PREDICTING COMMUTING CORRIDORS OF BATS [O]

THOMAS RAVESSOUD[1,2], KLAUS ECKER[1], FABIO BONTADINA[1,3], CLAUDE STECK[4], STEFFI VON FELTEN[5], LUCRETIA DEPLAZES[3], HUBERT KRÄTTLI[6], MARTIN K. OBRIST[1]**, **martin.obrist@wsl.ch
[1]Swiss Federal Research Institute WSL; Birmensdorf, Switzerland;
[2]University of Lausanne; Lausanne, Switzerland;
[3]SWILD - Urban Ecology & Wildlife Research; Zürich, Switzerland;
[4]FrInaT - Freiburg's Institute of Applied Animal Ecology; Freiburg, Germany;
[5]Oikostat - Ecological Statistics; Ettiswil, Aarau, Birwinken, Zürich, Switzerland;
[6]Bat Conservation Switzerland; Zürich, Switzerland.

Three main targets for the conservation of bats exist: roosts, foraging areas and commuting corridors. Roosts can be relatively well targeted at least in house-dwelling bats, and foraging areas often profit from other habitat conservation measures. But commuting corridors are difficult to protect due to limited knowledge about their location and importance. We aimed at finding models for predicting the commuting activity of bats in agricultural landscapes, focussing on two bat species with different navigational adaptations: *Rhinolophus hipposideros*, known to depend strongly on vertical structures, and *Myotis myotis*, less reliant on such features. We recorded acoustic activity at 30 sites around six roosts per species, twice before and after the juveniles were flying, at vertically structured and more open recording sites. Species-specific passes during peak activity of dawn emergence and dusk return were considered as commuting. In a first analytical step, we modelled the relation between the commuting activity and 170 environmental predictors per recording site. The most relevant predictors were identified with automatic Least Absolute Shrinkage and Selection Operator (LASSO) model selection, cross-validated using training and testing sets to evaluate the predictive model performance. Activity of both species was mainly related to three-dimensional arrangement of landscape features, terrain ruggedness, open spaces, and distance to structures, highlighting the importance of fine-scaled spatial parameters. Using the inverse of these habitat selection predictions as cost matrix, we modelled Least-Cost Distance corridors and critical features therein (pinch-points in current flow). The resulting corridor models allow the visualizing and targeting of important commuting corridors for landscape planning and conservation. In a final step, model calculations will be compared with expert's nomination of corridors, to assess necessary effort and yield in corridor identification.

14th European Bat Research Symposium

Donostia, The Basque Country

1-5 August 2017

EBRS2017

BOOK OF ABSTRACTS

14th European Bat Research Symposium

Donostia, The Basque Country

1-5 August 2017

EBRS2017

eman ta zabal zazu

Universidad del País Vasco

Euskal Herriko Unibertsitatea

udako euskal unibertsitatea

upna Universidad Pública de Navarra

Nafarroako Unibertsitate Publikoa

NATURAL HISTORY MUSEUM OF DENMARK
UNIVERSITY OF COPENHAGEN

14th European Bat Research Symposium - EBRS 2017
Abstract book
1-5 August 2017
Donostia, The Basque Country
ISBN: 978-84-697-4575-5

Book design: Antton Alberdi
Logo design: Tere Uribe-Etxeberria
Technical edition: Joxerra Aihartza, Antton Alberdi & Inazio Garin
Abstract edition: Anthony M Hudson & Peter HC Lina
The Organizers wish to thank the technical staff of the IM Barriola Building and the Uda Ikastaroak/Summer Courses, specially Juan Luis Cruz and Ainhoa Urbieta.
Printed in Hizki Inprimategia, Zarautz, in July 2017

Universidad del Pais Vasco
Euskal Herriko Unibertsitatea

upna Universidad Pública de Navarra
Nafarroako Unibertsitate Publikoa

NATURAL HISTORY MUSEUM OF DENMARK
UNIVERSITY OF COPENHAGEN

ueu udako euskal unibertsitatea

EUSKO JAURLARITZA
GOBIERNO VASCO