

Survey form templates used by BaTML in connection with the monitoring and distribution of bats in central Scotland

Authors: Neil E Middleton*

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*Correspondence details: 25 Killin Drive, Polmont, Falkirk, Scotland, UK, FK2 0QQ
email: middleneil@msn.com

Abstract

BATS & The Millennium Link (BaTML) was launched in 2000 with a view to studying the bats along the Union and Forth & Clyde canal network in the Central Belt of Scotland. A survey method was designed so that activity relating to *Myotis daubentonii*, *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus* could be monitored simultaneously. We herewith provide copies of the survey forms created relating to our survey work.

Key words: Millennium, canal, *Myotis daubentonii*, *Pipistrellus pygmaeus*

Introduction

BATS & The Millennium Link (BaTML) was launched in 2000 with a view to studying the bat populations along the Union and Forth & Clyde canal network in central Scotland (Middleton *et al.* 2004). A survey methodology was designed so that activity relating to *Myotis daubentonii* (Daubenton's bat), *Pipistrellus pipistrellus* (Bandit or Common pipistrelle) and *Pipistrellus pygmaeus* (Soprano pipistrelle) could be monitored simultaneously.

Due to the amount of variables being measured and hence the necessity to record data in a structured and consistent manner, bespoke survey forms were created. We herewith provide a copy of the final version of our survey forms as these may prove a useful point of reference to others developing bat survey programmes.

Materials

The survey form templates used during our studies are described as follows. Appendix I shows the data being collected prior to a survey evening, along with the information relating to the habitat in close proximity to the site in question. Appendix II lays out the information held by us regarding the positioning of each bat detector. In addition to this, details of the width of the canal at each point, as well as corridor type and the presence of any artificial light is also recorded. The second half of this form provides space to record other useful information relating to the site in question.

The top section within Appendix III shows the specific data collected during a survey evening (i.e. weather, sunset, people present). The lower half of

Appendix III is where we record the final summary of bat activity post analysis. Finally, Appendix IV shows where all of our data was recorded during post analysis of survey tapes prior to being summarised on the second half of Appendix III.

Conclusion

After four seasons of use we can report that these forms have proven to be more than adequate for the purpose they were created. In addition to our paper records, BaTML also stores data on various computer software programmes so that more thorough statistical analysis can be carried out.

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References

Middleton, N. E., Gould, C., Macadam, C. R., Mackenzie, S. and Morrison, K. (2004). Introducing BATS & The Millennium Link. A study of bats and their use of canal corridor habitat in the Central Belt of Scotland. BaTML Publications, Vol 1, 2-5.

Appendix I: The Standard Monitoring & Distribution Survey Form containing the higher level data and site specific habitat information collected prior to bat surveys commencing.

Standard Monitoring & Distribution Survey Form

Method

- 200m stretch. 4 points (65 m apart) + 1 point at mid point (mp) of survey stretch.
- Start Time – Sunset (SS) + 30 mins. End Time SS + 124 mins
- Heterodyne Detector recording of Daubenton's at each point (frequency 40kHz)
- Time Expansion Detector recording of pipistrelle spp at mid point (mp)

Site Code: UN/FC ## **BW Map Title:** **BW Map No: ##**

OS Grid Ref:

Site Type:

Bridge / Aqueduct / Tunnel No:

Orientation:

Altitude:

Average Width Of Water Surface: m **Corridor Type:** closed / mid / open

%age Canal Bank Affected By Overhanging Trees: %

Canal Features Present: (i.e. Bridge, Pool, Aqueduct, Tunnel)

- - -
- - -

Woodland : Broadleaved [] Coniferous [] Mixed []

 Scrubland [] Hedgerow []

Water : Standing Water [] Stream [] River [] Wetland []

Grassland : Parkland [] Amenity [] Meadow [] Moorland []

Farmland : Grazed [] Cattle [] Sheep [] Other Livestock [] Crop/Tilled []

Urban : Built Up Housing [] Semi Urban/Gardens [] Industrial []

 Isolated Buildings []

Support Material

Tick Notes

Previous Bat Survey Location []

Vegetation Survey []

Insect Survey []

Water Quality Survey []

Appendix II: The Bat Detector Location Form which also provides space for health and safety notes etc.

Bat Detector Location Form (Refer To Attached Map No)

Point No	Water Width	Corridor Type	Artificial Light	Description Notes
Heterodyne Detector No 1 (West)		Closed Mid Open	Y / N	
Heterodyne Detector No 2 (West)		Closed Mid Open	Y / N	
Heterodyne Detector No 3 (East)		Closed Mid Open	Y / N	
Heterodyne Detector No 4 (East)		Closed Mid Open	Y / N	
Time Expansion Detector No 5 (Mid Point)		Closed Mid Open	Y / N	

Local Contact Points:

Specific Site Risk Assessment Notes / Health & Safety Equipment Required:

Car Parking Details:

Distance In Time From Car Park To Survey Site: mins

Appendix III: The Bat Survey Record Form allowing a summary of all data relevant to specific survey evenings to be recorded.

Bat Survey Record Form

Site Code: **Date Of Survey:** / / **Sunset Time:** hrs mins

	Start Survey	Second Reading	Third Reading
Time			
Temp °C (Air)			
Temp °C (Water)			
Wind			
Cloud (%)			
Lux			
Rainfall			
Humidity			

Surveyors Present:

Notes:

Time	Daub's pass	Daub's Feed Buzz	1 st Daub's West	1 st Daub's East	Min No of Daub's	Max No of Daub's	Bandit pip' passes		48-52 pip' passes		Soprano pip' passes		Total pip' passes	
							E	S	E	S	E	S	E	S
Tape 1 SS +30 to +53														
Tape 2 SS +53 to +77														
Tape 3 SS +77 to +101														
Tape 4 SS+101 to +124														
Totals			Roost East	Roost West			E	S	E	S	E	S	E	S

Abbreviations: E – Echolocation call sequence S – Social call emitted

Appendix IV: The Post Survey Analysis Recording Form used whilst collecting the data from tapes, after which a summary of the data is transferred to the Bat Survey Record Form (Appendix III).

Post Survey Analysis Recording Form

Site Code: Site Name: Date: / /

Daubenton's

Tape No / Time	HD 4	HD 3	HD 2	HD 1	Notes	
	East	East	West	West	Min	Max

pipistrelle spp.

Tape No / Time	Bandit pipistrelle	Unallocated pipistrelle	Soprano pipistrelle	Notes
	FmaxE: < 48kHz	FmaxE: 48 - 52kHz	FmaxE: > 52kHz	
Totals:				
Echolocation				
Social Calls				