

Introduction

On 26 March, Jonathan Hootman conducted a phase I habitat assessment in Letcher County Kentucky at the request of a private land owner. A federal prison is proposed to be built utilizing some of the landowner's property.

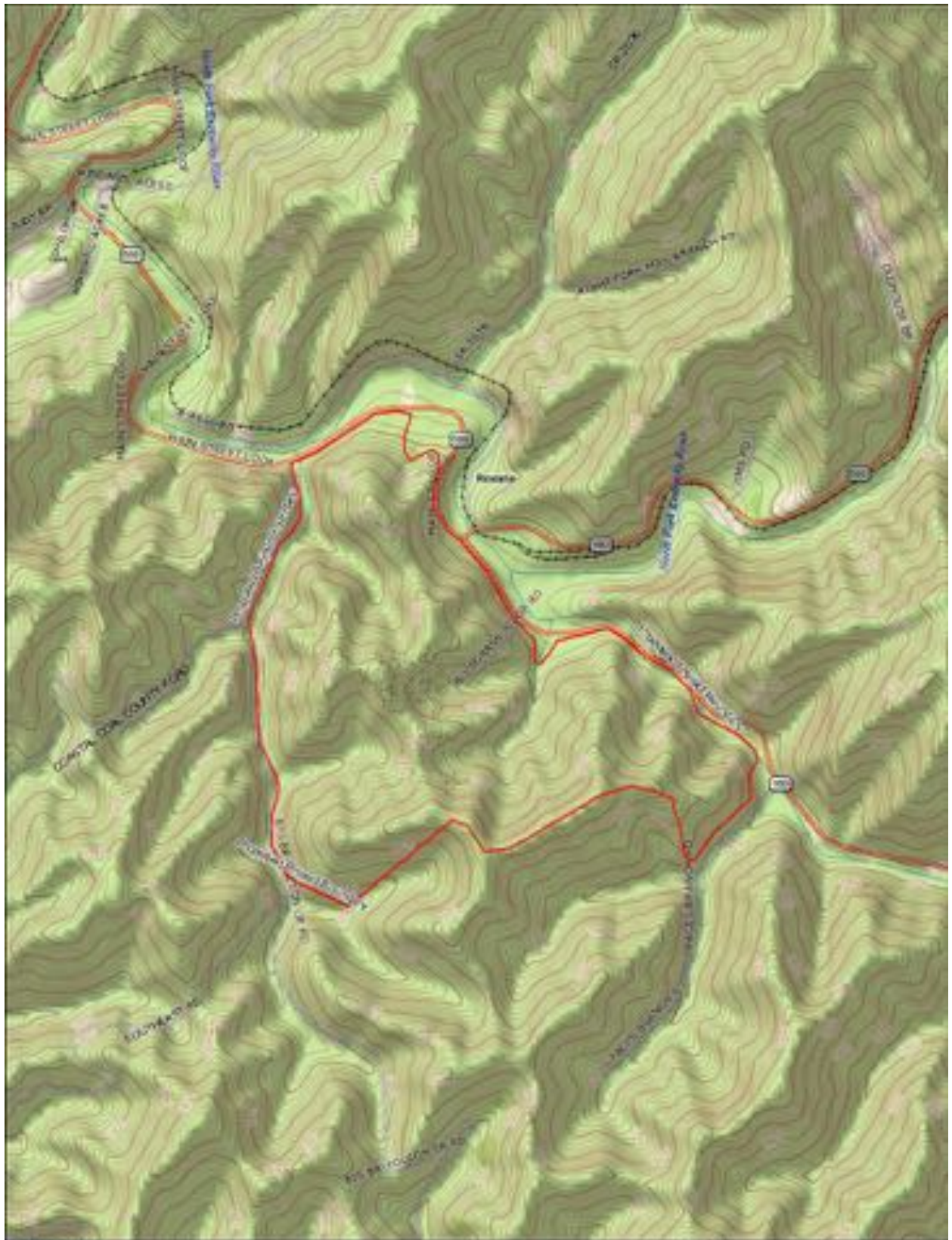
Two openings, assumed to be part of the same fissure feature, were determined to be potential habitat. One opening measured 1 meter wide by 30 centimeters tall, with the other measuring 30 centimeters square. The slope upon exiting the opening ran down hill and the openings appeared stable. There was slight outflow of air detected which was cooler (54 degrees F) than the outside temperature (59 degrees F). There was no evidence of past flooding with a slight trickle of water emerging from the opening. The fissure was approximately 100 meters from the North Fork of the Kentucky River, the closest water source. Canopy cover was found to be 90% at the fissure.

I shared my findings with the USFWS Kentucky Field Office (KFO) and we agreed that a survey to determine potential use of the fissure by federally listed bats was prudent.

After discussing the study plan with the KFO, a harp trap was used to survey the fissure. Mist nets were erected at either side of the harp trap to aid in capture success.

Location

The Proposed federal prison site is located in Letcher County Kentucky in the Roxana USGS quadrangle.



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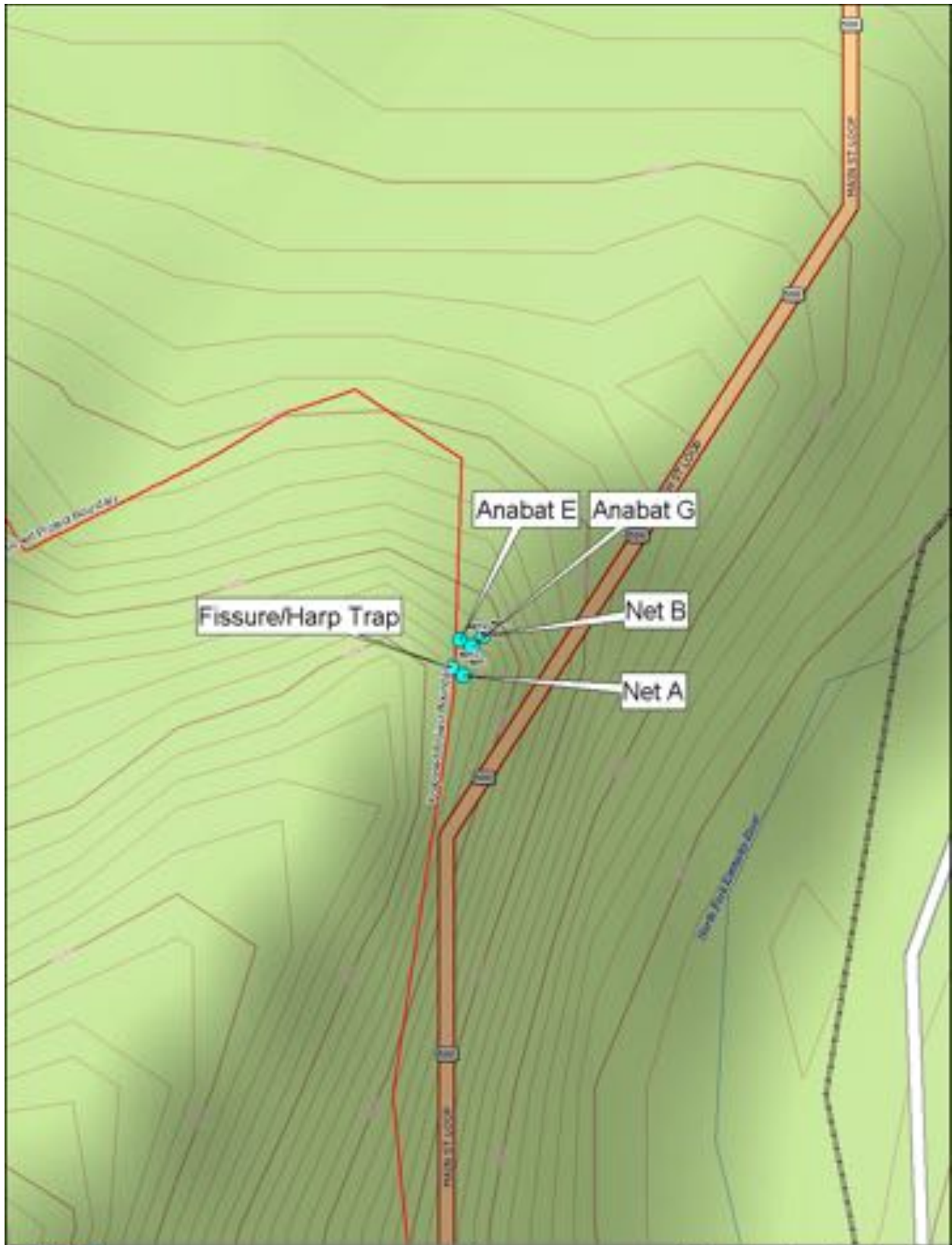
Survey Techniques

Mr. Hootman erected a harp trap directly in front of the main fissure covering both openings (See Illustrations 3-5) with two 2.6-meter-wide by 5.2-meter-tall mist net setups erected on either side of the harp trap. Two Anabat SD2 detectors were deployed. Anabat “G” was located along the cliff line next to the fissure. It was attached to a tripod and raised to two meters in height and directed away from the cliff line to minimize call bounce. Anabat “E” was located directly above the fissure on top of the cliff line facing out over the fissure.

Surveys started on 13 April using acoustic and visual survey techniques. Harp trapping started on 14 April and ended on 28 April. All harp trapping and mist netting were conducted for five hours/night starting at sunset. Acoustic detectors recorded data from 20:00 to 07:00 each night. Acoustic detectors were housed in a waterproof box with a 45-degree PVC pipe used to protect the detector from rain as described by Britzke et al. (2010). Sensitivity was set at 6 and both audio and data division ratios were set to 16.

Survey Equipment Locations

Type of Equipment	Latitude	Longitude
Harp Trap	37.11181	-82.95204
Mist Net A	37.11179	-82.95200
Mist Net B	37.11190	-82.95193
Anabat G	37.11189	-82.95201
Anabat E	37.11187	-82.95197



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Biologists

Jonathan Hootman, being federally permitted, conducted all surveys. Cliff Lemen conducted all acoustic analysis. Mr. Lemen used Kaleidoscope Pro 3.0 as well as manual vetting techniques. His professional opinion is in the furthest right hand column in the results section.

Results

No bats were captured during surveys. All surveys were conducted in favorable weather conditions. Acoustic detectors recorded the following files:

Anabat G:

FOLDER	IN FILE	DURATION	DATE	TIME	HOUR	AUTO ID	MARGIN	Cliff
20160413	Q4132017.11#	14.119	4/13/2016	20:17:11	20	EPFU	0.219354	
20160413	Q4132017.53#	14.948	4/13/2016	20:17:53	20	EPFU	0.201436	
20160413	Q4132018.15#	9.89	4/13/2016	20:18:15	20	EPFU	0.245393	
20160413	Q4132019.01#	14.65	4/13/2016	20:19:01	20	EPFU	0.273585	
20160413	Q4132019.52#	14.971	4/13/2016	20:19:52	20	EPFU	0.163167	
20160413	Q4132020.08#	14.412	4/13/2016	20:20:08	20	EPFU	0.273045	
20160413	Q4132020.44#	4.229	4/13/2016	20:20:44	20	MYSE	0.224218	Myotis?
20160413	Q4132021.58#	14.367	4/13/2016	20:21:58	20	EPFU	0.27468	
20160413	Q4132022.17#	10.049	4/13/2016	20:22:17	20	EPFU	0.248804	
20160413	Q4132024.58#	5.681	4/13/2016	20:24:58	20	EPFU	0.048825	
20160413	Q4132039.03#	6.961	4/13/2016	20:39:03	20	EPFU	0.232973	
20160413	Q4132039.24#	4.584	4/13/2016	20:39:24	20	EPFU	0.18995	
20160413	Q4132040.40#	7.225	4/13/2016	20:40:40	20	EPFU	0.190248	
20160413	Q4132048.42#	8.207	4/13/2016	20:48:42	20	EPFU	0.471403	
20160413	Q4132052.35#	7.364	4/13/2016	20:52:35	20	EPFU	0.324898	
20160413	Q4132103.21#	10.277	4/13/2016	21:03:21	21	EPFU	0.309651	
20160413	Q4132105.07#	2.071	4/13/2016	21:05:07	21	NoID	0	
20160413	Q4132112.58#	6.93	4/13/2016	21:12:58	21	EPFU	0.239894	
20160413	Q4132113.45#	6.805	4/13/2016	21:13:45	21	EPFU	0.224078	
20160413	Q4132127.46#	5.411	4/13/2016	21:27:46	21	EPFU	0.227945	
20160414	Q4142014.46#	13.525	4/14/2016	20:14:46	20	EPFU	0.30358	
20160414	Q4142015.07#	14.852	4/14/2016	20:15:07	20	EPFU	0.30358	
20160414	Q4142015.37#	13.758	4/14/2016	20:15:37	20	EPFU	0.268354	
20160414	Q4142018.29#	14.946	4/14/2016	20:18:29	20	EPFU	0.161973	
20160414	Q4142031.13#	1.372	4/14/2016	20:31:13	20	LABO	0.287703	
20160414	Q4142332.16#	9.44	4/14/2016	23:32:16	23	EPFU	0.247732	
20160415	Q4152021.08#	5.023	4/15/2016	20:21:08	20	EPFU	0.249664	
20160415	Q4152021.41#	6.693	4/15/2016	20:21:41	20	NoID	0	
20160415	Q4152021.51#	13.509	4/15/2016	20:21:51	20	EPFU	0.277424	

Anabat G results continued:

20160415 Q4152022.10#	9.796	4/15/2016	20:22:10	20 EPFU	0.159783
20160415 Q4152023.12#	14.995	4/15/2016	20:23:12	20 EPFU	0.102411
20160415 Q4152023.36#	14.318	4/15/2016	20:23:36	20 EPFU	0.076882
20160415 Q4152030.20#	14.999	4/15/2016	20:30:20	20 EPFU	0.280683
20160415 Q4152030.35#	14.929	4/15/2016	20:30:35	20 EPFU	0.170977
20160415 Q4152030.51#	3.645	4/15/2016	20:30:51	20 EPFU	0.201253
20160415 Q4152033.44#	4.168	4/15/2016	20:33:44	20 EPFU	0.088146
20160415 Q4152115.34#	2.974	4/15/2016	21:15:34	21 MYSE	0.174298 unk
20160415 Q4152330.31#	5.019	4/15/2016	23:30:31	23 EPFU	0.22467
20160415 Q4160100.57#	14.353	4/16/2016	1:00:57	1 LACI	0.317518
20160417 Q4172014.18#	10.164	4/17/2016	20:14:18	20 LACI	0.317709
20160417 Q4172026.41#	5.582	4/17/2016	20:26:41	20 EPFU	0.234988
20160417 Q4172027.15#	13.727	4/17/2016	20:27:15	20 EPFU	0.256636
20160417 Q4172027.57#	5.953	4/17/2016	20:27:57	20 EPFU	0.243722
20160417 Q4172030.26#	14.735	4/17/2016	20:30:26	20 EPFU	0.075596
20160417 Q4172038.59#	8.19	4/17/2016	20:38:59	20 PESU	0.278197
20160417 Q4172055.50#	1.993	4/17/2016	20:55:50	20 EPFU	0.230836
20160417 Q4172102.10#	1.04	4/17/2016	21:02:10	21 MYSE	0.543562 Myotis?
20160417 Q4172108.55#	10.218	4/17/2016	21:08:55	21 EPFU	0.206407
20160417 Q4172220.00#	9.394	4/17/2016	22:20:00	22 EPFU	0.132009
20160417 Q4172224.15#	1.467	4/17/2016	22:24:15	22 MYSO	0.166827 unk
20160417 Q4172227.59#	1.971	4/17/2016	22:27:59	22 NoID	0
20160417 Q4172232.49#	2.916	4/17/2016	22:32:49	22 LABO	0.098421
20160417 Q4172259.12#	13.228	4/17/2016	22:59:12	22 EPFU	0.27848
20160417 Q4172301.50#	9.322	4/17/2016	23:01:50	23 EPFU	0.311696
20160417 Q4172313.11#	5.944	4/17/2016	23:13:11	23 EPFU	0.385768
20160417 Q4172322.12#	5.004	4/17/2016	23:22:12	23 EPFU	0.094517
20160417 Q4172342.44#	4.38	4/17/2016	23:42:44	23 MYSE	0.49304 Myotis
20160417 Q4180053.28#	3.414	4/18/2016	0:53:28	0 LABO	0.186847
20160418 Q4182059.17#	6.649	4/18/2016	20:59:17	20 EPFU	0.063281
20160418 Q4182105.04#	4.643	4/18/2016	21:05:04	21 EPFU	0.324471
20160418 Q4182134.12#	3.106	4/18/2016	21:34:12	21 EPFU	0.355167
20160418 Q4182259.33#	2.066	4/18/2016	22:59:33	22 EPFU	0.451463
20160418 Q4182327.08#	10.844	4/18/2016	23:27:08	23 EPFU	0.15086
20160418 Q4182328.06#	14.994	4/18/2016	23:28:06	23 EPFU	0.314318
20160418 Q4182340.06#	6.135	4/18/2016	23:40:06	23 EPFU	0.307682
20160418 Q4182359.45#	6.154	4/18/2016	23:59:45	23 EPFU	0.074927
20160420 Q4202006.08#	14.859	4/20/2016	20:06:08	20 LACI	0.247807
20160420 Q4202006.25#	11.671	4/20/2016	20:06:25	20 LACI	0.250605
20160420 Q4202054.25#	3.986	4/20/2016	20:54:25	20 EPFU	0.25978
20160420 Q4202300.36#	3.461	4/20/2016	23:00:36	23 EPFU	0.439299
20160420 Q4210016.41#	7.809	4/21/2016	0:16:41	0 EPFU	0.314018
20160420 Q4210200.57#	5.177	4/21/2016	2:00:57	2 EPFU	0.119016
20160420 Q4210209.56#	8.248	4/21/2016	2:09:56	2 MYSO	0.094202 Myotis
20160421 Q4212038.52#	5.316	4/21/2016	20:38:52	20 EPFU	0.247915
20160421 Q4212039.16#	14.968	4/21/2016	20:39:16	20 EPFU	0.268166
20160421 Q4212039.31#	7.823	4/21/2016	20:39:31	20 EPFU	0.368652

Anabat G results continued:

20160421 Q4212039.42#	4.651	4/21/2016	20:39:42	20 EPFU	0.278582
20160421 Q4212042.18#	8.161	4/21/2016	20:42:18	20 EPFU	0.3381
20160421 Q4212042.52#	10.678	4/21/2016	20:42:52	20 EPFU	0.31579
20160421 Q4212049.29#	5.083	4/21/2016	20:49:29	20 EPFU	0.253187
20160421 Q4212107.24#	9.798	4/21/2016	21:07:24	21 EPFU	0.254556
20160421 Q4212125.01#	2.17	4/21/2016	21:25:01	21 EPFU	0.333973
20160421 Q4212214.06#	6.558	4/21/2016	22:14:06	22 EPFU	0.330267
20160421 Q4212221.48#	5.329	4/21/2016	22:21:48	22 EPFU	0.312584
20160421 Q4212222.03#	8.684	4/21/2016	22:22:03	22 EPFU	0.290606
20160421 Q4212222.18#	6.878	4/21/2016	22:22:18	22 EPFU	0.280784
20160421 Q4212222.31#	2.308	4/21/2016	22:22:31	22 EPFU	0.255058
20160421 Q4212313.04#	14.845	4/21/2016	23:13:04	23 EPFU	0.255821
20160421 Q4212313.29#	9.714	4/21/2016	23:13:29	23 EPFU	0.288827
20160421 Q4212322.52#	6.698	4/21/2016	23:22:52	23 EPFU	0.277966
20160421 Q4220133.08#	12.217	4/22/2016	1:33:08	1 EPFU	0.249985
20160421 Q4220628.40#	5.65	4/22/2016	6:28:40	6 NoID	0
20160426 Q4262212.18#	4.301	4/26/2016	22:12:18	22 EPFU	0.295867
20160427 Q4272100 (1).08#	9.553	4/27/2016	21:00:08	21 LACI	0.240744
20160427 Q4272100.08#	9.553	4/27/2016	21:00:08	21 LACI	0.240744
20160427 Q4272347.25#	12.088	4/27/2016	23:47:25	23 MYSE	0.247077 unk
20160427 Q4280033.09#	8.164	4/28/2016	0:33:09	0 LACI	0.272286
20160427 Q4280148.07#	14.973	4/28/2016	1:48:07	1 MYSE	0.436215 unk
20160427 Q4280243.17#	14.857	4/28/2016	2:43:17	2 EPFU	0.14766
20160427 Q4280323.54#	14.979	4/28/2016	3:23:54	3 EPFU	0.098576
20160427 Q4280324.32#	4.15	4/28/2016	3:24:32	3 LABO	0.166396
20160427 Q4280324.37#	4.206	4/28/2016	3:24:37	3 LABO	0.092935
20160427 Q4280325.03#	4.042	4/28/2016	3:25:03	3 LABO	0.070737
20160427 Q4280325.07#	3.115	4/28/2016	3:25:07	3 LABO	0.158459
20160427 Q4280325.10#	3.7	4/28/2016	3:25:10	3 LABO	0.120379
20160427 Q4280325.14#	4.041	4/28/2016	3:25:14	3 LABO	0.098596
20160427 Q4280325.18#	4.254	4/28/2016	3:25:18	3 LABO	0.093008
20160427 Q4280325.22#	3.831	4/28/2016	3:25:22	3 LABO	0.14323
20160427 Q4280325.26#	4.489	4/28/2016	3:25:26	3 LABO	0.065442
20160427 Q4280325.30#	7.795	4/28/2016	3:25:30	3 LABO	0.077294
20160427 Q4280325.38#	6.737	4/28/2016	3:25:38	3 LABO	0.178558
20160427 Q4280325.45#	4.251	4/28/2016	3:25:45	3 LABO	0.10179
20160427 Q4280325.49#	5.543	4/28/2016	3:25:49	3 LABO	0.131217
20160427 Q4280325.55#	13.699	4/28/2016	3:25:55	3 LABO	0.147367
20160427 Q4280326.09#	14.99	4/28/2016	3:26:09	3 EPFU	0.049179
20160427 Q4280326.35#	4.603	4/28/2016	3:26:35	3 LABO	0.198756
20160427 Q4280326.39#	5.551	4/28/2016	3:26:39	3 LABO	0.14644
20160427 Q4280326.45#	5.23	4/28/2016	3:26:45	3 LABO	0.112529
20160427 Q4280326.50#	3.808	4/28/2016	3:26:50	3 LABO	0.171203
20160427 Q4280326.54#	4.735	4/28/2016	3:26:54	3 LABO	0.114835
20160427 Q4280327.01#	2.68	4/28/2016	3:27:01	3 LABO	0.195441
20160427 Q4280327.04#	7.304	4/28/2016	3:27:04	3 LABO	0.141871
20160427 Q4280327.12#	3.356	4/28/2016	3:27:12	3 LABO	0.164963

Anabat G results continued:

20160427 Q4280342.59#	14.886	4/28/2016	3:42:59	3 LABO	0.165955
20160427 Q4280349.18#	8.728	4/28/2016	3:49:18	3 LABO	0.074861
20160427 Q4280349.32#	12.177	4/28/2016	3:49:32	3 LABO	0.220435
20160429 Q4300647.30#	14.931	4/30/2016	6:47:30	6 LACI	0.314886
20160430 Q4302000.02#	11.77	4/30/2016	20:00:02	20 LABO	0.055647
20160430 Q4302000.47#	14.671	4/30/2016	20:00:47	20 LABO	0.078595
20160430 Q4302001.04#	4.173	4/30/2016	20:01:04	20 LABO	0.221636
20160430 Q4302002.45#	14.864	4/30/2016	20:02:45	20 LACI	0.232273
20160430 Q4302008.23#	10.996	4/30/2016	20:08:23	20 LABO	0.252263
20160430 Q4302009.39#	4.047	4/30/2016	20:09:39	20 LABO	0.250659
20160430 Q4302010.24#	5.788	4/30/2016	20:10:24	20 LACI	0.322072
20160430 Q4302010.49#	14.986	4/30/2016	20:10:49	20 LACI	0.054377
20160430 Q4302012.38#	14.902	4/30/2016	20:12:38	20 LABO	0.096232
20160430 Q4302014.42#	14.955	4/30/2016	20:14:42	20 LACI	0.138206
20160430 Q4302015.31#	14.396	4/30/2016	20:15:31	20 LACI	0.319109
20160430 Q4302015.54#	14.999	4/30/2016	20:15:54	20 LACI	0.059183
20160430 Q4302016.16#	14.928	4/30/2016	20:16:16	20 NoID	0
20160430 Q4302016.34#	14.991	4/30/2016	20:16:34	20 LACI	0.315689
20160430 Q4302021.26#	14.983	4/30/2016	20:21:26	20 LACI	0.319142
20160430 Q4302045.51#	11.239	4/30/2016	20:45:51	20 PESU	0.223228
20160430 Q4302115.29#	14.949	4/30/2016	21:15:29	21 EPFU	0.343816
20160430 Q4302118.09#	9.607	4/30/2016	21:18:09	21 EPFU	0.326359
20160430 Q4302333.40#	14.813	4/30/2016	23:33:40	23 LACI	0.356428
20160430 Q4302334.14#	14.932	4/30/2016	23:34:14	23 LACI	0.275371
20160430 Q4302336.23#	14.992	4/30/2016	23:36:23	23 LACI	0.277958
20160430 Q4302340.26#	12.846	4/30/2016	23:40:26	23 LACI	0.247129
20160430 Q4302340.50#	14.883	4/30/2016	23:40:50	23 LACI	0.314223
20160430 Q4302342.51#	13.004	4/30/2016	23:42:51	23 LACI	0.354183
20160430 Q4302345.39#	14.711	4/30/2016	23:45:39	23 LACI	0.093446
20160430 Q4302349.08#	4.201	4/30/2016	23:49:08	23 LACI	0.267447
20160430 Q4302349.18#	11.366	4/30/2016	23:49:18	23 LACI	0.347272
20160430 Q4302353.26#	7.706	4/30/2016	23:53:26	23 LACI	0.326236
20160430 Q4302356.35#	0.165	4/30/2016	23:56:35	23 LACI	0.27396
20160430 Q4302358.29#	7.581	4/30/2016	23:58:29	23 LACI	0.311261
20160430 Q4302358.44#	13.713	4/30/2016	23:58:44	23 LACI	0.266081
20160430 Q4302359.03#	14.878	4/30/2016	23:59:03	23 LACI	0.19599
20160430 Q4302359.18#	13.259	4/30/2016	23:59:18	23 LACI	0.295963
20160430 Q4302359.36#	12.427	4/30/2016	23:59:36	23 LACI	0.38299
20160430 Q5010000.03#	11.486	5/1/2016	0:00:03	0 NoID	0
20160430 Q5010000.44#	8.745	5/1/2016	0:00:44	0 LACI	0.236156
20160430 Q5010000.58#	14.989	5/1/2016	0:00:58	0 LACI	0.180264
20160430 Q5010001.13#	14.067	5/1/2016	0:01:13	0 LACI	0.151473
20160430 Q5010001.27#	13.669	5/1/2016	0:01:27	0 LACI	0.193163
20160430 Q5010001.45#	14.388	5/1/2016	0:01:45	0 LACI	0.291077
20160430 Q5010002.08#	14.095	5/1/2016	0:02:08	0 LACI	0.344515
20160430 Q5010002.23#	13.435	5/1/2016	0:02:23	0 LACI	0.315839
20160430 Q5010002.41#	14.911	5/1/2016	0:02:41	0 LACI	0.281689

Anabat G results continued:

20160430 Q5010002.58#	11.909 5/1/2016	0:02:58	0 LACI	0.345772
20160430 Q5010003.38#	13.531 5/1/2016	0:03:38	0 LACI	0.322845
20160430 Q5010004.13#	14.169 5/1/2016	0:04:13	0 LACI	0.32425
20160430 Q5010004.50#	4.328 5/1/2016	0:04:50	0 LACI	0.327686
20160430 Q5010005.06#	13.504 5/1/2016	0:05:06	0 LACI	0.270841
20160430 Q5010005.31#	8.32 5/1/2016	0:05:31	0 LACI	0.337301
20160430 Q5010005.39#	14.891 5/1/2016	0:05:39	0 LACI	0.32566
20160430 Q5010006.05#	14.411 5/1/2016	0:06:05	0 LACI	0.360943
20160430 Q5010006.27#	14.999 5/1/2016	0:06:27	0 LACI	0.224861
20160430 Q5010006.42#	14.416 5/1/2016	0:06:42	0 LACI	0.302034
20160430 Q5010007.01#	7.597 5/1/2016	0:07:01	0 LACI	0.2687
20160430 Q5010007.20#	8.742 5/1/2016	0:07:20	0 LACI	0.360834
20160430 Q5010007.32#	1.268 5/1/2016	0:07:32	0 LACI	0.164173
20160430 Q5010007.50#	14.765 5/1/2016	0:07:50	0 LACI	0.391727
20160430 Q5010008.16#	14.999 5/1/2016	0:08:16	0 LACI	0.239849
20160430 Q5010008.31#	14.943 5/1/2016	0:08:31	0 LACI	0.323783
20160430 Q5010008.46#	14.959 5/1/2016	0:08:46	0 LACI	0.18531
20160430 Q5010009.02#	14.721 5/1/2016	0:09:02	0 LACI	0.193957
20160430 Q5010009.17#	14.95 5/1/2016	0:09:17	0 LACI	0.160511
20160430 Q5010009.33#	14.999 5/1/2016	0:09:33	0 LACI	0.201837
20160430 Q5010009.49#	14.873 5/1/2016	0:09:49	0 LACI	0.185262
20160430 Q5010010.04#	14.976 5/1/2016	0:10:04	0 LACI	0.20701
20160430 Q5010010.20#	14.857 5/1/2016	0:10:20	0 LACI	0.206017
20160430 Q5010010.36#	11.922 5/1/2016	0:10:36	0 LACI	0.169804
20160430 Q5010010.57#	14.965 5/1/2016	0:10:57	0 LACI	0.296557
20160430 Q5010011.12#	14.597 5/1/2016	0:11:12	0 LACI	0.368711
20160430 Q5010011.28#	14.987 5/1/2016	0:11:28	0 LACI	0.215615
20160430 Q5010011.43#	14.932 5/1/2016	0:11:43	0 LACI	0.271034
20160430 Q5010011.59#	4.731 5/1/2016	0:11:59	0 LACI	0.135899
20160501 Q5012002.34#	13.655 5/1/2016	20:02:34	20 PESU	0.14702
20160501 Q5012051.36#	14.633 5/1/2016	20:51:36	20 EPFU	0.256083
20160501 Q5012052.24#	13.708 5/1/2016	20:52:24	20 EPFU	0.040647
20160501 Q5012052.47#	2.97 5/1/2016	20:52:47	20 LABO	0.338859
20160501 Q5012105.47#	10.535 5/1/2016	21:05:47	21 LABO	0.315222
20160501 Q5012126.20#	5.317 5/1/2016	21:26:20	21 LABO	0.141133
20160501 Q5012135.19#	8.316 5/1/2016	21:35:19	21 LABO	0.360423

Anabat E results:

FOLDER	IN FILE	DURATION	DATE	TIME	HOUR	AUTO ID	MARGIN	Cliff
20160414	Q4142244.48#	4.041	4/14/2016	22:44:48	22	EPFU	0.241823	
20160414	Q4150025.13#	3.978	4/15/2016	0:25:13	0	EPFU	0.284816	
20160415	Q4152021.13#	11.189	4/15/2016	20:21:13	20	EPFU	0.241416	
20160415	Q4152021.27#	14.127	4/15/2016	20:21:27	20	EPFU	0.304708	
20160415	Q4152041.47#	5.061	4/15/2016	20:41:47	20	NoID		0 Myotis
20160420	Q4202034.06#	1.028	4/20/2016	20:34:06	20	EPFU	0.127506	
20160420	Q4202050.41#	1.383	4/20/2016	20:50:41	20	NoID		0 Myotis?
20160420	Q4202054.18#	6.169	4/20/2016	20:54:18	20	EPFU	0.324855	
20160420	Q4210455.29#	2.975	4/21/2016	4:55:29	4	NoID		0 Myotis?
20160421	Q4220344.01#	5.889	4/22/2016	3:44:01	3	EPFU	0.142478	
20160421	Q4220344.08#	4.035	4/22/2016	3:44:08	3	MYSE	0.069086	unknown
20160421	Q4220606.55#	0.772	4/22/2016	6:06:55	6	EPFU	0.244521	
20160422	Q4222035.07#	9.45	4/22/2016	20:35:07	20	EPFU	0.248134	
20160422	Q4222102.32#	14.783	4/22/2016	21:02:32	21	EPFU	0.141183	
20160425	Q4252033.31#	5.508	4/25/2016	20:33:31	20	EPFU	0.197277	
20160426	Q4270002.51#	8.893	4/27/2016	0:02:51	0	EPFU	0.254062	
20160427	Q4272356.03#	6.967	4/27/2016	23:56:03	23	LACI	0.123139	
20160428	Q4282133.29#	14.8	4/28/2016	21:33:29	21	LACI	0.291441	
20160428	Q4282133.44#	14.827	4/28/2016	21:33:44	21	LACI	0.304943	
20160428	Q4282134.00#	14.251	4/28/2016	21:34:00	21	LACI	0.278195	
20160428	Q4282134.15#	14.975	4/28/2016	21:34:15	21	LACI	0.283477	
20160428	Q4282134.30#	14.615	4/28/2016	21:34:30	21	LACI	0.309433	

Conclusions

After surveying for nine nights with favorable weather conditions, I am certain that no bats, including federally listed species, are using that particular fissure at this time. However, with the potential detection of *Myotis sodalis* and *Myotis septentrionalis* calls during acoustic surveys, further research is needed to better understand habitat use by these species within and around the project area.

Literature Cited

Britzke, E.R, B.A. Slack, M.P. Armstrong, and S.C. Loeb. 2010. Effects of orientation and weatherproofing on the detection of bat echolocation calls. *Journal of Fish and Wildlife Management* 1(2):136-141.

Appendix 1: Completed Datasheets

Project # 16-1 Project Name Porcine Fissure Date 11 April 2016
 Biologists T. MacLean Net site name: # Fissure
 GPS: N 37.11181° W 82.95204° County Lab. State KY Quad Perman

Capt #	Species	Time	Age	Sex	Reprod	WT (g)	RF/A (mm)	Band #	Net (pt)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

Notes

Time	Temp (°F)	% Cloud	Wind speed
20:00	68	40	0
21:00	61	50	1
22:00	60	60	1
23:00	58	50	1
00:00	57	10	1
01:00	53	10	1

Wind Scale:

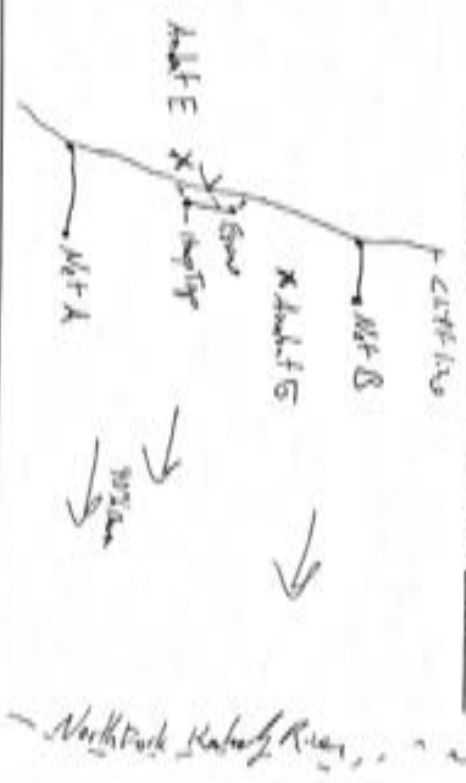
Wind speed	Description
0 mph	Calm
1-3	Light air
4-7	Light breeze
8-12	Good breeze
13-18	Moderate breeze

Comments: PHZ self
 Sun 06:09 20:05
 Mon 13:11 01:42
 Analyzer # G+E

Project # N-1 Project Name Kawa River Net site River Date 18 April 2016

Cap #	Species	Time	Age	Sex	Reprod	WT (g)	PFA (mm)	Band #	Net (m)
23									
24									
25									
26									
27									
28									

Net Set Diagram: Open Nets: 2:00 Close Nets: 07:00



Comments: _____

Vegetation
 Dominant Canopy Species
 1. Q. garryana
 2. P. serotina
 3. P. serotina

Canopy closure
 closed moderate open

Site Root Tree Potential
 large trees snags both

Area Root Tree Potential
 high moderate low

Subcanopy Closure
 closed moderate open

Comments / Other Trees

Project # 4-1 Project Name Roanoke Frits Date April 2006

Biologists J. Matthews Net site name: # _____

GPS: N 37.8111 W 82.95204 County Labrum State KY Quad Roma

Capt #	Species	Time	Age	Sex	Reprod	WT (g)	RFA (mm)	Band #	Net (H)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

M. f. f.

Moon Star Golden

Time	Temp (°F)	% Cloud	Wind speed
2000	70	0	1
2100	63	0	1
2200	65	0	1
2300	59	0	1
0000	52	0	1
0100	48	0	1

Wind Scale:

Wind speed	Description
0 mph	Calm
1-3	Light air
4-7	Light breeze
8-12	Quick breeze
13-18	Moderate breeze

Comments:

File set
Sun set 2006
Mon Apr 03:25

Anchor # ENG

Project # N-01 Project Name Koyaa Fosse Date 17 April 2005

Biologists J. Johnson Net site name: Fosse

GPS: N 37.11181 W 82.95204 County Leelanau State KI Quad Raven

Capt #	Species	Time	Age	Sex	Reprod	WT (g)	RFA (mm)	Band #	Net (H)	Moon	Wind	Temp (F)	% Cloud	Wind Speed
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														

No Bats

Moon *slightly gibbous*

Temp (F)	% Cloud	Wind Speed
20	6	1
20	5	1
20	0	1
20	0	1
20	0	0
20	0	0
20	0	0

Wind Scale:

Wind speed	Description
0 mph	Calm
1-3	Light Air
4-7	Light Breeze
8-12	Golden Breeze
13-18	Moderate Breeze

Comments:

*no bats
low wind temp
Apr 13 09:37*

Analyst # ETG

Project # 16-01 Project Name Parsons Fawn Date 18 April 2006

Biologists J. N. Long, James Net site name # Fawn

GPS: N 37.11181 W 82.95204 County Leslie State KY Quad Roman

Capr #	Species	Time	Age	Sex	Reprod	WT (g)	RFA (mm)	Band #	Net (H)	Time	Temp (°C)	% Cloud	Wind speed
1										01:18	53	0	1
2										02:00	72	0	0
3										02:19	66	0	0
4										02:40	60	0	0
5										03:10	56	0	1
6										03:19	54	0	1
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

Handwritten signature/initials

Moon Under Clear

Wind Scale:

Wind Speed	Description
0 mph	Calms
1-3	Light Air
4-7	Light Breeze
8-12	Common Breeze
13-18	Moderate Breeze

Comments:

Handwritten notes:
No self
Sun OK 20:10
Moon 17:09 07:09

Analyst # ERG

Project # 16-01 Project Name Prague Finches Date 20 April 2016

Biologists J. K. Thompson Net site name: # F-306

GPS: N 37.1181 W 82.95204 County Wetzel State KY Quad Prague

Capt #	Species	Time	Age	Sex	Repaired	WT (g)	RFA (mm)	Band #	Net (H)	Moon	Wdir	Wspeed	% Cloud	% wind speed
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														

W/B.S.

Moon Wdir S. Gibbous

Time (7)	Temp (°F)	% Cloud	% wind speed
2010	74	100	1
2112	71	50	2
2215	68	0	1
2317	62	10	1
0012	68	10	2
0112	65	10	1

Wind Scale:

Windspeed	Description
0 mph	Calm
1-3	Light air
4-7	Light breeze
8-12	Gentle breeze
13-19	Moderate breeze

Comments:

180
Sq out 202
Alan 1873 0811

Anchor # E-6

Project # W-01 Project Name Passer Fingers Date 21 Jan 2016

Biologists Jill Shuman Net site name: # Finger

GPS: N 37.11181 W 82.95204 County Leban State KY Quad Reyn

Cap #	Species	Time	Age	Sex	Reprod	WT (g)	RFA (mm)	Band #	Net (mg)	Moon	Temp (°F)	% Cloud	Wind Speed
1										Fall			
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

Time	Temp (°F)	% Cloud	Wind Speed
20:2	21	100	1
20:7	68	400	1
20:12	65	100	1
20:17	62	200	1
20:2	58	100	1
21:12	53	100	1

Wind Scale:

Wind Speed	Description
0 mph	Calm
1-3	Light Air
4-7	Light Breeze
8-12	Gentle Breeze
13-18	Moderate Breeze

Comments:
 No ref
 Sun 20:49 20:2
 Mon 19:52 0:42
 5/11/2016 @ 2000
 for 15 minutes
 Anabat # E-16

Project # K-01 Project Name Lowland Friton Date 25 Apr 2016

Biologists J. M. Howe Net site name: Friton

GPS: N 37.1181 W 82.95204 County Wolfe State KY Quad Brown

Cap #	Species	Time	Age	Sex	Reprod	WT (g)	PFA (mm)	Band #	Net (H)	Moore <u>Wolfe</u>
1										Time Temp (%) Cloud Wind Speed
2										20:18 68 0 0
3										21:04 69 5 0
4										22:04 64 5 1
5										23:04 63 0 0
6										04:04 62 0 0
7										04:14 64 0 0
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

Notes

Wind Speed	Description
0-3	Calm
4-7	Light Air
8-12	Light Breeze
13-18	Modest Breeze

Comments:
1st set
5 only 2014
4m size 0407
 Annot # ETG

Project # N-01 Project Name Roan Tarn Date 24 April 2016

Biologists W. Holt Wet site name: Fixane

GPS: N 37.11151 W 82.95264 County Wilder State Ky Quad Roan

Cap #	Species	Time	Age	Sex	Reprod	WR (g)	RFA (mm)	Band #	Net (H)	Moon	Windy	Galton
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												

Nobbs

Moon W Windy 0 Galton 0

Time	Temp (°F)	% Cloud	Wind Speed
20:15	22	5	0
20:30	69	5	1
20:45	66	5	0
21:00	64	30	0
21:15	62	50	0
21:30	62	50	0

Wind Scale:

Wind speed	Description
0-3 mph	Calm
4-7	Light Air
8-12	Light Breeze
13-18	Moderate Breeze

Comments:

*fixa self
Sun 04:45 20:16
Moon - 04:52
Eggs by: larvae on bank
Anabat # Er05*

Project # 16-01 Project Name Spencer Run Finches Date 25 April 2016

Biologists J. Hartz Net site name: Finch

GPS: N 37.11151 W 82.95204 County Labar State KY Quad Rum

Car #	Species	Time	Age	Sex	Reprod	WT (g)	RFA (mm)	Band #	Net (H)	Moon	Wet	Wings	Tarsus	Bill	Stomach	Other
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																

Handwritten note: All birds

Moon Wet Wings Tarsus Bill Stomach Other

Time	Temp (°F)	% Cloud	Wind Speed
2016	20	0	0
2100	63	0	1
2200	67	0	0
2300	66	0	0
0000	65	0	0
0100	64	0	0

Wind Scale:

Wind Speed	Description
0 mph	Calm
1-3	Light Air
4-7	Light Breeze
8-12	Good Breeze
13-18	Moderate Breeze

Comments:

Handwritten notes:
 1-12 SW SWF
 SW 0648 SWF
 SW 0710 W 79

Amateur # E+5

Appendix 2: Pictures



Illustration 2: Fissure Opening #1

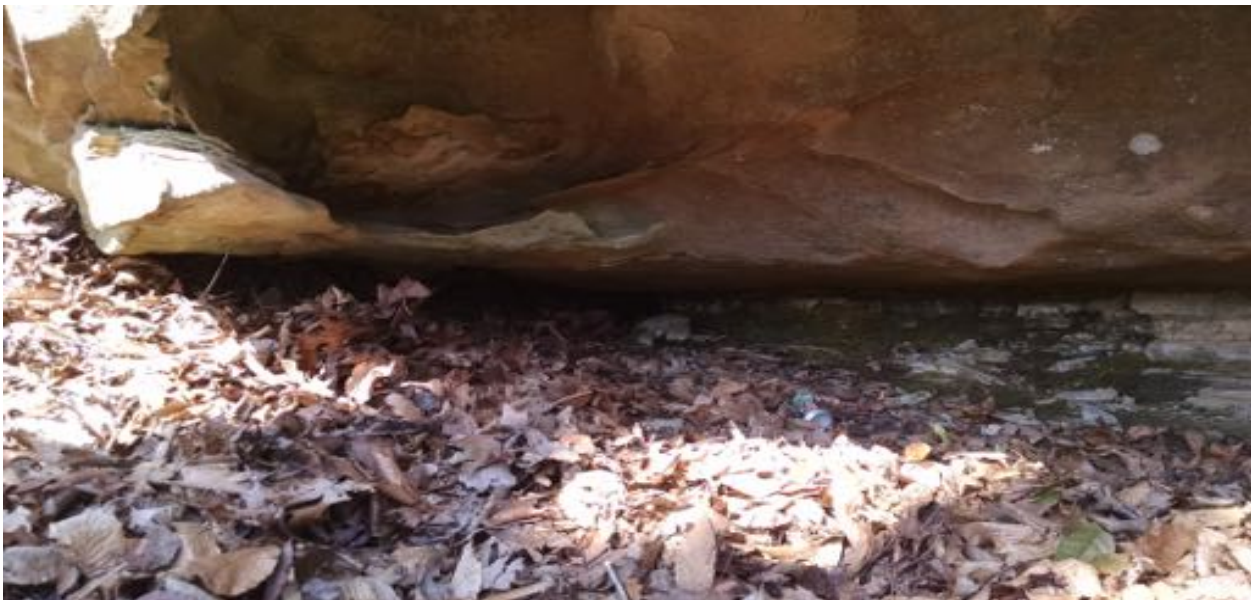


Illustration 4: Fissure Opening #2



Illustration 5: Harp Trap With Exclusion Netting



Illustration 6: Net A



Illustration 7: Net B



Illustration 8: Anabat G



Illustration 9: Anabat E