



PHOTO: COMMON PIPISTRELLE BAT

**PROJECT** A MODELLING APPROACH TO TARGETING MATERNITY ROOST SURVEY EFFORT FOR THE LESSER HORSESHOE BAT

**CLIENT** STUDY IS PUBLISHED IN THE EUROPEAN JOURNAL OF WILDLIFE RESEARCH

## PROJECT DESCRIPTION

Develop a habitat-suitability modelling tool for identifying likely maternity roost sites of the lesser horseshoe bat in Wales. A novel approach was taken using techniques originally developed for species-distribution mapping.

## SERVICES PROVIDED

- Collation of lesser horseshoe bat records from biodiversity record centres, and environmental covariate data including environmental and anthropogenic features, land cover and topographical data from a range of sources.
- Filtering of bat records to ensure appropriate accuracy and temporal relevancy
- Processing of environmental data to generate covariates relating to proximity, coverage and density of key features as well as a range of topographical derivatives.
- Use of R to predict suitable maternity roost habitat for lesser horseshoe bat across the whole of Wales via an ensemble model derived from presence-only modelling with variable selection using area under the curve (AUC) based and random forest approaches.
- Post-processing of outputs to identify areas likely to represent previously unknown existing maternity roost sites.

## ADDED VALUE

The tool developed can:

- Dramatically reduce survey effort and increase efficiency by limiting search effort to likely maternity roost sites.
- Aid in habitat management, allowing identification of candidate areas of habitat for connection with corridors, and a means to assess where planned infrastructure might impact on dispersal.
- Be applied to other species of bat including grey long-eared, whiskered, brown long-eared, natterers and pipistrelle bats.



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