Bat Survey

Mrs Brenda Weir
Rookwood
Stocking Lane
Dublin 16

2020

WildOnFoot

Ecological Services

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Bat Licence No: DER/BAT 2019-42

Contents

Summary

Mrs Brenda Weir of Rookwood House, Stocking Lane, Dublin 16, is applying for planning of eleven houses, to be incorporated into the estate grounds. The gardens are landscaped with many different species of trees and hedges, with areas of lawns and pathways throughout. As part of the planning application, a bat survey was carried out from the 06/09/2020 to the 08/09/2020.

Dawn and dusk surveys, and transects of the grounds were carried out and five bat recording devices were deployed for the duration of the two nights in question.

This effort resulted in four species of bat being identified, Common Pipistrelle, Soprano Pipistrelle, Leisler's bat and Daubenton's bat. The areas where they were roosting, commuting and foraging were identified where possible.

A single Common Pipistrelle was found to be roosting in the west side of Rookwood house. This will have no bearing on the planning application as the house will not be altered in any way.

Soprano Pipistrelle and Leisler's bat were found to be commuting into the site and using it for foraging at various points in time.

Daubenton's bat commuted through the estate mainly along the southern side of the gardens.

None of the bat activity suggests a maternity roost on the estate and the number of bats in question using the estate are few.

It is considered that the proposed developments on site will have no major negative impact on breeding or resting places of Irish bat species. With considerate building methods, new native planting and appropriate lighting, bat activity should remain consistent at the site.

Introduction

Fionnuala Rogerson Architects has requested a bat survey of Rookwood estate, Stocking Lane, Dublin 16, to support a planning application on behalf of Mrs Brenda Weir of the same address, see Figure 1. The site is 1.14 hectares which contains Rookwood House, a protected building and extended buildings, surrounded by heavily vegetated gardens. There are numerous tree and shrubs, some native species, some non-native. It is proposed to incorporate 11 houses in discrete locations around the estate. Locations of same may be seen in Figure 4.

The property is situated in South County Dublin, inside the M50 ring road. It is bordered to the west by Stocking Lane, where its entrance is located. There is a new housing estate on the opposite side of Stocking Lane. To the north is Scholarstown Road and to the east Edmondstown Road which service more housing areas. To the south is a green field bounded by housing. Ballyboden water treatment plant can be found to the south west on the other side of Stocking Lane. There is a wooded area and older housing estates to the north east with the Owendoher River running north-south to the east of Rookwood. Edmondstown Farm Park and golf course can be found approximately 400m to the south east. There is therefore potential roosting and feeding grounds for bats in the area. See Figure 2.

Fig.1: Location of Rookwood Estate, Stocking lane, Dublin 16.

Irish grid reference: O 13387 26702

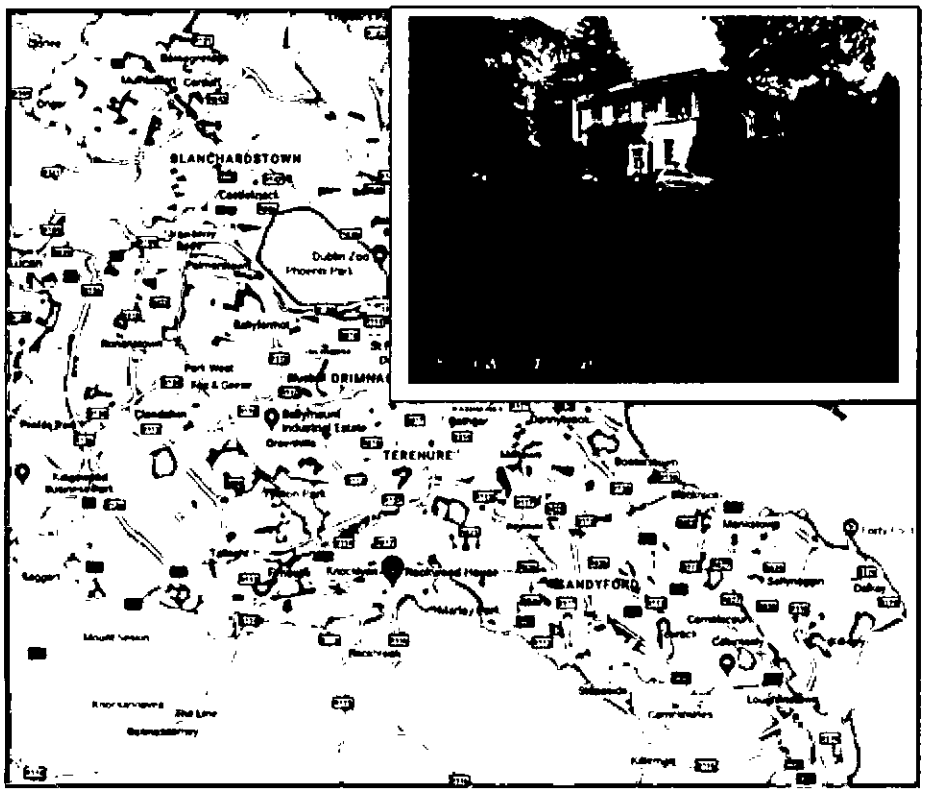


Fig.2: Aerial image of Rookwood House and its surrounds.

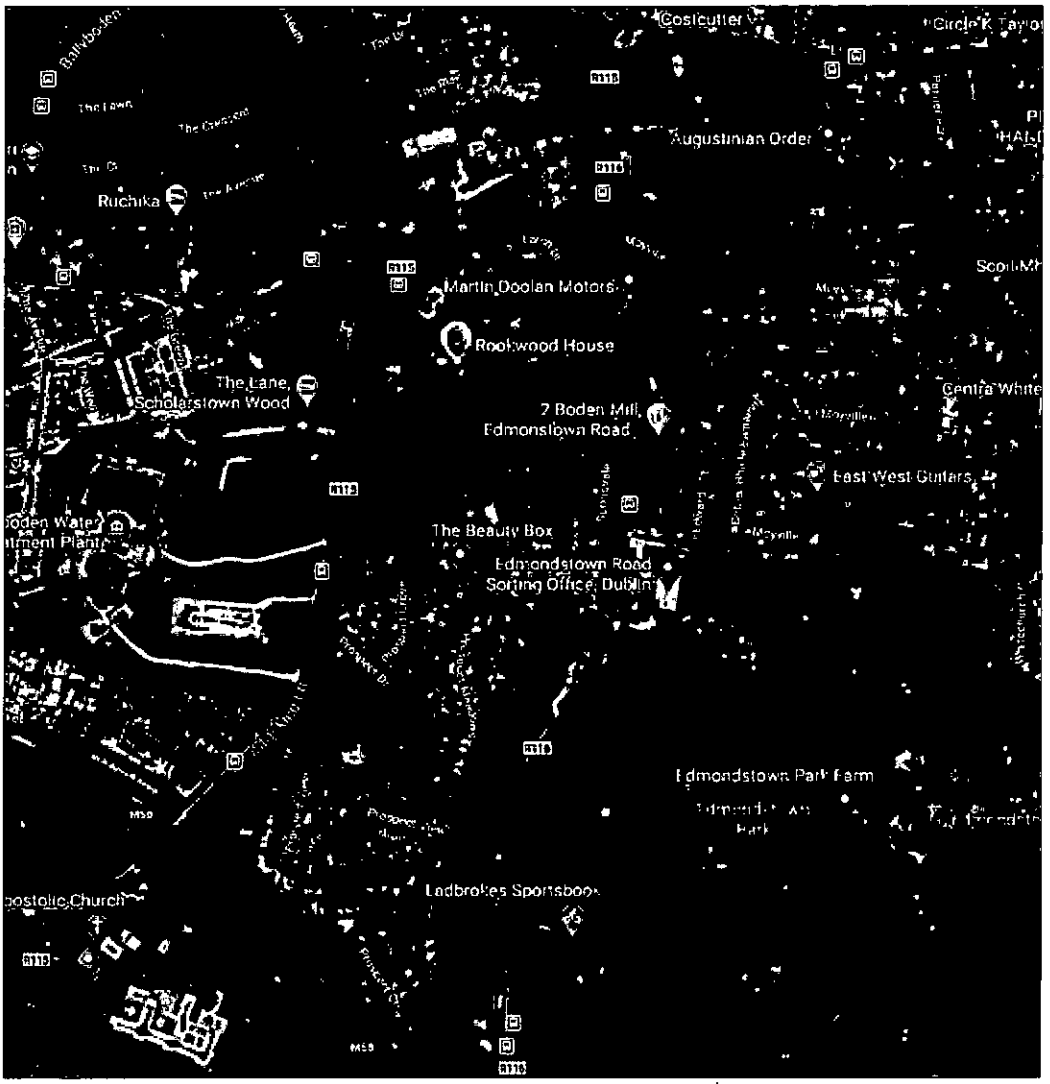
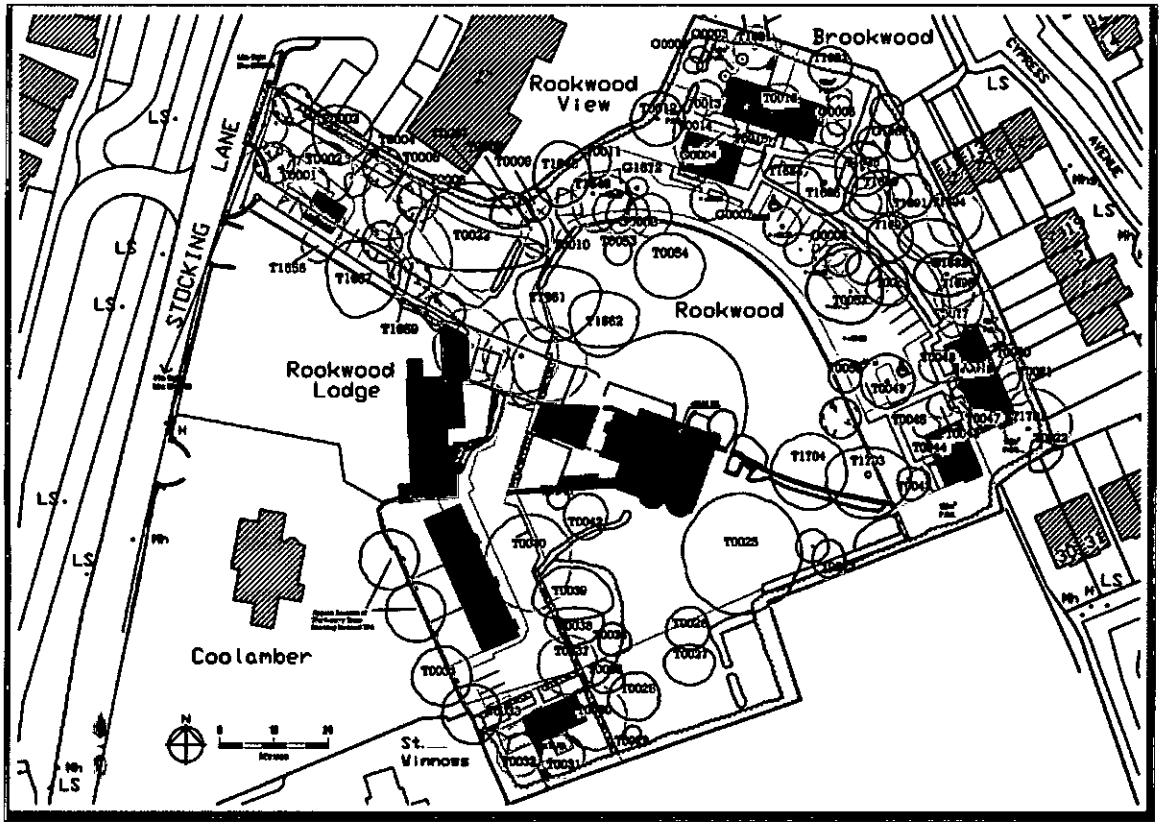


Fig.3: Rookwood site plan with current buildings, trees, and proposed buildings represented-Fionnuala Rogerson architects. Trees potentially to be removed are in yellow.



Bats in Ireland

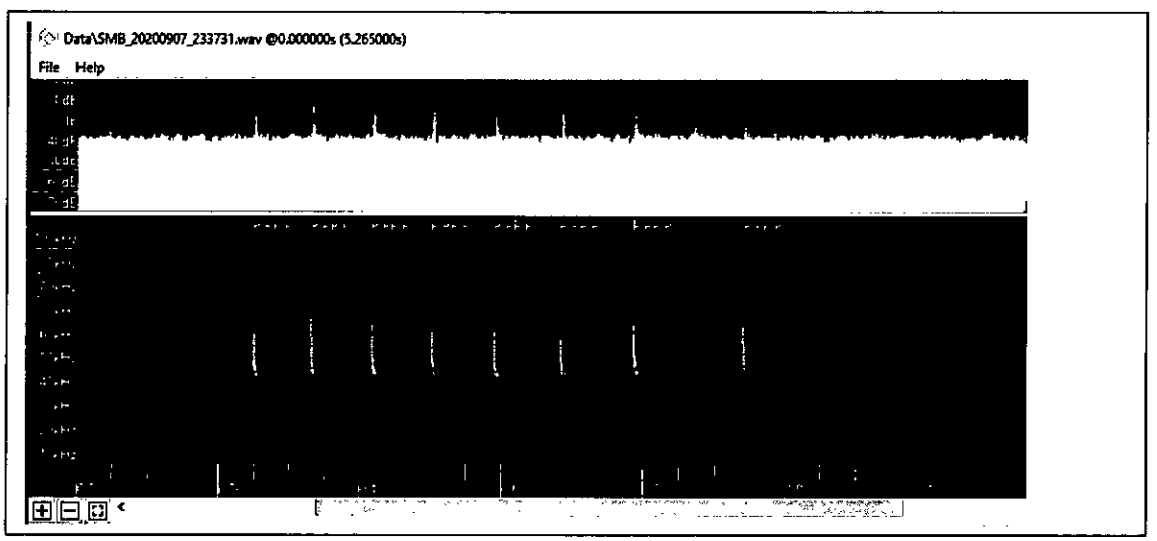
In summer, many of Ireland's nine breeding species of bat use both built structures and trees for maternity roosts. Here, they raise their pup in a colony of females until the autumn when the young are self-sufficient. In autumn when the young are independent, some or all of the roost disperses into smaller roosts, commonly amongst trees containing cracks and crevices.

In winter, bats gather for hibernation, often in a separate location from the maternity roost. These locations, such as tree cavities, caves, souterrains, or deep stone walls are chosen because of steady temperatures, which allow the bats to stay in torpor and conserve energy.

Due to the roosting behaviour of bats in Ireland, it is appropriate that this site is surveyed for bats. It contains potential, in its buildings, numerous trees and hedgerows, for roosting and foraging bats.

All Irish bats are protected under National and EU legislation (The Wildlife Act 1976, the Wildlife (Amendment) Act 2000, and European Communities (Birds and Natural Habitats) Regulations 2011). Both the animals themselves and their roosts are protected, and it is an offence to disturb or interfere with them without a licence.

Fig.4: Sonogram of a Common Pipistrelle (Pipistrellus pipistrellus) recorded foraging at Rookwood. This is an image representing the sound a bat emits when echo locating, when they are commuting, foraging and communicating with each other.



Methods

Tree bat-roost suitability survey

A tree bat-roost suitability survey was carried out on the 06/09/2020 in the presence of Architect Fionnuala Rogerson. All trees were visually inspected for their suitability and potential as a bat roost. This was undertaken with the aid of the Bartlett tree survey report from 01/03/2019, which detailed all tree species on site, with, amongst other information, a note on their location, age and condition. The architects drawing containing proposed buildings and location of trees and trees to potentially be removed was also used to identify areas which would be disturbed due to the potential developments. See Figure 4. Further visual inspections were carried out later that day on any tree with bat-roost suitability.

Building Inspections

All buildings on site were inspected for signs of use by bats, looking for suitable crevices, bat faeces, wall staining, and corpses. This included an attic inspection of Rookwood House and interior inspection of the garage proposed for demolition. All exterior walls were visually inspected where possible.

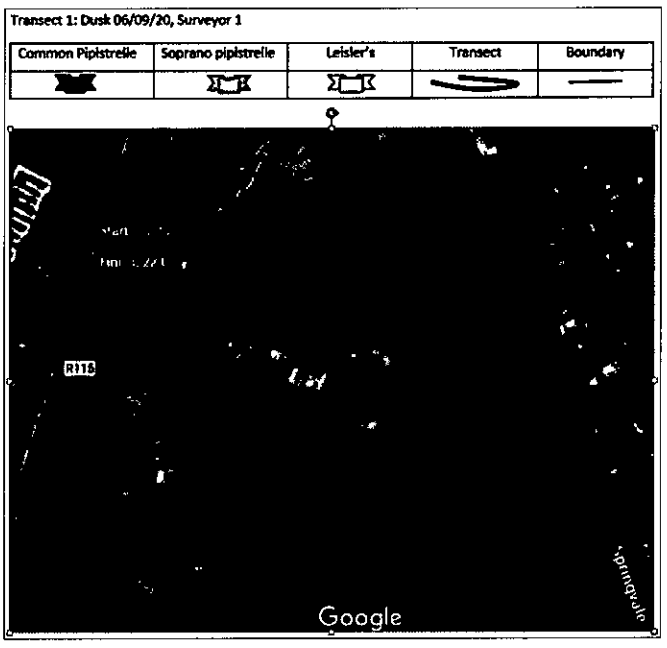
Bat Surveys

Bat surveys were carried out on the evening of 06/09/2020, morning and evening of 07/09/2020 and the morning of 08/09/2020 at Rookwood. In areas where there was roost potential in a tree or built structure, a vantage point (VP) watch was undertaken during bat emergence and re-entry times on each date, to observe the possibility of any roosting bats. Particular attention was given to the garage and the mature trees on the avenue

Transects, see Figure 5, were carried out around the estate post-emergence time at dusk and pre-roosting time at dawn and any bat species found was recorded. These surveys were carried out using Echo meter touch and heterodyne bat detectors.

Four transects were carried out around the perimeter of Rookwood estate during the dusk survey on the 06/09/2020. Two surveyors started at the entrance at Stocking Lane and one walked clockwise around the estate, while the other anti-clockwise. This was then repeated. At dawn on the 07/09/2020 two more transects were carried out in the same manner. The last transect was completed at pre-roosting time on the morning of 08/09/2020. See transect maps in appendix for full details.

Fig.5: Example of a bat survey walking transect of the property at Rookwood.

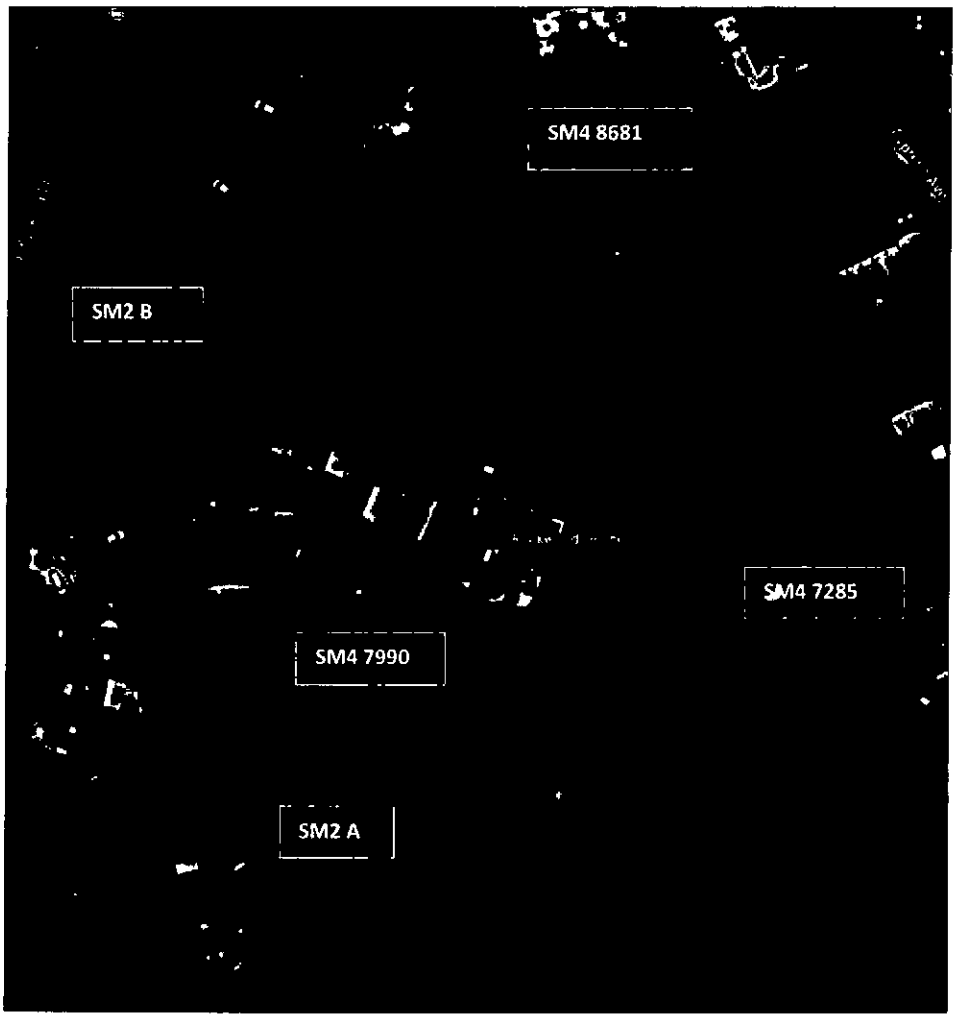


Static bat detectors

Bat recording detectors, two "Song Meters bat 2" and three "Song Meters bat 4", were placed at points around the estate and were set to record from a half hour before sunset until a half hour after sunrise on both nights of the survey. The calls were then downloaded and analysed using Kaleidoscope software. All calls were verified to species level.

Those classified by Kaleidoscope as "No ID" or "Noise" files were verified but not re-classified into species totals. It can be noted that the majority of the No ID and Noise files were observed to be Pipistrelle social calls when they were not of another noise source. See Figure 6 for Song Meter placements.

Fig. 6: Song Meter locations at Rookwood Estate



Results

Tree inspection

A visual inspection of all the trees at Rookwood was undertaken on Sunday 06/09/2020 to determine if there was bat roost potential in any tree. Bartlett tree services documented approximately 90 trees on the site, the majority of which were found to be relatively young specimens with little or no bat roost potential. Those found to have potential are listed in Table 1 and some were the focus of the early and late part of dusk and dawn surveys. See also Figure 7. Trees with roost potential were inspected whether they were in the footprint of a potential house or not, and therefore at risk of removal.

*Table 1: Tree species with bat roosting potential (*indicates probable removal)*

Tree Species	Bartlett ref number	Roost Potential
Common Lime	T0001 *	Medium
Common Lime	T0002 *	Medium
Common Oak	T0022	High
Sycamore	T1661	Medium
Sycamore	T1662	High
Common Lime	T1655*	Medium
Common Lime	T1656*	Medium
Common Lime	T1703	Medium
Common Lime	T1704	Medium
Deodar Cedar	T0025	High
Standing deadwood	G0001*	High

Fig.7: The entrance to Rookwood, with mature Lime, Oak, Sycamore and Horse Chestnut trees. A focal point for the dawn and dusk surveys. Note the yew hedge in the foreground.

Attic inspection

The attic was inspected to ascertain if the source of a bat roost might be found. It was fully accessible, and no signs or presence of bats were found.

Extended buildings

During the inspection of the other buildings on the property no obvious signs of bats were found. The only structure proposed for demolition to make way for the proposed development is a lean-to and a garage to the north west of the main house, adjacent to the avenue. This was paid particular attention at dawn surveys, but no bat was seen using these structures.

Vantage point watches (VP)

See appendix for all maps of vantage point watches and transects.

Dusk VP 06/09/2020

Surveyor 1

At 19.55, from the VP to the rear of Rookwood house, which covered an area from the tennis court, through the compost area out onto the back lawn, no bat was seen to emerge from anywhere on the property. Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*) were all seen and heard foraging and passing through the area. Leisler's bat seemed to come from the north, while it was difficult to say which direction the pipistrelles came from.

Surveyor 2

Also, at 19.55 another VP was taken from an area of a circle of Yew trees to the north of the house. Species recorded were the same as by surveyor 1. Soprano Pipistrelles appeared to be coming from the north.

Dawn VP – 07/09/2020

Surveyor 1

From the same location as the previous dusk, from 06.10, the same set of bat species were observed - Common Pipistrelle, Soprano Pipistrelle and Leisler's bat, foraging to the rear of the house. No bat was seen to return to roost within view of this vantage point.

Surveyor 2

At 05.55 from a VP to the front of the house, towards the driveway, in view of an oak tree, the same three species were recorded. A Common Pipistrelle particularly foraged in that area, never straying far. No bat was seen to return to roost within view of this vantage point.

Dusk VP – 07/09/2020

Surveyor 1

The dusk survey starting at 20.00 and focusing on the garage and lean-to (due for demolition if the development proceeds), also revealed no roost emergence. Common Pipistrelle foraged in the same area by 20.05 as noted by surveyor 2 at dawn, but a roost point was not determined. Again, Soprano Pipistrelle and Leisler's bat were recorded.

Surveyor 2

At 20.00 surveyor 2 was located under the mature oak tree, beside the front avenue with a view also of the lime trees in that section, see Figure 7 & Table 2, to try to establish if it was a roost point. No bats were seen to emerge from the oak, but Soprano Pipistrelle were observed arriving from the northern boundary of the estate. The Oak does provide a foraging spot for the Common Pipistrelle on site.

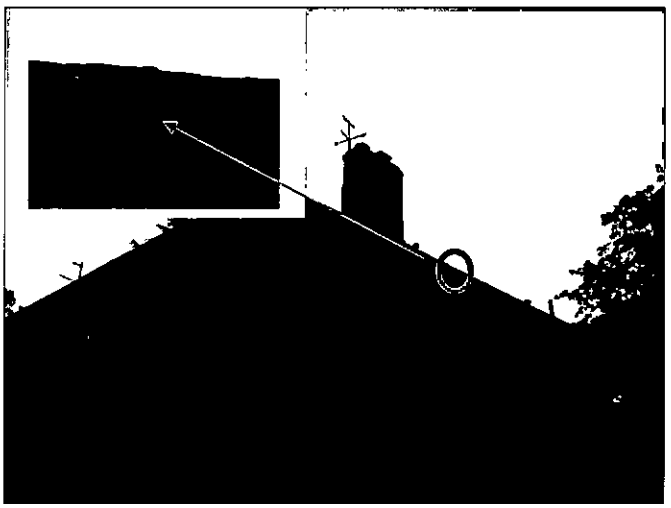
Dawn VP – 08/09/2020

Surveyor 1

It was not until the VP watch which started at 06.05 in front of Rookwood house, that a Common Pipistrelle which persistently foraged around the area of the oak tree and front lawn, was observed going to roost in a crevice on the west side of the house at 06.25. See Figure 8.

A Leisler's bat which continued to forage over the area after this time was then seen flying away in a northerly direction over the Rookwood estate boundary at 06.35.

Fig.8: Roost point of Common Pipistrelle at Rookwood house



Surveyor 2

From 05.30, surveyor 2 was positioned at a VP on the driveway, with a view of the mature trees there. All three bat species were recorded, but none going to roost. Soprano Pipistrelle bats were observed headed in a northerly direction by sunrise.

Transects

A total of 7 transects were carried out at the estate at Rookwood. These transects circumnavigated the estate, taking in the proposed areas of development and as many of the hedges and tree lined boundaries as possible. Four species of bat were recorded during the dusk and dawn transects. Common Pipistrelle, Soprano Pipistrelle, Leisler's and Daubenton's bat (*Myotis daubentonii*). The former three were found more regularly but the Daubenton's bat was only briefly encountered. Details of species and locations found during all transects may be seen in the appendix.

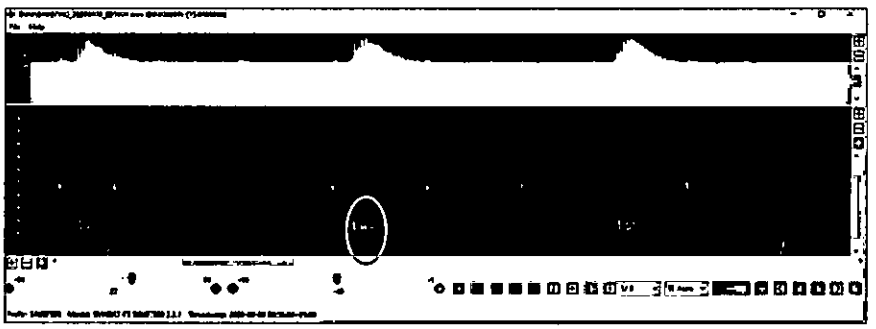
Song Meter activity

Four species of bat were recorded on the Song Meters during the survey period. Soprano Pipistrelle, Common Pipistrelle, Leisler's bat and Daubenton's bat. A total of 2858 calls were recorded from the five Song Meters over the two nights. 1234 calls on the night of the 06/09/2020 and 1624 on the 07/09/2020. Calls were broken down into species and numbers tallied to give an indication of the level of activity in an area over the two nights. See Figure 6 for Song Meter locations.

All No ID / Noise files are disregarded in terms of species tallies. However, these recordings were verified, to ensure that no species was overlooked. The majority of these calls were indeed noise and social calls of the pipistrelle bats. See Figure 9.

Song Meter identity, total calls, location, and percentage of calls per species are summarised in Table 2. All recordings will be kept for five years.

Fig.9: Sonogram identified as "No ID" in Kaleidoscope. This is in fact the call of a Common Pipistrelle with a social call element (circled in red).



Song Meter 7285 - East corner

This recorder had the greatest number of calls with 1770 in total. Of these, Common Pipistrelle produced the highest number of calls (1052), where it foraged intensely in the east corner of the garden later in the night. This Song Meter also recorded Soprano Pipistrelle, Leisler's and Daubenton's bat. There were only two calls registered from Daubenton's bat, indicating that this bat was commuting through.

Song Meter 7990 – Tennis Court

This recorded 420 calls. 193 Leisler's bat calls were recorded here, the highest of all the Song Meters, verifying the foraging path of these bats observed during surveys on the ground. Common Pipistrelle was represented by 80 recordings, with a lot of social calls represented in the No ID/ Noise files.

This recorder also had the highest number of Daubenton's bats (18). This level of calls would suggest that these bats were commuting through here as opposed to foraging in the area.

It was in this area during the VP of the evening of the 06/09/2020 that two Soprano Pipistrelles were seen flying in the area of the buttressed wall boundary. They registered 47 calls.

Song Meter 8681 – Yew circle

This recorded 299 calls. The highest being Leisler's bat with 114 registered. Moderate numbers of Common Pipistrelle and Soprano Pipistrelle were also recorded, with high numbers of social calls logged in the No ID/ Noise files.

Song Meter A – Compost area

148 calls were recorded here. All four species previously recorded on site passed through here, with Leisler's being the highest.

Song Meter B – Driveway

221 calls were recorded at this location. Predictably from the ground surveys the most frequently recorded here was Common Pipistrelle – 102 calls. Leisler's and Soprano Pipistrelle were also recorded.

Table 2: Song Meter identity, total calls, location, and species percentage.

SM & Location	Total Calls	Common Pipistrelle	Soprano Pipistrelle	No ID/ Noise	Leislers	Daubentons	Total
SM 7285 East corner	1770	59.44%	7.80%	25.42%	7.23%	0.11%	100.00%
SM 7990 Tennis	420	19.05%	11.19%	19.52%	45.95%	4.29%	100.00%
SM 8681 Yew	299	14.72%	21.07%	24.08%	39.80%	0.33%	100.00%
SM A Compost	148	12.84%	7.43%	18.24%	59.46%	2.03%	100.00%
SM B Driveway	221	46.15%	12.22%	28.51%	12.67%	0.45%	100.00%
Final Total	2858						

Roost records

Roost records on the Bat Conservation Ireland database include records of Leisler's bat within 10Km of Rookwood house. Locations include, Templeogue, Rathfarnham, Phoenix Park and Clonskeagh. The nearest record of a Soprano Pipistrelle roost was in Templeogue and the nearest on record for Common Pipistrelle was in Clonskeagh.

A bat survey was carried out on Prospect House, also on Stocking Lane, in May 2019. A single Soprano Pipistrelle was found roosting at the house and the same four bat species foraging as were found at Rookwood.

Weather

The surveys were carried out in suitable weather conditions. See Table 3.

Table 3: Weather/Sunrise & Sunset Times

Date	Survey	Sunrise/ Sunset	Wind speed Bf	Cloud cover %	Precipitation Y/N	Temperature °C
06/09/2020	Dusk	20.00	F2	80	N later Y	18
07/09/2020	Dawn	06.46	F4/F5	100	N	14 - 12
07/09/2020	Dusk	19.58	F3	20	N	17
08/09/2020	Dawn	06.48	F4/F5	95	N	17

Results Summary

Four species of bat were recorded using the area at Rookwood estate in September of 2020. Common Pipistrelle, Soprano Pipistrelle, Leisler's bat and Daubenton's bat. These were observed during the dawn and dusk surveys and transects of the property, and were later identified from the 2858 calls logged on the five Song Meters. No signs of bats were noted during the tree or building inspections. Also, no bat was seen emerging from or entering any tree during the survey.

Common Pipistrelle was the only bat species found to be roosting on the estate. The roost was located on the west aspect of Rookwood house in a crevice, during the dawn VP watch of the 08/09/2020. It contained only one individual. This bat was found to forage on site all night long during the two night's surveys. The main feeding areas were along the top of the drive, near the house and around the oak tree and yew hedge, and on the south east of the grounds.

Soprano Pipistrelle and Leisler's bat were found to be foraging at intervals on the estate. They appeared to travel to and from a northerly aspect and were not found to be roosting on site.

Daubenton's bat was mainly picked up on the Song Meters, during the hours after the ground surveys. They were using the vegetation on the southern side of the estate as a commuting corridor, and may have been traversing between the water treatment plant to the south west and the Owendoher River to the east.

Recommendations

The areas which are being proposed for future housing development lie in four distinct parts of Rookwood estate. All these areas had bat activity of some description, but no roost point was identified in any of the vegetation. Aside from the Common Pipistrelle roosting in the gable of the house, all other bat activity was the result of foraging or commuting. It is not considered that any development on site will affect this Common Pipistrelle bat if lighting and future landscaping on site is set out as outlined below.

While the removal of trees and hedges for the proposed developments will reduce the density of vegetation in places, it will not leave such substantial blanks in connectivity that cannot be bridged by new planting. With new native planting, insect biodiversity should be increased, thereby providing increased foraging prospects for the bat fauna on site.

Lighting

Appropriate lighting for the new development is crucial in terms of keeping the grounds of Rookwood as dark as possible for foraging and commuting bats and for minimising light pollution in general. Bats are not blind, and if there is too much light, their vision can be reduced, resulting in disorientation.

This is especially the case for Myotis bats, one of which, the Daubenton's bat, was found using the dark areas of Rookwood as a corridor to and from feeding/roosting areas. It is noted that Rookwood already has subtle levels of lighting and is only used when needed. This is ideal and a model that should be continued. Species such as Leisler's and to a lesser extent Pipistrelle bats, do have a greater tolerance for lit up areas and will not be as badly affected by increased luminaries.

Guidelines for lighting should be used from the following sources:

- Bat Conservation Trust: https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting

- Bat Conservation Ireland https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf

While many lighting solutions are possible, and the housing layout will dictate levels and placement of lights needed (this should also include lighting used during construction), the following ideals should be adhered to:

- The avoidance of direct lighting on trees, hedges and shrubs. All lights should lack UV elements and LED lights should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.

- Directional lighting – that is, lighting only at the intensity and direction it is needed.

- Height of lighting columns – The lower the light column, the less light spillage.

- Duration of lighting – Lights should only be on when in use or for health and safety purposes. The use of timers and sensors are ways of controlling this.

Future Landscaping

It is proposed that areas of new build on the estate will include extensive native planting, to replace removed vegetation and to increase the level biodiversity. This will provide an increased food source not just for bats, but all wildlife.

Species such as Guelder rose (*Viburnum opulus*), Spindle (*Euonymus europaeus*), Elder (*Sambucus nigra*), Holly (*Ilex aquifolium*), Yew (*Taxus baccata*), Hazel (*Corylus avellana*) and Rowan (*Sorbus acuparia)* are all native, will not grow excessively tall and will provide fruits and shelter for wildlife. In fact, if carried out, this planting will replace a large selection of non-native trees/shrubs such as Blue Gum and Indian Horse Chestnut which have lower levels of biodiversity value.

Re-planting should endeavour to provide maintainable hedge screening for the developments and act as a "green pathway" for bats and other wildlife. The yew hedges already in situ are excellent in this regard and some will be incorporated into future plans or sections re-located or re-planted. Other single tree specimens should be appropriately planted to ensure a long lifespan. Trees that outgrow their surroundings may lose favour and be removed in time which is not desirable.

In conclusion, with suitable native species landscaping and use of appropriate lighting, the proposed development should not have any adverse effect on the four bat species found at Rookwood. The findings of this report provides information on our native bat species at this site, and a chance to enhance their environment. Apart from future native planting, bat boxes could be erected on some trees which will continue to grow at the estate, providing intermediate roosting spots for these mammals.

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Sunrise and sunset times - https://www.sunrise-and-sunset.com/en/sun/ireland/dublin

Appendix

Maps of Vantage Point Bat Watches

and

Bat Transect Surveys

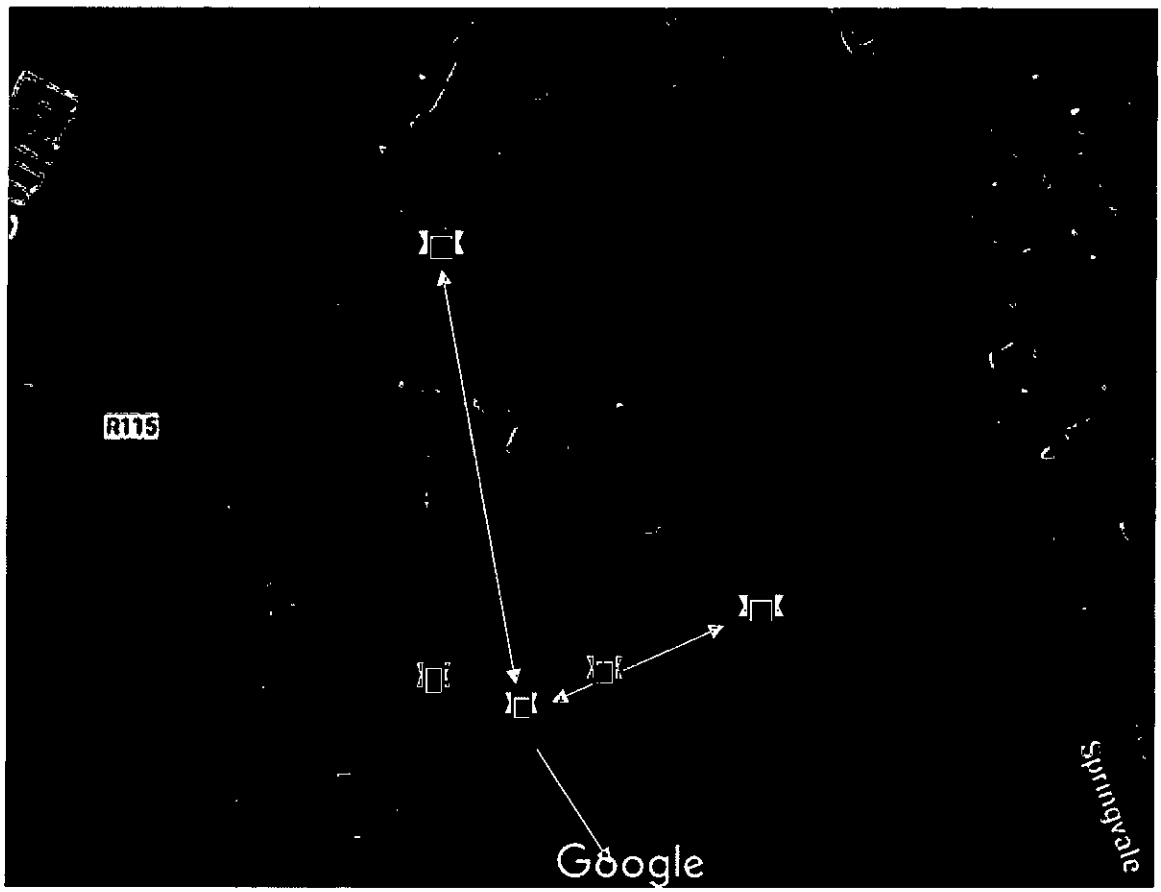
at

Rookwood House Estate

September 2020

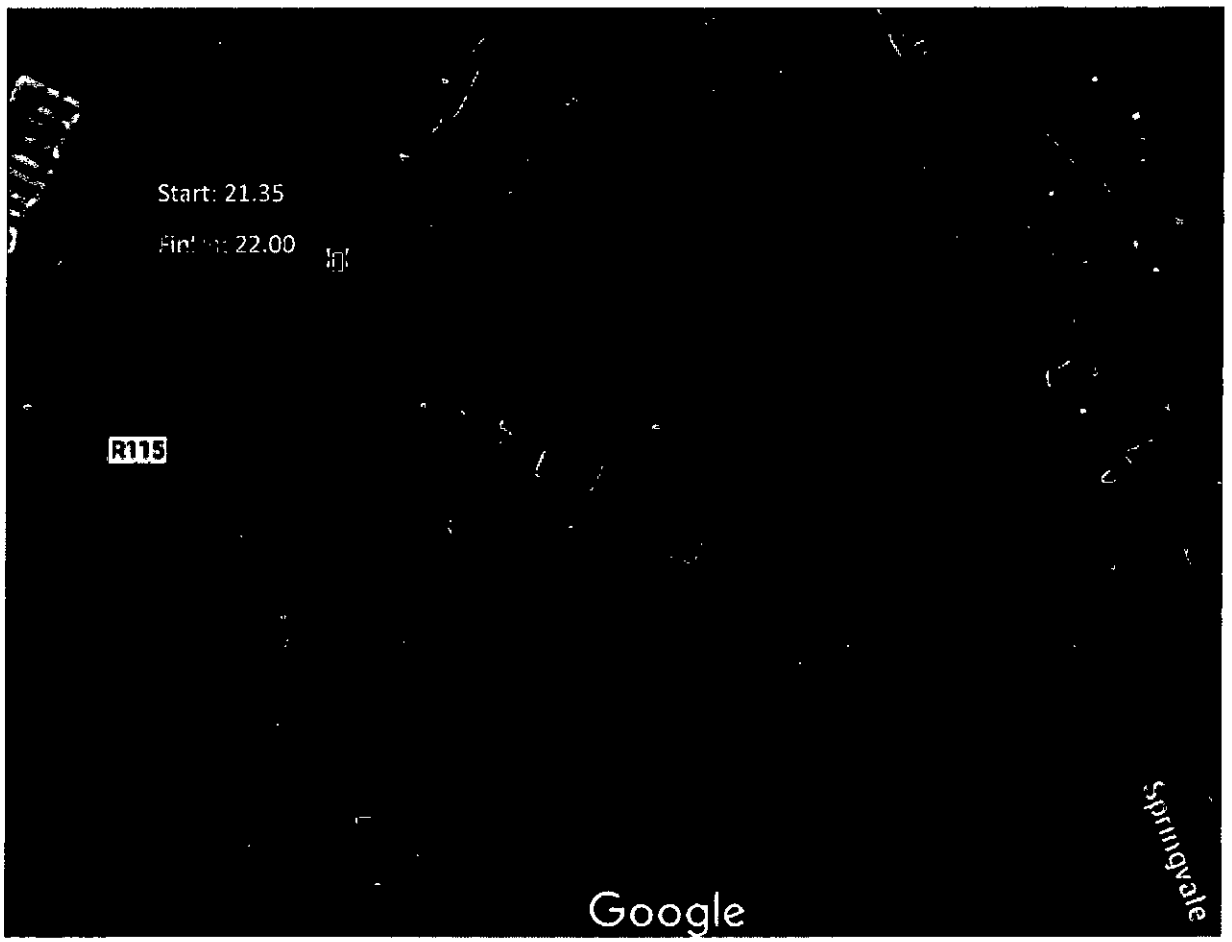
Vantage point (VP) 1 06/09/2020, Surveyor 1, Dusk emergence @ 19.55

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary



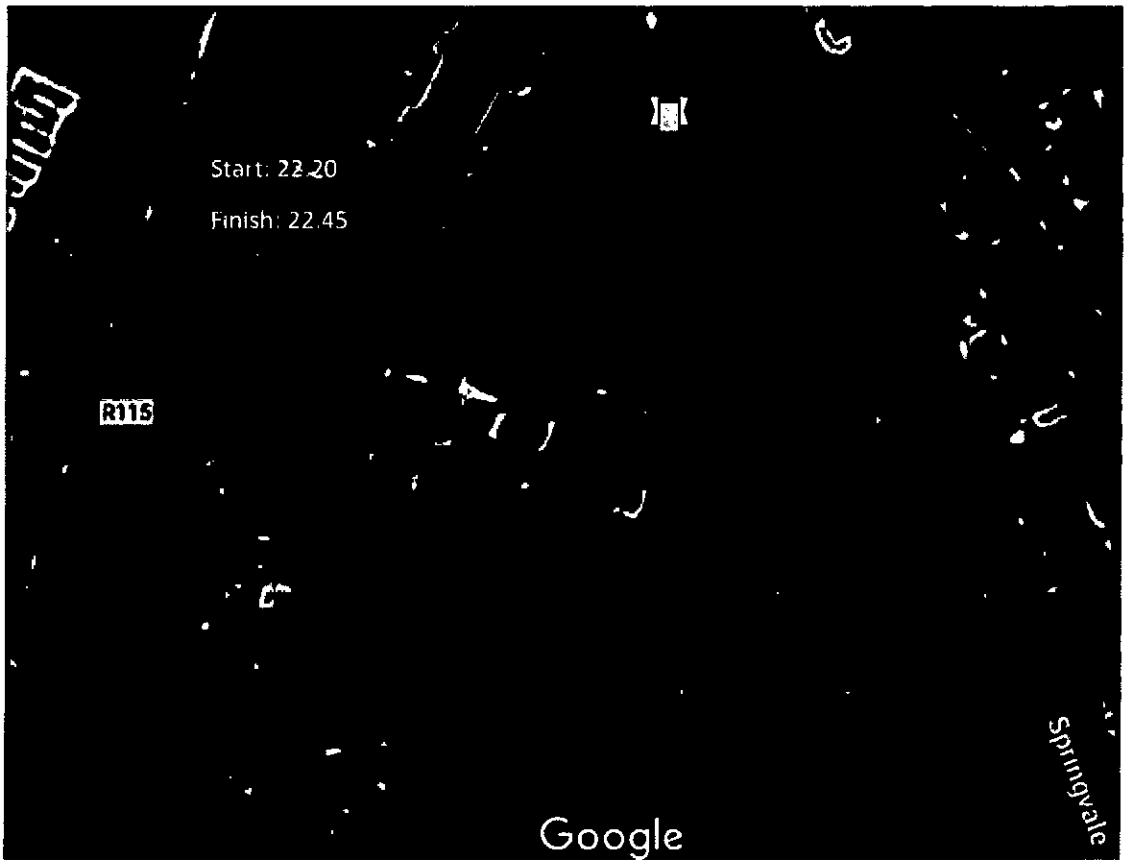
Transect 1: Dusk 06/09/2020, Surveyor 1

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



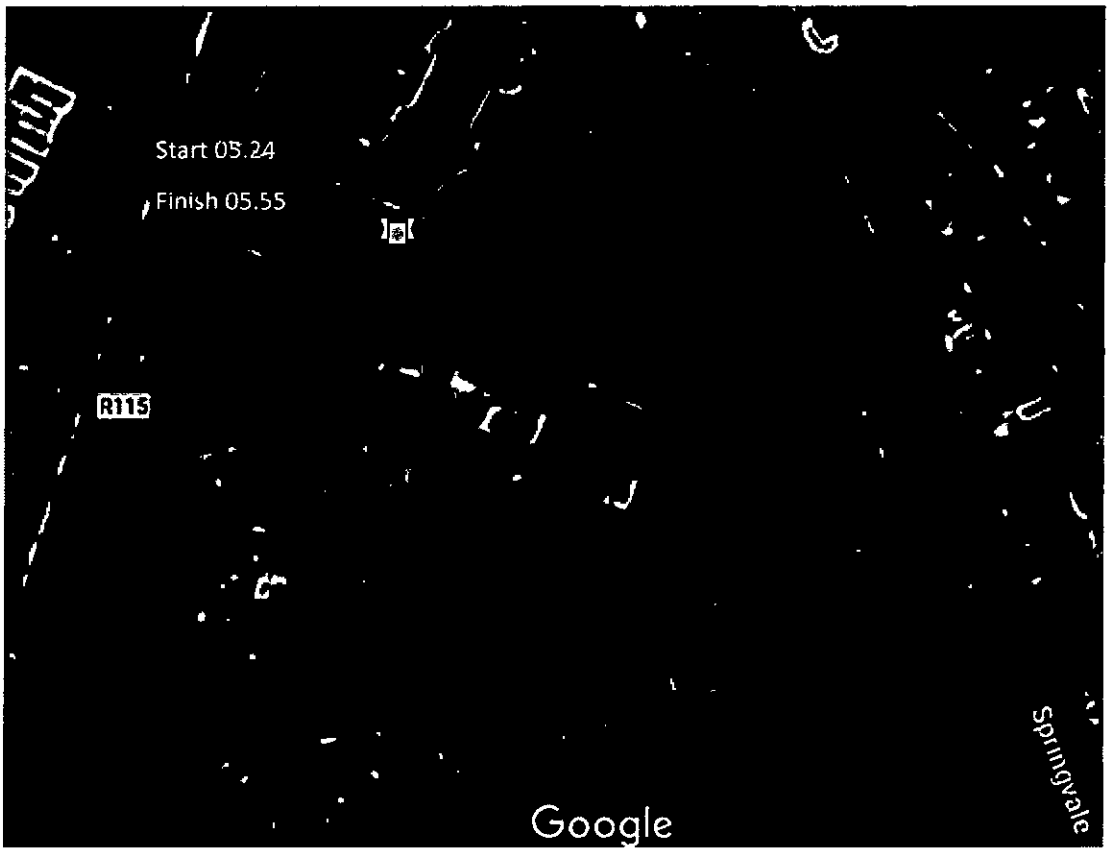
Transect 2: Dusk 06/09/2020, Surveyor 1

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



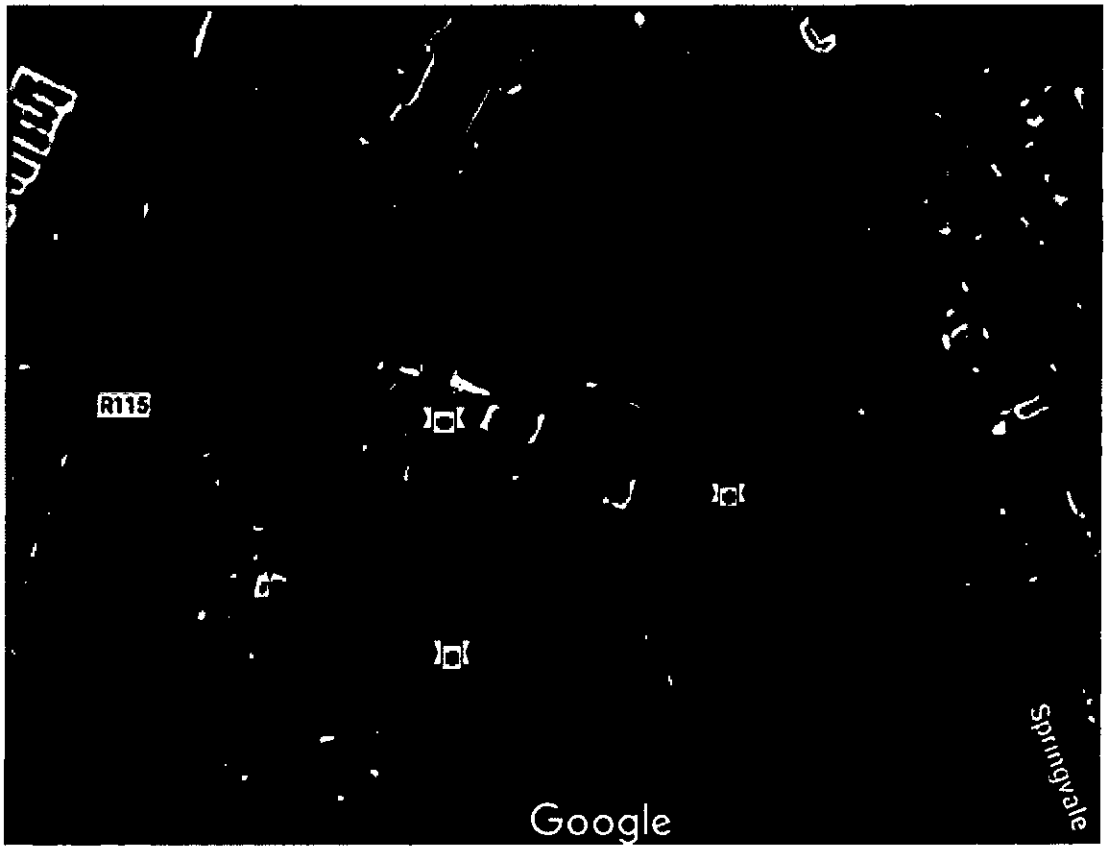
Transect 3: Dawn 07/09/20, Surveyor 1

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



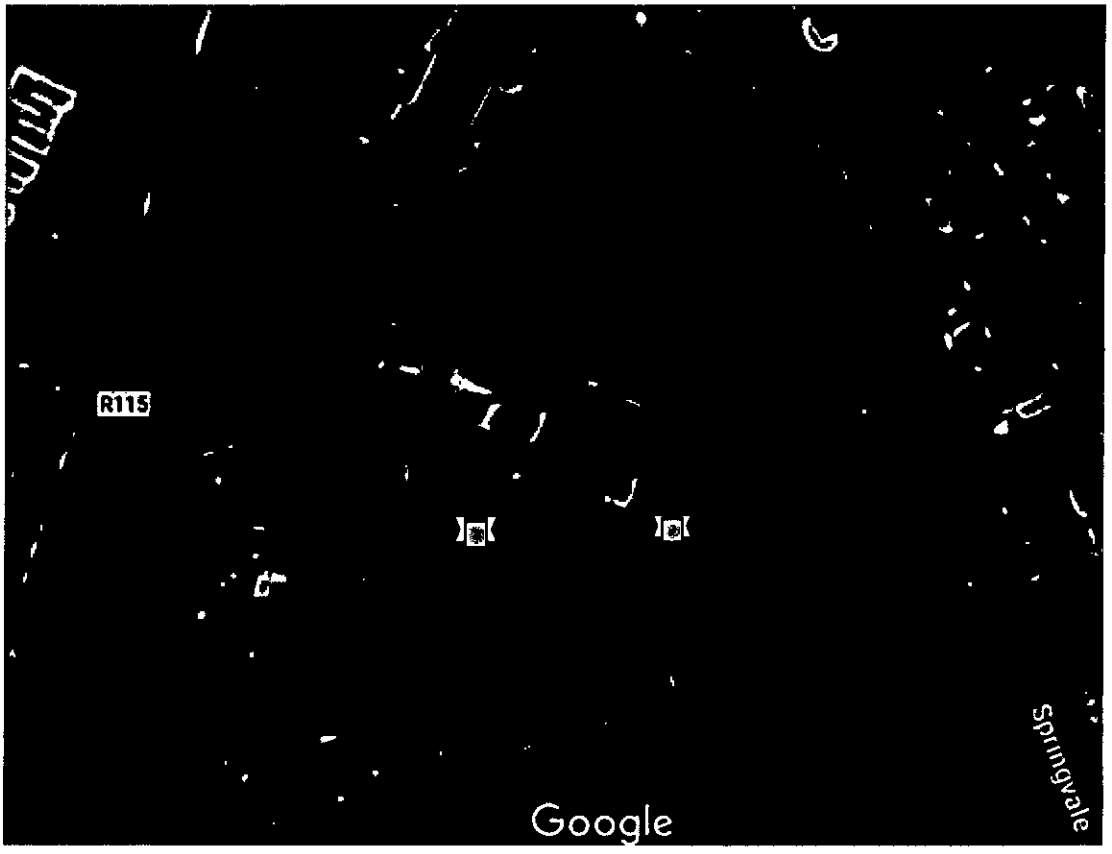
Vantage point 2: 07/09/20 Surveyor 1, @ 06.10 Dawn

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary



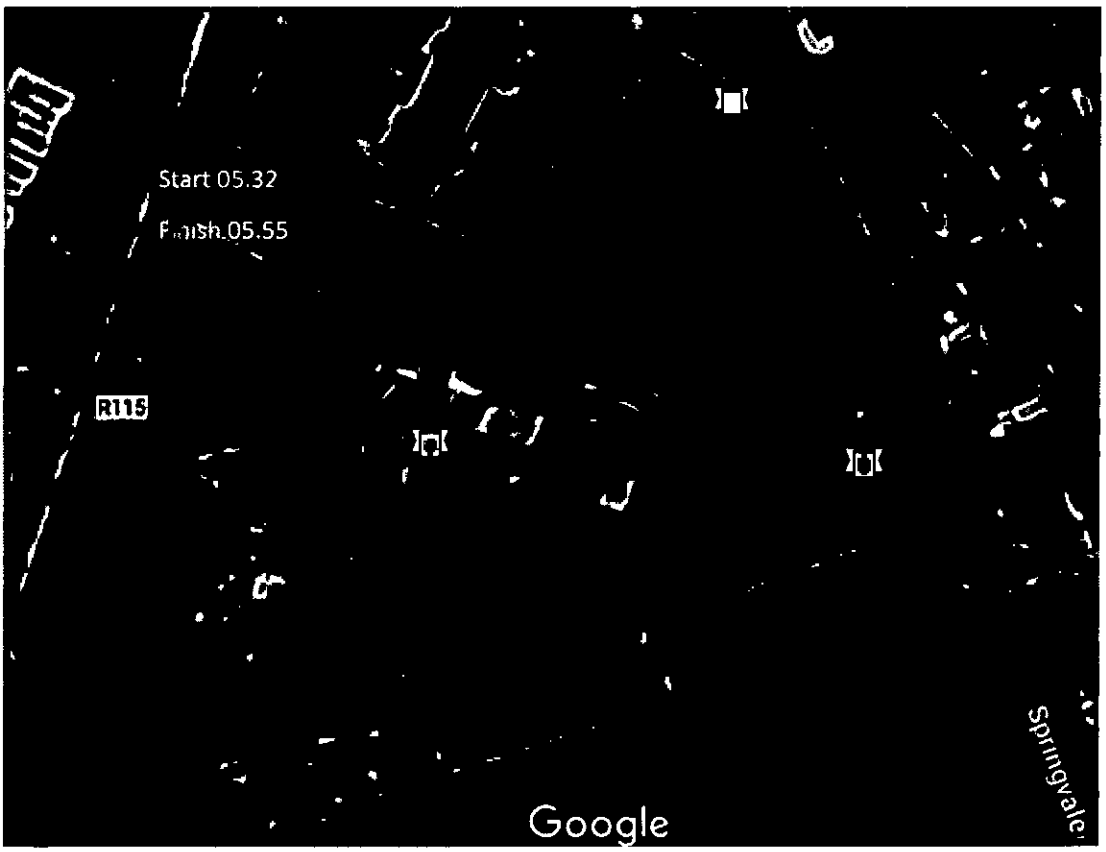
Vantage Point 3: 07/09/20 Surveyor 1 @ 20.00, Dusk

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary



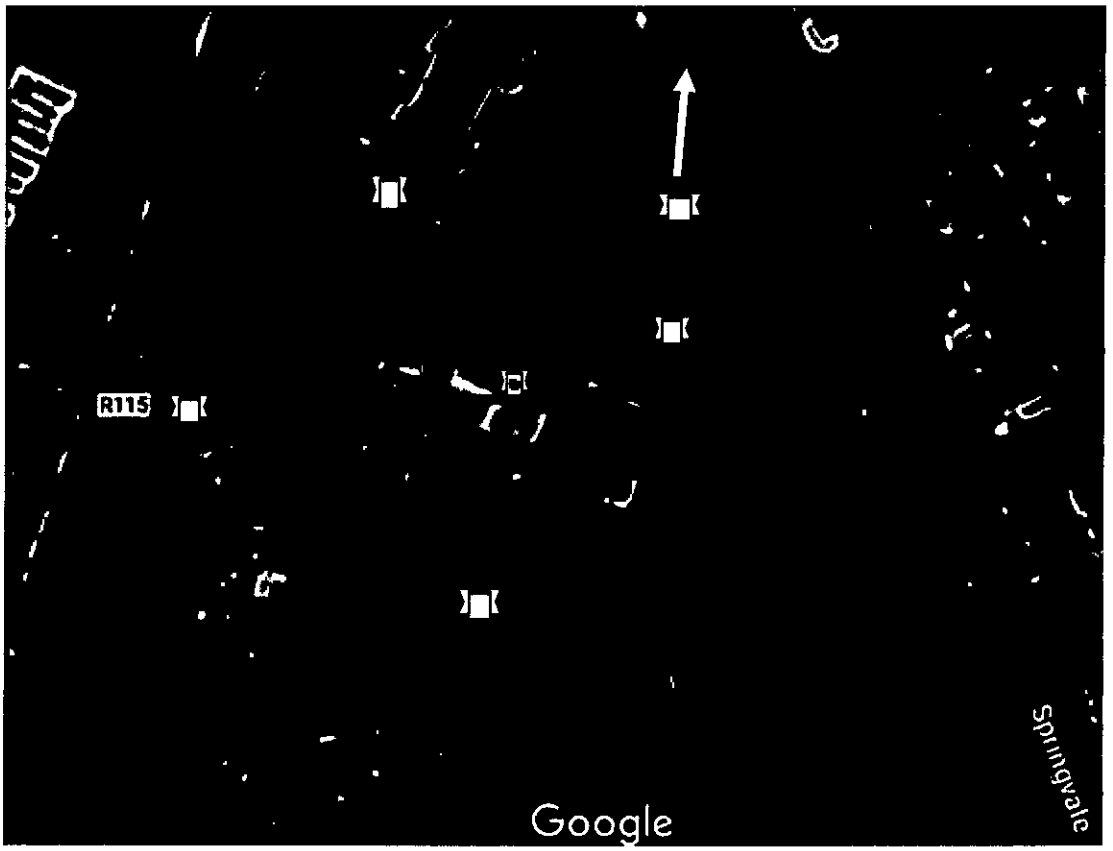
Transect 4: 08/09/20, Surveyor 1 Dawn

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



Vantage Point 4: 08/09/20 Surveyor 1 @ 06.05 Dawn,

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary

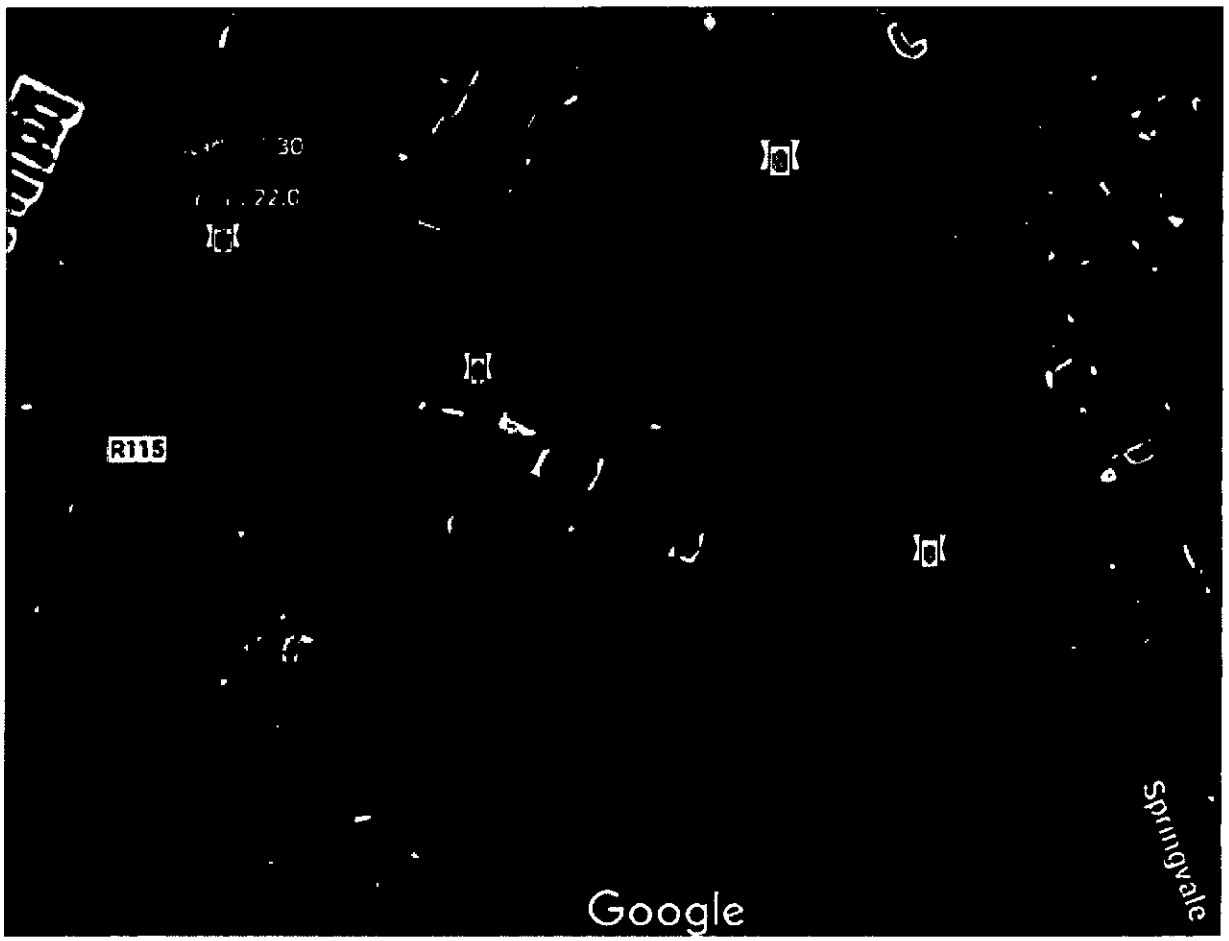


Vantage point (VP) 1 06/09/20 Surveyor 2 @ 19.55, Dusk emergence.

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary

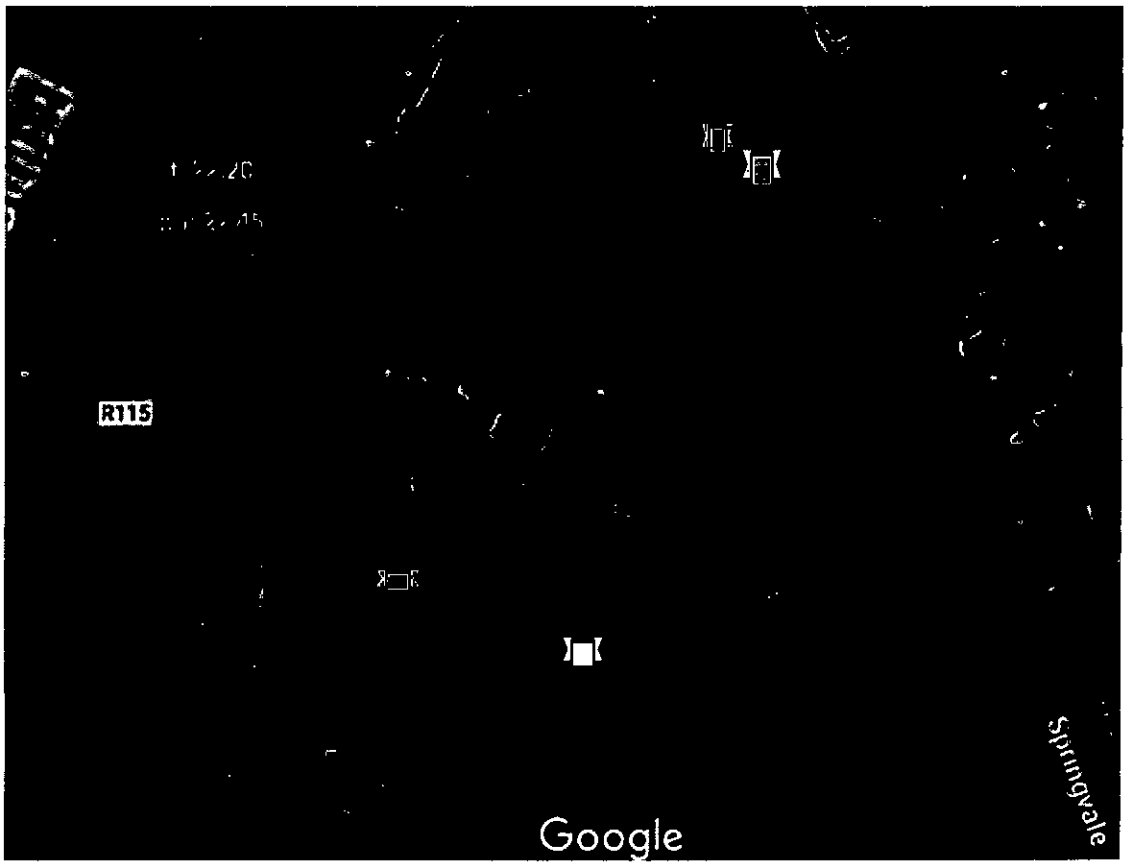
Transect 1: Dusk 06/09/20, Surveyor 2

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



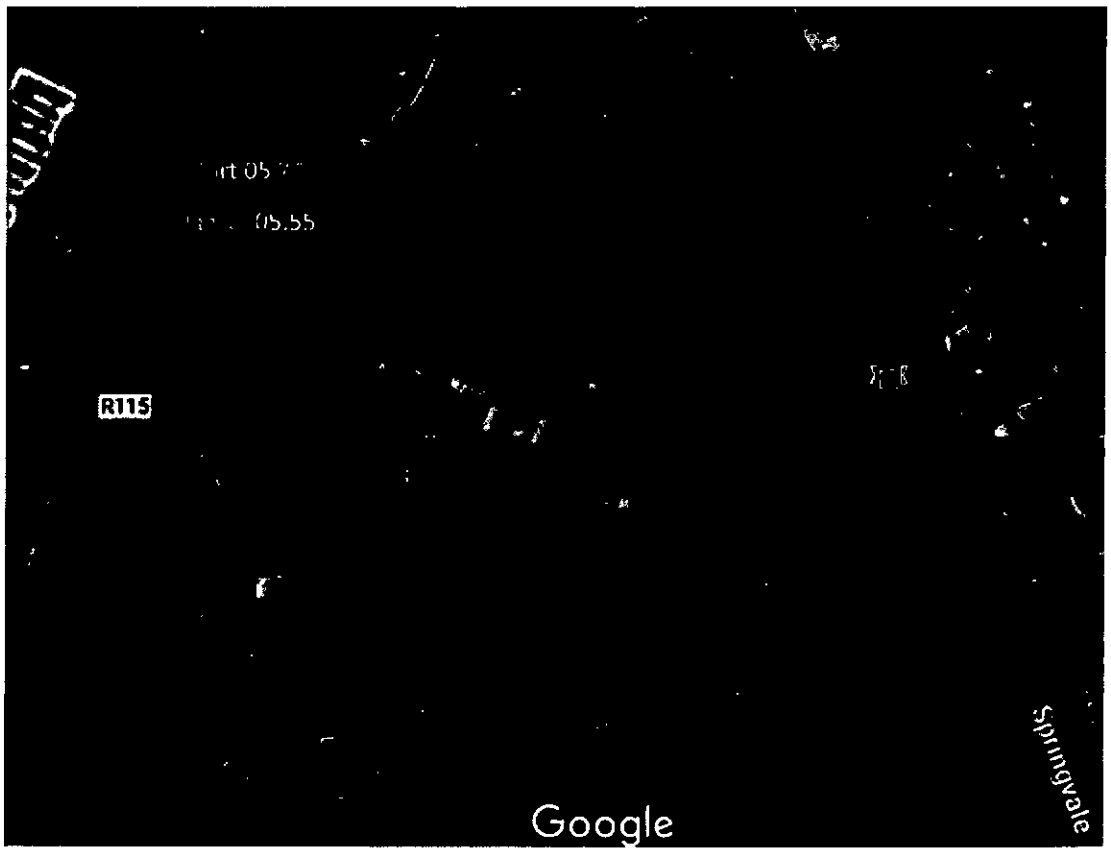
Transect 2: Dusk 06/09/20, Surveyor 2

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Myotis	Transect	Boundary



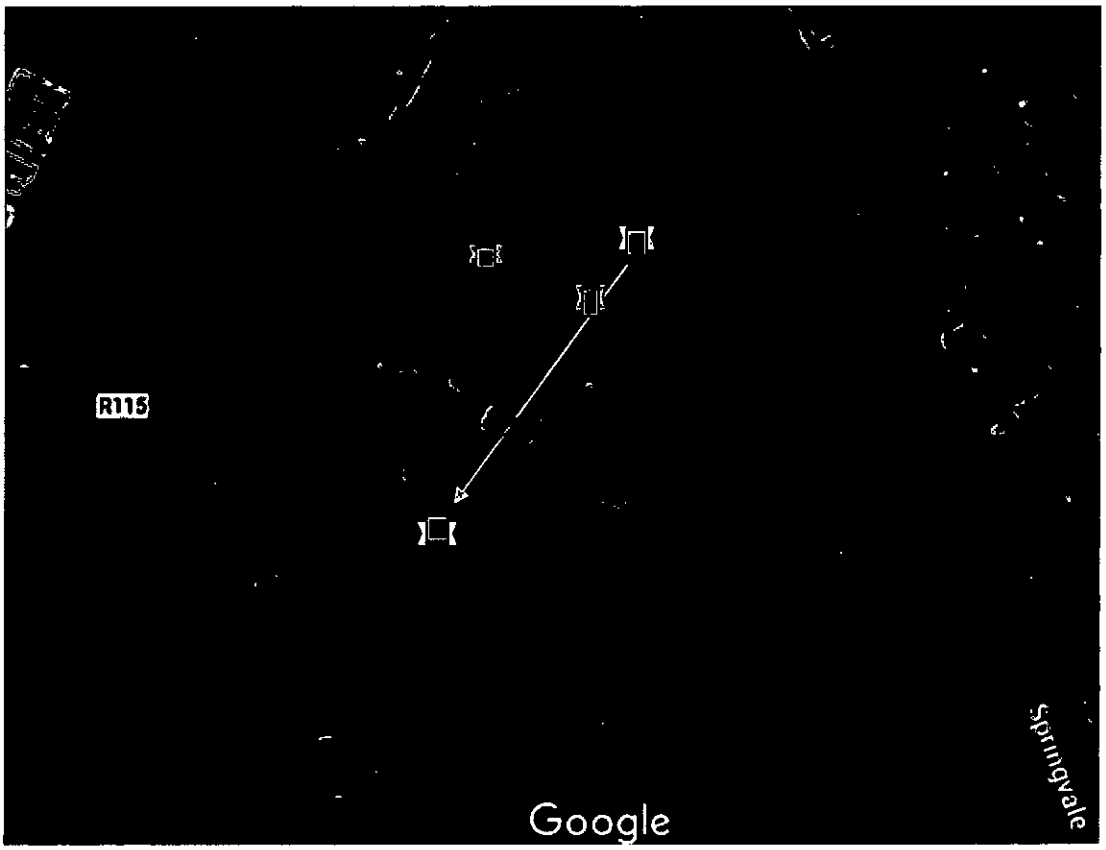
Transect 3: Dawn 07/09/20, Surveyor 2

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Transect	Boundary



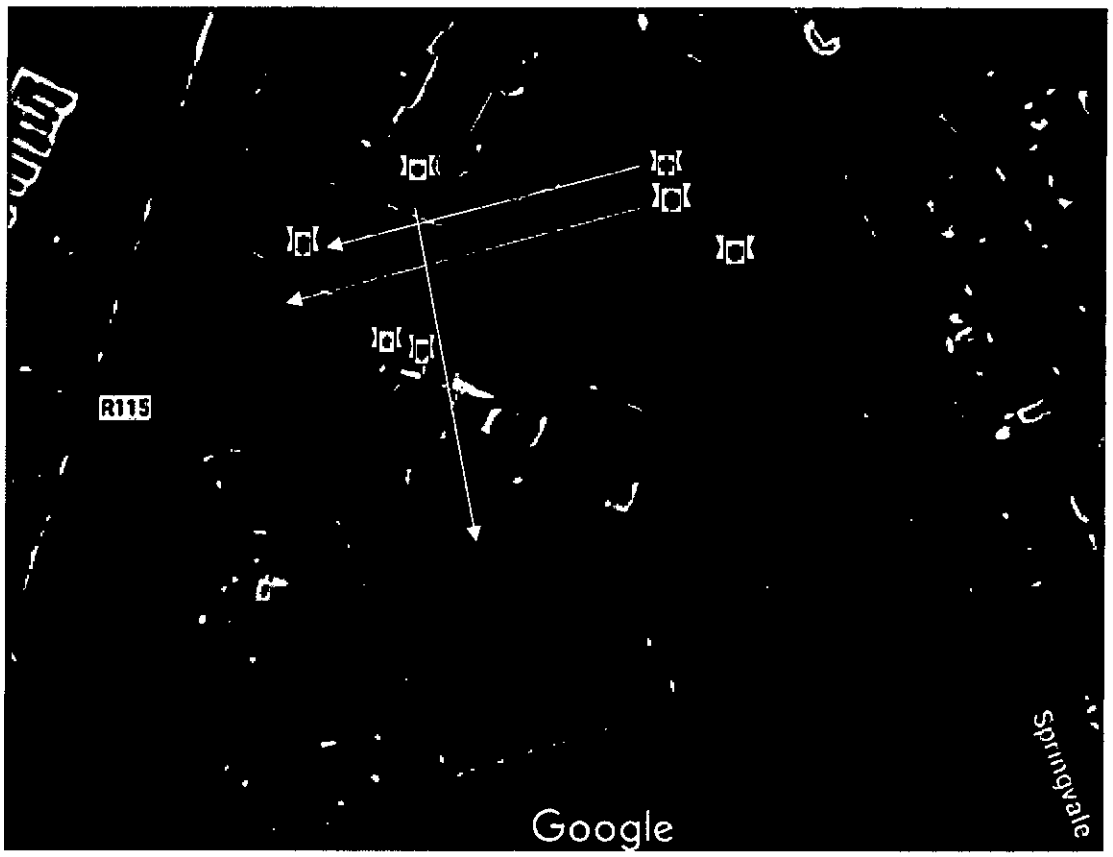
Vantage point 2: Dawn 07/09/20 Surveyor 2 @ 05.55

Common Pipistrelle	Soprano Pipistrelle	Leisler's	VP	Boundary



Vantage Point 3: Dusk 07/09/20, Surveyor 2@ 20.00

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Vantage Point	Boundary



Vantage Point 4: Dawn 08/09/20 Surveyor 2 @ 05.30,

Common Pipistrelle	Soprano Pipistrelle	Leisler's	Vantage Point	Boundary