



Region 4 Inventory and Monitoring Network

Mobile Acoustical Bat Monitoring Annual Summary Report

2015

ROANOKE RIVER NATIONAL WILDLIFE REFUGE



The Region 4 Inventory and Monitoring Network coordinated acoustical bat monitoring on 54 National Wildlife Refuges and 2 Ecological Services field offices in Regions 2, 3, and 4 during 2015. 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 up to 30 mile mobile 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 2015 and provides annual species detections from 2012 to 2014 for comparison. Calls were classified in 2015 using Bat Call ID ([BCID] 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 output files. Summary tables include all classified species observations including those that did not have an associated spatial reference.

All submitted call data and survey metadata have been archived and are available on the Mobile Acoustical Bat Monitoring SharePoint site (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. All acoustical bat data will be summarized in a comprehensive 2015 annual report following station-level reporting.

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

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

Route Name: RrvNWR1 Company Swamp

Survey date	# bat calls	Route completed?	GPS data?	Survey notes
6/22/2015	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7/7/2015	12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Route Name: RrvNWR2 Town Swamp

Survey date	# bat calls	Route completed?	GPS data?	Survey notes
6/22/2015	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7/7/2015	32	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

RrvNWR1 **Company Swamp** Species Filter 7: CORA, EPFU, LABO, LACI, MYAU, MYLU, MYSE, NYHU, PESU
Length of transect (miles): **3.25**

Nightly Summary

	<u>Survey date</u>	<u>Total observed</u>	<u>Bats/mile</u>
Eastern red bat			
	7/7/2015	4	1.23
Evening bat			
	6/22/2015	3	0.92
	7/7/2015	1	0.31
Little brown bat			
	7/7/2015	3	0.92
Southeastern myotis			
	7/7/2015	2	0.62
Tricolored bat			
	6/22/2015	1	0.31
	7/7/2015	1	0.31
Unknown			
	7/7/2015	1	0.31

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

RrvNWR2 **Town Swamp** Species Filter 7: CORA, EPFU, LABO, LACI, MYAU, MYLU, MYSE, NYHU, PESU
Length of transect (miles): **9.96**

Nightly Summary

	<u>Survey date</u>	<u>Total observed</u>	<u>Bats/mile</u>
Big brown bat			
	7/7/2015	1	0.1
Eastern red bat			
	6/22/2015	6	0.6
	7/7/2015	9	0.9
Evening bat			
	6/22/2015	1	0.1
	7/7/2015	5	0.5
Little brown bat			
	6/22/2015	1	0.1
Northern long-eared bat			
	7/7/2015	1	0.1
Southeastern myotis			
	6/22/2015	2	0.2
	7/7/2015	2	0.2
Tricolored bat			
	6/22/2015	4	0.4
	7/7/2015	12	1.2
Unknown			
	6/22/2015	1	0.1
	7/7/2015	2	0.2

Species Summary 2012-2015

Below are the results of bat species classification generated from automated acoustic bat ID software in BCID version 2.7c. Automated acoustical bat classification has inherent limitations based in part on call quality, species filter constraints, and statistical model agreement parameters. 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 a custom python script to combine GPS locations with individual calls based on unique Date and Time parameters. 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 version 2.7c 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.

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

RrvNWR1

Company Swamp

Species Filter 7: CORA, EPFU, LABO, LACI, MYAU, MYLU, MYSE, NYHU, PESU

Length of transect (miles):

3.25

Annual Summary

		<u>Total observed</u>	<u># Survey nights</u>	<u># Bats/night</u>	<u># Bats/mile</u>
Eastern red bat					
	2012	9	1	9	2.77
	2014	3	2	1.5	0.46
	2015	4	2	2	0.62
Evening bat					
	2012	19	1	19	5.85
	2014	8	2	4	1.23
	2015	4	2	2	0.62
Little brown bat					
	2012	4	1	4	1.23
	2014	2	2	1	0.31
	2015	3	2	1.5	0.46
Northern long-eared bat					
	2014	4	2	2	0.62

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

Southeastern myotis

2015	2	2	1	0.31
------	---	---	---	------

Tricolored bat

2012	3	1	3	0.92
------	---	---	---	------

2014	2	2	1	0.31
------	---	---	---	------

2015	2	2	1	0.31
------	---	---	---	------

Unknown

2015	1	2	0.5	0.15
------	---	---	-----	------

RrvNWR2

Town Swamp

Species Filter 7: CORA, EPFU, LABO, LACI, MYAU, MYLU, MYSE, NYHU, PESU

Length of transect (miles): 9.96

Annual Summary

	<u>Total observed</u>	<u># Survey nights</u>	<u># Bats/night</u>	<u># Bats/mile</u>
Big brown bat				
2012	5	1	5	0.5
2014	4	2	2	0.2
2015	1	2	0.5	0.05
Eastern red bat				
2012	12	1	12	1.2
2014	15	2	7.5	0.75
2015	15	2	7.5	0.75
Evening bat				
2012	8	1	8	0.8
2014	8	2	4	0.4
2015	6	2	3	0.3
Little brown bat				
2014	5	2	2.5	0.25
2015	1	2	0.5	0.05
Northern long-eared bat				
2012	1	1	1	0.1

ROANOKE RIVER NATIONAL WILDLIFE REFUGE

	2015	1	2	0.5	0.05
Southeastern myotis					
	2015	4	2	2	0.2
Tricolored bat					
	2012	11	1	11	1.1
	2014	27	2	13.5	1.36
	2015	16	2	8	0.8
Unknown					
	2012	3	1	3	0.3
	2014	3	2	1.5	0.15
	2015	3	2	1.5	0.15