

What scale should we be working on?

Taking Chiroptera issues into account

While protecting their roosts has proved essential for ensuring the long-term survival of bat populations, preserving their foraging habitats is no less vital. Managers aware of this necessity soon run up against an unknown, though. Specifically, what is the best scale for introducing favourable management measures? Some thirty naturalists accordingly tackled this question as part of a Life nature programme. They targeted three cave-dwelling species that were particularly endangered and unfamiliar: the *rhinolophus euryale*, the *myotis Capaccinii* and the *miniopterus Schreibersii*. These three species have very different ecologies. The *rhinolophus euryale* forages essentially in and on the edges of hardwood stands bordered by grassland or meadowland. The *myotis Capaccinii* is a species specific to aquatic environments, which captures its prey above expanses of calm water. The *miniopterus Schreibersii* lives in such diverse environments as hedged orchards, the edges of forests or the public lighting systems of peri-urban environments.

Highly mobile. During the project, 120 gestating or lactating females were monitored individually and on a daily basis using radiolocation technology, revealing astounding individual journeys among all three species! The *rhinolophus euryale*, described in scientific literature as a species with a small radius of action (< 2.5 km) because of its wing morphology, is in fact likely to reach distances of over 10 km



A recent study has revealed the full extent of chiropterans' home range.

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DURING HIBERNATION AND REPRODUCTION, SWARMS OF MINIOPTERUS SCHREIBERSII COMPRISE OVER 2 000 INDIVIDUALS PER SQ. M.

from its roost every night. Record distances of nearly 20 km have even been observed! Likewise, the *myotis Capaccinii* is capable of travelling to over 30 km from its roost, covering over 100 linear km of water course per night. Who would have thought that these little mammals, each weighing less than 20 grams, would be capable of covering such distances?

An extensive home range. The home range of a colony of chiropterans – in other

words, the area used by the individuals, especially as they search for food – can therefore be huge. In the Drôme, radiolocation tracking of twenty female *miniopterus Schreibersii* led naturalists to estimate the total area of the colony's home range at 200 000ha (even if usage of this area is not consistent throughout). Several factors can influence the area of the home range: the age, sex or reproductive status of the individuals / the size of the colony (breeding colonies frequently host tens or even hundreds or thousands of individuals) / the distribution of nutritional resources / the topography and the quality of the surrounding environments.

These considerations and the results of the studies (with additional insight provided by recently-acquired results from

several European countries) served as a basis for drawing up detailed recommendations as to the scale of managers' action. For example, it was shown that, to ensure good-quality expanses of water for the *myotis Capaccinii*, measures to control the use of phytosanitary products and to plant grass strips along the edges of plots or water courses had to be scaled to the whole catchment area.

Now it remains to find appropriate management tools that are also suitable for working on such a large scale. A number of suggestions are provided in the technical guide, «*Connaissance et conservation de trois chiroptères cavernicoles*», published by the Société française pour l'étude et la protection des mammifères¹. ■

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Home range of the Chiroptera

	<i>Rhinolophus euryale</i>	<i>Myotis Capaccinii</i>	<i>Miniopterus schreibersii</i>
Close-range operating area (around the roost)	<ul style="list-style-type: none"> Colony < 200 individuals = 5 km Colony > 200 individuals = 10 km 	High-flow channel and river-bank stands of water courses within a 30 km radius	15 km
Extended operating area	15 km	Catchment area	30 km