



Region 4 Inventory and Monitoring Branch

Mobile Acoustical Bat Monitoring Annual Summary Report

2016

POND CREEK NATIONAL WILDLIFE REFUGE



The Region 4 Inventory and Monitoring Branch coordinated acoustical bat monitoring on 58 National Wildlife Refuges and 2 Ecological Services field offices in Regions 2, 3, and 4 during the 2016 field season. Surveys establish baseline inventories of bat species at each station and contribute to a landscape-level understanding of bat population trends and habitat associations. Bat call data were collected using Anabat SD2 detectors along road-based transects during June and July each year following the procedures outlined in the Mobile Bat Acoustical Survey Protocol (USFWS 2012*).

This report summarizes bat calls collected along transects at your station in 2016 and provides annual species detections from 2012 to 2015 for comparison. Calls were classified in 2016 using the BCID Eastern USA (version 2.7c) software and restricted to calls with 5 or more pulses. This annual summary report package contains summary information on transect surveys, and a digital folder containing shapefiles and BCID classification output files. Summary tables include all classified species observations including those that did not have an associated spatial reference.

All submitted raw call data and survey metadata have been archived and are available on the Mobile Acoustical Bat Monitoring SharePoint site (<https://fishnet.fws.doi.net/regions/4/nwrs/IM/bats>). Bat call files, GPS data, and survey metadata sheets were reviewed for quality assurance prior to generation of this report. Some submitted data were necessarily excluded due to identified errors in collection processes.

**U.S Fish and Wildlife Service. 2012. Mobile Bat Acoustical Survey Protocol, U.S. Fish and Wildlife Service, Region 4, Division of Refuges*

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Route Name: PncNWR

Survey date	# bat calls	Route completed?	GPS data?	Survey notes
6/21/2016	83	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	We stopped at 22:26 because of a wrong turn. We shut off the anabat, backed up, and then proceeded with the survey by 22:27
6/28/2016	103	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

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Route: PncNWR

Length of transect (miles): 29.95

2016 Nightly Summary

	<u>Survey date</u>	<u>Total observed</u>	<u>Bats/mile</u>
Big Brown Bat			
	6/21/2016	19	0.63
	6/28/2016	5	0.17
Eastern Red Bat			
	6/21/2016	15	0.5
	6/28/2016	11	0.37
Evening Bat			
	6/21/2016	29	0.97
	6/28/2016	35	1.17
Hoary Bat			
	6/21/2016	1	0.03
	6/28/2016	1	0.03
Little Brown Bat			
	6/28/2016	1	0.03
Northern Long-eared Bat			
	6/21/2016	1	0.03
Rafinesque's Big-eared Ba			
	6/28/2016	1	0.03
Southeastern Myotis			
	6/28/2016	1	0.03
Tricolored Bat			
	6/21/2016	16	0.53
	6/28/2016	43	1.44
Unknown			
	6/21/2016	2	0.07
	6/28/2016	5	0.17

Species Summary 2012-2016

Below are the results of the auto-classification of search-phase echolocations of bats detected along survey routes from 2012-2016 generated from the BCID Eastern USA software program (Version 2.7c). Automated acoustical bat classification has inherent limitations based in part on call quality, species filter constraints, and statistical model agreement parameters. Species filters were used to limited the output to only those bat species expected to occur at a field station during the sampling interval. Using a conservative approach to generate robust species classifications, calls with fewer than 5 pulses were not classified; therefore the estimates presented here may under-represent the actual number of bats detected on a survey night. Classified calls were geo-referenced using the package MABM in Program R to combine GPS locations with individual calls based on unique Date and Time parameters. If GPS time intervals did match a the time stamp of a call file, the location was approximated based on the nearest corresponding GPS location along the route. Accuracy of call classification varies among species but is reported to be >85% correct. Measures of confidence in species identification for each survey night are available as a maximum-likelihood estimator p-value for each observed species in the BCID output files included with this summary report package. BCID software does not classify the following species (Seminole bat - LASE, Northern yellow bat - LAIN, Brazilian free-tailed bat - TABR). If these species occur within your monitoring area, the calls generally will be classified to a species with the closest model agreement or classified to "unknown". Species summary tables include all classified calls including those without a spatial reference.

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PncNWR

Length of transect (miles): 29.95

	<u>Total observed</u>	<u># Survey nights</u>	<u># Bats/night</u>	<u># Bats/mile</u>
Big Brown Bat				
2012	9	2	4.5	0.15
2013	15	3	5	0.17
2014	3	2	1.5	0.05
2016	24	2	12	0.4
Eastern Red Bat				
2012	50	2	25	0.83
2013	51	3	17	0.57
2014	26	2	13	0.43
2016	26	2	13	0.43
Evening Bat				
2012	28	2	14	0.47
2013	48	3	16	0.53
2014	23	2	11.5	0.38
2016	64	2	32	1.07

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Hoary Bat

2012	2	2	1	0.03
2013	1	3	0.33	0.01
2014	2	2	1	0.03
2016	2	2	1	0.03

Little Brown Bat

2012	3	2	1.5	0.05
2013	7	3	2.33	0.08
2014	3	2	1.5	0.05
2016	1	2	0.5	0.02

Northern Long-eared Bat

2016	1	2	0.5	0.02
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Rafinesque's Big-eared Bat

2016	1	2	0.5	0.02
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Southeastern Myotis

2012	2	2	1	0.03
2013	1	3	0.33	0.01
2014	1	2	0.5	0.02
2016	1	2	0.5	0.02

Tricolored Bat

2012	96	2	48	1.6
2013	132	3	44	1.47
2014	63	2	31.5	1.05
2016	59	2	29.5	0.98

Unknown

2012	11	2	5.5	0.18
2013	8	3	2.67	0.09
2014	4	2	2	0.07
2016	7	2	3.5	0.12