



BAT CONSERVATION
IRELAND



NEIGHBOURHOOD BATS

with a little help from neighbourhood citizen scientists

A collaborative project by Bat Conservation Ireland and affiliated Bat Groups.
Data Analysis and Report: Brian Keeley, Bat Conservation Ireland.

An Chomhairle Oidhreachta
The Heritage Council





A Whiskered Bat in hibernation. Photograph by Paul van Hoof.

ABOUT BAT CONSERVATION IRELAND

Bat Conservation Ireland is an independent, non-profit, charity that is Ireland's leading authority on bats. We conduct monitoring and research to increase knowledge of all Irish bat species, and work to secure and expand existing bat populations, and where feasible to extend their ranges. We aim to develop a genuine and widespread understanding and appreciation of bats amongst the public, state agencies and other organisations, and to secure consistent protection of all bat species and the ecological infrastructure necessary to support them.

We carry out our work through the following:

- **Education** - Disseminating education materials;
- **Community Engagement** - Giving talks and leading bat walks;
- **Conservation** - Carrying out nationwide surveys and monitoring of bats;
- **Collaboration** - Acting as an umbrella group for local bat groups;
- **Research** - Collaborating with partners on research projects and collating and managing a central repository for bat data for Ireland

This project is part of our work to promote community engagement, while also carrying out the important work of conservation through monitoring our bat species.

Daubenton's Bat hunting. Photograph by Paul van Hoof.



INTRODUCTION

The Neighbourhood Bats Project involved 9 bat groups affiliated with Bat Conservation Ireland engaging in a Citizen Science project where bat detectors were located at 9 different locations around the country. The basis of the project was to see what kind of bat activity could be detected over a set period of time, at a static location, providing another arm to Bat Conservation Ireland's monitoring work of Ireland's bats. The detectors were placed at these locations for a period of 6-weeks and were monitored on either a weekly or fortnightly basis. The bat groups identified the locations in advance, with the stipulation that they be placed in a spot not easily visible to passersby, that the detector be secured to a spot that would not be immediately exposed to adverse weather conditions, that there was tree cover nearby or a large pond or river, that the site be easily accessible and the bat detector be easily reachable and that they set the reading to record from sunrise to sunset. These guidelines were to give the best possible chance of detecting bat activity at the location.

The monitoring period was from 1 July to 12 August and after this, the groups returned the SD cards and basic data sheets (recording variables like weather conditions on first installing the detector, vegetation present at the location, lighting and adjacent habitat) from the detectors for analysis. The idea behind the project was to both identify if there was bat activity at the different site locations and if activity was recorded, to identify what species of bat were detected. The added advantage of the equipment and software being used, is that it is advanced enough to allow the identification of all of the different bat species present in Ireland.

Once the monitoring period was over, the groups returned the SD cards to Bat Conservation Ireland Council members who have vast experience in bat conservation and ecology for basic analysis of the data.

**Our Vision is for humans and bats
to co-exist in harmony in Ireland**



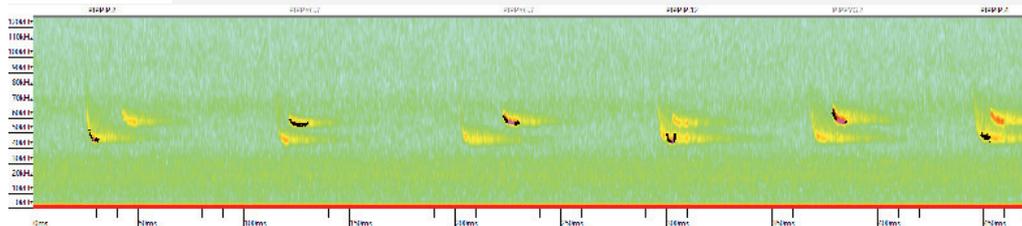
Results from analysis of Songmeter Mini Bats throughout Ireland

The following summarises some of the findings of the first Neighbourhood Bats project. This brings together some of the differences and similarities in how bats use the gardens, parks, villages, and towns within which we live our lives and find recreation. The results to date include the following locations:

1. St. Enda's Park, Dublin,
2. a garden in Wicklow,
3. Barna Woods, Galway,
4. Janesborough, Limerick city,
5. a garden in Crossmolina, Mayo,
6. St. Benignus Church Grounds, Staplestown, Kildare,
7. Corlea Amenity walk, Longford,
8. Moynalty Roman Catholic church farm, Meath and
9. a garden in Clonanny, County Laois.

The data has been collected from the monitors on SD cards, analysed with Kaleidoscope Pro software, examined by a bat specialist to provide identifications of the bats producing the calls and compiled to look for overall trends in the activity. Bat calls are typically produced in the ultrasonic range and need to be converted to the human audible range to be heard. Computer analysis allows spectrograms to be produced that create a picture of the sounds using the frequencies of sound, the strength of the calls, the time taken to produce the call and the gaps between the calls.

These features can be categorised for different bat species and therefore a bat can be identified by its voice even from a recording made in a garden in Mayo or Wicklow, by an enthusiast at a computer screen in Meath. Spectrograms are provided in this report to describe how it is possible to identify bats from the signals recorded to a SD card.



Spectrogram showing signals of two bat species: common and soprano pipistrelle

The patterns within the graph show the range of frequencies the bats use to navigate and hunt against time. Thus, it is possible to say that two bats are present here and that one is a common pipistrelle (lower signal), and one is a soprano pipistrelle (higher signal).

In the analysis for this report, signals that were not identified with the automatic software were not used as this would have added enormously to the time involved to analyse the data. Equally, Noise files were not checked for bat signals. All sequences of calls analysed were identified to the more common signal observed or to any uncommon species noted within the sequence (for example, brown long-eared bat or Natterer's bat).

There are a number of difficulties in identifying a bat species from calls alone. Bats use signals differently dependent upon the habitat, weather conditions, the age of the bat, the purpose of the call etc. Recordings may not be complete if they are obscured by leaves, walls or are only partially recorded as the bat passes at an oblique angle. Some species have very variable signals that may overlap greatly with similar species (e.g., *Myotis* species such as whiskered bat, Brandt's bat, Natterer's bat and Daubenton's bat may have similar signals while common pipistrelles and *Nathusius'* pipistrelles may have overlapping signals. Leisler's bats have very steep calls in cluttered areas and very shallow calls in open areas (this is true of most bats). The signal characteristics may be very different from typical calls and may confuse automatic identification (and even experienced bat specialists).

A very helpful guide in this project was the new book edited by Dr. Jon Russ (who kindly offered suggestions on one signal that was sent to him in addition to the use of the book for consultation). "Bat Calls of Britain and Europe: A Guide to Species Identification ISBN 978-78427-225-8. This book is available from booksellers and from Pelagic Publishing. (Many thanks to Jon for his continued assistance to Bat Conservation Ireland.)

Brown Long-eared Bat. Photograph by Faith Wilson.



DUBLIN BAT GROUP - ST. ENDA'S PARK, RATHFARNHAM

Public parks are often the first places that people may see bats for the first time. This may be through bat walks or while walking the dog or collecting sporting children. St. Enda's Park has been the venue for bat activities for Dublin Bat Group for many years. It was host to a Leisler's bat roost historically and the Nature Room served as a great location for talks on bats and other wildlife topics.

St. Enda's provides a variety of habitats attractive to bats including the Whitechurch stream, mature trees and pasture and it is fitting that the Dublin venue for this project should be based here.

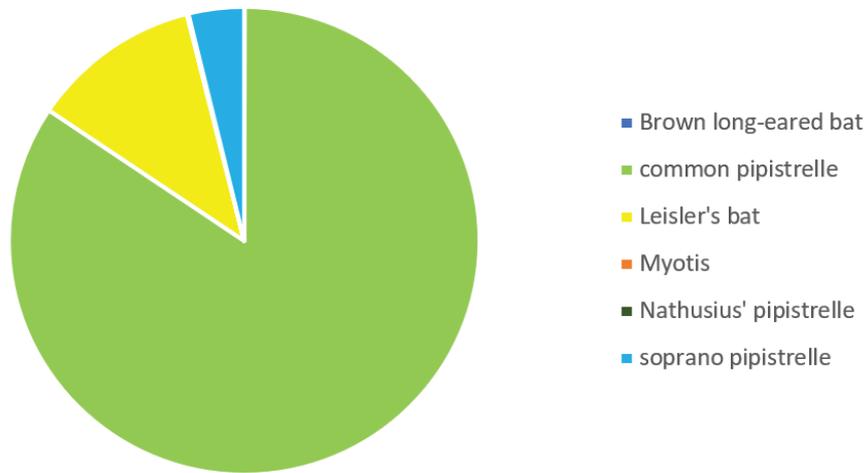
Dublin is the most developed city on the island and bat habitat is under continuous pressure from construction. Parks serve as protective zones within an ever-changing landscape, and it is valuable to know what level of bat use these parks support.



Dublin Song Metre mini position.

Nathusius' Pipistrelle. Photograph by Paul van Hoof.

Bat activity at St. Enda's Park Dublin



Species of bat

Number of encounters based on detector recordings

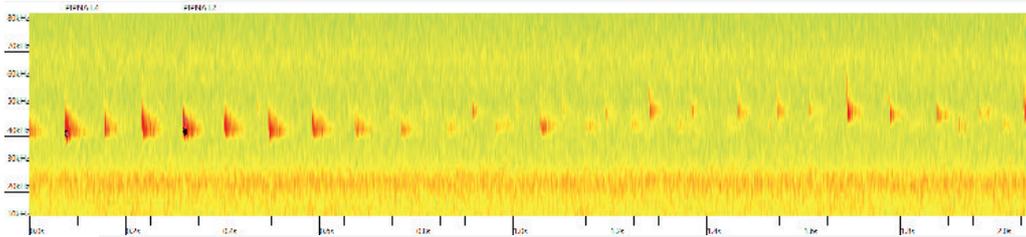
| | |
|------------------------|-------------|
| Brown long-eared bat | 1 |
| common pipistrelle | 2216 |
| Leisler's bat | 306 |
| Myotis | 1 |
| Nathusius' pipistrelle | 2 |
| soprano pipistrelle | 100 |
| Grand total | 2626 |

Bat activity within St. Enda's Park July to mid-August 2021

As shown above, most bat activity within the Park (84%) was of common pipistrelle with low soprano pipistrelle activity in comparison (4%). Leisler's bat made up a notable proportion (12%). All other bats were too infrequent to contribute to the overall picture. There were two Nathusius' pipistrelle call sequences, one brown long-eared bat sequence and very low Myotis (one or two signals).

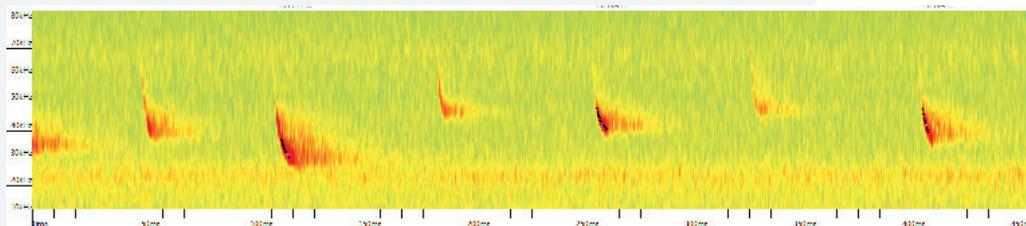
Interestingly, there is evidence of a Myotis bat within the Park and of Nathusius' pipistrelle. Given the scarcity of calls, it is unlikely that they are roosting in any numbers within the Park, but individuals may be present here. Brown long-eared bat signals were extremely rare (one signal identified).

The highest bat activity was on 16th July 2021 with 1083 common pipistrelle calls at 22.00 hours to 23.00 hours. The next highest peak was also common pipistrelle at 01.00 hours o 13th August 2021.



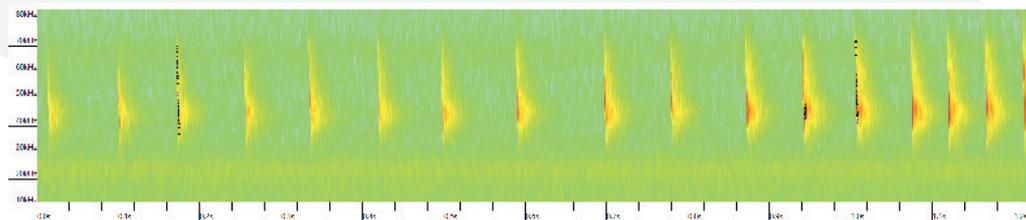
Low pipistrelle signals 19th July at 00.12 hours

These signals have been proposed as Nathusius' pipistrelle by the automatic identification and meet the criteria for this species. Signals to the right show the presence of a common pipistrelle.



Possible Nathusius' pipistrelle signals on 26th July 2021 at 03.46 hours

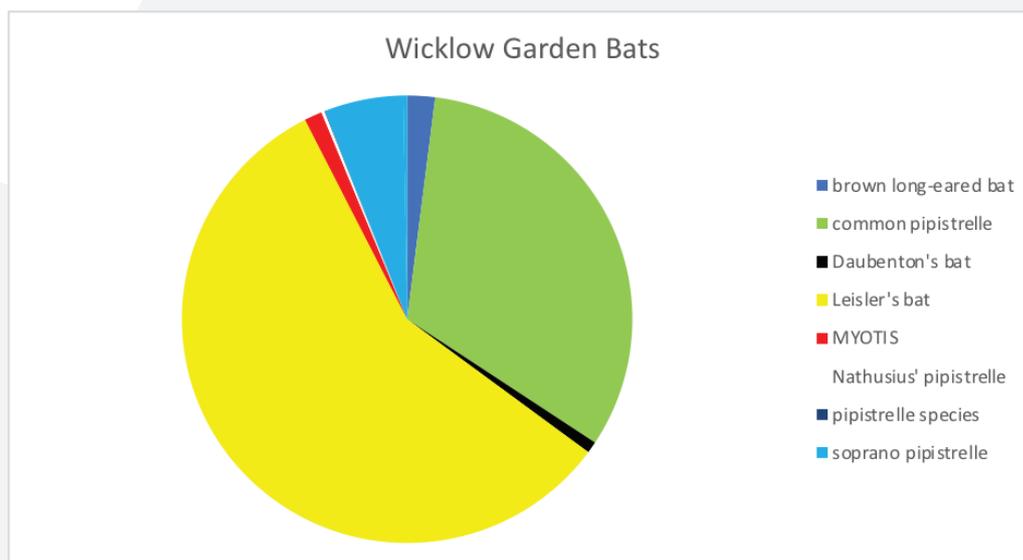
The spectrogram may show three species: common pipistrelle (highest calls), Nathusius' pipistrelle middle calls and Leisler's bat (lowest call).



Myotis bat signal on 29th July at 23.39 hours

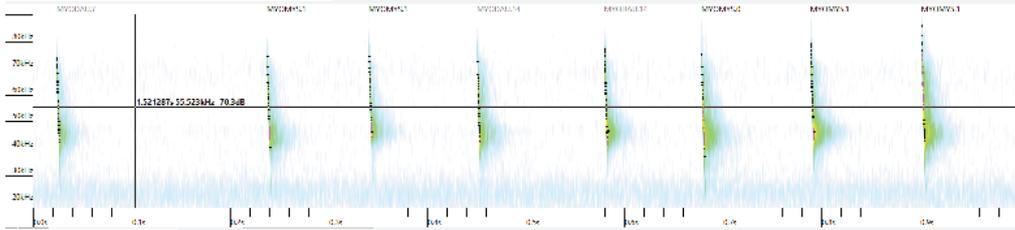
This may indicate the presence of foraging whiskered bats in the Park.

WICKLOW BAT GROUP - GARDEN IN THE DELGANY / GREYSTONES AREA



Bats in the Wicklow garden

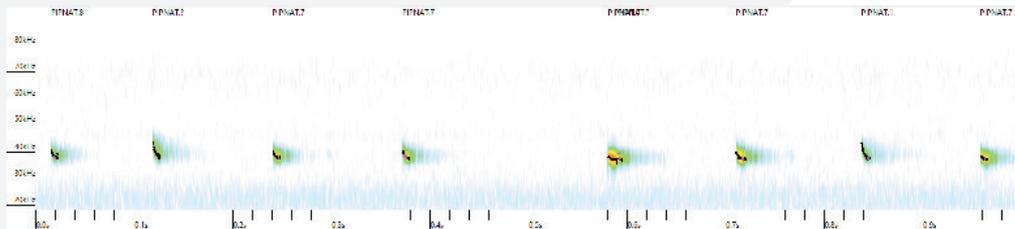
The Wicklow bat assessment was delayed and commenced when all other surveys had been carried out and it shows some interesting differences possibly due to this time lag and to local factors. The bat activity was dominated by Leisler's bat activity with high common pipistrelle activity and low soprano pipistrelle activity. The Wicklow survey period was short but provided interesting results including good Myotis bat activity. The presence of whiskered bat is a possibility within the site (see overleaf).



Possibly a whiskered bat signal at 04.16 hours on 11th August 2021

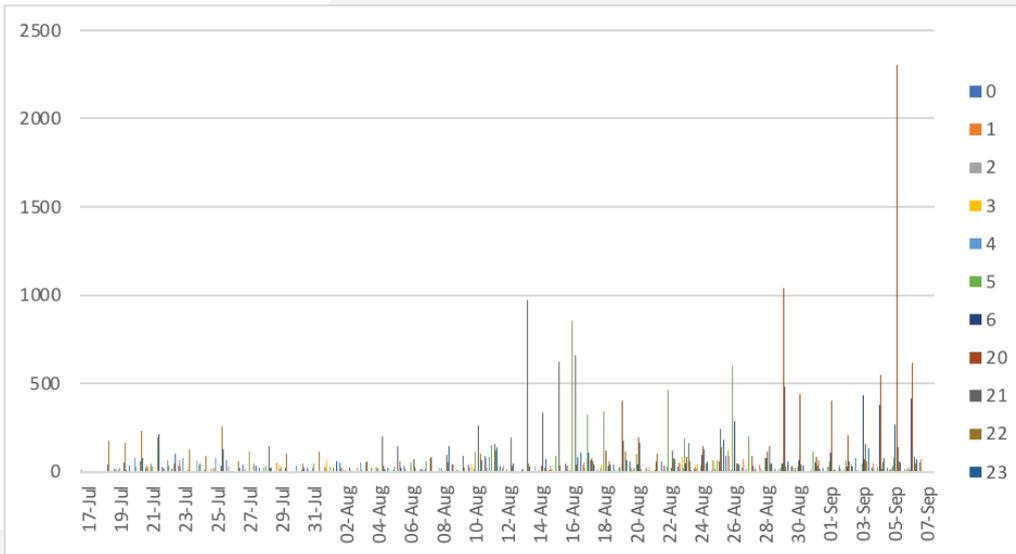
This is an uncommon species found throughout Ireland. It is probable that there are many more roosts than were discovered during research undertaken by UCD and QUB, but it is still one of Ireland’s rarest bats.

Nathusius’ pipistrelle was present in the Wicklow garden on four separate occasions in the survey period including one period close to emergence time and another close to return time in August 2021. There were also 36 brown long-eared bat signals on the monitor.



Nathusius’ pipistrelle bat in the Wicklow garden

Bat activity within the garden appears to have increased towards the autumn with the highest level at 20.00 hours on 5th September 2021. This was primarily due to a Leisler’s bat which was noted to emit 2169 pulses on this date with 2043 signals within one hour. This may indicate a Leisler’s bat mating perch or roost close to the monitor (sunset was at 20.04 hours on this date).



Bat signals recorded in the Wicklow garden between July 17th and September 7th, 2021.

The main signal peaks were Leisler's bat (a total of 2043 in one hour) and common pipistrelles (936 and 1001 calls in one hour respectively on 13th August and 29th August).



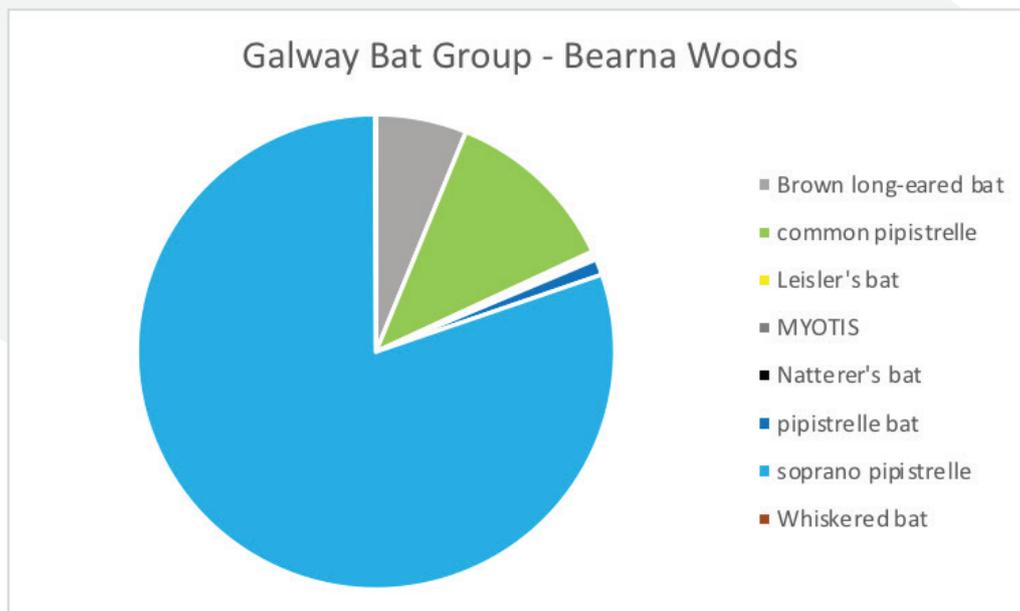
Wicklow Song Metre in situ.

Soprano Pipistrelle. Photograph by Tina Aughney.

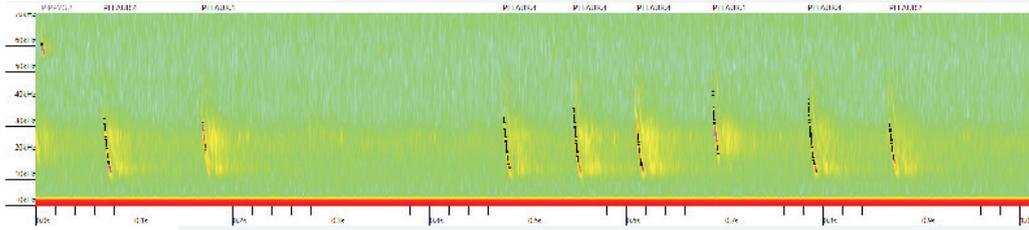
GALWAY BAT GROUP - BEARNA, BARNA WOODS

Galway has seen huge changes in recent decades and the bat fauna are experiencing the effects of urban expansion. Places like Bearna Woods may be important havens for bats in landscape that is often devoid of good tree cover. The data from this survey displays an interesting dominance of soprano pipistrelle bats. This species makes up around 81% of all bat activity noted based on the number of passes recorded. Even more notably, brown long-eared bats make up 6% of the signals recorded by the monitor. This is a very difficult bat to record due to its directional and quiet calls emitted through the nose (in the same way that lesser horseshoe bats do).

The bat fauna was relatively diverse within the wood and there is likely to be most of Ireland's bat species in this area including lesser horseshoe bat and Nathusius' pipistrelle (as shown in surveys associated with the proposed Galway road construction); neither of which were recorded in this assessment.

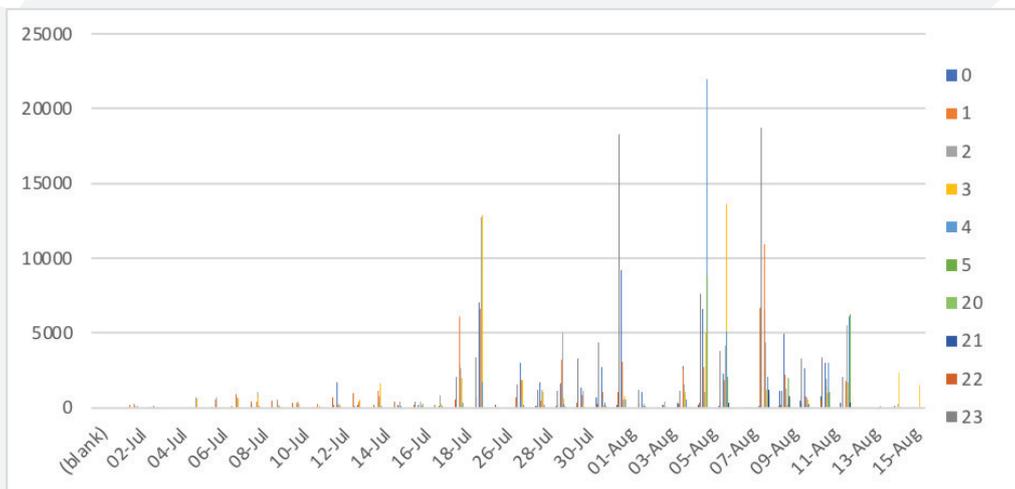


Bat species noted between July 1st and August 16th, 2021



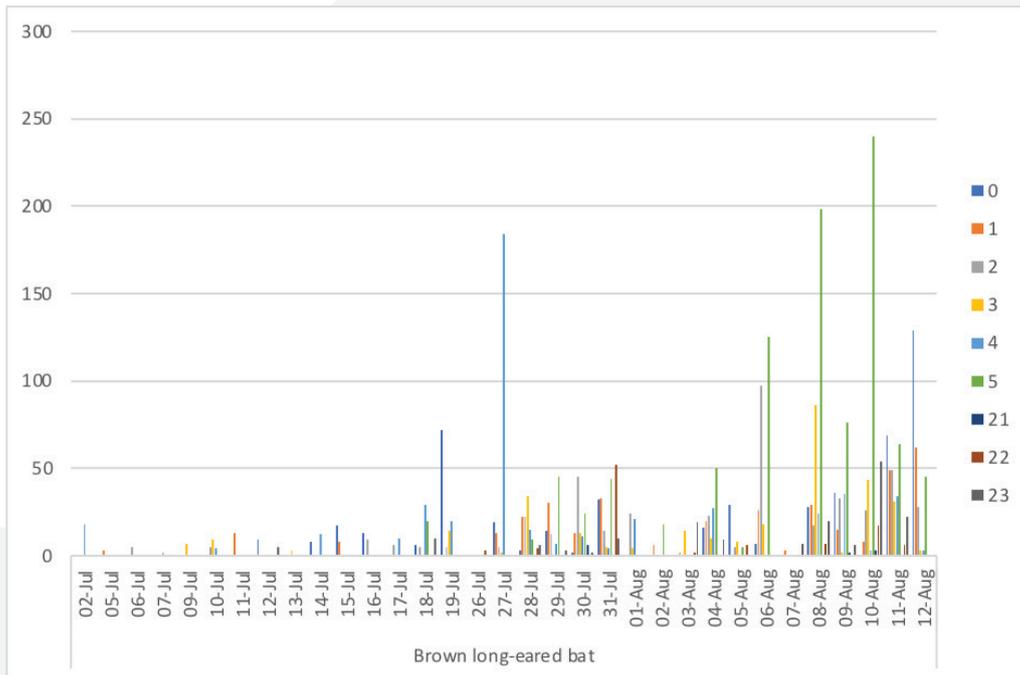
Brown long-eared bat was a huge part of the bat signals in this location.

Clearly there is a roost of this species close to the monitor. This species is not easy to record because of its directional calls. Usually, there are two or three calls over a night of survey if the bat is encountered at all.



Bat activity at Barna Wood between 1st July and 12th August 2021

On August 5th, there were 21,948 calls of soprano pipistrelles between 04.00 hours and 05.00 hours. High activity was also noted on 19th and 31st July and 7th August 2021.



Brown long-eared bat activity at Barna Woods

This is a rare representation as brown long-eared bat activity would be difficult to plot in most locations. The highest call rate was at 5 am on 10th August when 240 calls were recorded. As can be seen, this species was recorded repeatedly throughout the study.

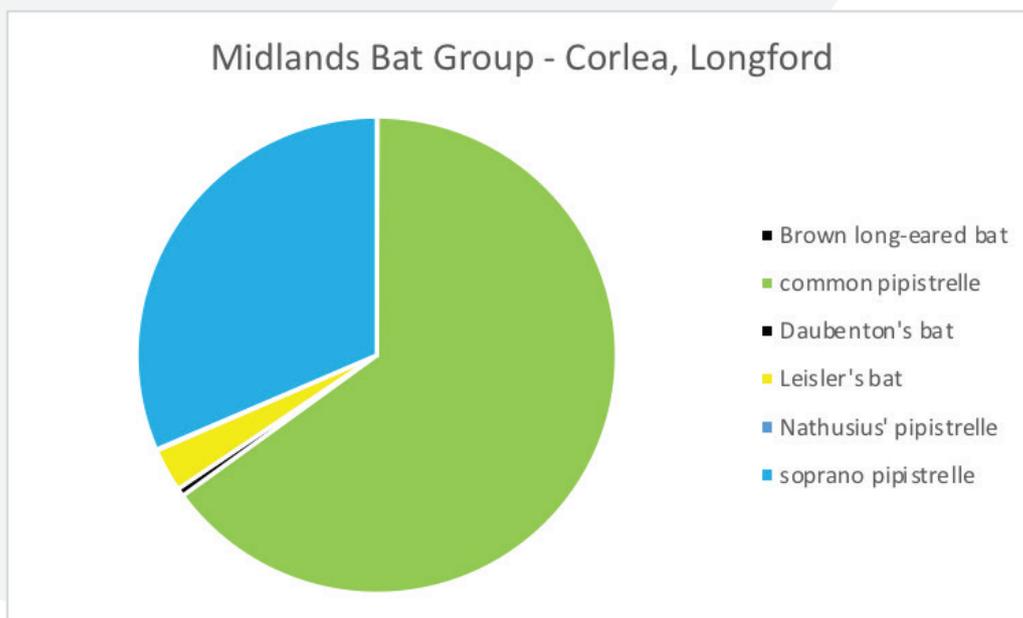
Galway Song Metre mini location.



THE MIDLANDS BAT GROUP – CORLEA BOG AMENITY WALK

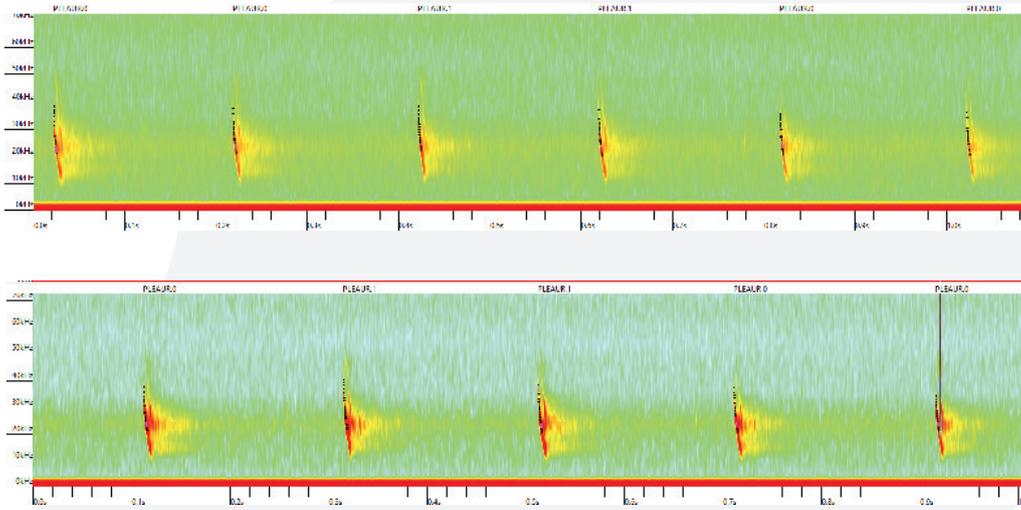
The Midlands Bat Group chose a representative location for the installation of its Songmeter Mini Bat – a bog track. This is an interesting habitat that may not receive as much attention for bat surveys and the results would probably reflect bat activity throughout large parts of the Midlands.

The most straight-forward data was collated by the Midlands Bat Group Songmeter Mini Bat. The signals recorded were easily attributable to species and there were virtually no ambiguous calls noted in the sample analysed from the whole survey period.

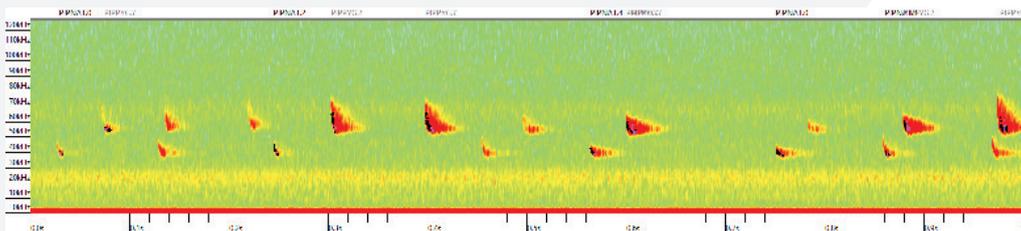


Bat activity at the Corlea Bog Amenity Walk Pathway

Pipistrelles accounted for the vast majority of bat activity, with Leisler's bat accounting for most of the remainder. The only other species that was present in sufficient strength to register on the chart above was Daubenton's bat.

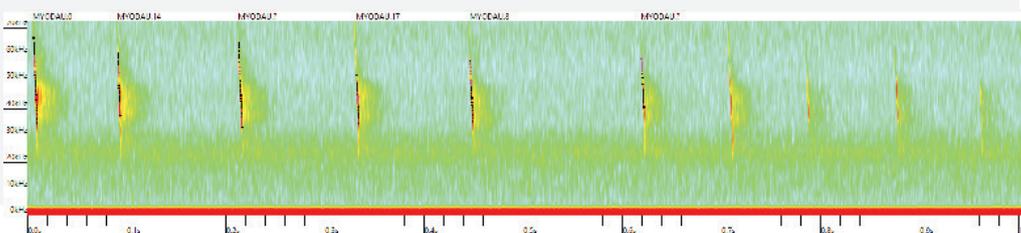


Brown long-eared bat signal at 00.16 on 20th July 2021



Nathusius' pipistrelle and Soprano pipistrelle at 02.15 hours on 4th August 2021

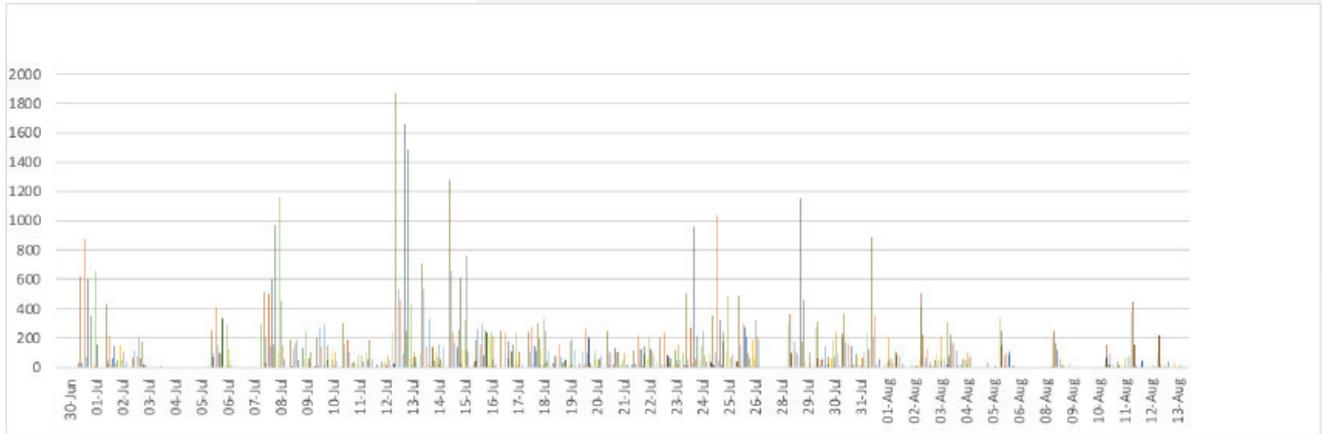
This is the only signal of Nathusius' pipistrelle in the entire survey period.



Daubenton's bat at 23.26 hours on 18th July 2021

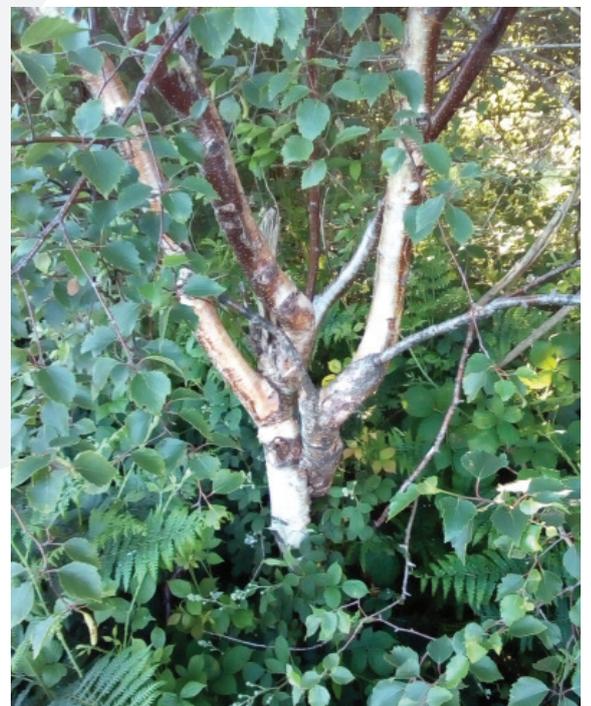
Species of bat noted

In all, the following species were noted within the bog: Common pipistrelle, Soprano pipistrelle, Nathusius' pipistrelle, Leisler's bat, Daubenton's bat, Brown Long-eared bat.



Bat activity at Corlea throughout the survey period 1st July to 12th August

The highest bat activity was at 23.00 hours on 12th July 2021 when there were 1,871 common pipistrelle calls.

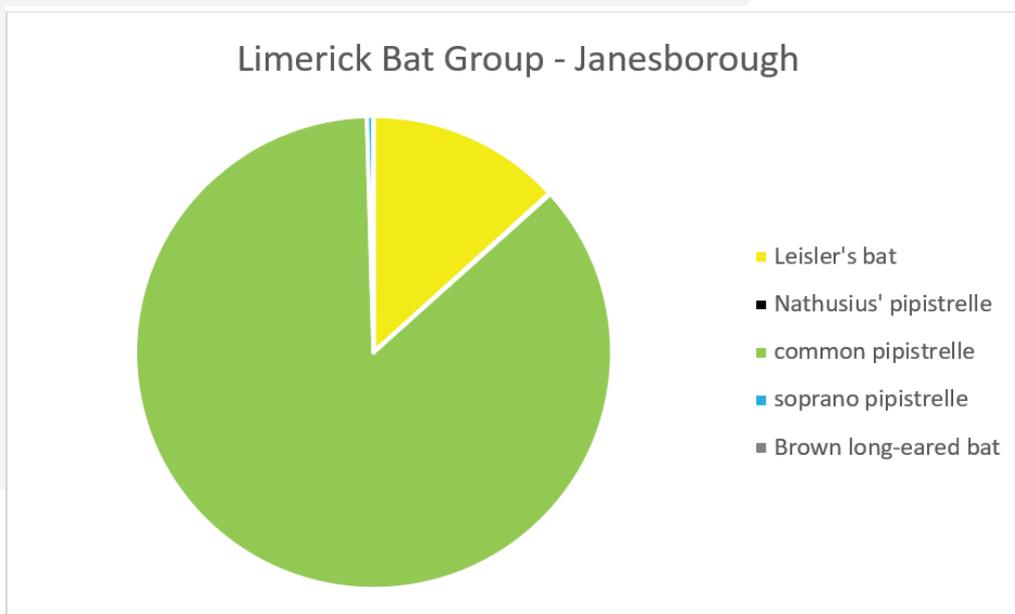


Midlands Song Metre mini location.

Common Pipistrelle. Photograph by Paul van Hoof.

LIMERICK BAT GROUP - JANESBOROUGH FORMER RAILWAY LINE

Limerick is one of the largest settlements in Ireland. This has seen a continued expansion and changes to the landscape. Some changes have seen green spaces decline. Others have seen the abandonment of former transport routes such as the railway line at Janesborough, leaving some wildlife corridors to the rear of Limerick Colbert Station. The monitor was placed adjacent to the old railway line to determine if there is much activity within the area and evidence for foraging and commuting and indications of nearby roosts. The substantial part of the recordings are attributable to common pipistrelles with a very small amount of calls that may be evidence of Nathusius' pipistrelle.



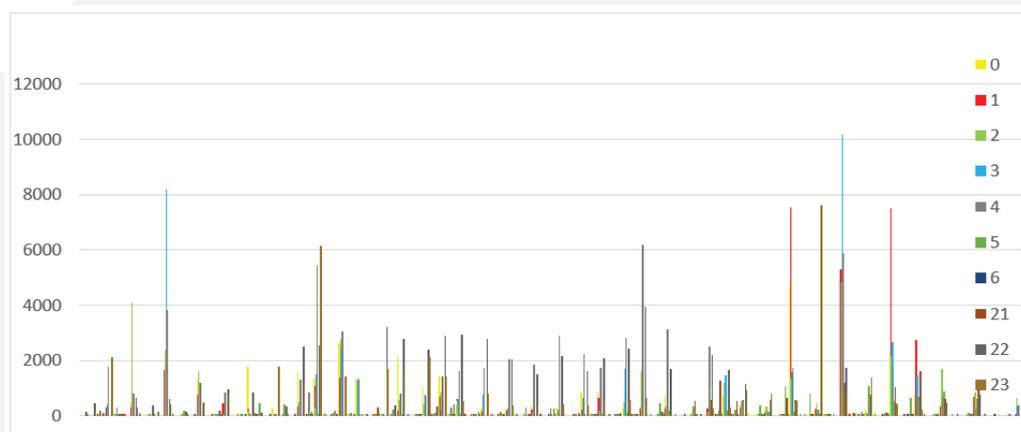
Bat activity based on the number of bat call sequences identified within the study areas

Species of bat

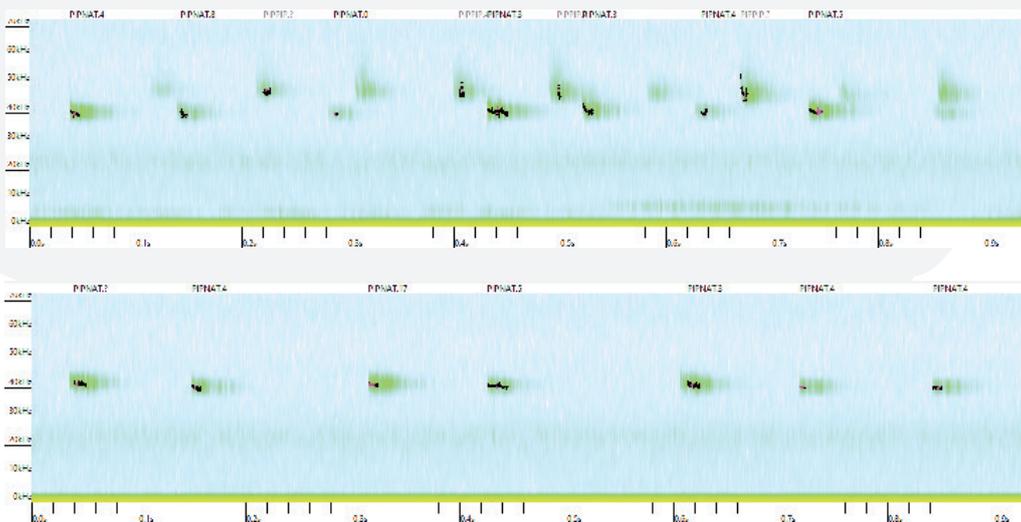
Number of bat passes in the entire survey period

| | |
|------------------------|--------------|
| Leisler's bat | 1496 |
| Nathusius' pipistrelle | 9 |
| common pipistrelle | 9759 |
| soprano pipistrelle | 48 |
| Brown long-eared bat | 2 |
| Grand total | 11314 |

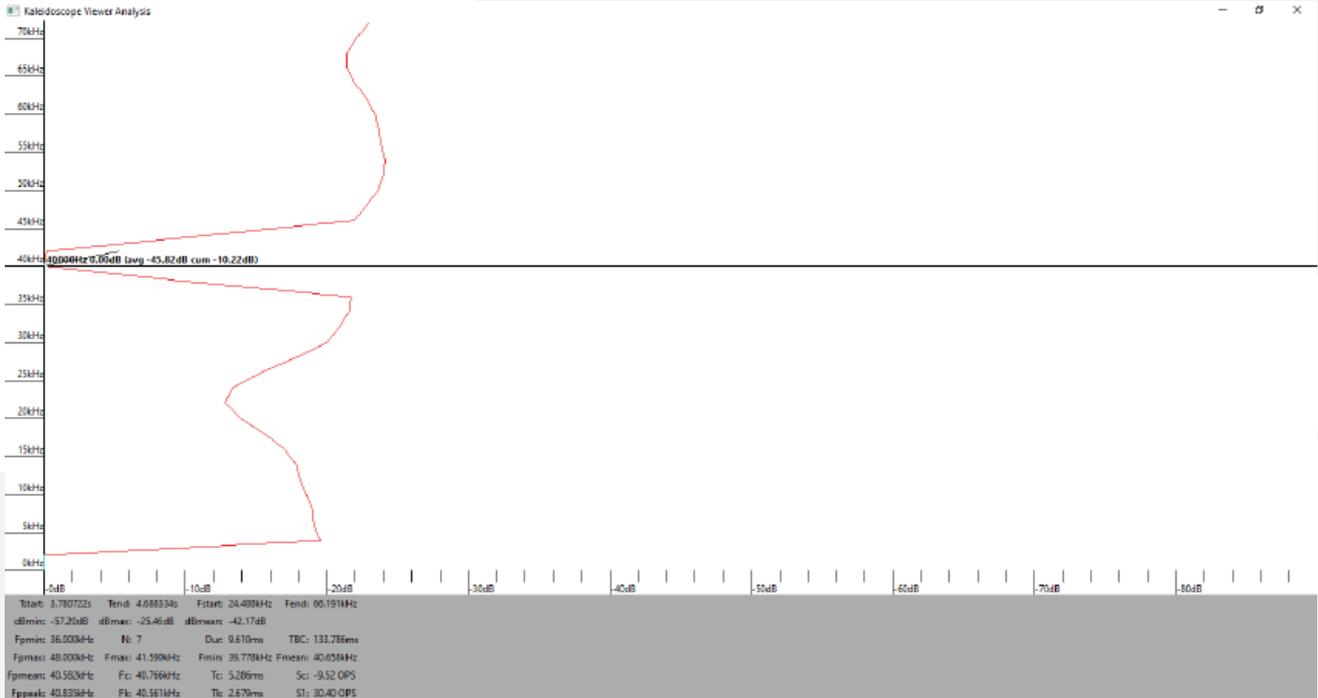
Bat activity based on the number of bat call sequences identified within the study areas



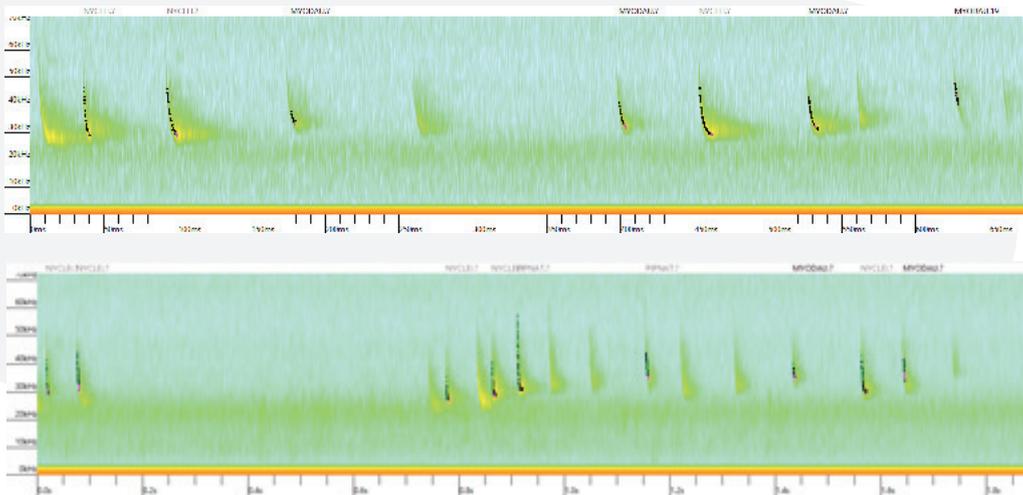
Bat activity within the site. The highest level of activity was 10,163 common pipistrelle calls at 3 am on 1st August 2021



Nathusius' pipistrelle and common pipistrelle at the site on 3rd July 2021 at 04.56 to 04.57 hours

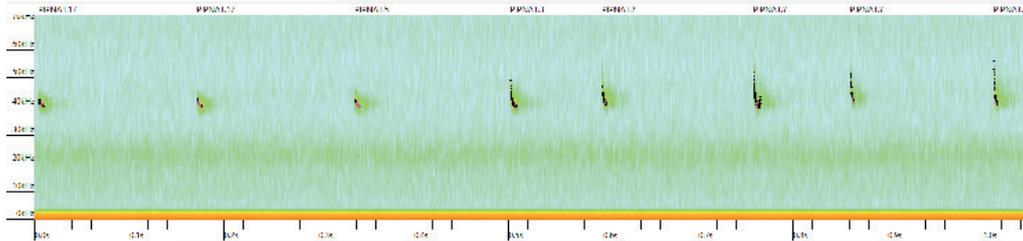


The above shows that the bat's signals in the lower (and upper figure) is strongest slightly below 41 kHz (kilohertz). There is a possibility that these are very low common pipistrelle signals.



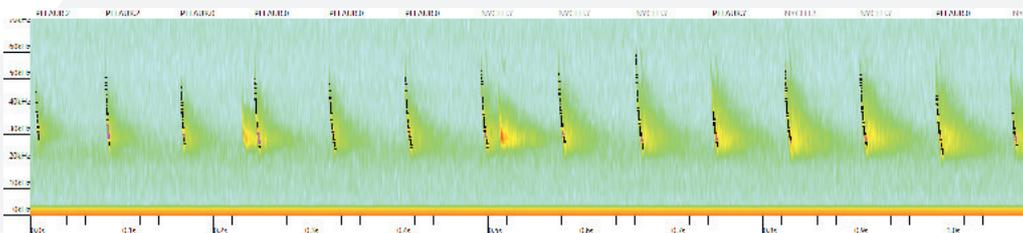
Signals difficult for software to attribute to a bat species

The above signals are social calls of a common pipistrelle that are believed to be contact calls (confirmed by Dr. Jon Russ)



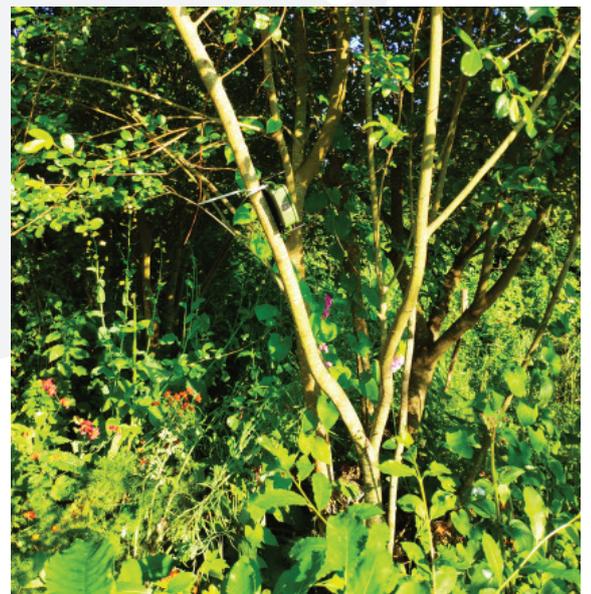
Possible Nathusius' pipistrelle signals at 03.09 hours on 1st August 2021

Several signals are potentially this species in the study area but may be very low common pipistrelle signals.



Brown long-eared bat at 04.27 hours on 25th July 2021

This species was very rarely recorded at this location.

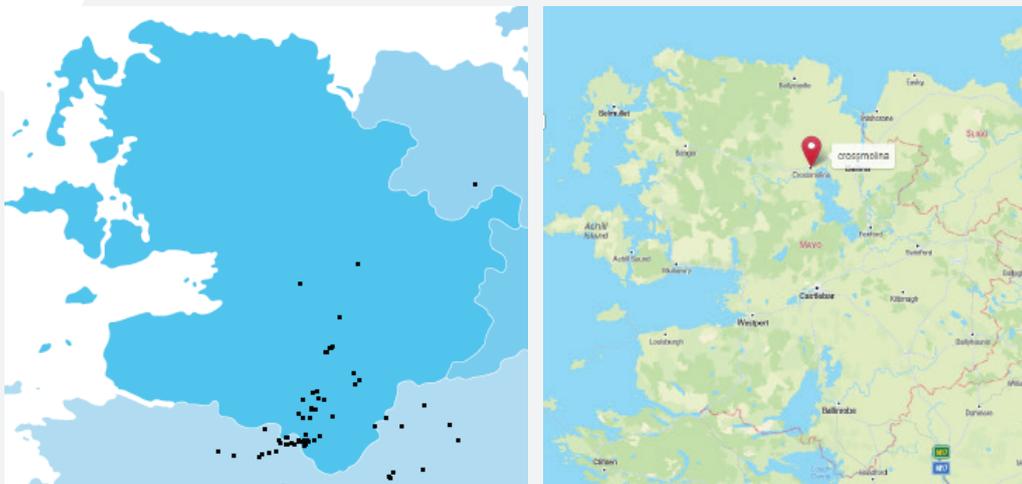


Limerick Song Metre mini position.

Common Pipistrelle. Photograph by Paul van Hoof.

MAYO BAT GROUP – CROSSMOLINA GARDEN

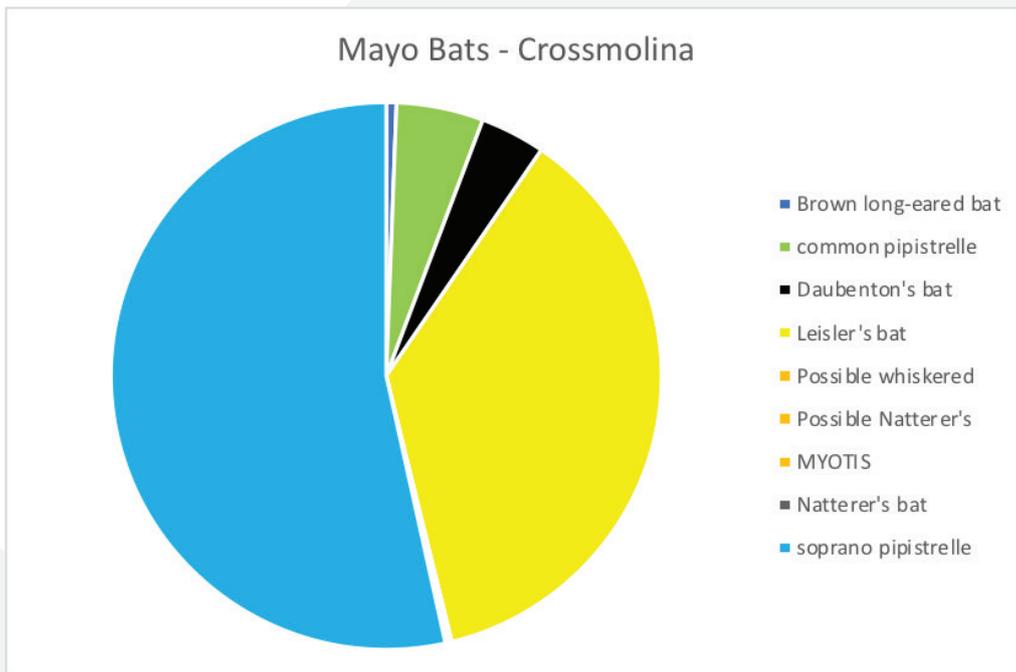
Mayo is at the northern end of the range of the lesser horseshoe bat in Ireland. Crossmolina is farther north than any records for the county based on the Bat Conservation Ireland database.



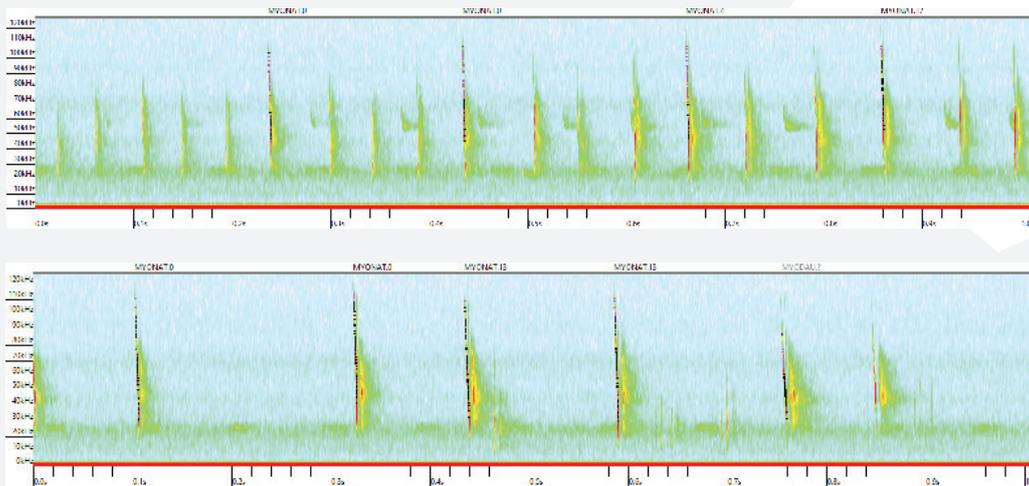
However, longer term placement of static monitors may help in providing information on movements of this species and other bat species outside of the recorded range and it would be of great value to record this bat by this means. However, in this study there were no lesser horseshoe bats recorded within this area but there was a variety of bat species that were found in Crossmolina.



Daubenton's Bat hunting. Photograph by Paul van Hoof.

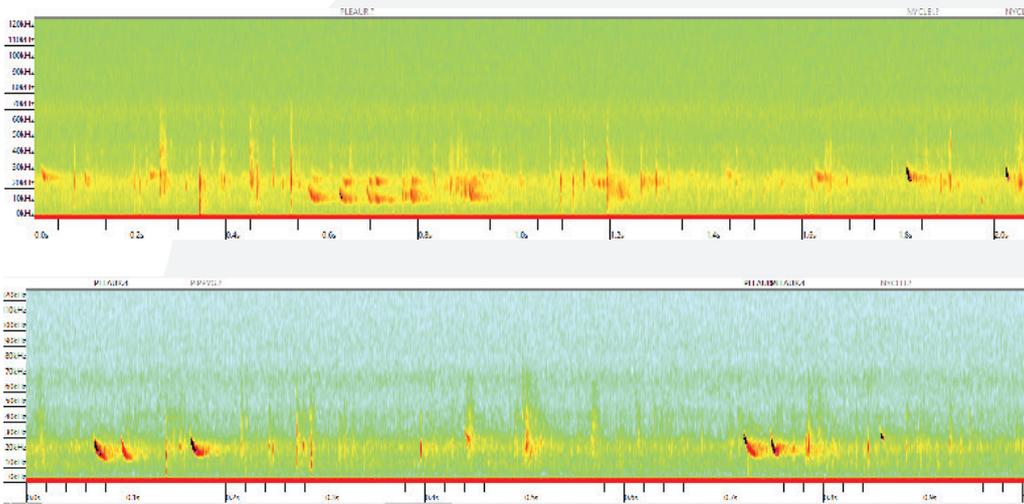


Bat activity within the garden in Crossmolina between 1st July and 12th August 2021

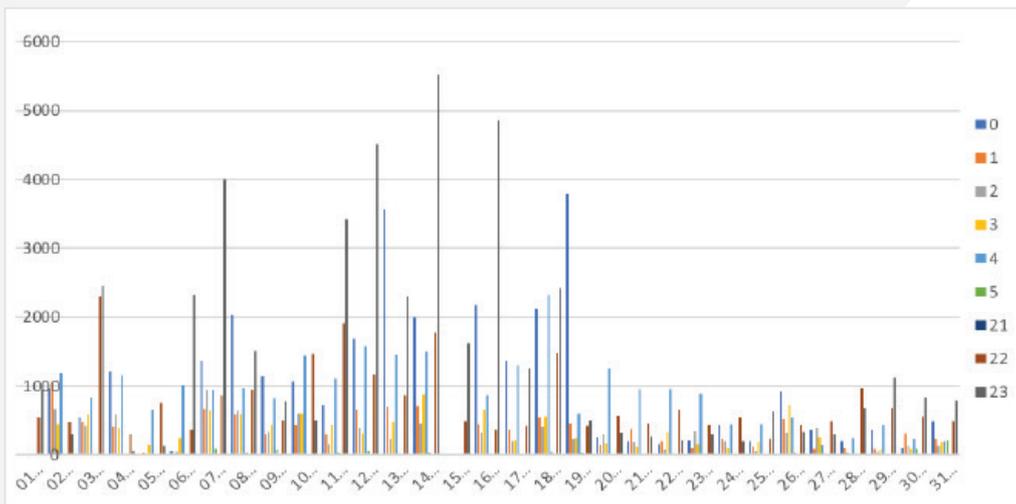


Myotis possibly Natterer's bat in Crossmolina 11th July 2021 at 23.18 hours and on 8th July at 23.22 hours.

There were a number of Myotis signals that meet the overall description of Natterer's bat signals. Most signals recorded were attributable to Daubenton's bat.

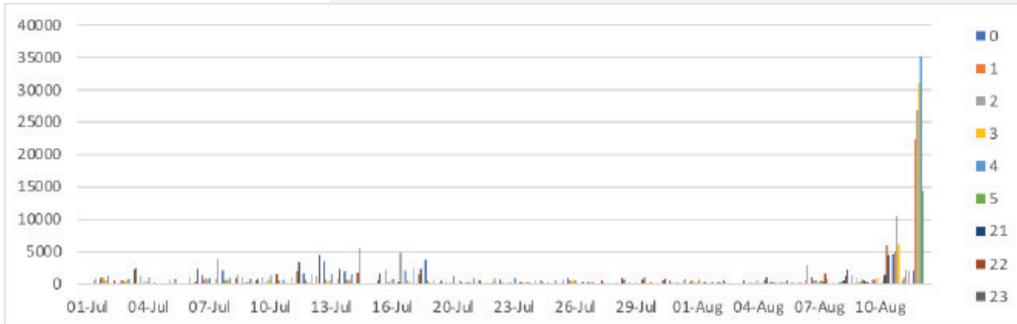


Leisler's bat social calls at 02.59 and 02.49 hours on 6th July 2021



Bat activity at the Crossmolina Songmeter Mini Bat in July 2021

Bat activity was very high on 14th July 2021. This was a period of good weather and in advance of very high night-time temperatures on 21st July 2021. There were 5,524 bat calls close to the monitor on 14th July.

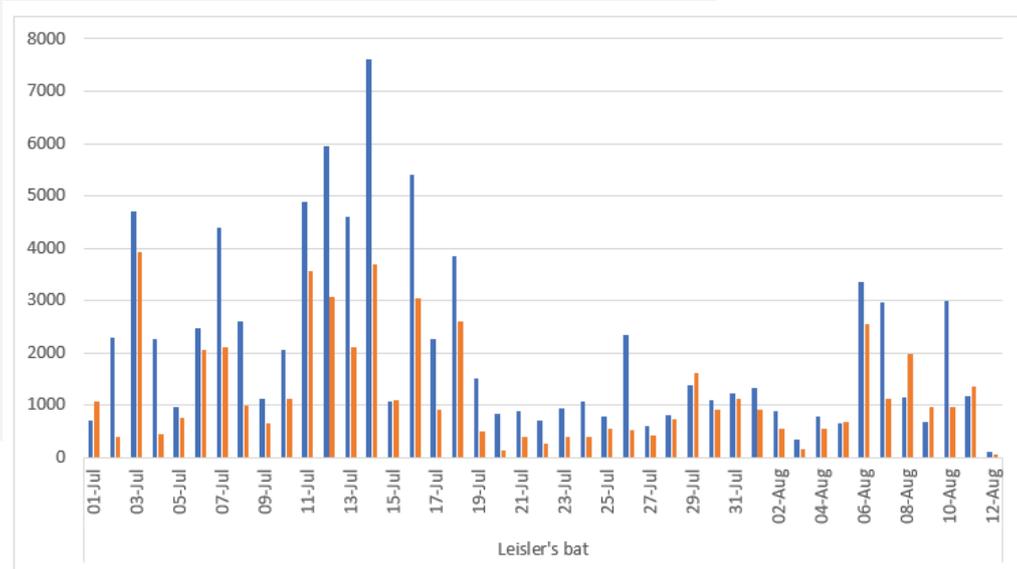
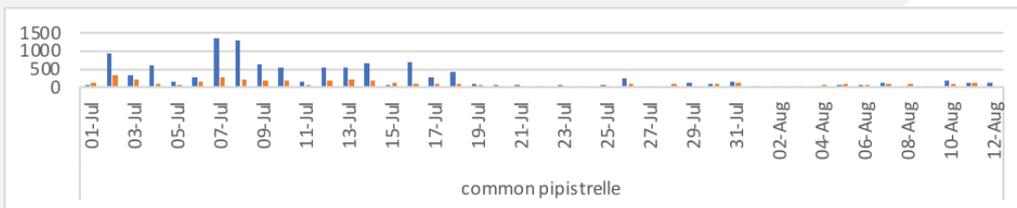
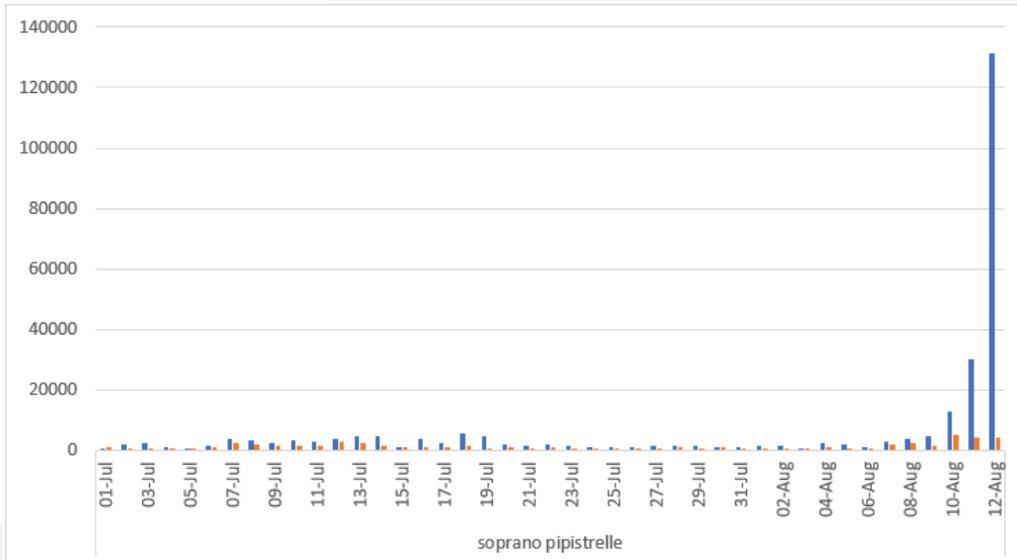


Bat activity within the Crossmolina site in early to mid-August (right side of graph) compared to July (left side).

The previous graph shows the left-hand data in higher resolution. Soprano pipistrelle activity at 4.00 hours on 12th August 2021 was extremely high.



Mayo Song Metre mini location.



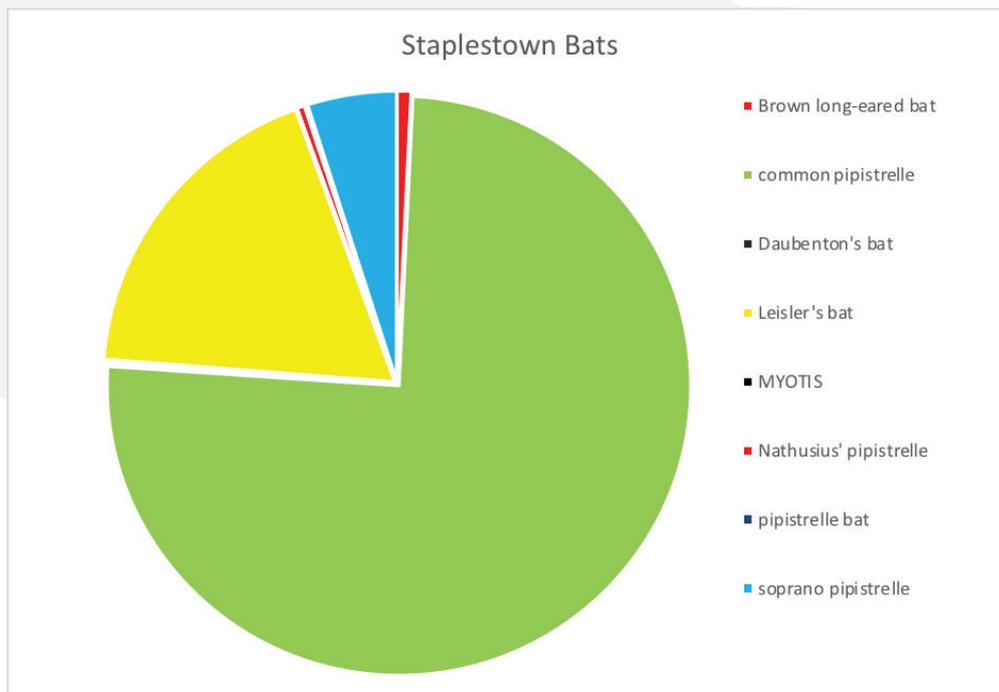
Comparison of soprano pipistrelle, common pipistrelle and Leisler's bat activity within the Crossmolina garden July to August 2021

ST. BENIGNUS CHURCH GROUNDS, STAPLESTOWN, KILDARE

While this may not have been the most active site for bats, an examination of the data collated for the site reveals that there were greater than 200,000 bat calls within the study site over the study period.

The highest level of activity was on 15th July 2021 at 23.00 hours (11 pm) and on 5th August in the period of 5 am to 6 am.

The most active species within range of the monitor was common pipistrelle. Leisler's bats were the next most commonly encountered species. Soprano pipistrelles were noted $\frac{1}{4}$ of the times that Leisler's bats were present. There were also 48 recordings of Nathusius' pipistrelle around the church in the survey period. There were 89 brown long-eared signals. This is high given the directionality and weakness of the signal of this species and may suggest a nearby roost of this species.



Bat activity at Staplestown, Kildare July to mid-August 2021

Most bat activity was of common pipistrelle. There is a possibility that there is a bat roost within the church based on the level of bat activity noted and the times of high bat activity.

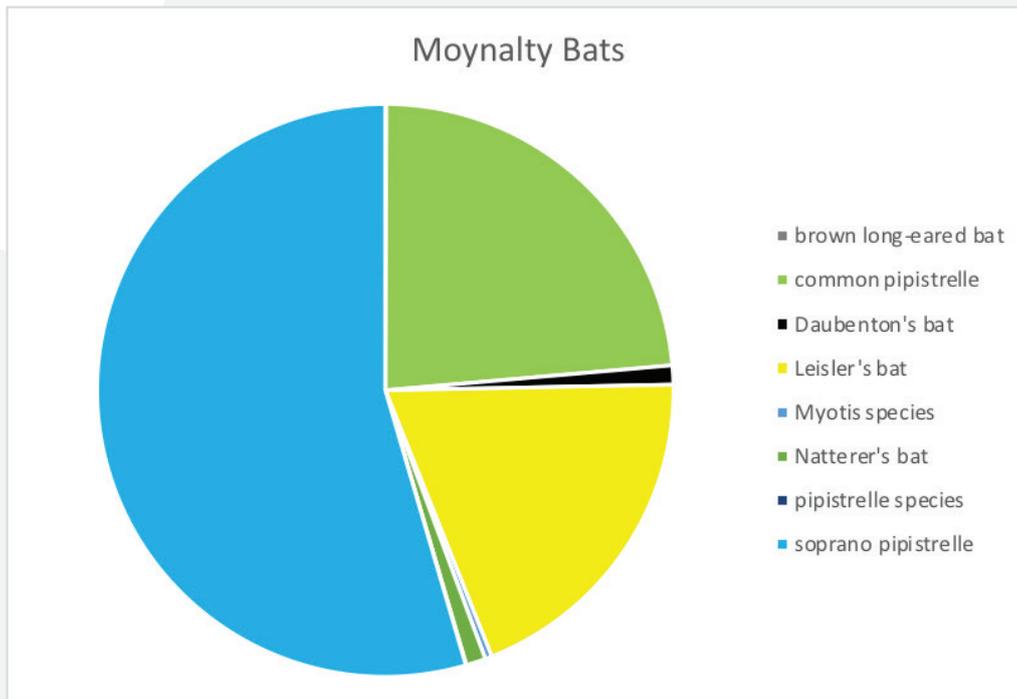


Leisler's Bat. Photograph by Paul van Hoof.

St. Benignus Church, Staplestown, Co. Kildare.



MEATH BAT GROUP – MOYNALTY RC CHURCH FARMLAND

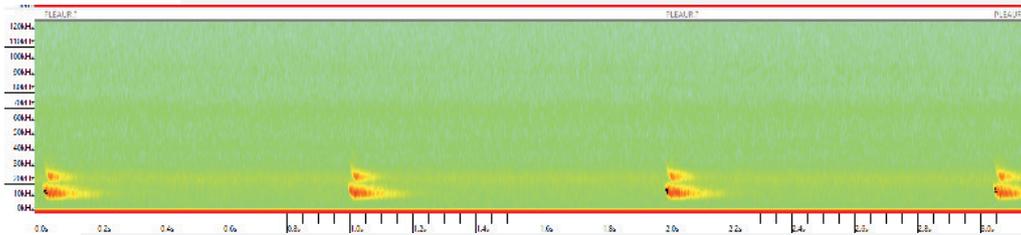


Bat activity in Moynalty, Meath July to early August 2021

The location for the Songmeter Mini Bat in the village of Moynalty was a mature tree along the River Barora in pasture tended by Fr. Joe McEvoy who has aimed to develop healthy grass diversity and organic sheep and pig meat adjacent to the Main Street of the village. This is upriver of an annual monitoring location for the Daubenton's Bat Waterways scheme undertaken by Bat Conservation Ireland, local volunteers, and Dr. Tina Aughney. There is a long-term record of the Daubenton's bat activity on this river. The recordings cover the period 1st July to 4th August 2021.

The majority of bat activity within the site was of soprano pipistrelle and with similar levels of bat activity of Leisler's bats and common pipistrelles. In effect, this is a higher proportion of Leisler's bat activity than usual as this bat may feed over a much greater distance and area than common pipistrelles.

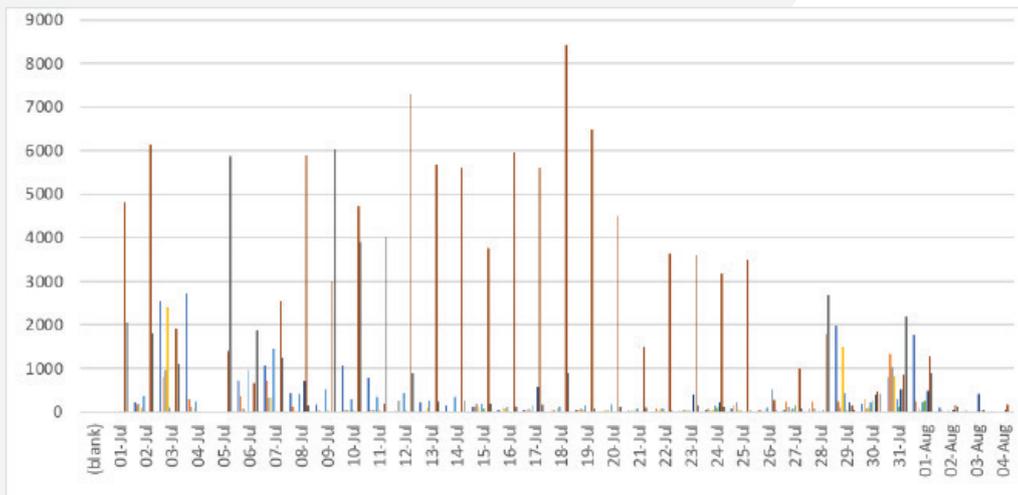
Signals recorded by the monitor indicate that a male Leisler's bat was availing of the site as a mating perch. The tree to which the monitor was attached was a significant horse chestnut tree while there are several substantial trees in nearby fields.



Leisler's bat social calls from a stationary position.

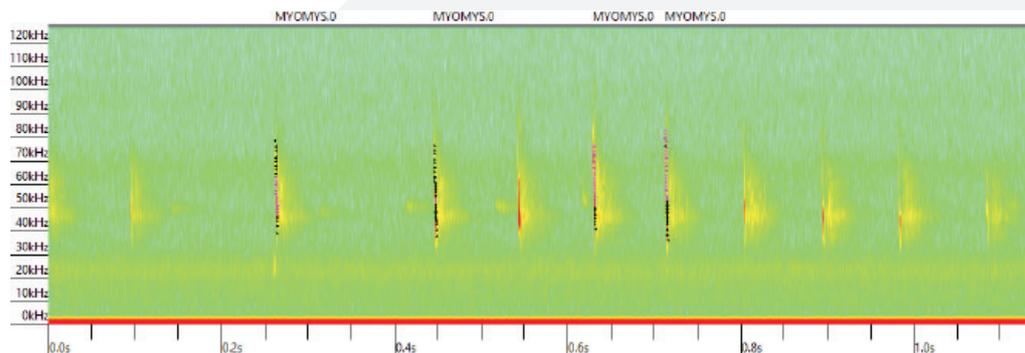
This may be within the tree to which the Songmeter Mini Bat was attached.

There were only four identified recordings of brown long-eared bats at the monitor over the entire survey period.



Bat activity based on the total number of bat calls on each date recorded by the monitor

The busiest day was 18th July when there were 8,426 calls in one hour (22.00 hours)



Myotis signals may indicate the presence of a number of species including whiskered bat.

The signals of this genus of bat are very difficult to confirm to species level. Signals of Daubenton's bats may resemble those of the other species including whiskered bat and Natterer's bat.

It is known that there are soprano pipistrelles, Natterer's bats, brown long-eared bats, and Leisler's bats roosting close to the village centre. The presence of whiskered has yet to be confirmed and no Daubenton's roosts are known close to the village albeit that bridge roosts have been recorded upriver of the village.

Meath bat group location.



KILDARE BAT GROUP - CLONANNY

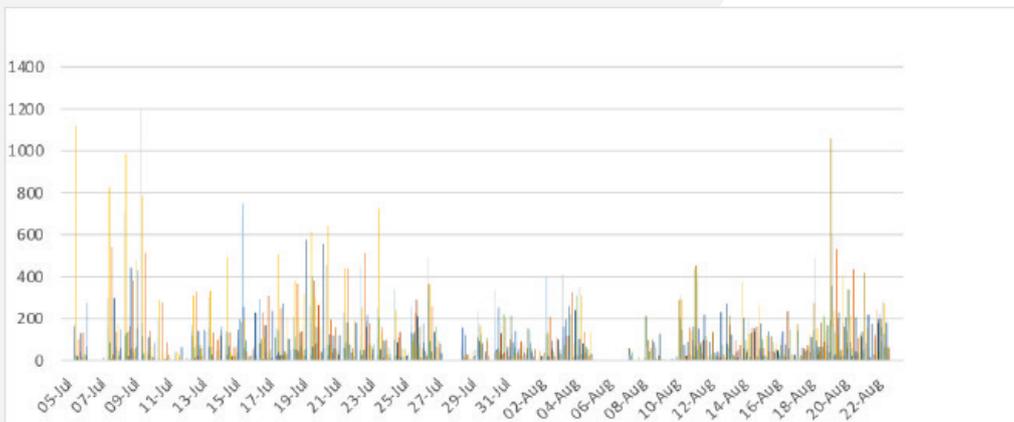
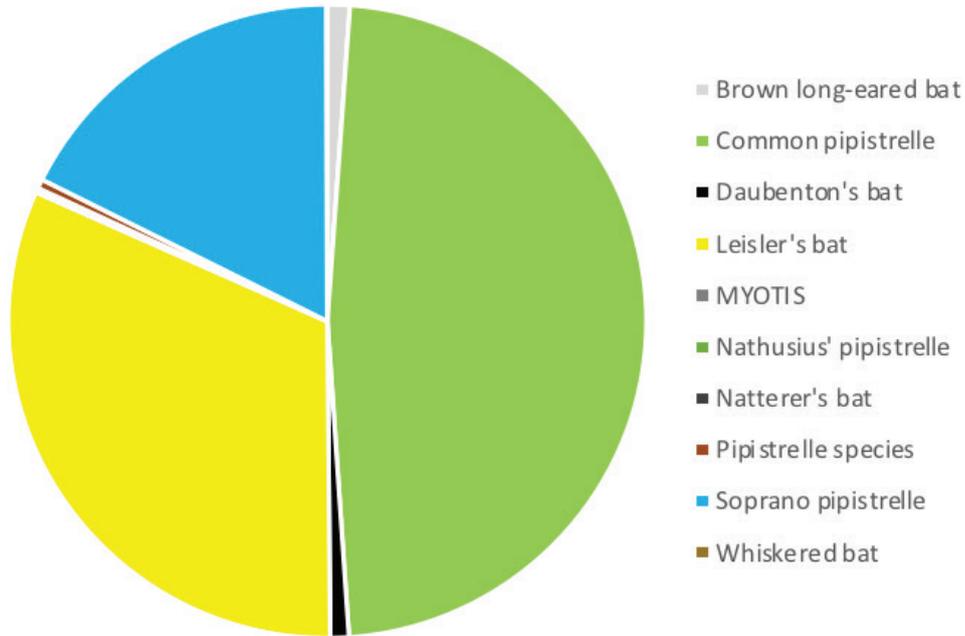
Kildare Bat Group are actively involved in surveys for Bat Conservation Ireland in addition to walks, talks and other events. The survey site for this project was close to the border of three counties - Laois, Offaly and Kildare and was within a garden in Clonanny. Within several kilometres is the River Barrow, the Grand Canal as well as the River Stradbally in addition to several bogs.

The survey commenced on 5th July 2021 and ran to dawn of 23rd August 2021. The results show high common pipistrelle activity within the survey area, followed by high Leisler's bat activity with soprano pipistrelles being the third most commonly encountered bat based on activity within range of the Songmeter Mini Bat. There are a range of signals from Myotis bats that have been attributed to three separate species. This group is difficult to be definitive in identifying and it should be borne in mind that recordings of bats may overlap in particular for Myotis species (whiskered, Brandt's, Natterer's and Daubenton's). It is certain that the following species are present: Nathusius', common and soprano pipistrelle, Leisler's bat, brown long-eared bat with potential for Natterer's, Daubenton's and whiskered bat.



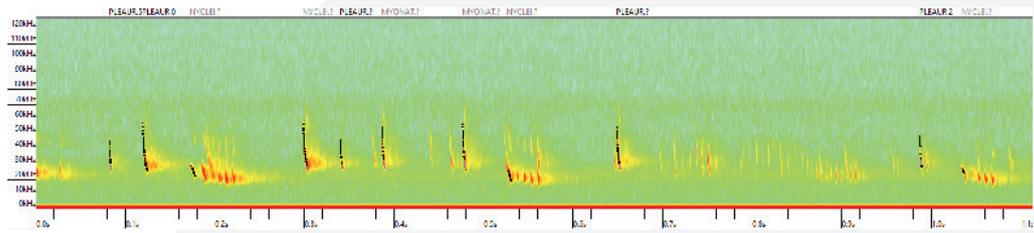
Kildare Song Metre mini location.

KILDARE BAT GROUP – CLONANNY BATS

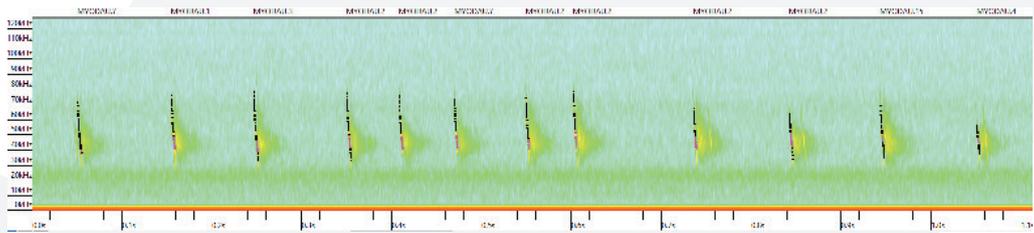


Bat activity within the site between 5th July and 22nd August 2021

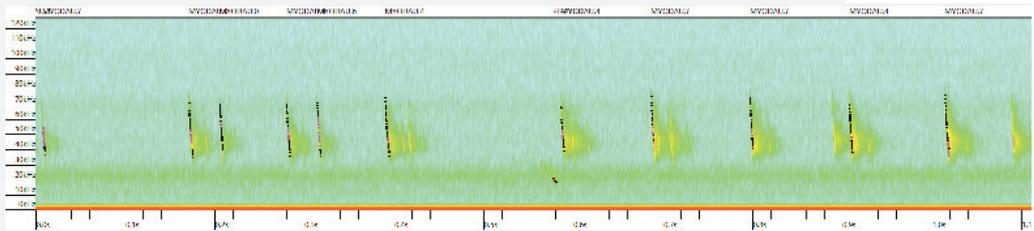
The highest activity was on 5th July, 8th and 9th July and 19th August and was of common pipistrelles. There were 1,198 calls and were all between 9 pm and 11 pm.



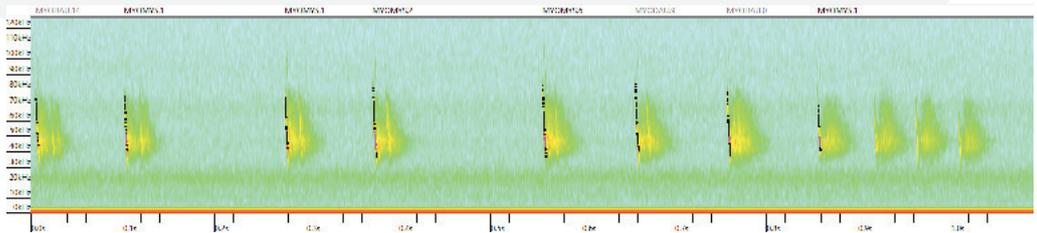
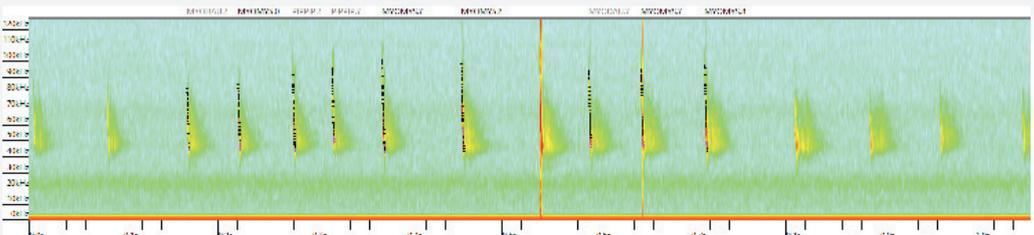
Brown long-eared bat echolocation calls and social calls



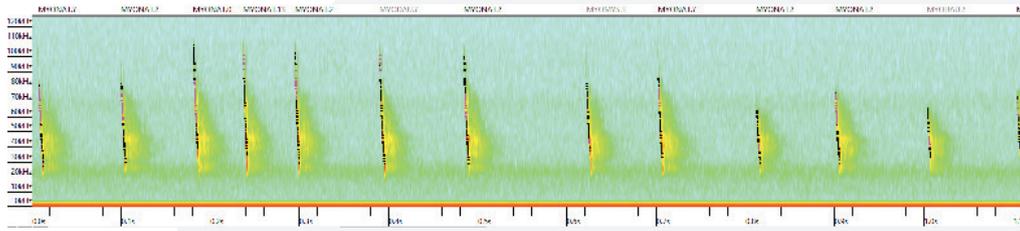
Possible Daubenton's bat calls 01.00 hours 9th July 2021



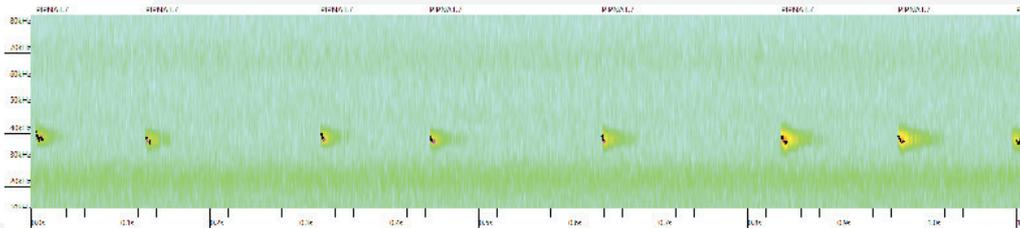
Possible Daubenton's bat calls 23.32 hours 18th August 2021



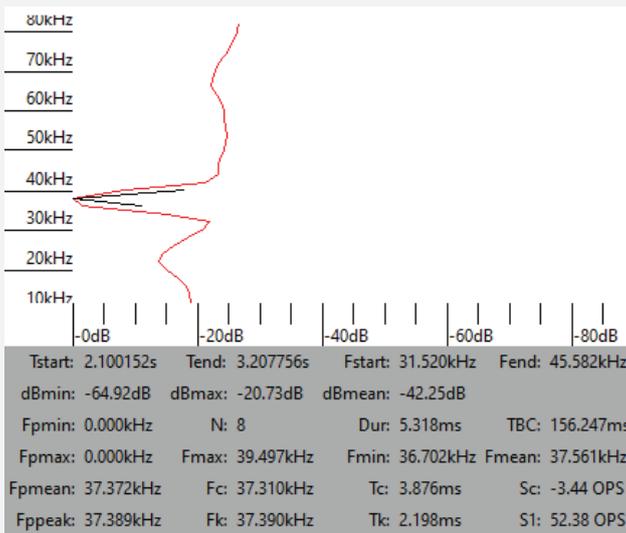
Myotis bat calls considered to be possible whiskered bat by software 3rd August 22.06 hours (top), 12th August 00.38 hours



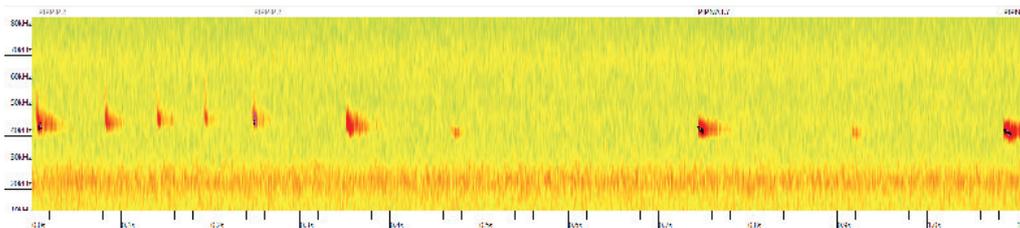
Myotis bat calls considered to be Natterer's bat on 22nd August 2021 at 01.02 hours



Nathusius' pipistrelle at 23.41 hours on 17th July 2021.



Above is a summary of the characteristics of the signal that allow it to be identified. The strongest signal is around 37 kHz, and the highest frequency is 39 kHz.



Possible *Nathusius' pipistrelle* at 23.02 hours on 2nd August 2021.

CONCLUSIONS

The project to roll out a monitoring scheme over a very flexible area has been successful in providing a fascinating sample of what could be achieved with a scheme of this nature, carried out throughout the island. It requires local involvement and assistance to complete it successfully and bat expert knowledge to assess the results. The two elements can work well to create an important insight into the bat fauna of different villages and towns throughout Ireland and help to form a link and understanding between the inhabitants and their resident overlooked bat neighbours.

There are lessons to be learned regarding implementation that should help enhance any further projects. This would include more regular changes of SD cards and checking of batteries, better means of passing SD cards along for analysis, checking of NOID files for any uncommon bat species and possibly checking for multiple species in call sequences. The last two measures increase the analysis effort enormously.

The benefits of the project are that there will be an increased level of data available on bats throughout the island that can be checked now and into the future for any trends similar to the projects already undertaken by Bat Conservation Ireland. The project also allows anyone with no expertise in bats, to contribute to research and monitoring of their local bat fauna.

As with any voluntary project, it is only possible with the willingness and enthusiasm of the volunteers to install the monitors, maintain the batteries and SD cards and pass the information back for analysis and collation.

Bat Conservation Ireland wish to thank all who took part or permitted access to their properties for this project and to the Heritage Council for providing the financial assistance to undertake what is hoped will be a project that can be carried on throughout Ireland.

Brian Keeley

Chair Bat Conservation Ireland

ACKNOWLEDGEMENTS

Bat Conservation Ireland would like to acknowledge the enormous time and effort that county bat groups invest in work to provide educational opportunities for the general public and contribute to conservation projects throughout Ireland. They contributed their time and expertise to this project on a voluntary basis and we are hugely grateful for their participation. In particular we would like to acknowledge: Dublin Bat Group, Galway Bat Group, Kildare Bat Group, Limerick Bat Group, Mayo Bat Group, Meath Bat Group, Midlands Bat Group and Wicklow Bat Group. We would like to extend sincere thanks to our Chair, Brian Keeley for project managing this project, carrying out the data analysis and writing this report on a voluntary basis. We would also like to thank all those who gave us permission (where required) to set up detectors at various sites, in order to collect data for this project.

Finally, we would like to extend our sincere thanks to the Heritage Council for funding this project and their ongoing support to help conserve Ireland's bat populations and protect our biodiversity.



Nathusius' Pipistrelle. Photograph by Paul van Hoof.



BAT CONSERVATION
IRELAND

Bat Conservation Ireland

Registered Address:

Carmichael Centre,
4-7 North Brunswick Street,
Dublin 7

E-mail: admin@batconservationireland.org

Website: www.batconservationireland.org

Registered Number: 494343

Charity Number: 13016

Charity Registration Number: 20039417