

Supplementary Materials:

Table 1. Distance of detection from Barataud's study [3], frequency of peak and call duration energy from Obrist et al.'s study [4].

Species	Distance of Detection	Frequency of Peak Energy		Call Duration	
		Mean	SD	Mean	SD
<i>Barbastella barbastellus</i>	15	36	4.8	4.3	1
<i>Eptesicus nilssonii</i>	50	29.8	1.6	10.7	1.6
<i>Eptesicus serotinus</i>	35	26.8	1.8	10.9	2.4
<i>Hypsugo savii</i>	35	34.9	2	7.3	1
<i>Miniopterus schreibersii</i>	25	53.9	3.8	6.2	0.8
<i>Myotis alcaethoe</i>	10	-	-	-	-
<i>Myotis bechsteinii</i>	10	48.4	6.6	4.3	0.8
<i>Myotis brandtii</i>	10	45.7	4.9	4.6	1.1
<i>Myotis daubentonii</i>	12.5	42.7	3.5	3.9	0.9
<i>Myotis emarginatus</i>	8	54.5	7.4	3.6	0.7
<i>Myotis myotis</i>	17.5	37.1	4	6	1.7
<i>Myotis mystacinus</i>	10	46.8	5.6	3.6	0.5
<i>Myotis nattereri</i>	11.5	40.4	8.8	4.1	1.1
<i>Myotis oxygnathus</i>	15	-	-	-	-
<i>Nyctalus lasiopterus</i>	150	-	-	-	-
<i>Nyctalus leisleri</i>	80	27.4	5.1	9.3	3.9
<i>Nyctalus noctula</i>	100	22.1	3.1	14.4	3.4
<i>Pipistrellus kuhlii</i>	27.5	39.5	1.8	6.3	0.9
<i>Pipistrellus nathusii</i>	27.5	41.3	2.2	6.9	1.4
<i>Pipistrellus pipistrellus</i>	27.5	47.4	2	6.3	0.9
<i>Pipistrellus pygmaeus</i>	22.5	56.2	2.4	6	0.9
<i>Plecotus auritus</i>	22.5	37.7	5.1	2.9	0.6
<i>Plecotus austriacus</i>	22.5	27.6	2.5	5.8	1.4
<i>Rhinolophus euryale</i>	11	-	-	-	-
<i>Rhinolophus ferrumequinum</i>	10	79.7	4.7	22.7	4.9
<i>Rhinolophus hipposideros</i>	5	107.5	3.7	21.6	4.4
<i>Tadarida teniotis</i>	150	11.4	0.8	16.8	2.4
<i>Vespertilio murinus</i>	50	24.6	2.2	15	3.8

Table 2. Additional information on the French National Bat-Monitoring Program coordinated by the National Museum of Natural History (MNHN).

Aim of the program	Monitoring the temporal trends of bat populations at a national scale
Car-transect survey sampling protocol	
Scope	10 km around surveyors' home.
Route length	30 km
Number of transect per route	10
Transect length	2 km separated of at least 1 km

Period of sampling	from the 15th of June to the 31th of July and 15 August to 31 September	
Weather conditions	no rain, low wind speed (< 7 m/s), temperature > 12°C	
Survey start	as possible 30 minutes after sunset	
Height of sensor	~1 m, bat detector are fixed at the window car (The detector was fixed to the passenger-side window at a 45° angle so that the distance to road edges was similar all along the circuits, for more detail see Kerbiriou et al. 2018)	
Count-point survey sampling protocol		
Scope	square of 2km-side randomly chosen (by the Museum) in a radius of 10km from the observer's home, (i.e. on average one square randomly chosen between 80 possible squares).	
Area	square of 2km-side	
Number of point per circuit	10	
Recording duration	6 minutes	
Period of sampling	from the 15th of June to the 31th of July and 15 August to 31 September	
Weather conditions	no rain, low wind speed (< 7 m/s), temperature > 12°C	
Survey start	as possible 30 minutes after sunset	
Height of sensor	~1 m	
Bat recording characteristics		
Bat detector	Tranquility Transect	D240x
Intercalibration of detectors	Intercalibration of detectors was at the MNHN.	trigger level on "low" position and trigger source on "high frequency" position
Suppliers	Courtpan Design Ltd, UK	Pettersson Elektronik
High pass filter	5 kHz	18 kHz
Frequency range	10-160kHz	10-120 kHz
Sample rate	409.6kHz	307 kHz
Microphone	Capacitive	Advanced Electret
Recording device	Zoom H2 digital recorder (Samson technologies, USA)	
Frequency	96 000 sample/sec	
File storage format	WAV	
Bat identification		
Software	Syrinx 2.6, software configurations (access: http://www.vigienature.fr/fr/page/documentations-logiciel)	
Procedure	· Training: 2-day training course+ online self-training courses · Bat first identification: by volunteers · Bat identification validation: by MNHN	
Taxon identification level	Species level except for <i>Myotis</i> sp. Extensive data expertise evaluated that <i>Pipistrellus kuhlii</i> may include less than 8 % <i>Pipistrellus nathusius</i> , as these two species overlap in their acoustic signatures.	
Meteorological data		
Air temperature (°C) and cloud cover (% in four classes: 0-25%, 25-50%, 50-75%, 75-100%) were recorded by volunteers during the survey. Wind speed recorded by volunteers using Beaufort scale but this empirical categorical measure was not used in analyses. We used this field measure to confirm the appropriateness of the use of the wind speed measure provide by the closest meteorological station (within a 10 km radius) using the public archives Infoclimat [http://www.infoclimat.fr/]. - Wind speed (km/h) and humidity (%) from the closest meteorological station (within a 10 km radius) using the public archives at Infoclimat [http://www.infoclimat.fr/]		

Table 3. Model set with df, log-likelihood, AICc, Δ AICc, and Akaike weights. Abbreviations: methods to survey bat activity (Surv.), operator (Op.), species (Sp.), humidity (Hum.), temperature (Temp.), index of clutter (Ind.Clutt.).

Model	df	log-likelihood	AICc	delta	weight
Surv. + Op. + Sp + Hum + Temp.	50	-338618.1	677336.4	0.00	1
Surv. + Op. + Sp + Ind.Clutt + Temp.	50	-338654.9	677410.0	73.65	0
Null	1	-376925.1	753852.2	76515.84	0

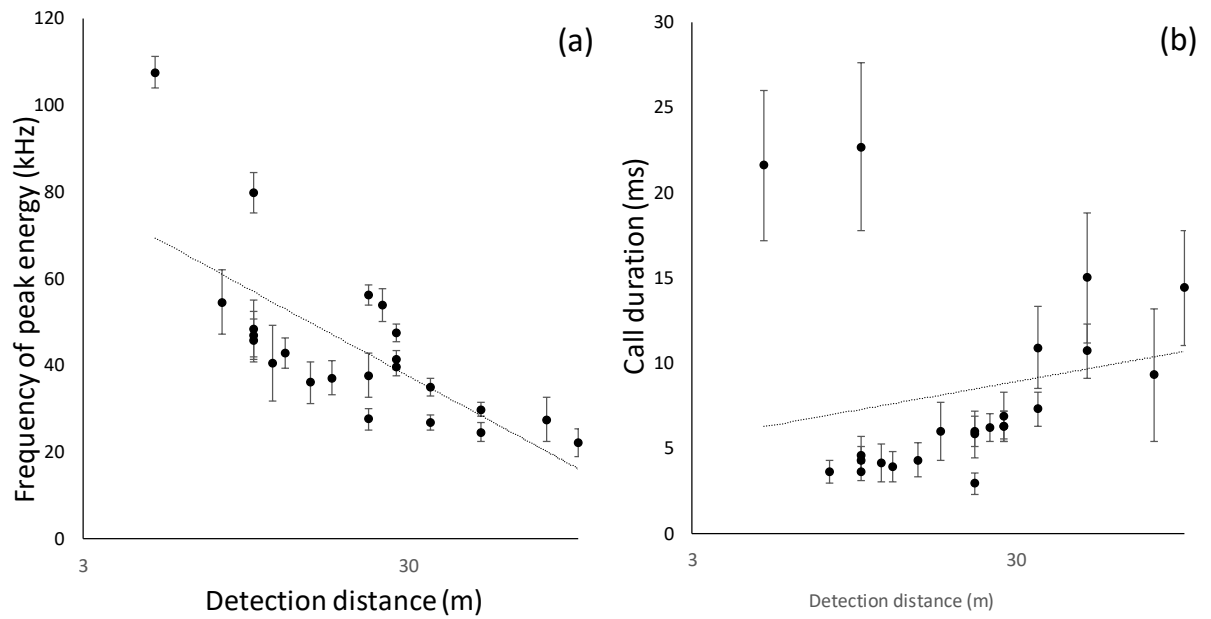


Figure 1. Relationship between detection distance (Barataud's study [3]) and frequency of peak energy (Obrist et al.'s study [4]) and call duration (Obrist et al.'s study [4]).