Photographic surveying of mouse-eared bat colonies reveals cases of reproduction of Schreibers' bent-winged bat *Miniopterus schreibersii* (Kuhl, 1817) at the edge of its range

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Abstract:
The Schreibers' bent-winged bat (*Miniopterus schreibersi*i), listed as Vulnerable on the IUCN Red List, has undergone severe population declines in Europe. In Piedmont (NW Italy), at the northern edge of its range, it is rare. Following the capture of a post-lactating female of this species – possibly a transient individual – at the entrance of a mouse-eared bat (*Myotis blythii* and *Myotis myotis*) maternity site in late July 2022, we investigated its occurrence in the six maternity colonies of mouse-eared bats currently known in the region. We analysed photographic material collected between 2004 and 2025 during yearly colony censuses, focusing on identifying possible *M. schreibersii* adults and newborns based on their distinctive morphological traits. Photographs taken after the emergence of adult bats at dusk provided the first clear evidence of *M. schreibersii* reproduction in Piedmont: newborns, although few in number (1-4), were repeatedly documented at the Abbey of Staffarda, the Castle of Agliè, and the Fortress of Verrua Savoia. Detections suggested an increasing trend in the number of individuals. Their frequency, together with the large distances from the nearest maternity colonies of M. schreibersii outside the region, rules out the possibility that the presence of newborns was the result of occasional transport by mothers during temporary roost-switch events. The observed distribution pattern suggests a strategy in which small groups of breeding females integrate into large mouse-eared bat colonies rather than forming a single, larger nursery. The non-invasive photographic method used proved effective, and could be suitable to monitor this species in other areas where it is uncommon.

Keywords: monitoring, reproduction, nurseries, Miniopterus schreibersii, Myotis myotis, Myotis blythii.

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Short title
Photographic surveying reveals *Miniopterus schreibersii*

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Introduction

Schreibers' bent-winged bat (*Miniopterus schreibersii*) occurs from southern Europe and northwestern Africa to the westernmost regions of Asia. In Europe, the northern boundary of its range currently crosses central France, the French and Swiss Jura Mountains, northern Italy, Slovenia, southeastern Austria, Slovakia, and Romania. Single individuals are sometimes recorded further north, but the species is considered extinct in Germany and in the Ukrainian areas where it was formerly recorded (Aulagnier and Presetnik 2023). Since the mid-twentieth century, European populations of this species have experienced dramatic declines due to several factors including habitat loss, pesticide use, and disturbance to colonies. Massive die-offs associated with the emergence of the Lloviu filovirus have affected colonies in Spain, France, Portugal, and, more recently, Hungary; however, causality between these mortality events and viral infection has not been conclusively established (Negredo et al. 2011; Kemenesi et al. 2018; Ramírez De Arellano et al. 2019). According to Ancillotto et al. (2025) *M. schreibersii* disappeared from two of the four Italian cities they surveyed because of roost alteration and growing urbanization. Currently, the species is classified as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List (Cistrone et al. 2023).

In this context of decline, the surveillance of the species' demography has become increasingly important, including along the edges of the species' range, where the loss of colonies or, on the contrary, the establishing of new colonies can provide valuable information on the trends underway. In northwestern Italy, Piedmont represents a suitable area to monitor such possible changes. The first records of the occurrence of *M. schreibersii* in the region date to the early 1970s. They include the capture, on 25 April 1974, of a pregnant female inside an abandoned mine at Santa Vittoria d'Alba that is used by a maternity colony of mouse-eared bats (*M. myotis* and *M. blythii*). This event was interpreted as evidence that also *M. schreibersii* reproduces at the site (Sindaco et al. 1992), yet, recently, this conclusion has been called into question in an update on the distribution of the species in Piedmont (Toffoli 2025). According to the latter, the species occurs in the central and southern part of the region; after 2000, it has been acoustically recorded at eight different sites and directly observed

inside a cave (1-4 individuals in winter) and the above-mentioned mine at Santa Vittoria d'Alba (single individuals from October to March). However, taking into account that none of the available records, either recent or historical, were recorded between May and early July, Toffoli (2025) concluded that the pregnant female captured in the 70s was likely resting in the mine during migration or dispersal, and that the species probably does not give birth in Piedmont.

On 28 July 2022, we captured a post-lactating female of *M. schreibersii* at the entrance of a maternity roost used by a colony of mouse-eared bats inside the Castle of Agliè. This female too may have been using the castle as a stopover site during seasonal movements or, as an alternative, may have given birth at the site. In order to shed light on such occurrences and, more generally, on the reproduction of the species in this part of its range:

1) we gathered the available data on the presence of nursery colonies of *M. schreibersii* within a buffer area around Piedmont;

2) considering that *M. schreibersii* often shares maternity sites with mouse-eared bats (Lanza 2012; Aulagnier and Presetnik 2023), we carefully searched for *M. schreibersii* individuals in the photographs taken while censusing the colony of the Castle of Agliè and the other mouse-eared bat maternity colonies known in Piedmont.

Methods

Known nursery colonies of M. schreibersii *in a buffer area*

With reference to a buffer radius of 200 km from the borders of Piedmont, we mapped the nursery colonies of *M. schreibersii* currently known based on scientific and grey literature sources. When needed, we supplemented the information reported in literature by directly contacting the authors (e.g. for reports of "summer colonies" lacking further detail). The buffer radius was chosen considering that *M. schreibersii*, although capable of longer migrations, mainly moves seasonally between roosts located 40-100 km apart (Hutterer et al. 2005; Wright et al. 2020), and that the

distances nightly covered by females from maternity roosts are shorter (Aulagnier and Presetnik 2023).

Analysis of photographs taken inside maternity sites of mouse-eared bats in Piedmont

Currently, six mouse-eared bat maternity sites are known in Piedmont: the above-mentioned mine at Santa Vittoria d'Alba, four heritage buildings – the Abbey of Staffarda, the Palace (*Reggia*) of Venaria, the Fortress of Verrua Savoia, and the Castle of Agliè –, and an artificial underground beneath the historic gardens of Isola Bella (Baratti et al. 1997; Debernardi and Patriarca 2007, 2015; Debernardi et al. 2012; Patriarca et al. 2012).

From 2004 or later (depending on the site), we carried out censuses of these colonies as described by AA.VV. (2014). Once or twice yearly at each site, we counted the bats aged one year or older (hereafter "adults") based on videotape footage recorded during their emergence at dusk and, after the emergence ended, by roost inspections aimed at counting the adults possibly remaining inside. If the latter were clustered with newborns, photographs of clusters were taken to facilitate counting. As a result, we have a collection of photographs taken in the roosts during the night (hereafter "night photos"). Although irregularly collected (only when adults were present), these allowed us to search for *M. schreibersii* newborns among the offspring of mouse-eared bats.

In some cases, on census days or nearby dates, we also took diurnal photographs of the colonies (hereafter "day photos"); for one of the surveyed sites, only day photos were taken in some years. When available, these materials were included in our search for *M. schreibersii*.

Since *M. schreibersii* gives birth in June or in the first half of July (Aulagnier and Presetnik 2023) we analysed only photos taken in the period 1 June-15 July.

To identify *M. schreibersii* we relied on external morphology. Due to their sparse fur, newborns of this species have a pinkish hue which characterizes their heads, bodies and forearms (Klíma and Gaisler 1967; Aulagnier and Presetnik 2023). Mouse-eared bat newborns are much darker and, even in their early days of life (i.e. when naked), can be distinguished because of their darker forearms.

Adults of *M. schreibersii* are easily recognizable from mouse-eared bats thanks to their smaller size, shorter nose, high-domed forehead and, above all, very short ears, with a short and forward-curved tragus. In the case of the colony of Isola Bella, where *M. capaccinii* and *M. daubentonii* also occur, identification of possible *M. schreibersii* individuals relied on subtler differences, and primarily on the shape of the ears (which are longer in *Myotis* species).

Results

Known nursery colonies of M. schreibersii *in a buffer area*

Most of the maternity sites of *M. schreibersii* known within a buffer of 200 km from Piedmont are situated in France, beyond the Alpine chain (fig. 1). Based on straight line distance, the nearest of them are at about 35-37 km from the borders of Piedmont (Gourdon 2023; Dioniso 2025; E. Cosson and C. Dionisio, *pers. comm.*).

In Italy, the closest maternity site currently known is an abandoned mine in Tuscany, at 150 km (Dondini and Vergari 2023), followed by a cave in Veneto, 168 km from the borders of Piedmont (Pereswiet-Soltan et al. 2016). Other two maternity roosts are inside underground sites located in Veneto and Romagna just over the buffer border (Vernier 2007; Bertozzi 2024). Nearer colony sites, the closest of which are situated in Emilia (at about 15 km from the borders of Piedmont) and in Liguria (about 40 km), are known to be used as transition roosts and/or as hibernacula (M. Calvini, A. Ruggieri, D. Trombin, *pers. comm.*).

Analysis of photographs taken inside maternity sites of mouse-eared bats in Piedmont

We examined a total of 591 photographs: 365 of them were taken on 108 nights (during colony censuses at dusk emergence) and 226 during 34 diurnal surveys. About 93% of the photos were taken in June.

Night photographs revealed the presence of *M. schreibersii* newborns at three of the six roosts surveyed: the Abbey of Staffarda, the Fortress of Verrua Savoia, and the Castle of Agliè (fig. 1). The respective positioning of individuals within the colonies allowed us to recognize the newborns photographed more times in the same survey, avoiding double-counting. The maximum number of newborns recoded per survey was 2 at the Abbey of Staffarda, 1 at the Fortress of Verrua Savoia, and 4 at the Castle of Agliè. We cannot exclude the presence of further pups, hidden under the bodies of other bats.

The first recording of a newborn occurred in 2009 at Agliè and in 2012 at Staffarda. The numbers of newborns photographed at these two sites from 2005 to 2024 (a period for which we have night photos regularly taken at both the sites) suggest a positive trend (Spearman's rho = 0.68, $p < 0.001$; fig. 2).

In some cases, from night photographs we could identify also single adults of *M. schreibersii*. This happened at least twice at the Castle of Agliè (in a third case an identification was dubious) and once at the Abbey of Staffarda; the adult of Staffarda was carrying a pup (fig. 3).

On the whole, occurrences of *M. schreibersii* were recorded in the Abbey of Staffarda and the Castle of Agliè in 6 and 13 different years respectively, i.e. in 40% and 61.9% of the years for which we have night photos. In the Fortress of Verrua Savoia, which was surveyed for a shorter period, the species was observed only once, that is in 12.5% of the years for which we have night photos.

Day photos did not reveal newborns or adults of *M. schreibersii*. It is worth noting that, while the day photos of Staffarda and Verrua Savoia were taken in years when we could not detect any *M. schreibersii* in the night photos either, the negative day photos of Agliè were taken in presence of newborns of *M. schreibersii*, as revealed by the night photos taken on the same dates.

In the other three sites surveyed we did not identify any *M. schreibersii*.

Discussion

Mapping the known *M. schreibersii*'s maternity colonies has highlighted strong differences between the French and Italian regions close to Piedmont. The high density of nurseries in south-eastern France, an area which features ecologic conditions very similar to those that characterize large part of the bordering Liguria, suggests probable knowledge gaps (i.e. presence of further nurseries and a breeding range larger than known) on the Italian side.

Using photography, we recorded the presence of *M. schreibersii* at the Abbey of Staffarda, the Fortress of Verrua Savoia, and the Castle of Agliè, i.e. in half of the maternity sites of mouse-eared bats currently known for Piedmont. From night photos, we identified newborns of *M. schreibersii* inside all of the three roosts. Since pregnant and lactating females of the species can temporarily use alternative roosts, as demonstrated by records up to 30 km from maternity sites (Vincent et al. 2010), we should consider the possibility that pups may also be occasionally moved by their mothers to alternative roosts. However, the distances that separate the nurseries reported in literature from the three sites (≥ 100 km) seem too large to explain the presence of the newborns photographed as due to occasional events of roost switching, and the same is true for a hypothetical Ligurian nursery (still unknown), which would be situated over 65 km from the nearest Piedmontese roost (Staffarda). Moreover, the frequency of detection of newborns at the Abbey of Staffarda and the Castle of Agliè is quite high, proving that females of *M. schreibersii* are regularly present and give birth at both these sites. Therefore, we conclude that Piedmont is undoubtedly part of the breeding range of this species.

From the day photos taken in June and July we could not detect any *M. schreibersii.* The low number of day surveys carried out did not allow for a statistical comparison between the usefulness of night and day photos to detect the species, yet it is evident that the number of adult mouse-eared bats in day photos (larger than in night photos) hampers the possibility to detect a few *M. schreibersii.* Indeed, from an occasional day photo that we took at Agliè in October 2017, when a large part of the colony of mouse-eared bats had already abandoned the site, we could detect the presence of 7 *M. schreibersii* (photo in supplementary material).

All the three positive roosts are situated at ground or underground level inside heritage buildings and have tall (5-8 m) brick vaults. The roosts of Santa Vittoria d'Alba and Isola Bella, given their resemblance to natural caves, appear suitable for *M. schreibersii* as well, and indeed we cannot consider conclusive our results. Lack of detection of the species could be due to factors that limit photographic detectability at these two sites: the deep crevices of the stony vault, where bats often take refuge, at Isola Bella, and the large number of mouse-eared bats, among which *M. schreibersii* might hide, at Santa Vittoria d'Alba.

Conversely, in the case of the Palace of Venaria, we can consider the absence of recording as evidence of an actual absence of the species on the dates of the night photos, and as evidence of a complete absence of its reproduction at least in the years of the same photos (2004-2017). If present, individuals of *M. schreibersii* would have been easily discovered because of the lack of crevices in the plastered ceiling of the roost and the small size of the mouse-eared bat colony. Due to this latter condition, the species was probably also absent during the years (2018-2024) for which we have only day photos. The roost, an attic where temperatures can exceed 35°C, appears atypical for *M. schreibersii*; nevertheless, its absence could not be foreseen *a priori*, since some maternity colonies of the species currently or formerly using garret spaces have been reported for Slovenia, Austria and Slovakia (Bauer and Steiner 1960; Gaisler and Klíma 1965; Spitzenberger 1981; Presetnik and Podgorelec 2010).

It is interesting to note that in Piedmont, where *M. schreibersii* is definitely rare, the reproduction of this species takes place through the scattering of small numbers of breeding females in multiple roosts, rather than relying on a single colony of larger size. This behaviour, favoured by the great mobility of the species, could be adaptive: the thermal requirements of the newborns are guaranteed within a large colony of mouse-eared bats, and the dispersal over more sites protects against the risks associated with roost loss.

At the Abbey of Staffarda and the Castle of Agliè, the fact that we did not record the species in early survey years (2005-2008), and the slight positive trend in the number of newborns detected on later

179 years might indicate new colonization and/or an increase in the species occurrence. A similar positive
180 trend, starting from 2008, has been described by Toffoli (2025), who reported the occurrences of the
181 species that he recorded in Piedmont; yet, the author attributed the trend to an enhanced surveying
182 effort and to the improvements in the acoustic technique.
183 Even considering the possibility of individuals unseen or born after the dates of the surveys, the
184 number of individuals of *M. schreibersii* that we counted at each of the three maternity sites is
185 extremely small compared to the typical maternity colony sizes (hundreds to thousands) reported in
186 literature for this species (Aulagnier and Presetnik 2023). An exception, similar to our cases, is that
187 of an Austrian nursery which counted 15 adults of *M. schreibersii* scattered among hundreds of *M.*
188 *myotis* (Presetnik and Podgorelec 2010).
189 Noteworthily, the association of *M. schreibersii* with maternity colonies of mouse-eared bats in
190 Piedmont seems to be a necessary or at least preferential condition: we carried out a preliminary check
191 of the night photos taken during the censuses of 5 maternity colonies of *Myotis emarginatus* (i.e.
192 another species known to share maternity roosts with *M. schreibersii*; Lanza 2012; Aulagnier and
193 Presetnik 2023) located within 25 km of Agliè, Staffarda or Verrua Savoia sites and we could not
194 detect any *M. schreibersii.*
195 The identification of *M. schreibersii*'s maternity roosts is a prerequisite for establishing surveillance
196 activities, and for guaranteeing effective protection to the sites and the colonies, thus contributing to
197 the conservation of this threatened species. Among the three Piedmontese roost sites in which we
198 identified it, only the Abbey of Staffarda is currently included in the Natura 2000 network (SCI
199 IT1160041 Boschi e colonie di chirotteri di Staffarda). The other two sites would also deserve the
200 same classification, as repeatedly brought to the attention of the Regional administration in order to
201 ensure the conservation of mouse-eared bat colonies (e.g. in: Debernardi et al. 2010; Patriarca et al.
202 2012; Patriarca and Debernardi 2023). Knowing that *M. schreibersii* occurs and reproduces at both
203 sites makes their inclusion into the Natura 2000 network even more justified and urgent.

204

Conclusions

Photographic surveys can significantly contribute to bat research and monitoring (Rydell and Russo 2015; Rydell et al. 2022). Counting newborns from night photos has been used to estimate the size of large *M. schreibersii* colonies (Grazioli et al. 2019). In our study, the examination of night photographs taken in maternity roosts of mouse-eared bats proved to be an effective method to ascertain the reproduction of small numbers of *M. schreibersii* in Piedmont. The technique does not entail the uncertainties of acoustic identification, is non-invasive, and could contribute to improve the knowledge about the presence and the phenology of this vulnerable species in other areas where its occurrence is uncertain or uncommon, and particularly along its range edges.

Supplemental information

File 1. List of photographs found positive for the presence of individuals of *M. schreibersii*.

File 2. Photographs found positive for the presence of individuals of *M. schreibersii*.

File 3. Details of photographs that portray individuals of *M. schreibersii*.

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Statements and Declarations

Conflict of Interest. Not Applicable.

Data availability. All data generated or analysed during this study are included in this published article and its supplemental information files.

Animal Ethics. The bat capture mentioned was carried out under licence (Italian Environment Ministry m_amte.MATTM_.REGISTRO UFFICIALE.USCITA.0049743.30-06-2020).

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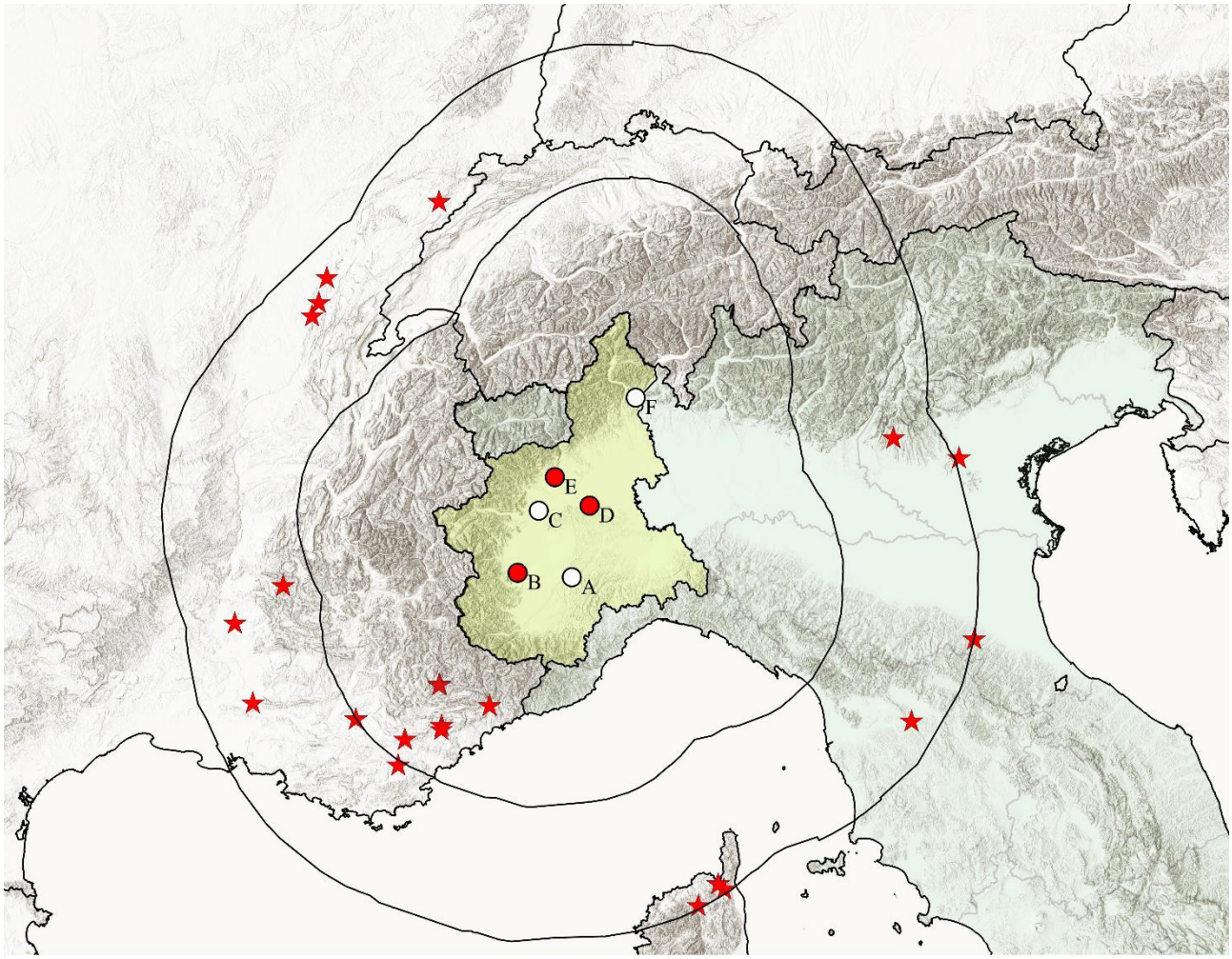
Fig. 1 Nurseries of *M. schreibersii* (stars) currently known within 100 and 200 km from the borders of Piedmont; location of the mouse-eared bat maternity colonies (circles) where the photographic material was collected; regarding the latter, their composition according to previous literature, their approximative size (min-max N adults) during the overall surveying period, and results of *M. schreibersii* detection (Yes/No during each survey).

Fig. 2 Number of newborns of *M. schreibersii* photographed inside the roosts of the Abbey of Staffarda, the Fortress of Verrua Savoia and the Castle of Agliè. The arrows indicate the temporal series of night photos.

Fig. 3 Examples of photographic details that portray individuals of *M. schreibersii* in the colonies of the Abbey of Staffarda (left, adult and newborn), the Fortress of Verrua Savoia (centre, one newborn) and the Castle of Agliè (right, three newborns). Overall positive photos (entire photos and details) in Supplemental information.

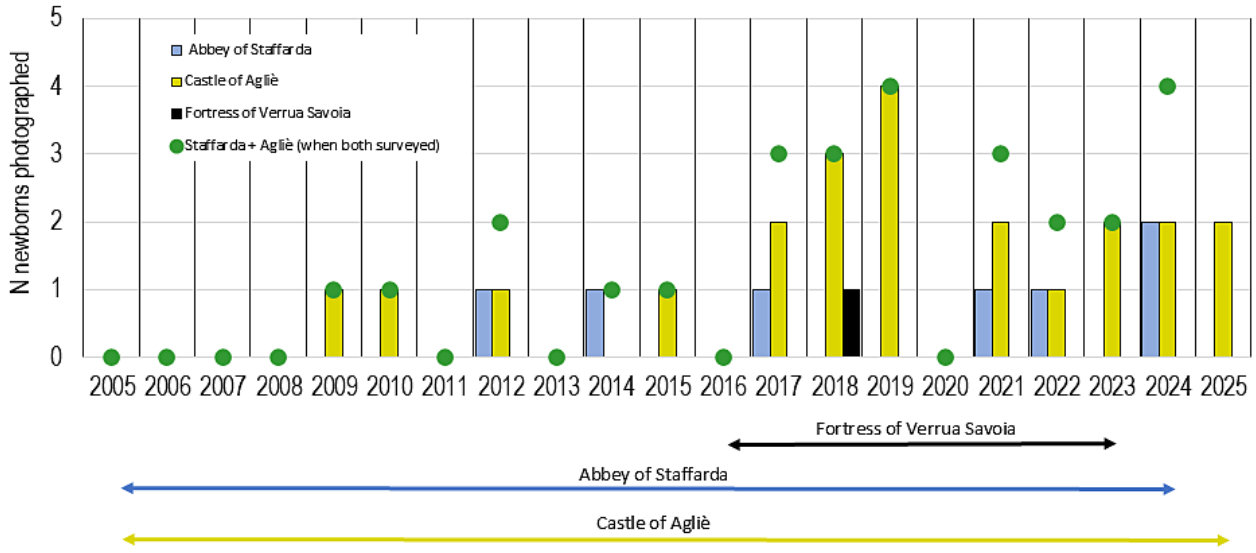
357 **Figure 1**



Site	Species (based on previous literature)	Surveying period	Colony size	*M. schreibersii* detection			
				N day surveys		N night surveys	
				Yes	No	Yes	No
A, Santa Vittoria d'Alba	M. blythii, M. myotis	2009-2024	1000-2500	0	2	0	12
B, Abbey of Staffarda	M. blythii, M. myotis	2005-2024	850-1400	0	1	6	25
C, Palace of Venaria	M. blythii, M. myotis	2004-2017	50-100	0	9	0	14
		2018-2024		0	13	0	0
D, Fortress of Verrua Savoia	M. blythii	2016-2024	950-1150	0	5	1	9
E, Castle of Agliè	M. blythii, M. myotis	2005-2025	500-1100	0	3	14	15
F, Isola Bella	M. blythii, M. myotis, M. capaccinii, M. daubentonii	2005-2025	500-800	0	1	0	12

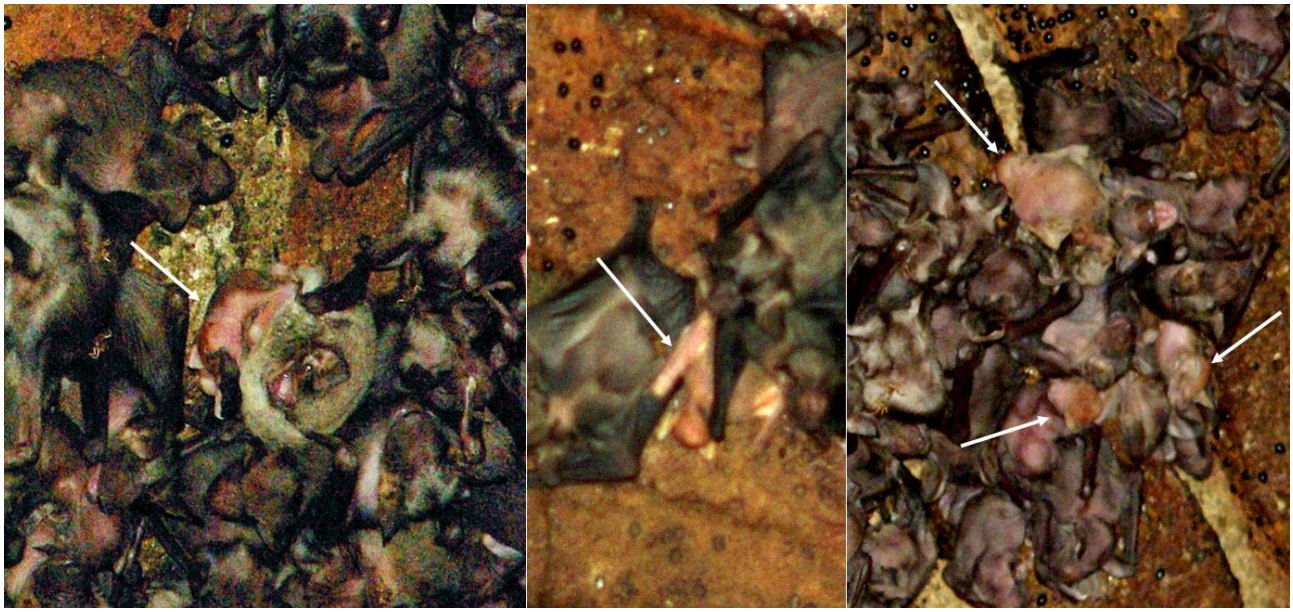
358

359 **Figure 2**



360

361 **Figure 3**



Supplementary information

S1 Photographic material that was found positive for the presence of individuals of *M. schreibersii*. All the photos were taken during nighttime surveys in the breeding period, with the exception of the last three, taken during an occasional visit in October 2017

SITE	FILE.jpg (see supplementary materials)	DETAIL (file 3)	YEAR	MONTH	DAY	HOUR	M. schreibersii	
							N adults	N newborns
Abbey of Staffarda	20120614223041IMGP8276.JPG	B1	2012	6	14	22:30	1	1
Abbey of Staffarda	20140605221142IMGP1473.JPG	B2	2014	6	5	22:11		1
Abbey of Staffarda	20140605221155IMGP1475.JPG	B3	2014	6	5	22:11		1
Abbey of Staffarda	20170609224243_IGP6184.JPG	B4	2017	6	9	22:42		1
Abbey of Staffarda	20210618225318DSC00582.JPG	B5	2021	6	18	22:53		1
Abbey of Staffarda	20220617225946DSC01325.jpg	B6	2022	6	17	22:59		1
Abbey of Staffarda	20220617230023DSC01327.jpg	B7	2022	6	17	23:00		1
Abbey of Staffarda	20240614224101DSC02781.jpg	B8	2024	6	14	22:41		2
Fortress of Verrua Savoia	20180625222939_IGP6996.JPG	D1	2018	6	25	22:29		1
Fortress of Verrua Savoia	20180625222950_IGP6998.JPG	D2	2018	6	25	22:29		1
Fortress of Verrua Savoia	20180625223011_IGP7000.JPG	D3	2018	6	25	22:30		1
Fortress of Verrua Savoia	20180625223017_IGP7001.JPG	D4	2018	6	25	22:30		1
Castle of Agliè	20090614224555IMGP3060.JPG	E1	2009	6	14	22:45		1
Castle of Agliè	20100629224850IMGP5044 JPG	E2	2010	6	29	22:48		1
Castle of Agliè	20120613222031IMGP8259.JPG	E3	2012	6	13	22:20		1
Castle of Agliè	20120613222050IMGP8260.JPG	E4	2012	6	13	22:20		1
Castle of Agliè	20140606221042IMGP1485.JPG	E5	2014	6	6	22:10	1	
Castle of Agliè	20140606221054IMGP1486.JPG	E6	2014	6	6	22:10	1	
Castle of Agliè	20150617221128IMGP3422.JPG	E7	2015	6	17	22:11		1
Castle of Agliè	20170612223531_IGP6210.JPG	E8	2017	6	12	22:35		2
Castle of Agliè	20170612223536_IGP6211.JPG	E9	2017	6	12	22:35		2
Castle of Agliè	20180613223247_IGP6822.JPG	E10	2018	6	13	22:32	1	
Castle of Agliè	20180624223842_IGP6970.JPG	E11-E12	2018	6	24	22:38		2
Castle of Agliè	20180624223851_IGP6971.JPG	E13-E14	2018	6	24	22:38		3
Castle of Agliè	20190618222657_IGP8845.JPG	E15-E16	2019	6	18	22:26	1?	2
Castle of Agliè	20190618222712_IGP8846.JPG	E17-E18	2019	6	18	22:27		4
Castle of Agliè	20210619224148DSC00604 JPG	E19	2021	6	19	22:41		2
Castle of Agliè	20220624223619DSC01407.jpg	E20	2022	6	24	22:36		1
Castle of Agliè	20220624223627DSC01408.jpg	E21	2022	6	24	22:36		1
Castle of Agliè	20230623223524DSC02482.jpg	E22-E23	2023	6	23	22:35		2
Castle of Agliè	20240625223552DSC02873.jpg	E24	2024	6	25	22:35		2
Castle of Agliè	20240625223602DSC02874.jpg	E25	2024	6	25	22:36		2
Castle of Agliè	20250623225350DSC03566.jpg	E26	2025	6	23	22:53		2
Castle of Agliè	20250623225403DSC03571.jpg	E27	2025	6	23	22:54		2
Castle of Agliè	20171016112616_IGP6513.JPG	E28	2017	10	16	11:26	7	
Castle of Agliè	20171016112621_IGP6514.JPG	E29	2017	10	16	11:26	7	
Castle of Agliè	20171016112633_IGP6515.JPG	E30	2017	10	16	11:26	7	

S2. Photographs found positive for the presence of individuals of *M. schreibersii*

S3 Details of the photographs that portray individuals of *M. schreibersii*.
Photos list in file 1; entire photos in file 2

Manuscript body

Download source file (5.59 MB)

Supplementary Online Material

File 1 - Download source file (22.37 MB)
S2_1_1.Photographs found positive for the presence of individuals of M. schreibersii Abbey of Staffarda Part1

File 2 - Download source file (16.98 MB)
S2_1_2.Photographs found positive for the presence of individuals of M. schreibersii Abbey of Staffarda Part2

File 3 - Download source file (92.97 MB)
S2_2. Photographs found positive for the presence of individuals of M. schreibersii. Part 2 (Castle of Aglie)

File 4 - Download source file (13.2 MB)
S2_3. Photographs found positive for the presence of individuals of M. schreibersii. Part 3 (Fortress of Verrua Savoia)

File 5 - Download source file (2.78 MB)
S3 Details of the photographs that portray individuals of M. schreibersii