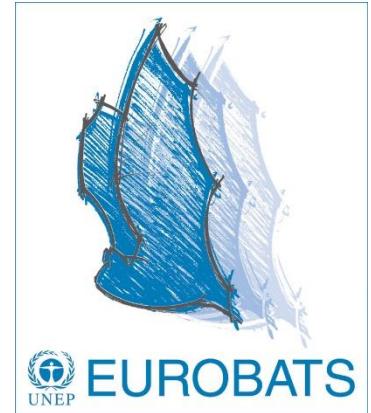


## 25<sup>th</sup> Meeting of the Advisory Committee

Videoconference 30 April 2021

### Report of the Intersessional Working Group on Bats and Climate Change



The IWG met on 29 March online.

Secretary, A. Streit, gave a short introduction on the forthcoming virtual AC Meeting, after which D. Hamidović and O. Razgour gave a short presentation on the update of the Climbat - COST Action CA18107: Climate Change and Bats: from Science to Conservation (<https://climbats.eu/>). The IWG members were reminded of Resolution 8.7 Bats and Climate Change adopted in 2018. In addition, D. Hamidović presented the Draft Questionnaire to collect evidence on impact of climate change on bats that was developed at the last AC Meeting by L. Godlevska, H. Schofield, F. Mathews and D. Hamidovic. Meeting attendees discussed the possibility of assigning subrgroups convenors to lead on: 1) following literature on climate change and bats, 2) how to monitor changes in migration, 3) developing approaches to monitoring mortality events, viruses and parasites, and 4) maintaining the Bat Trait Database after the end of CLIMBATS Action.

It was decided that:

- draft questionnaire will be forwarded to IWG members for comments with 2 weeks deadline,
- O. Razgour is already following literature and will send link to the table with references on Google Drive,
- other subgroups will be developed after the analysis of the questionnaire responses, which will be done by E. Coraman and H. Schofield as agreed at last AC Meeting.

H. Rebelo informed members that they can join CLIMBATS working groups at any time if interested. Main contacts are Working Group leaders. Next COST Action Management Committee meeting will take place at the end of May.

The Presentation and draft Questionnaire are attached to these Minutes.

## IWG – Bats and Climate Change: draft Questionnaire

Country	
Completed by (Name, Surname)	
Organisation (name, address)	
Contact details (e-mail)	
Date (dd.mm.yyyy)	

*To be sent to scientific focal points and the observers.*

*The aim of this questionnaire is to collect data on the evidence of the possible effects of the climate change on bats during last few decades. The questionnaire includes few questions focusing on the main issues of the influence of climate change on bats. However, if there are any other data on the impact of climate change on bats (point 7) that we didn't anticipate, please, provide the information. There is also space at the end for comments if needed.*

**1) Is there any observations on bat ranges over time in your country or countries you did research in (winter, breeding, or general)? Y / N / Don't know (underline)**

If yes, specify, please for every species you have the data on (underline):

A) Winter (enter: species name(s)): **Y / N / Not known**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

B) Breeding (enter: species name(s)): **Y / N / Not known**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

C) General (enter: species name(s)): **Y / N / Not known (underline)**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

**2) Do you have any observations on migration patterns over time (for example timing, routes, distances)? Y / N / Not known (underline)**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

**3) We would like to assess the correlation between climate change and population size. Do you have any data on population indices over time (e.g. roost counts or acoustic monitoring data)?**

**Y / N /Not known (underline)**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

**4) Do you have any observations on the effects of extreme climatic events on bats (for example deaths, breeding etc.)? Y / N / Not known (underline)**

If yes is it:

i) published (please, provide reference(s)):

ii) unpublished:

iii) data owner (name and surname):

iv) are you willing to share data? **Y/N**

**5) Do you have any observations on the impact of weather on bat demography (for example, showing a link between juvenile survival and spring temperature)? Y / N / Not known (underline)**

If yes is it:

- i) published (please, provide reference(s)):
- ii) unpublished:
- iii) data owner (name and surname):
- iv) are you willing to share data? **Y/N**

**6) Do you have any body size data over time (such as forearm/ weight)? Y / N / Not known (underline)**

If yes is it:

- i) published (please, provide reference(s)):
- ii) unpublished:
- iii) data owner (name and surname):
- iv) are you willing to share data? **Y/N**

**7) Other observations on potential impact:**

- i) published (please, provide reference(s)):
- ii) unpublished
- iii) data owner (name and surname):
- iv) are you willing to share data? **Y/N**

**8) Comments:**



# IWG Bat and Climate Change

zoom Meeting  
29<sup>th</sup> March 2021  
13:00-14:30

convenors: Daniela Hamidović & Hugo Rebelo

# Agenda [CET]



- |                      |   |
|----------------------|---|
| <b>13:00 – 13:15</b> | <b>CLIMBATS COST Action update</b>                      |
| <b>13:15 – 13:30</b> | <b>Q&amp;A</b>  |
| <b>13:30 - 14:00</b> | <b>Presentation and discussion of the Questionnaire</b> |
| <b>14:00 – 14:30</b> | <b>Discussion of future steps</b>                       |



# COST Action Network ClimBats

## Update

<https://climbats.eu> | @batstothefuture #batstothefuture



# COST Action Network ClimBats



Action Chair: [Danilo RUSSO](#)

Action Vice Chair: [Hugo REBELO](#)

Working Group 1: [Orly RAZGOUR](#), Leader; [Luca SANTINI](#), Vice-coordinator

Working Group 2: [Daniela HAMIDOVIC](#), Leader; [Adrià LÓPEZ-BAUCELLS](#), Vice-coordinator

Working Group 3: [Vanessa MATA](#), Leader; [Xavier PUIG-MONTSERRAT](#), Vice-coordinator

[Leonardo ANCILLOTTO](#), Short Term Scientific Mission Coordinator

[Fiona MATHEWS](#), Science Communication Manager





# COST Action Network ClimBats Goals



- 1) Define, predict and quantify the effects of climate change on bats across Europe ([WG1](#))**, establishing how bats react to different climatic conditions, assessing the current magnitude of this impact, forecasting its future effects, and establishing the roles played by life history traits and environmental factors.
- 2) Establish strategies to develop a network to monitor and predict changes in bat distribution and inform future management and policy ([WG2](#))**. This will be achieved by selecting the best monitoring approaches, identifying a set of responsive bat species acting as indicators, and facilitating co-operation between scientists and relevant stakeholders.
- 3) Evaluate the effects of climate change on insect consumption provided by bats in farmland ([WG3](#))** by: a) estimating the importance of this ecosystem service across Europe for the agricultural economy and society; and b) modelling scenarios of mismatches between the distribution of bats and their pest prey under future climate change, evaluating the economic consequences of these mismatches.



Bats &  
Climate  
Change

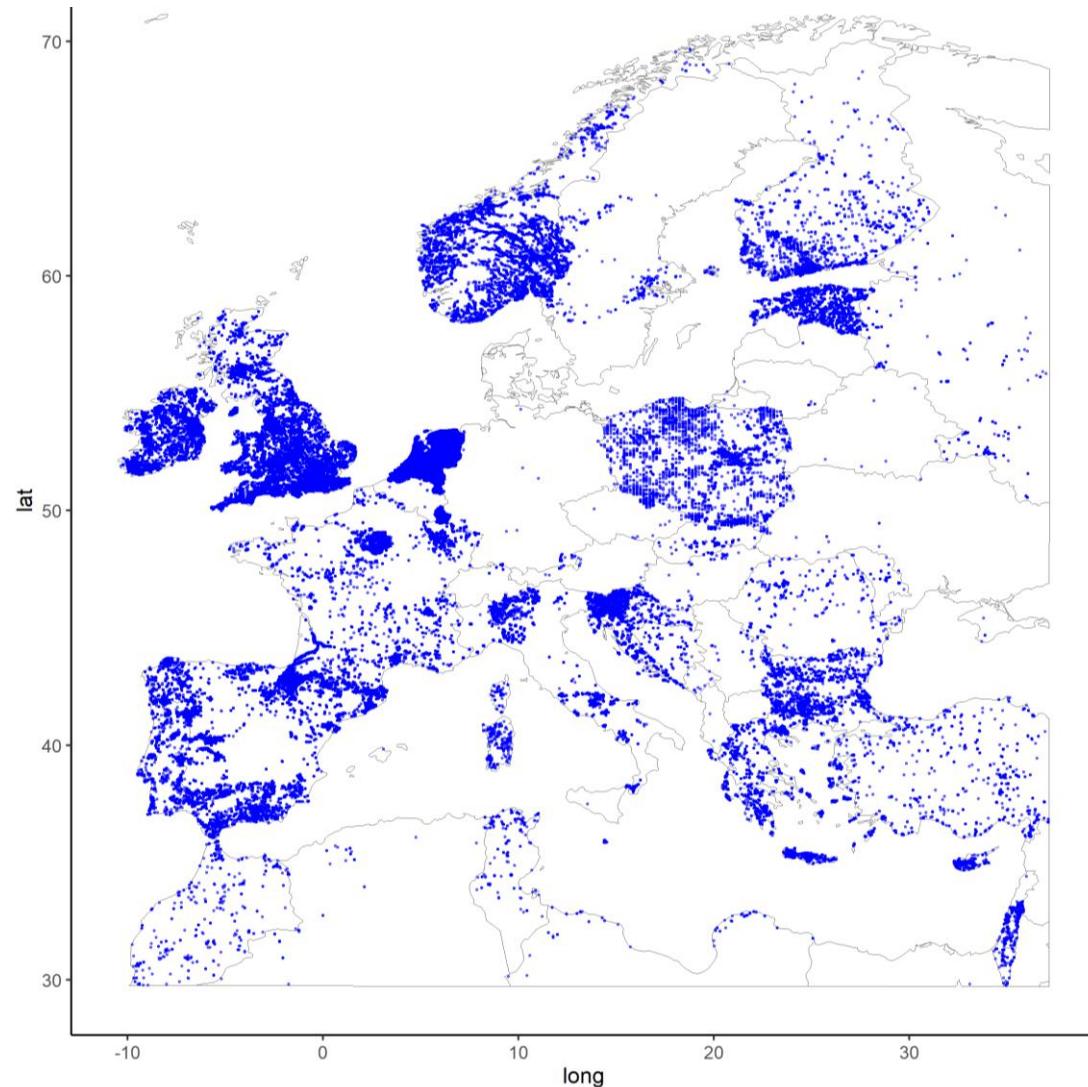


cost  
EUROPEAN COOPERATION  
IN SCIENCE & TECHNOLOGY



# WG1 updates: SDMs

- 37 bat species
- > 60 data providers
- Climate only variables
- Present, 2050 RCP 4.5 and 8.5
- Model resolution 5 km
- Models will be made available after publication





# WG1 updates

## Bat trait database

- 54 bat species
- 144 traits
- Morphology, physiology, phenology, echolocation, spatial behaviour, genetics, pathogens, threats.
- Complete database by May 2021
- Open access post publication

# WG1 updates

## Systematic review

- Bat responses to climate change
- 1095 paper retrieved
- 68 papers retained
- Analysis May 2021

# MAIN WG2 Update



1. Sampling tools established for bat species selected as project targets (by WG1) according to their potential sensitivity to climate change (distribution and phenology if possible)
  - Questionnaire developed and distributed (presented in IWG on monitoring and indicators)
  - Update of the Monitoring guidelines in cooperation with EUROBATS

## WG2

*\*\* Map illustrating the location of the site network designed to monitor bat responses to future climate change.\*\* - waiting for WG1 – soon to be delivered*

# Planned:



## A. Workshop to discuss monitoring methodologies:

*Workshop aimed at fostering a co-development process involving scientists and stakeholders in the designing of the monitoring network.*

## B. Training School in Year 3:

*To train personnel from NGOs, nature reserves, and volunteers in surveying presence and activity of the target species.*

## C. Online layperson report

*that presents in an accessible way the outcome of WG2 to non-specialist stakeholders such as policymakers, management authorities, and the public.*

# MAIN WG3 Update



*Topics under procedure:*

1. Young students/researchers engagement
2. Approaches to pest/bats dyads or lists selection
3. Economic valuation
4. Changes in the insectivory value under different climate change scenarios
5. Detected research gaps
6. Pest traits and distribution resources



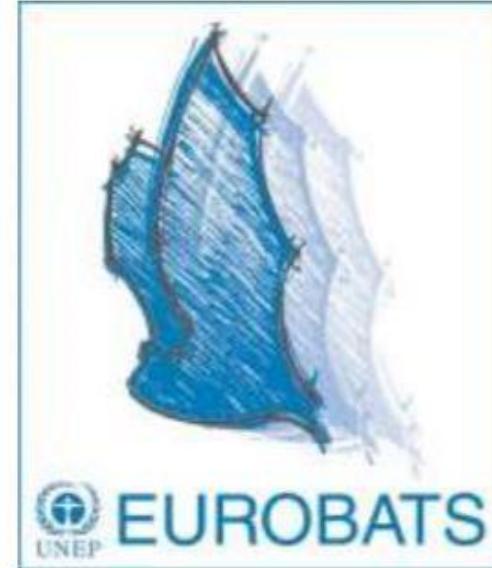
# IWG Bat and Climate Change

EUROBATS.MoP8.Resolution8.7

## 8<sup>th</sup> Session of the Meeting of the Parties

Monte Carlo, Monaco, 8 – 10 October 2018

Resolution 8.7  
Bats and Climate Change



*The Meeting of the Parties to the Agreement on the Conservation of Populations of European Bats (hereafter “the Agreement”),*

*Advises Parties and non-party Range States, if not already done so, to:*

1. Promote research into the effects of climate change on bats.
2. Cooperate on assessments of bat vulnerability to climate change at the EUROBATS range level.
3. Monitor changes in species migration, hibernation, reproductive and range-shift patterns and consequent species interactions.
4. Ensure habitat availability and connectivity for bats now and in the future by appropriate means of habitat protection, the establishment of ecological networks and adaptive habitat management.
5. Ensure that climate change impact on bats is taken into account in land-use planning and impact assessment in future projects evaluation.
6. Raise awareness of the impacts of climate change on bats.
7. Promote continued cooperation and collaboration between scientists, professionals and other stakeholders and international bodies whose work is related to climate change.

*Requests the Advisory Committee to:*

1. Identify knowledge gaps and research priorities relating to the impacts of climate change on bats.
2. Identify standardised methodologies to evaluate species and populations vulnerability to climate change.
3. Compile all relevant scientific information to assess the impact of climate change on bats.
4. Develop guidelines for the most urgent or prioritised actions identified, if appropriate.
5. Publish any such guidelines following circulation to all Parties for approval.





# IWG Bat and Climate Change Questionnaire



# Other topics: Species impacted?

- Vulnerability (IUCN guidelines) -  
<https://portals.iucn.org/library/sites/library/files/documents/SSC-OP-059.pdf>
- Unfavourable – bad/inadequate conservation status (EU Habitat Directive)?
- IUCN Category (CR, EN, VU) – European, Mediterranean, National level plus year of estimation?
- Common species ?
- Separate species – group of species ?
- Based on species ecology ?

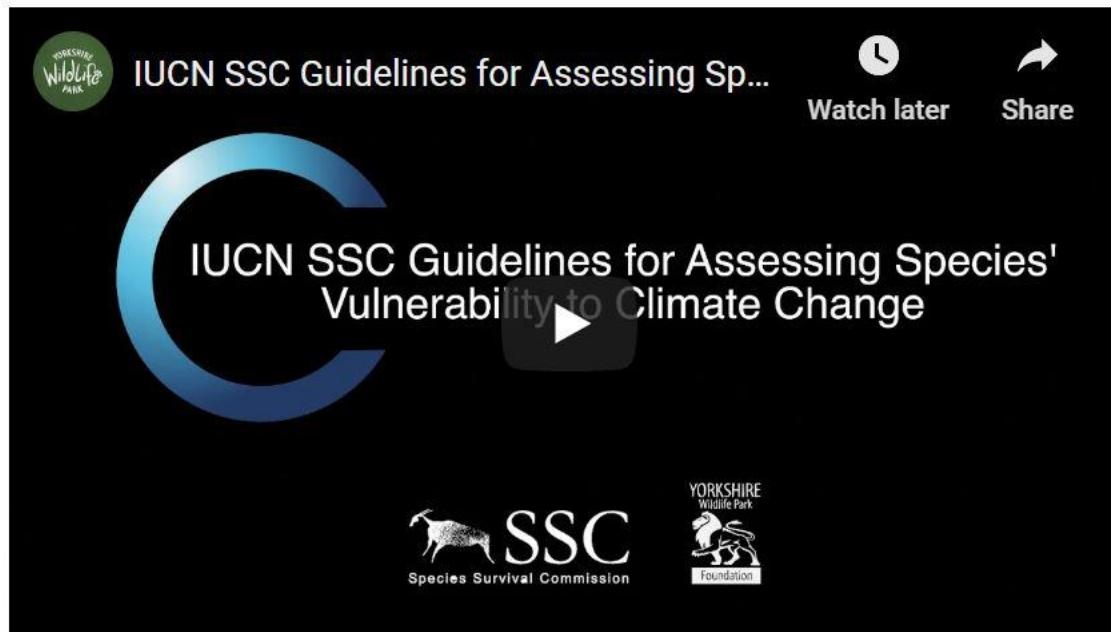
# Resources

Climate change vulnerability assessment of species. WIREs Climate Change. Foden et al (2018)

Guidelines for using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee. [See section 12 on Climate Change]

Reference List of Climate Change Science, Policy & Related Information. World Association of Zoos and Aquariums, Botanic Gardens Conservation International, Zoological Society of London and IUCN's Conservation Breeding Specialist Group and Climate Change Specialist Group.

Assessing species vulnerability to climate change. *Nature Climate Change* 5: 215–224 (2015)



Warning times for species extinctions due to climate change. *Global Change Biology* 21:1066–1077 (2015)





**Subconvenors?**

**Literature collection**

**Changes in migrations monitoring**

**Mortality, viruses, parasites monitoring**

**Questionnaire analyses – Henry Schofield and Emrah Coraman**

**Bat Trait Database updating?**