



APPENDIX 6-3

BAT SURVEYS AT HEIGHT

Bat Surveys at Height Report

Coole, Co. Westmeath



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Element Power

Project title: Coole – Bat Surveys at Height

Project Number: 150939f

Document Title: Bat Surveys at Height Report

Doc. File Name: BR-F-150939f-2018.11.09

Prepared By: **McCarthy Keville O’Sullivan Ltd.**

Planning & Environmental Consultants
Block 1, G.F.S.C.
Moneenageisha Road, Galway



Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	F	09.11.2018	BR-F-150939f-2018.11.09	UN	PR

Table of Contents

1	Introduction.....	1
1.1	Statement of Authority.....	1
2	Methods.....	2
3	Results	3
4	Conclusion.....	7

1 INTRODUCTION

McCarthy Keville O’Sullivan (MKO) was commissioned to complete bat surveys at height at a met mast installed at Coole, Co. Westmeath. This report provides details of the bat surveys undertaken and an assessment of bat activity at ground level and at height.

Studies have shown activity levels recorded at ground level may differ to those recorded at height and assessing bat activity levels from only ground level data may overestimate activity levels experienced at height for certain species, e.g. pipistrelle bats, and may underestimate those for high-flying species, e.g. Leisler’s bat.

Surveys were undertaken in autumn 2017 and spring, summer and autumn 2018. The aims of these surveys were to:

- Identify the species present and their abundance at ground level and at height.
- Assess differences in flight height for individual species.
- Determine any seasonal variations in flight heights.

1.1 Statement of Authority

Bat surveys were coordinated by Úna Nealon (BSc, PhD). Úna’s primary expertise lies in bat ecology, particularly in relation to wind farm EIA. She completed her PhD with the Centre for Irish Bat Research, examining the impacts of wind farms on Irish bat species. All bat survey results were compiled and assessed by Úna

2 METHODS

One Song Meter SM3BAT detector (Wildlife Acoustics, Maynard, MA, USA) was installed at the meteorological mast (IG Ref: E240666 N 274363) in September 2017. The detector was equipped with two microphones; one at ground level and one at height (approx. 75 m above ground level).

Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

The detector was set to record for at least 10 consecutive nights per month between September and October 2017 inclusive. Monitoring was resumed in April 2018, when detectors were set for at least 5 consecutive nights per month between April and October 2018. Table 2.1 describes survey effort.

Table 2.1: Summary of met mast survey effort

ID	Start Date	End Date	No. Nights	No. Hours
2017-Sep-A	08/09/2017	17/09/2017	9	109.05
2017-Sep-B	22/09/2017	01/10/2017	9	117.93
2017-Oct-A	05/10/2017	13/10/2017	8	111.88
2017-Oct-B	20/10/2017	28/10/2017	8	120.20
2018-Apr	19/04/2018	29/04/2018	10	103.62
2018-May	03/05/2018	15/05/2018	12	112.90
2018-Jun	Detector failed due to technical fault.			
2018-Jul	03/07/2018	22/07/2018	19	158.85
2018-Aug	06/08/2018	20/08/2018	14	140.35
2018-Sep	19/09/2018	28/09/2018	9	115.88
2018-Oct	05/10/2018	14/10/2018	9	126.03
Total Survey Effort			107	1216.70

All recordings were later analysed using bat call analysis software, Kaleidoscope Converter and Viewer, v.5.1.3 (Wildlife Acoustics, Maynard, MA, USA). Bat species were identified using established call parameters, to identify individual species or genera. A bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15s duration.

3 RESULTS

One hundred and seven nights of bat monitoring at ground level and at height was achieved in 2017 and 2018. In total, 2922 bat passes were recorded. Most of the activity was attributed to common pipistrelle, soprano pipistrelle and Leisler’s bat. Nathusius’ pipistrelle, unidentified pipistrelle, Myotis sp. and brown long-eared bat were recorded less frequently (Figure 3.1). Table 3.1 presents met mast monitoring as total bat passes per deployment.

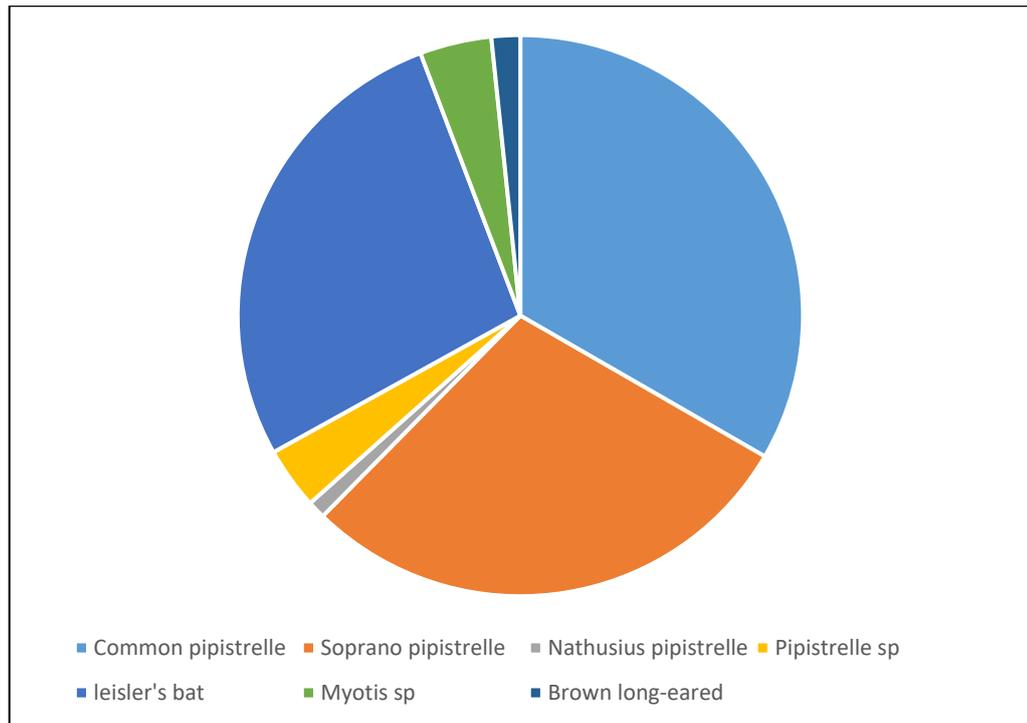


Figure 3.1: Species composition (total bat passes)

Bat activity was also calculated as total bat passes per hour (bpph) to account for any bias in survey effort, resulting from varying night lengths throughout the survey seasons. Table 3.2 presents these results for each static detector deployment. Overall bat activity was low, totaling 1.20 bat passes per survey hour.

Overall, bat activity was higher at ground level (85.5% of all activity) compared to at height (14.5%) across all deployments (Figures 3.2 and 3.3). There were peaks in activity in May and July 2018. However, the scale of these peaks was significantly greater at ground level.

For all species, bat activity was higher at ground level compared to at height. Leisler’s showed the greatest activity at height (n=380) compared to at ground level (n=419). However, there were also occasional instances of common pipistrelle (n=16), soprano pipistrelle (n=17), Nathusius’ pipistrelle (n=8), unidentified pipistrelle (n=2) and brown long-eared bat (n=2).

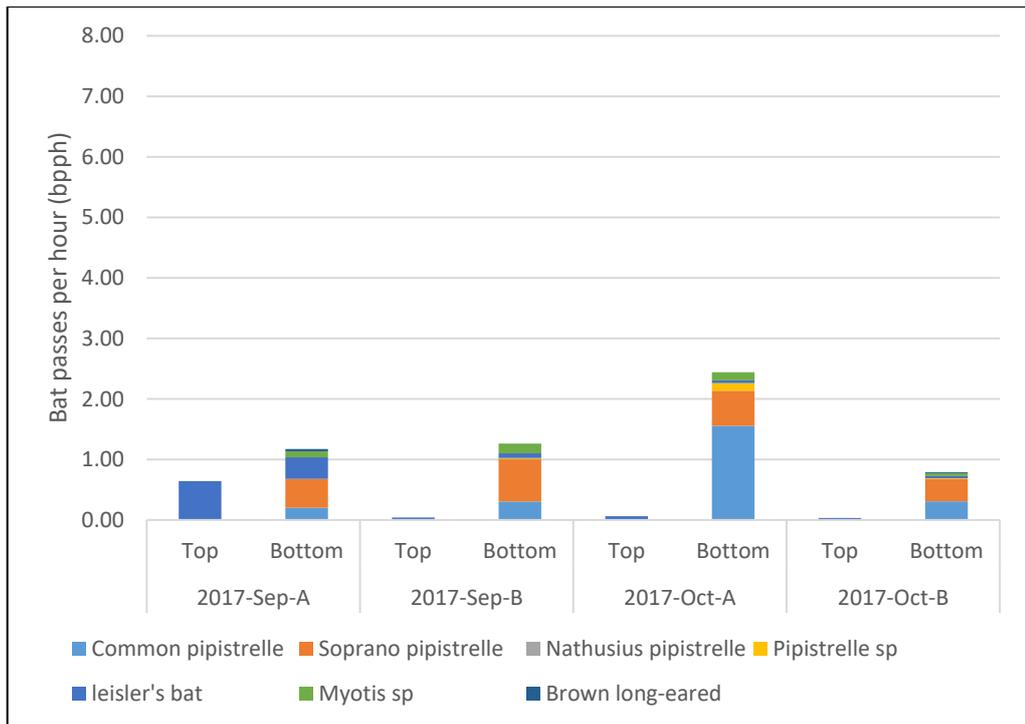


Figure 3.2: Static detector survey results 2017: Species composition per deployment (bpph)

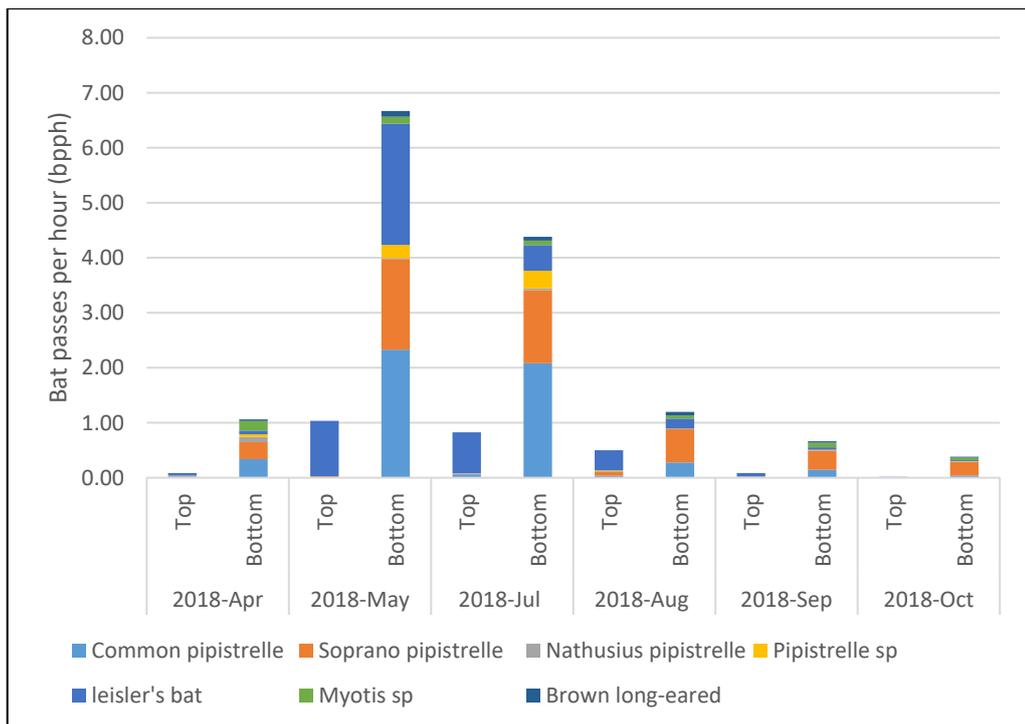


Figure 3.3: Static detector survey results 2018: Species composition per deployment (bpph)

Table 3.1 Summary of met mast static detector results (total bat passes)

ID	Mic	Effort (h)	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle sp	Leisler's Bat	Myotis sp	Brown long-eared	Total
2017-Sep-A	Top	109.05		1			69			70
	Bottom	109.05	22	52			39	11	4	128
2017-Sep-B	Top	117.93					5			5
	Bottom	117.93	36	82	1	2	9	19		149
2017-Oct-A	Top	111.88					7			7
	Bottom	111.88	174	65		14	5	15		273
2017-Oct-B	Top	120.2					4			4
	Bottom	120.2	37	45		1	4	6	2	95
2018-Apr	Top	103.62		1	3		5			9
	Bottom	103.62	35	32	10	5	7	18	3	110
2018-May	Top	112.9		3			114			117
	Bottom	112.9	263	186	2	27	249	14	12	753
2018-Jul	Top	158.85	10	2	1		118			131
	Bottom	158.85	331	211	5	51	74	13	11	696
2018-Aug	Top	140.35	5	10	2	2	49		2	70
	Bottom	140.35	39	85	2		25	8	9	168
2018-Sep	Top	115.88	1		2		7			10
	Bottom	115.88	17	40	1	1	5	10	3	77
2018-Oct	Top	126.03					2			2
	Bottom	126.03	5	31	1	1	2	6	2	48
Total		2433.38	975	846	30	104	799	120	48	2922

Table 3.1 Summary of met mast static detector results (bpph)

ID	Mic	Effort (h)	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle sp	Leisler's Bat	Myotis sp	Brown long-eared	Total
2017-Sep-A	Top	109.05	0.00	0.01	0.00	0.00	0.63	0.00	0.00	0.64
	Bottom	109.05	0.20	0.48	0.00	0.00	0.36	0.10	0.04	1.17
2017-Sep-B	Top	117.93	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.04
	Bottom	117.93	0.31	0.70	0.01	0.02	0.08	0.16	0.00	1.26
2017-Oct-A	Top	111.88	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.06
	Bottom	111.88	1.56	0.58	0.00	0.13	0.04	0.13	0.00	2.44
2017-Oct-B	Top	120.2	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03
	Bottom	120.2	0.31	0.37	0.00	0.01	0.03	0.05	0.02	0.79
2018-Apr	Top	103.62	0.00	0.01	0.03	0.00	0.05	0.00	0.00	0.09
	Bottom	103.62	0.34	0.31	0.10	0.05	0.07	0.17	0.03	1.06
2018-May	Top	112.9	0.00	0.03	0.00	0.00	1.01	0.00	0.00	1.04
	Bottom	112.9	2.33	1.65	0.02	0.24	2.21	0.12	0.11	6.67
2018-Jul	Top	158.85	0.06	0.01	0.01	0.00	0.74	0.00	0.00	0.82
	Bottom	158.85	2.08	1.33	0.03	0.32	0.47	0.08	0.07	4.38
2018-Aug	Top	140.35	0.04	0.07	0.01	0.01	0.35	0.00	0.01	0.50
	Bottom	140.35	0.28	0.61	0.01	0.00	0.18	0.06	0.06	1.20
2018-Sep	Top	115.88	0.01	0.00	0.02	0.00	0.06	0.00	0.00	0.09
	Bottom	115.88	0.15	0.35	0.01	0.01	0.04	0.09	0.03	0.66
2018-Oct	Top	126.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02
	Bottom	126.03	0.04	0.25	0.01	0.01	0.02	0.05	0.02	0.38
Total		2433.38	0.40	0.35	0.01	0.04	0.33	0.05	0.02	1.20

4 CONCLUSION

Met mast monitoring at ground level and at height revealed bat activity was consistently higher at ground level compared to at height across all seasons surveyed and for all species identified.

These results should be considered when interpreting any bat activity surveys undertaken at ground level at Coole, Co. Westmeath.