, but finally the decision was taken to hold the meeting online. The result of it was that the IWGs were behind with their work, and that could not be changed. Online meetings might be very fast, but this was also because not much work was being done there. This should be remembered when deciding on the organisation of the next meeting. Ms. Petermann supported the argument of Dr Marnell. She also agreed with Ms. Hamidović that there was no need to have a new resolution on a topic when the old one was still valid. The AC was behind with its work, many of the goals stipulated in the conservation and management plan had not been achieved and they would persist for the following quadrennium. Ms. Nedinge

agreed with Mr. Streit and had also expected more draft resolutions. She repeated that it would not be possible to agree on the resolutions presented only at the MoP. Draft resolutions should be made available latest by the end of June.

Ms. Petermann asked whether there was a deadline defined by the Agreement as to how long before an MoP a draft resolution had to be presented. Mr. Streit answered that there was no formal deadline established – there was never a need for that. However, considering the current situation, Mr. Streit would be glad if a deadline could be determined. Ms. Hamidović was of the opinion that the main reason why joint meetings were introduced in the first place was to have the possibility to get the feedback from the administrative focal points and to amend the draft resolutions, with unresolved matters then being solved at the MoPs. She suggested that if a deadline for the submission of the draft resolutions was to be introduced, it should be set for the joint meetings of the Advisory and the Standing Committees prior to the MoP. Mr. Streit confirmed what Ms. Hamidović said. This was the way it used to be. A glance at the documents of the previous joint meetings could also prove that all draft resolutions had been prepared in advance and presented at the spring meetings before the MoPs. The only exception was the draft resolution on the conservation and management plan, which was traditionally prepared during the MoP. However, four years ago even this draft resolution was formulated at the joint meeting, and it was extremely helpful. Mr. Streit repeated that, due to the special situation, he would be glad if the Committees could agree on the end of June as the deadline for the submission of draft resolutions for MoP9. Ms. Petermann was also in favour of this deadline. She further explained that the draft resolution on the conservation and management plan could not have been prepared while other draft resolutions were missing – there was no substance for it. She also said that in case of in-person meetings several subgroups were working in parallel that could also support the Secretariat, e.g., with preparing the questions for the national reports, etc. In her opinion, it was crucial that the next AC meeting should be a face-to-face one.

Commenting on the matter with the draft resolution on the conservation and management plan, Professor Aulagnier mentioned that new topics for the Advisory Committee to investigate were usually included into this document. Investigating causes of the decline in some bat populations was mentioned upon several occasions during the meeting. Similarly, Professor Aulagnier considered that solar

power plants was another topic to be included in the conservation and management plan for the next quadrennium.

20. Any Other Business

Dr Johnny de Jong asked about the location of the next European Bat Research Symposium. Mr. Peter Lina from the Netherlands informed the delegates that Spain invited the EBRS, but that there was no final decision yet as to where it would be held. Mr. Lina promised to follow up on that matter.

21. Date and Venue of the 27th Meeting of the Advisory Committee

Mr. Streit explained that, almost three years ago, before the start of the COVID-19 pandemic, everything was prepared to hold the meeting of the Advisory Committee in Sarajevo, Bosnia and Herzegovina. Everything was still in place, and since the Secretariat had not received any other invitation, the location of the next AC meeting was clear. The meeting should take place in spring 2023, however, the exact date would have to be decided at a later stage – depending on the availability of the venue, but also on the schedules of the AC Chair and the Vice-Chair. Professor Matthews emphasised the importance of the date for the next AC meeting being communicated as soon as possible. It was often announced only a couple of months ahead, for which reason some people could not attend the meeting.

22. Close of the Meeting

Both the Chair of the Standing Committee and of the Advisory Committee as well as the Executive Secretary thanked the delegates for their work and expressed their hope that next meeting would be a face-to-face one. There being no further business, the meeting ended at 11:50.

19th Meeting of the Standing Committee
26th Meeting of the Advisory Committee

Online Meeting, 9 – 12 May 2022

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