Summer/Fall 2006 Survey of Bat Activity at the Proposed Kibby Wind Power Project in Kibby and Skinner Townships, Maine

Prepared For:

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Final Fall Survey of Bat Activity Report Submitted by:

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Date

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1.0 Introduction

TransCanada Maine Wind Development Inc. (TransCanada) is proposing a 130 megawatt wind energy facility (the Kibby Wind Power Project) on two ridgelines in Kibby and Skinner townships in the Boundary Mountains of Maine. The project area is within the published range of seven bat species, including silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), northern long-eared bat (*Myotis septentrionalis*), eastern pipistrelle (*Pipistrellus subflavus*), big brown bat (*Eptesicus fuscus*), and little brown bat (*M. lucifugus*); an eighth species, the eastern small-footed bat (*M. leibii*), may also occur (DeGraaf and Yamasaki 2001). To document bat activity in the proposed project area, Woodlot Alternatives, Inc. (Woodlot) conducted acoustic monitoring surveys during summer and fall 2006. The survey was designed to document bat passages at the heights of the rotor zone of the proposed turbines[1] and, in one location, a lower monitor was also installed for comparative purposes.

2.0 Methods

2.1 *Field Surveys*

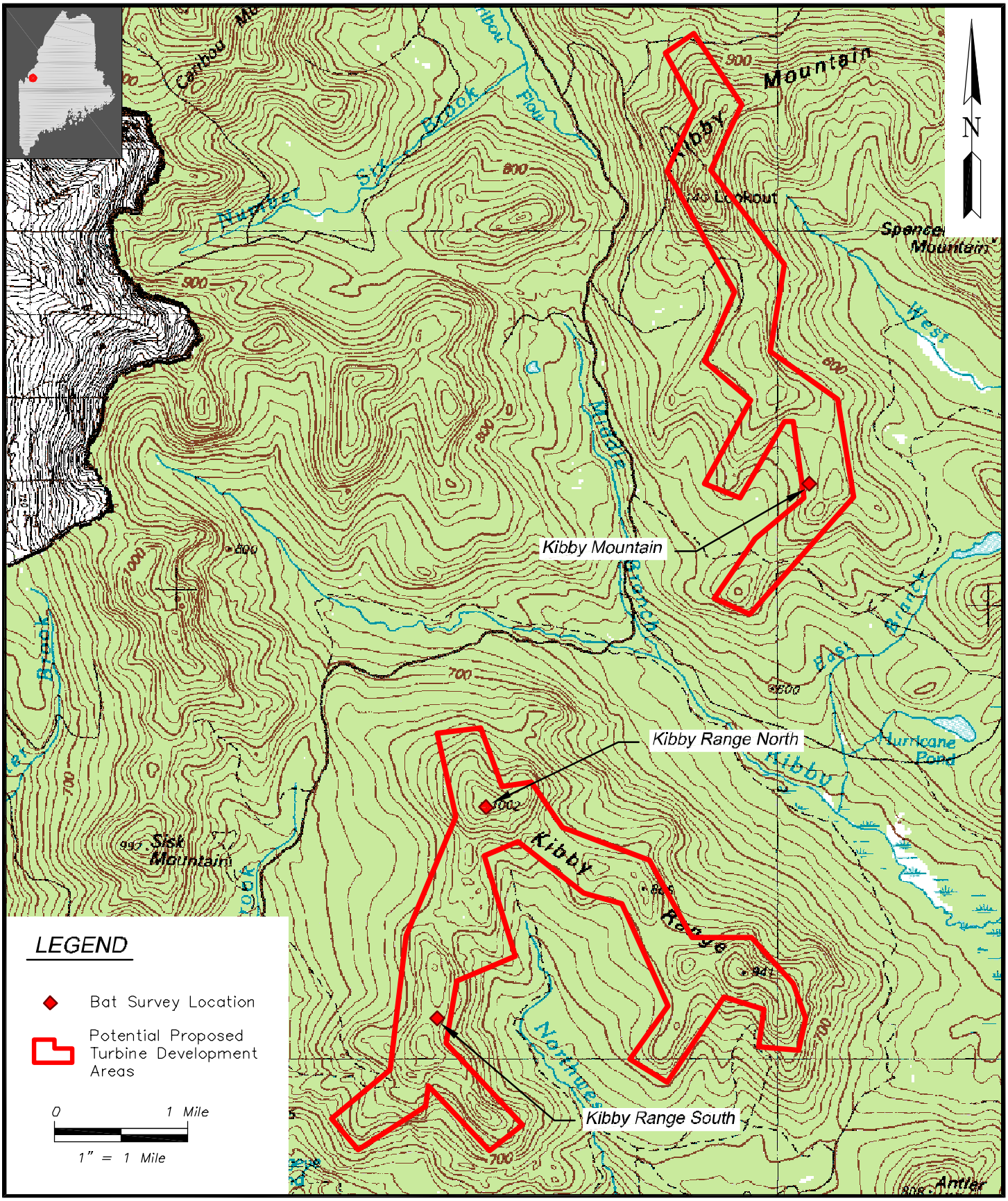
Four detectors were deployed on three meteorological towers (met towers) in the project area. These were passive surveys, as the detectors were placed at the site and left there for the duration of the study. Two detectors were placed on Kibby Range South at heights of approximately 45 meters (m) (147') and 20 m (66'). One detector was placed at Kibby Range North at a height of approximately 45 m (147') and one detector was placed at the southern end of the Kibby Mountain ridgeline at a height of approximately 45 m (147') (Figure 1). Detectors were programmed to record nightly from 7:00 pm to 7:00 am. Detectors were deployed on May 4 and retrieved on October 21, 2006. For the purposes of describing summer activity and fall migration, data from the night of June 20 onwards are included in this report.

Anabat detectors are frequency division detectors, dividing the frequency of ultrasonic calls made by bats so that they are audible to humans. A factor of 16 was used in this study, as this is the most appropriate division ratio for the frequency at which northeastern United States bats echolocate. Frequency division detectors were selected based upon their widespread use for this type of survey, their ability to be deployed for long periods of time, and their ability to detect a broad frequency range, which allows detection of all species of bats that could occur in Maine. Data from the Anabat detectors were logged onto compact flash media using a CF ZCAIM (Titley Electronics Pty Ltd.) and downloaded to a computer for analysis.

2.2 *Data Analysis*

Bat call sequences detected by the deployed Anabat detectors were logged onto compact flash media using a CF ZCAIM and downloaded to a computer for analysis. The call files were extracted from the media cards using CFCread© software. The default settings for CFCread© were used during this file extraction process, as these settings are recommended for the calls that are characteristic of northeastern bats. This software screens all data recorded by the bat detector and extracts call files using a filter. The filter simply removes files created by noises other than bat calls based on the characteristics of the call file

[1] The final selection of wind turbine locations has not been made. However, meteorological towers are in place along the ridgelines proposed for wind turbine placement. These towers, which extend into the typical height of the rotor-swept area of modern wind turbines, were used to collect data from those heights.



PREPARED BY:
WOODLOT ALTERNATIVES, INC.
ENVIRONMENTAL CONSULTANTS
105112-F301-BatSurvey.dwg

SHEET TITLE:
Bat Survey Location Map

PROJECT:
Kibby Wind Power Project
TransCanada Energy, Ltd.
Kibby, Maine

DATE: October 2006
SCALE: 1"=1 Mile
PROJ. NO.: 105112
FIGURE:
1

and the established characteristics of northeastern bat calls. Using the default settings for this initial screen also ensures comparability between data sets. Settings used by the filter include a maximum time between calls of five seconds, a minimum line length of five milliseconds, and a smoothing factor of 50. The smoothing factor refers to whether or not adjacent pixels can be connected with a smooth line. The higher the smoothing factor, the less restrictive the filter is and the more noise files and poor quality call sequences are retained within the data set. A call is a single pulse of sound produced by a bat. A call sequence is a combination of two or more pulses recorded in a call file.

Following the initial screening, each file was visually inspected to ensure that files created by static or some other form of interference that were still within the frequency range of northeastern bats were not included in the data set. Call sequences were identified based on visual comparison of call sequences with reference libraries of known calls recorded by Woodlot during mist netting surveys in 2006 in New York and Pennsylvania. Supplemental reference calls that were also used were provided by nationally recognized bat experts Lynn Robbins and Chris Corben, who is also the developer of the Anabat software. Bat calls typically include a series of pulses characteristic of normal flight or prey location and capture periods (feeding 'buzzes') and visually look very different than static, which typically forms a solid line at either a constant frequency or with great frequency variation. Using these characteristics, bat call files are easily distinguished from non-bat call files.

Qualitative visual comparison of recorded call sequences of sufficient length to reference libraries of bat calls allows for relatively accurate identification of bat species (O'Farrell *et al*. 1999, O'Farrell and Gannon 1999). A call sequence was considered of suitable quality and duration if the individual call pulses were 'clean' (i.e., consisting of sharp, distinct lines) and at least seven pulses were included within the sequence. Call sequences were classified to species whenever possible, using the reference calls described above. However, due to similarity of call signatures between several species, all classified calls have been categorized into four guilds for presentation in this report. This classification scheme follows that of Gannon *et al.* (2003) and is as follows.

- Unknown (UNKN) – all call sequences with too few pulses (less than seven) or of poor quality (such as indistinct pulse characteristics or background static).
- Myotid (MYSP) – All bats of the genus *Myotis*. While there are some general characteristics believed to be distinctive for several of the species in this genus, these characteristics do not occur consistently enough for any one species to be relied upon at all times when using Anabat recordings.
- Red bat/pipistrelle (RBEP) – Eastern red bats and eastern pipistrelles. Like so many of the other northeastern bats, these two species can produce calls distinctive only to each species. However, significant overlap in the call pulse shape, frequency range, and slope can also occur.
- Big brown/silver-haired/hoary bat (BBSHHB) – This guild will also be referred to as the big brown bat guild. These species' call signatures commonly overlap and have therefore been included as one guild in this report.

This guilding represents the most conservative approach to bat call identification. Since some species do sometimes produce calls unique only to that species, and as mentioned above, all calls were identified to the lowest possible taxonomic level before being grouped into the listed guilds. Tables and figures in the body of this report reflect those guilds. However, since species-specific identification did occur in some cases, each guild will also be briefly discussed with respect to potential species composition of recorded call sequences.

Once all of the call files were identified and placed into the appropriate guilds, nightly tallies of detected calls were compiled. Mean detection rates (number of calls/detector-night) for the entire sampling period

were calculated for each detector and for all detectors combined. It is important to note that detection rates indicate only the number of calls detected and do not necessarily reflect the number of individual bats in an area. For example, a single individual can produce one or many call files recorded by the bat detector, but the bat detector cannot differentiate between individuals of the same species producing those calls. Consequently, detections recorded by the bat detector system likely over-represent the actual number of animals that produced the recorded calls.

3.0 Results

For the purposes of describing summer activity and fall migration, the detectors were operational on June 20 and retrieved on October 25, 2006, for a total survey period of 128 nights. Occasional periods occurred when individual detectors powered down, animals damaged the detector equipment, or severe weather caused water damage either from flooding or shorting and de-sensitizing the microphones. Combined, 212 detector-nights[2] of bat echolocation data were recorded during the summer-fall deployment period.

A total of 22 bat call sequences were recorded during the sampling period (Figure 2). The number of call sequences recorded by *each* detector ranged from 0 (by the Kibby Range South low detector) to 18 (by the Kibby Range South high detector). The mean detection rate for all four detectors was 0.1 calls/detector night (Table 1). Detection rates at each of the four detectors ranged from 0 calls/detector-night by the Kibby Mountain detector and Kibby Range south low detector to 0.3 calls/detector-night at the Kibby Range South high detector.

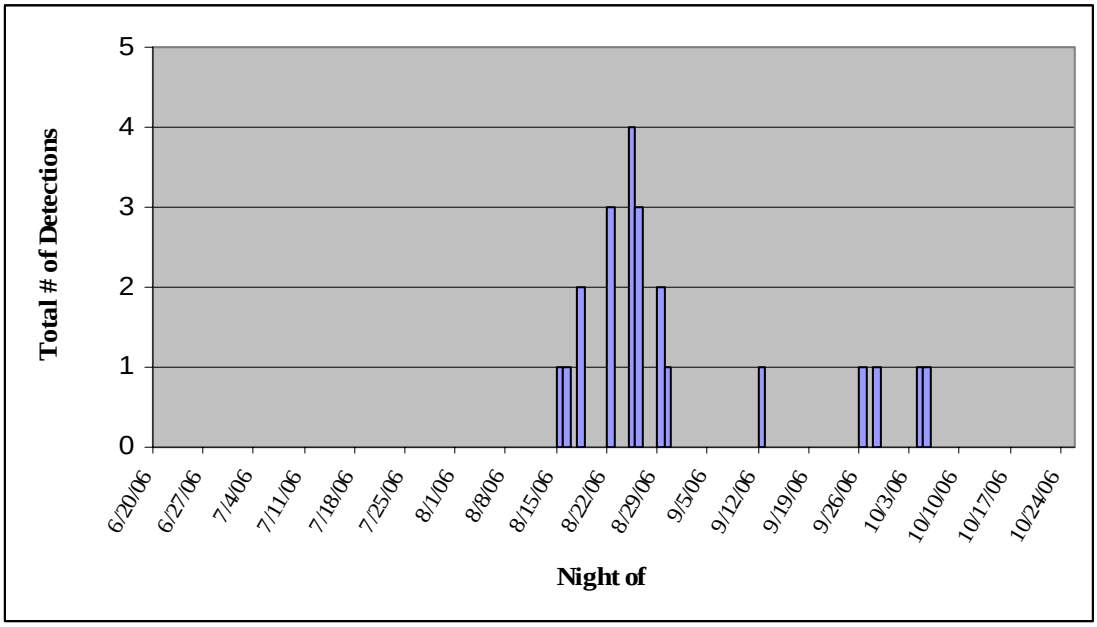


Figure 2. Total nightly bat call sequence detections

[2] A detector-night is a sampling unit during which a single detector is deployed overnight. On nights when two detectors are deployed, the sampling effort equals two detector-nights, etc.

Table 1. Summary of bat detector field survey effort and results

Location	Dates	# Detector-Nights*	# Recorded Sequences	Detection Rate **	Maximum # Calls Recorded ***
High in Kibby Range South met tower	June 20 - October 25	72	18	0.3	4
Low in Kibby Range South met tower	June 20 - October 25	76	0	0.0	--
Kibby Range North met tower	June 20 - October 25	44	4	0.1	2
Kibby Mountain met tower	June 20 - October 25	20	0	0.0	--
Overall Results		***212***	***22***	***0.1***	

* Detector-night is a sampling unit during which a single detector is deployed overnight. On nights when two detectors are deployed, the sampling effort equals two detector-nights, etc.

** Number of bat passes recorded per detector-night.

*** Maximum number of bat passes recorded from any **single** detector for a 12-hour sampling period.

Appendix A provides a series of tables with more specific information on the nightly timing, number, and species composition of recorded bat call sequences. Included is information on the number of call sequences by guild and suspected species recorded (Appendix A Tables 1 – 4). Appendix A Table 5 provides the actual data file information for each of the detectors, including the file name. Included in this latter table is the Analook file name for all 22 recorded call sequences, the night during which the call sequence was recorded, the timing of the recording, and the species code that the call was given during analysis. The timing of recording the calls is particularly useful in identifying if some recorded call files could have been created by the same individual bat.

The numbers of calls per night detected by all four detectors *combined* were generally very low, ranging from 0 to 3 total calls. Nights with peak activity occurred on August 25-26, with 4 and 3 total calls, respectively.

Of the calls that were identified to species or guild, those of the big brown guild were the most common (68 % of all call sequences), followed by species within the *Myotis* guild (14 %), and the red bat/eastern pipistrelle (5 %). Some calls (14 %) could not be identified due to very short call sequences (less than seven pulses) or poor call signature formation (probably due to a bat flying at the edge of the detection zone of the detector or flying away from the microphone) (Table 2).

Table 2. Summary of the composition of recorded bat call sequences

Detector	Guild				Total
	Big brown guild	Red bat/ E. pipistrelle	Myotis	Unknown	
High in Kibby Range South met tower	13	1	2	2	***18***
Low in Kibby Range South met tower	0	0	0	0	***0***
Kibby Range North met tower	2	0	1	1	***4***
Kibby Mountain met tower	0	0	0	0	***0***
Total	***15***	***1***	***3***	***3***	***22***

Within each guild, some individual call sequences were identified to species (Appendix A Tables 1 – 3). Of the 15 sequences in the big brown bat guild, approximately 47 percent were identified as distinctly that of the silver-haired bat, 40 percent appeared to be either big brown or silver-haired bat, and 13 percent were the hoary bat. Of the 3 call sequences in the myotid group, all were identified as *Myotis* spp. Only one call sequence was identified as an eastern red bat. Call sequences within the guild of unknown bat calls were identified as such primarily due to too few pulses being included within the recorded call sequence.

4.0 Discussion

Bat echolocation surveys in 2006 at the proposed Kibby Wind Power Project site provide insight into activity patterns, species composition, and timing of movements of bats in the project area. The overall mean detection rate at the proposed Kibby project during the summer-fall 2006 survey period was 0.1 calls/detector-night. This indicates that, overall, bat activity along the project area ridgelines was low (Table 3).

Table 3. Summary of other available bat detector survey results

Location	Landscape	Season	Calls per detector night	Reference
Cohocton, NY	Agric. plateau	Fall 2004	2.00	Woodlot 2006a
Franklin, WV	Forested ridge	Fall 2004	9.24	Woodlot 2004b
Prattsburgh, NY	Agric. plateau	Fall 2004	2.22	Woodlot 2004a
Sheffield, VT	Forested ridge	Fall 2004	1.76	Woodlot 2006b
Cohocton, NY	Agric. plateau	Fall 2005	1.57	Woodlot 2005e
Jordanville, NY	Agric. plateau / ADK foothills	Fall 2005	4.79	Woodlot 2005a
Marble River, NY	Agric. plateau / ADK foothills	Fall 2005	5.56	Woodlot 2005b
Mars Hill, ME	Forested ridge / Agric. plateau	Fall 2005	0.83	Woodlot 2005c
Redington, ME	Forested ridge	Fall 2005	4.20	Woodlot 2005d
Sheldon, NY	Agric. plateau	Fall 2005	34.92	Woodlot 2005e
Sheffield, VT	Forested ridge	Fall 2005	1.18	Woodlot 2006b
Fairfield, NY	Agric. plateau / ADK foothills	Fall 2005	1.7	Woodlot 2005f
Searsburg, VT	Forested ridge	Summer-Fall 2005	0.52	Woodlot 2005g
Kibby, ME	Forested ridge	Fall 2006	0.2 *	this report
* For comparison purposes, detection rate at Kibby was determined from Aug. 1 to Oct. 25 (22 calls in 142 nights).				

Of those calls that were identifiable to species or guild, calls of the big brown bat guild were the most abundant. This pattern in guild abundance is generally consistent with most of the studies listed in Table 3. Fall 2006 surveys resulted in 22 bat calls, of which 15 were in the big brown bat guild, 3 were myotid, 1 was red bat, and 3 were unknown.

Results of acoustic surveys must be interpreted with caution. Room for error exists in identification of bats based upon acoustic calls alone, especially if a site or regionally specific library of recorded reference calls is not available. Also, detection rates are not necessarily correlated with the actual numbers of bats in an area, because it is not possible to differentiate between individual bats. For example, Appendix B Table 5 identifies that four bats were documented by the Kibby Mountain South high detector on the night of August 25th, including three call sequences identified as silver-haired bat and one as a myotid. An examination of the timing of those calls, however, shows that three silver-haired bat call sequences were recorded over a two-minute period, indicating that those call sequences were quite possibly emitted by only one bat, rather than three. Conversely, on the night of August 29th two silver-haired bat call sequences were recorded approximately half an hour apart. These call sequences cannot be as readily assumed to be from the same individual.

5.0 Conclusions

Detector surveys during the summer and fall period have provided information on bat activity in the vicinity of the proposed Kibby Wind Power Project. The surveys documented the species that would be expected in the area based on the species' range, habits, and known relative abundance in the region. The overall low passage rate of all of the detection data indicates that bat activity during the summer and fall period appears to be relatively low. The overall detection rate is at the lower end of the range of results found from similar studies in the northeast.

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Appendix A

Bat Detector Survey Data Tables

Appendix A Table 1. Summary of species and weather during each survey night at the Kibby Range North detector (45 m) – Fall 2006

	BIG BROWN GUILD				RBEP		MYSP				UNKN	
Night of	big brown bat	hoary bat	silver-haired bat	silver-haired/big brown	eastern pipistrelle	eastern red bat	little brown bat	*Myotis* spp.	northern myotis	small-footed myotis	unknown	Total
20-Jun												0
21-Jun												0
22-Jun												0
23-Jun												0
24-Jun												0
25-Jun												0
26-Jun												0
27-Jun												0
28-Jun												0
29-Jun												0
30-Jun												0
1-Jul												0
2-Jul												0
3-Jul												0
4-Jul												0
5-Jul												0
6-Jul												0
7-Jul												0
8-Jul												0
9-Jul												0
10-Jul												n/o
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21-Oct												n/o
22-Oct												n/o
23-Oct												n/o
24-Oct												n/o
25-Oct												n/o
By Species	0	1	0	1	0	0	0	1	0	0	1	4
By Guild	2				0		1				1	
	BIG BROWN GUILD				RBEP		MYSP				UNKN	Total

n/o - indicates that detector was not operating on that night

Appendix A Table 2. Summary of species and weather during each survey night at the Kibby Range South high detector (45m)– Fall 2006

	BIG BROWN GUILD				RBEP		MYSP				UNKN	
Night of	big brown bat	hoary bat	silver-haired bat	silver-haired/big brown	eastern pipistrelle	eastern red bat	little brown bat	*Myotis* spp.	northern myotis	small-footed myotis	unknown	Total
20-Jun												n/o
21-Jun												0
22-Jun												0
23-Jun												0
24-Jun												n/o
25-Jun												n/o
26-Jun												n/o
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19-Oct												0
20-Oct												0
21-Oct												0
22-Oct												0
23-Oct												0
24-Oct												0
25-Oct												0
By Species	0	1	7	5	0	1	0	2	0	0	2	18
By Guild	13				1		2				2	
	BIG BROWN GUILD				RBEP		MYSP				UNKN	Total

n/o - indicates that detector was not operating on that night

Appendix A Table 3. Summary of species and weather during each survey night at the Kibby Range South low detector (20 m) – Fall 2006

	BIG BROWN GUILD				RBEP		MYSP				UNKN	
Night of	big brown bat	hoary bat	silver-haired bat	silver-haired/big brown	eastern pipistrelle	eastern red bat	little brown bat	*Myotis* spp.	northern myotis	small-footed myotis	unknown	Total
20-Jun												0
21-Jun												0
22-Jun												0
23-Jun												0
24-Jun												0
25-Jun												0
26-Jun												0
27-Jun												0
28-Jun												0
29-Jun												0
30-Jun												0
1-Jul												0
2-Jul												0
3-Jul												0
4-Jul												0
5-Jul												n/o
6-Jul												n/o
7-Jul												n/o
8-Jul												n/o
9-Jul												n/o
10-Jul												n/o
11-Jul												n/o
12-Jul												n/o
13-Jul												n/o
14-Jul												n/o
15-Jul												n/o
16-Jul												n/o
17-Jul												n/o
18-Jul												n/o
19-Jul												n/o
20-Jul												n/o
21-Jul												n/o
22-Jul												0
23-Jul												0
24-Jul												0
25-Jul												0
26-Jul												0
27-Jul												0
28-Jul												0
29-Jul												0
30-Jul												0
31-Jul												0
1-Aug												0
2-Aug												0
3-Aug												n/o
4-Aug												n/o
5-Aug												n/o
6-Aug												n/o
7-Aug												n/o
8-Aug												n/o
9-Aug												n/o
10-Aug												n/o
11-Aug												n/o
12-Aug												0
13-Aug												0
14-Aug												n/o
15-Aug												n/o
16-Aug												n/o
17-Aug												n/o
18-Aug												n/o
19-Aug												n/o
20-Aug												n/o
21-Aug												n/o
22-Aug												0
23-Aug												0
24-Aug												n/o
25-Aug												n/o
26-Aug												n/o
27-Aug												n/o
28-Aug												n/o
29-Aug												n/o
30-Aug												n/o
31-Aug												n/o
1-Sep												n/o
2-Sep												n/o
3-Sep												n/o
4-Sep												n/o
5-Sep												n/o
6-Sep												n/o
7-Sep												n/o
8-Sep												n/o
9-Sep												0
10-Sep												0
11-Sep												0
12-Sep												0
13-Sep												0
14-Sep												0
15-Sep												0
16-Sep												0
17-Sep												0
18-Sep												0
19-Sep												0
20-Sep												0
21-Sep												0
22-Sep												0
23-Sep												0
24-Sep												n/o
25-Sep												n/o
26-Sep												0
27-Sep												0
28-Sep												0
29-Sep												0
30-Sep												0
1-Oct												0
2-Oct												0
3-Oct												0
4-Oct												0
5-Oct												0
6-Oct												0
7-Oct												0
8-Oct												0
9-Oct												0
10-Oct												0
11-Oct												0
12-Oct												0
13-Oct												0
14-Oct												0
15-Oct												0
16-Oct												0
17-Oct												0
18-Oct												0
19-Oct												0
20-Oct												0
21-Oct												0
22-Oct												0
23-Oct												0
24-Oct												0
25-Oct												0
By Species	0	0	0	0	0	0	0	0	0	0	0	0
By Guild	0				0		0				0	
	BIG BROWN GUILD				RBEP		MYSP				UNKN	Total

n/o - indicates that detector was not operating on that night

Appendix A Table 4. Summary of species and weather during each survey night at the Kibby Mountain detector (45m)– Fall 2006

Night Of	BIG BROWN GUILD				RBEP		MYSP				UNKN	Total
	big brown bat	hoary bat	silver-haired bat	silver-haired/big brown	eastern pipistrelle	eastern red bat	little brown bat	*Myotis* spp.	northern myotis	small-footed myotis	unknown	
18-Jun												0
19-Jun												0
20-Jun												0
21-Jun												0
22-Jun												0
23-Jun												0
24-Jun												0
25-Jun												0
26-Jun												0
27-Jun												0
28-Jun												0
29-Jun												0
30-Jun												0
1-Jul												0
2-Jul												0
3-Jul												0
4-Jul												0
5-Jul												0
6-Jul												0
7-Jul												0
8-Jul												0
9-Jul												0
10-Jul												0
11-Jul												0
12-Jul												0
13-Jul												0
14-Jul												0
15-Jul												0
16-Jul												0
17-Jul												0
18-Jul												0
19-Jul												0
20-Jul												0
21-Jul												0
22-Jul												0
23-Jul												0
24-Jul												0
25-Jul												0
26-Jul												0
27-Jul												0
28-Jul												0
29-Jul												0
30-Jul												0
31-Jul												0
1-Aug												0
2-Aug												0
3-Aug												0
4-Aug												0
5-Aug												0
6-Aug												0
7-Aug												0
8-Aug												0
9-Aug												0
10-Aug												0
11-Aug												0
12-Aug												0
13-Aug												0
14-Aug												0
15-Aug												0
16-Aug												0
17-Aug												0
18-Aug												0
19-Aug												0
20-Aug												0
21-Aug												0
22-Aug												0
23-Aug												0
24-Aug												0
25-Aug												0
26-Aug												0
27-Aug												0
28-Aug												0
29-Aug												0
30-Aug												0
31-Aug												0
1-Sep												0
2-Sep												0
3-Sep												0
4-Sep												0
5-Sep												0
6-Sep												0
7-Sep												0
8-Sep												0
9-Sep												0
10-Sep												0
11-Sep												0
12-Sep												0
13-Sep												0
14-Sep												0
15-Sep												0
16-Sep												0
17-Sep												0
18-Sep												0
19-Sep												0
20-Sep												0
21-Sep												0
22-Sep												0
23-Sep												0
24-Sep												0
25-Sep												0
26-Sep												0
27-Sep												0
28-Sep												0
29-Sep												0
30-Sep												0
1-Oct												0
2-Oct												0
3-Oct												0
4-Oct												0
5-Oct												0
6-Oct												0
7-Oct												0
8-Oct												0
9-Oct												0
10-Oct												0
11-Oct												0
12-Oct												0
13-Oct												0
14-Oct												0
15-Oct												0
16-Oct												0
17-Oct												0
18-Oct												0
19-Oct												0
20-Oct												0
21-Oct												0
22-Oct												0
23-Oct												0
24-Oct												0
25-Oct												0
By Species	0	0	0	0	0	0	0	0	0	0	0	0
By Guild	0				0		0				0	
	BIG BROWN GUILD				RBEP		MYSP				UNKN	Total

Appendix A Table 5. All calls detected during survey period.

Filename	Date (night of)	Time	Species	Detector
G8152111.16#	8/15/06	21:11	UNKN	Kibby Range North MET
G8170109.43#	8/16/06	1:09	MYSP	Kibby Range North MET
G8182110.43#	8/18/06	21:10	LE	Kibby Range North MET
G8182120.07#	8/18/06	21:20	LACI	Kibby Range North MET
G8222241.44#	8/22/06	22:41	LE	Kibby Range South MET High
G8222347.15#	8/22/06	23:47	LANO	Kibby Range South MET High
G8230030.01#	8/22/06	0:30	LE	Kibby Range South MET High
G8260119.36#	8/25/06	1:19	LANO	Kibby Range South MET High
G8260119.54#	8/25/06	1:19	LANO	Kibby Range South MET High
G8260120.10#	8/25/06	1:20	LANO	Kibby Range South MET High
G8260204.12#	8/25/06	2:04	MYSP	Kibby Range South MET High
G8262244.22#	8/26/06	22:44	LANO	Kibby Range South MET High
G8262311.47#	8/26/06	23:11	LACI	Kibby Range South MET High
G8262355.21#	8/26/06	23:55	LE	Kibby Range South MET High
G8292012.14#	8/29/06	20:12	LANO	Kibby Range South MET High
G8292045.19#	8/29/06	20:45	LANO	Kibby Range South MET High
G8302259.01#	8/30/06	22:59	MYSP	Kibby Range South MET High
G9130003.36#	9/12/06	0:03	LE	Kibby Range South MET High
G9262117.37#	9/26/06	21:17	UNKN	Kibby Range South MET High
G9281908.26#	9/28/06	19:08	LABO	Kibby Range South MET High
GA040555.18#	10/3/06	5:55	UNKN	Kibby Range South MET High
GA052005.26#	10/5/06	20:05	LE	Kibby Range South MET High