

3.1.3.2 Acoustic Monitoring of Bats on the ORR 2015 (Draft)

Acoustic bat surveys were conducted at eight major ORR areas and adjacent areas during 2015: (1) Haw Ridge Park, (2) Bethel Valley (ORNL), (3) ETPP west ponds, (4) Upper East Fork Poplar Creek floodplain (UEFPC), (5) White Wing Scrapyard Area (WWSY), (6) ETPP proposed airport site, (7) Parcel ED-5 (Horizon Center), and (8) Freels Bend Wildlife Management Area. For 209 nights during 2015 (multiple detectors deployed/night), approximately 226,000 files of bat acoustic data were recorded at 48 field stations (Table 3.1.3.2.1) and were processed with specialized, automated bat identification software (Kaleidoscope PRO) yielding 12,567 bat identifications. An additional 2,249 bat calls were detected but not identified to species due to poor call quality, inclement weather conditions, or field clutter. Fourteen species were detected on the ORR including: Townsend's big-eared bat, big brown bat, eastern red bat, hoary bat, silver-haired bat, southeastern bat, eastern small-footed bat, little brown bat, northern long-eared bat (federally-listed threatened), Indiana bat (federally-listed endangered), evening bat, tri-colored bat (eastern pipistrelle), and the Mexican free-tailed bat (Table 3.1.3.2.2, Figure 3.1.3.2.1). Of these species, the hoary bat (18%), silver-haired bat (16%), eastern red bat (11%), and big brown bat (11%) were the dominant combined species detected at all sites. Federally-listed species detected included the gray bat (7%), Indiana bat (1%), and northern Long-eared bat (>1%).

TDEC documented all three federally-listed bat species with acoustic surveys on the ETPP proposed airport site in bat roost trees such as white oaks and dead snags. The information was shared with the TWRA, DOE, and the USFWS.

TDEC also documented all three federally-listed bat species with acoustic surveys on the Parcel ED-5 (Horizon Center), in bat roost trees such as white oaks, shagbark hickory, and dead snags. The information was shared with the TWRA, DOE, the City of Oak Ridge, and the USFWS.

Table 3.1.3.2.1 2015 ORR Acoustic Monitoring Sites

Site	Site description	Detector type
ORR-01	Haw Ridge Park/embayment area/Red Shore Trail	Anabat Express
ORR-02	Haw Ridge Park/embayment area/Red Shore Trail	Anabat Express
ORR-03	Haw Ridge Park/pond/Red Shore Trail	Anabat Express
ORR-04	Haw Ridge Park/embayment area/East Shore Trail	Anabat Express
ORR-05	Spallation Neutron Source (SNS) sedimentation pond	Anabat SD-2
ORR-06	TWRA deer checking station	Anabat SD-2
ORR-07	East Tennessee Technology Park (ETTP) ponds near Clinch River (ORNL-sponsored public outreach program: amphibians/bats)	Anabat SD-2
ORR-08	East Tennessee Technology Park (ETTP) open field (ORNL-sponsored public outreach program: amphibians/bats)	Anabat SD-2
ORR-09	East Fork Poplar Creek (EFPC 22.0 km)/riparian zone near Old Ben Franklin Motors	Anabat Express
ORR-10	East Fork Poplar Creek (EFPC 21.0 km)/edge of riparian zone adjacent to open field	Anabat Express
ORR-11	City of Oak Ridge Water Treatment Plant/ DOE Patrol Road	Anabat SD-2
ORR-12	Gum Hollow access road / limestone outcropping with small cave	Anabat SD-2
ORR-13	Hembree Marsh/White Wing Scrap Yard area	Anabat Express
ORR-14	ETTP proposed airport site/forested ridge north of Oak Ridge Turnpike	Anabat SD-2
ORR-15	ETTP proposed airport site/small pond near Oak Ridge Turnpike	Anabat Express

Site	Site description	Detector type
ORR-16	ETTP proposed airport site/RSI Brightfield adjacent to Oak Ridge Turnpike	Anabat SD-2
ORR-17	ETTP proposed airport site/open field near office building	Anabat Express
ORR-18	ETTP proposed airport site/forested ridge north of Oak Ridge Turnpike	Anabat Roost Logger
ORR-19	ETTP proposed airport site/wetlands north of Oak Ridge Turnpike (forested ridge)	SM3BAT
ORR-20	ETTP proposed airport site/forested ridge north of Oak Ridge Turnpike	SM2BAT
ORR-21	ETTP proposed airport site/forested ridge and abandoned water-storage(?) tank north of Oak Ridge Turnpike	Anabat Express
ORR-22	ETTP proposed airport site/wetlands north of Oak Ridge Turnpike (forested ridge)	Anabat SD-2
ORR-23	ETTP proposed airport site/pine plantation north of Oak Ridge Turnpike	Anabat Express
ORR-24	ETTP proposed airport site/wetlands north of Oak Ridge Turnpike (forested ridge)	SM2BAT
ORR-25	ETTP proposed airport site/groundwater monitoring well access trail near Blair Road	Anabat Express
ORR-26	ETTP proposed airport site/pipeline ROW near George Jones Church (off Blair Road)	SM3BAT
ORR-27	Horizon Center/EFPC 6.3 km sampling station/riparian zone on limestone bluff	Anabat SD-2
ORR-28	ED-5 parcel/wetlands in forest near East Fork Poplar Creek	Anabat Express
ORR-29	ED-5 parcel/East Fork Poplar Creek shoreline embankment	Anabat Express
ORR-30	ED-5 parcel/gas pipeline right-of-way (ROW)	SM3BAT
ORR-31	ED-5 parcel/gas pipeline right-of-way (ROW)	SM2BAT
ORR-32	Horizon Center/open field near Horizon Center office building	Anabat SD-2
ORR-33	Horizon Center/open area at gated dead end road	Anabat SD-2
ORR-34	ED-5 parcel/interior forested area along old access trail	Anabat Express
ORR-35	ED-5 parcel/interior forested area	SM2BAT
ORR-36	Horizon Center/open area at gated dead end road	Anabat SD-2
ORR-37	ED-5 parcel/EFPC access road	Anabat SD-2
ORR-38	ED-5 parcel/EFPC access road	SM2BAT
ORR-39	ED-5 parcel/EFPC access road	Anabat SD-2
ORR-40	ED-5 parcel/EFPC access road near limestone karst feature	SM3BAT
ORR-41	ED-5 parcel/EFPC access road	Anabat SD-2
ORR-42	ED-5 parcel/EFPC access road	SM3BAT
ORR-43	ED-5 parcel/interior forested ridge area	Anabat Express
ORR-44	ED-5 parcel/interior forested ridge area	Anabat SD-2
ORR-45	ED-5 parcel/large wet land area near EFPC access road	Anabat Express
ORR-46	Freels Bend Wildlife Management Area/Rainy Knob karst feature	Anabat SD-2
ORR-47	Freels Bend Wildlife Management Area/limestone bluff	Anabat Express
ORR-48	Freels Bend Wildlife Management Area/limestone karst feature	Anabat Express

**Table 3.1.3.2.2 Summary
of ORR Bat Species Detected
During 2015 Acoustic Surveys**

BAT SPECIES	BAT CALLS
COTO	67
EPFU	1653
LABO	1652
LACI	2589
LANO	2364
MYAU	18
MYGR	1010
MYLE	20
MYLU	498
MYSE	49
MYSO	74
NYHU	1024
PESU	1230
TABR	319
UNKN	2249

Table 3.1.3.2.3 Bat Species Codes

BAT SPECIES CODES
COTO = <i>Corynorhinus townsendii</i> (Townsend's big-eared bat)
EPFU = <i>Eptesicus fuscus</i> (big brown bat)
LABO = <i>Lasiurus borealis</i> (eastern red bat)
LACI = <i>Lasiurus cinereus</i> (hoary bat)
LANO = <i>Lasionycteris noctivagans</i> (silver-haired bat)
MYAU = <i>Myotis austroriparius</i> (southeastern bat)
MYGR = <i>Myotis grisescens</i> (gray bat, endangered)
MYLE = <i>Myotis leibii</i> (eastern small-footed bat)
MYLU = <i>Myotis lucifugus</i> (little brown bat)
MYSE = <i>Myotis septentrionalis</i> (northern long-eared bat, threatened)
MYSO = <i>Myotis sodalis</i> (Indiana bat, endangered)
NYHU = <i>Nycticeius humeralis</i> (evening bat)
PESU = <i>Perimyotis subflavus</i> (tri-colored bat; eastern pipistrelle)
TABR = <i>Tadarida brasiliensis</i> (Mexican free-tailed bat)
UNKN = unknown (bat detected but not identified)

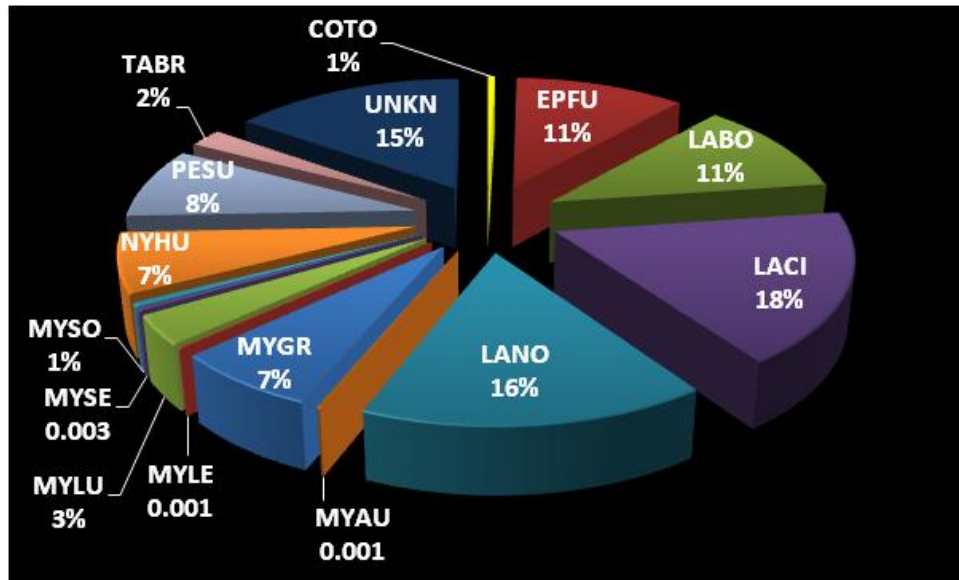


Figure 3.1.3.2.1 Distribution of combined 2015 ORR bat calls

Below are a map and figure with locations of the stations and the representation of the bat species identified. This was completed for all 48 stations and can be found in Appendix A.

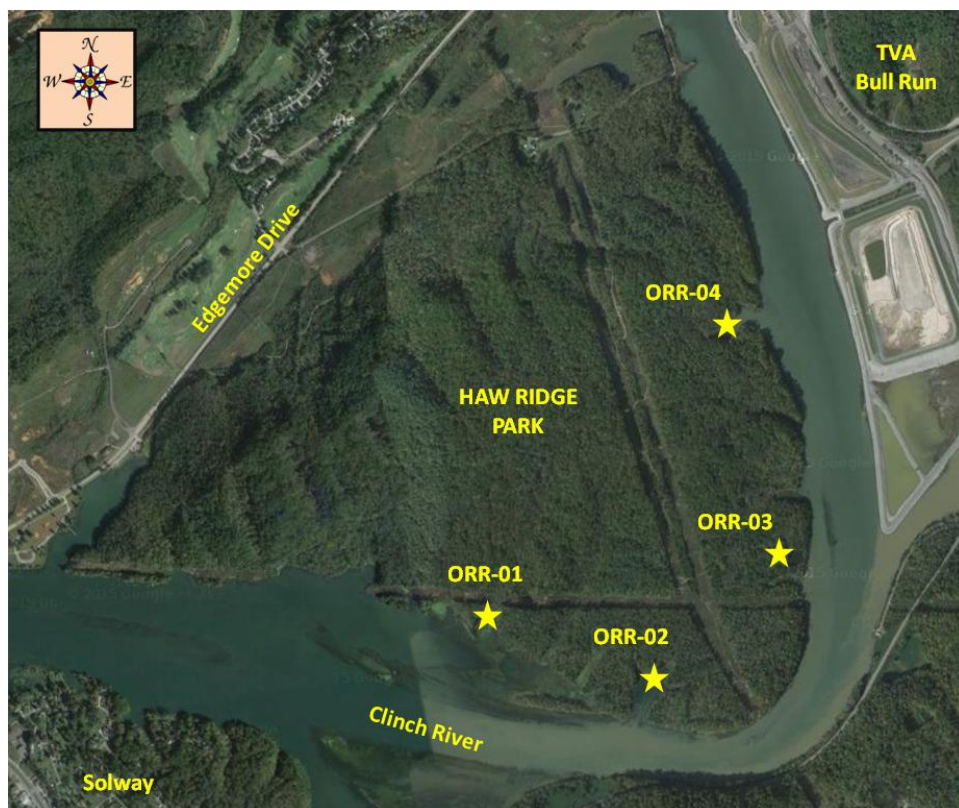


Figure 3.1.3.2.2 Haw Ridge Park acoustic survey map

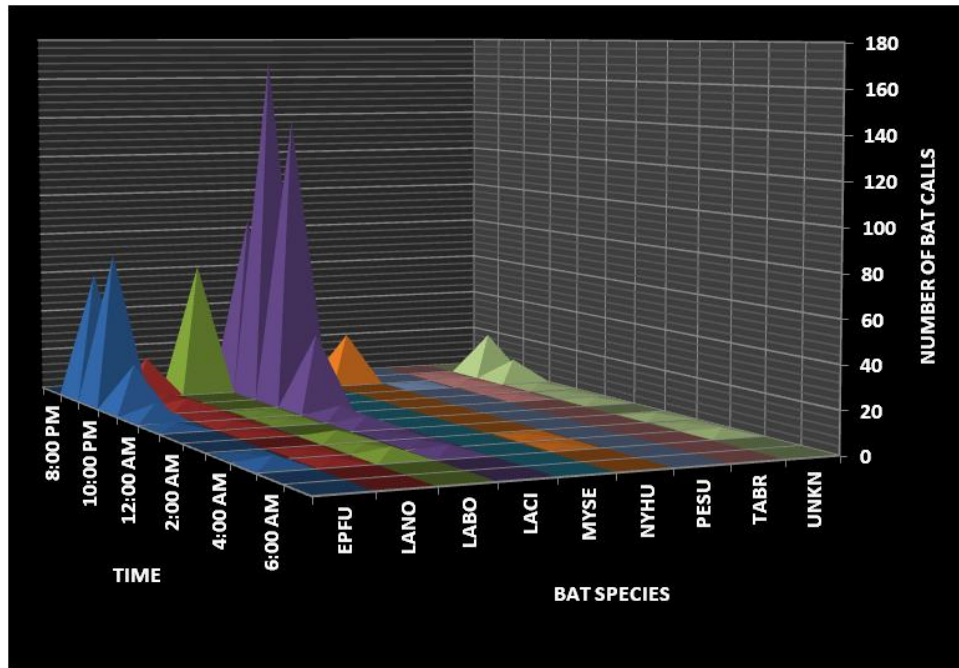


Figure 3.1.3.2.3 ORR-01-Haw Ridge Park / Red Shore Trail embayment area

Figure 3.1.3.2.3 Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).

BAT MONITORING LOCATIONS AND SPECIES IDENTIFIED

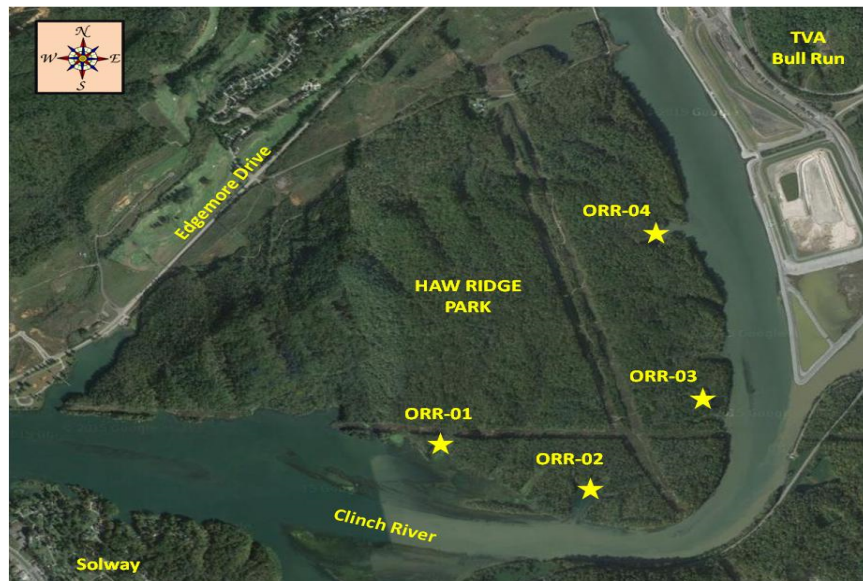
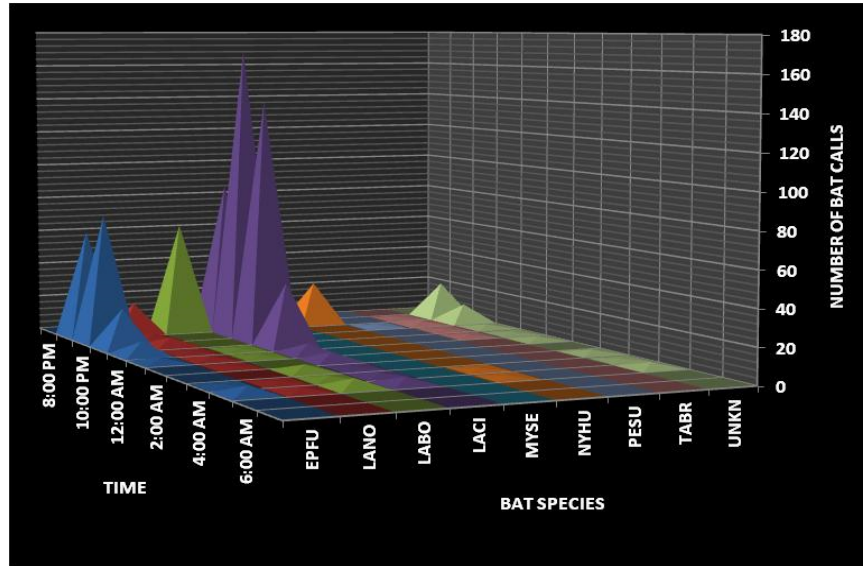
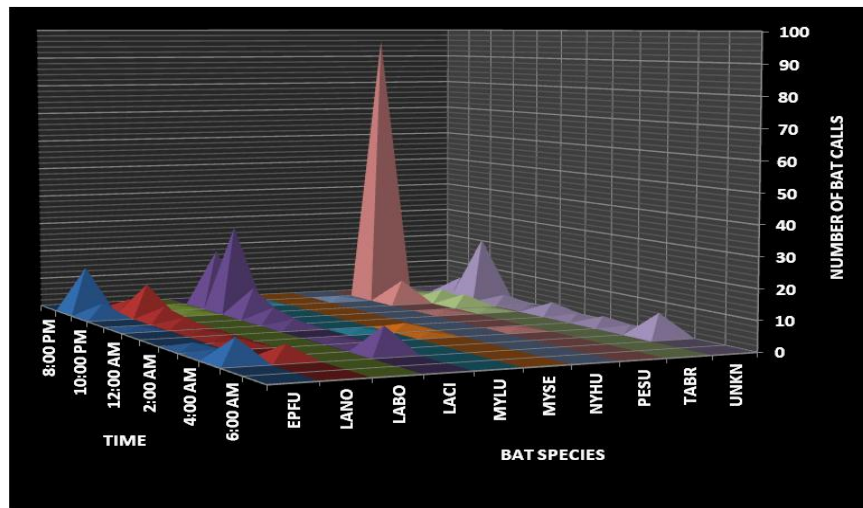


Figure 3.1.3.2.2 Haw Ridge Park acoustic survey map



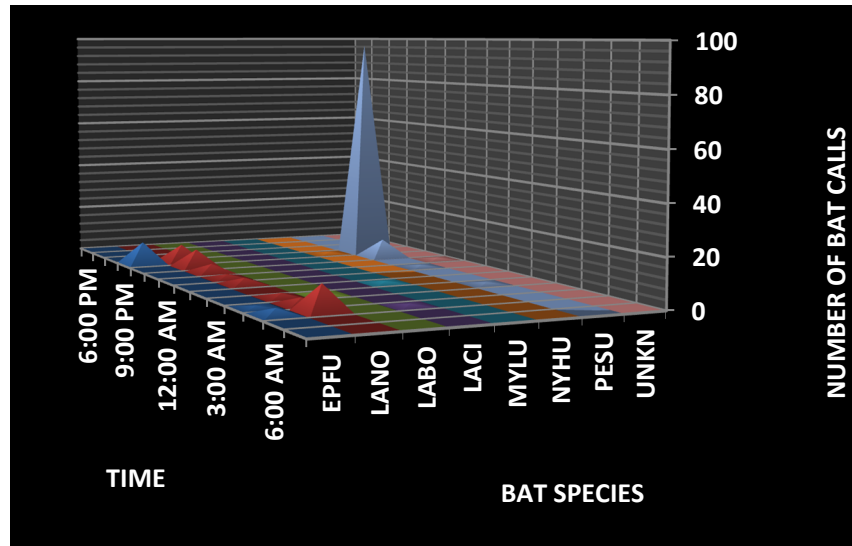
ORR-01 Haw Ridge Park/Red Shore Trail embayment area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



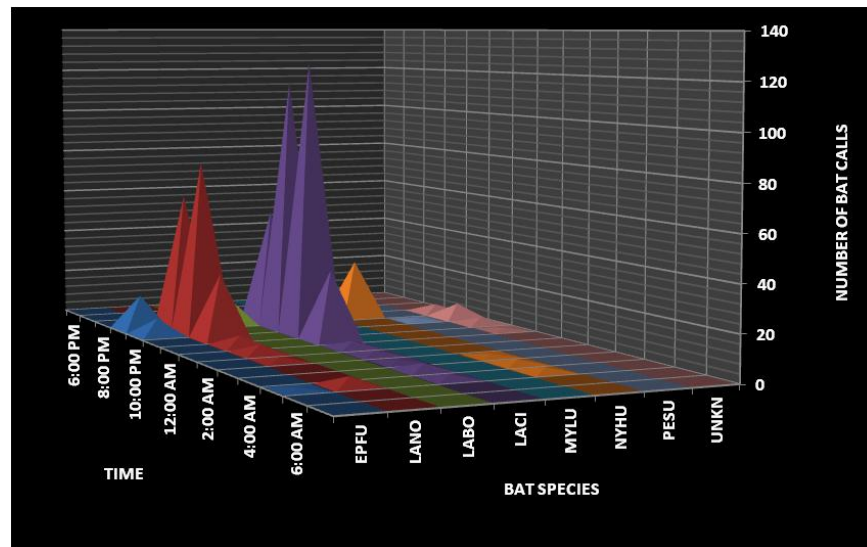
ORR-02 Haw Ridge Park/Red Shore Trail embayment area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



ORR-03 Haw Ridge Park/Red Shore Trail pond

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-04 Haw Ridge Park/East Shore Trail embayment

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).

BETHEL VALLEY (ORNL)

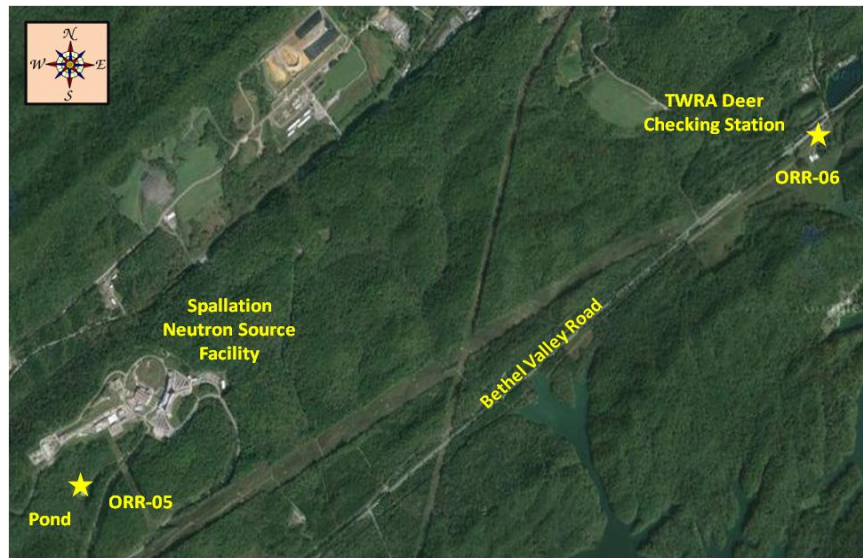
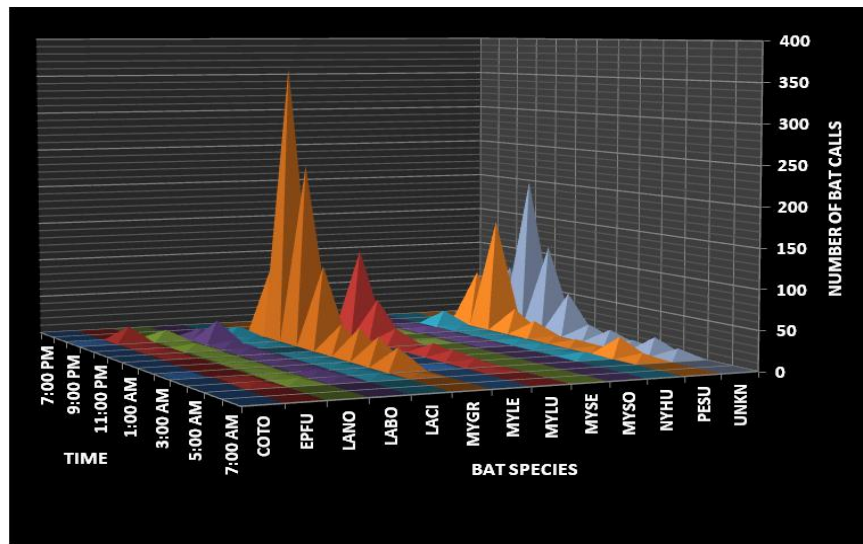
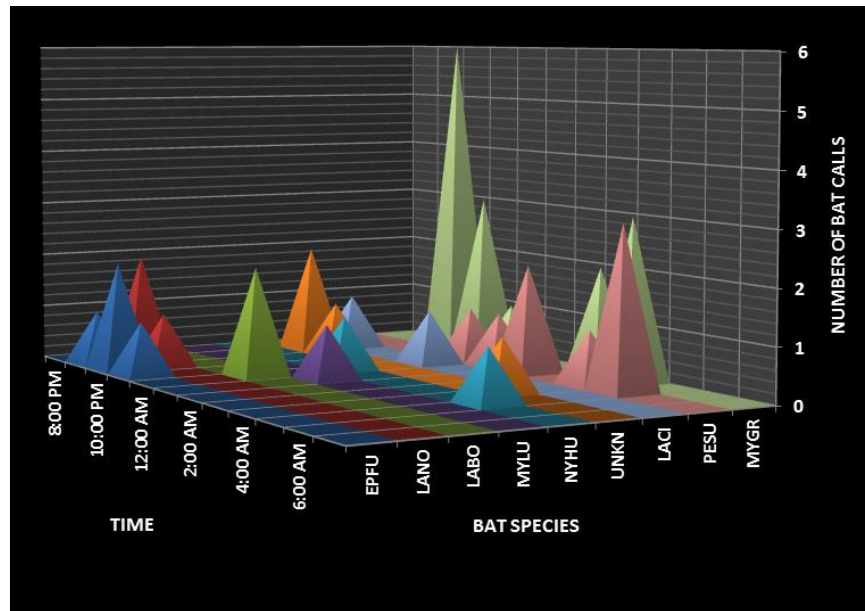


Figure 3.1.3.2.3 Bethel Valley (Oak Ridge National Laboratory) acoustic survey map



ORR-05 Spallation Neutron Source (SNS) sedimentation pond

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLE = *Myotis leibii* (eastern small-footed bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



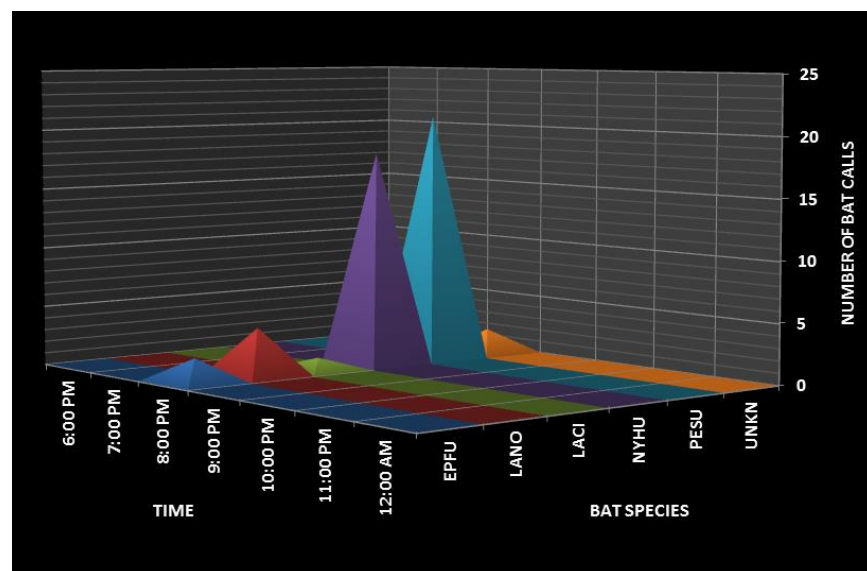
ORR-06 ORR TWRA deer checking station

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).

ETTP WEST PONDS AREA

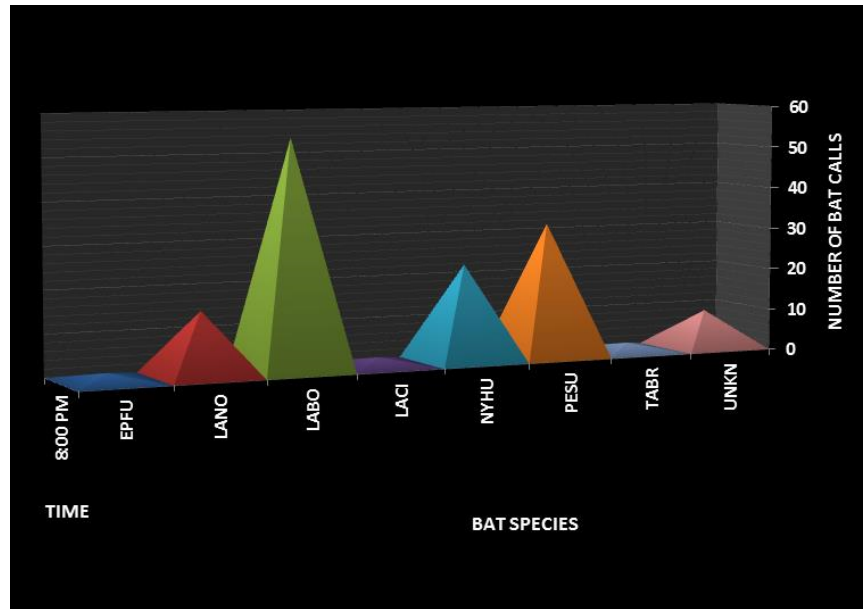


Figure 3.1.3.2.4 East Tennessee Technology Park (ETTP) west ponds area



ORR-07 ETTP west ponds area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



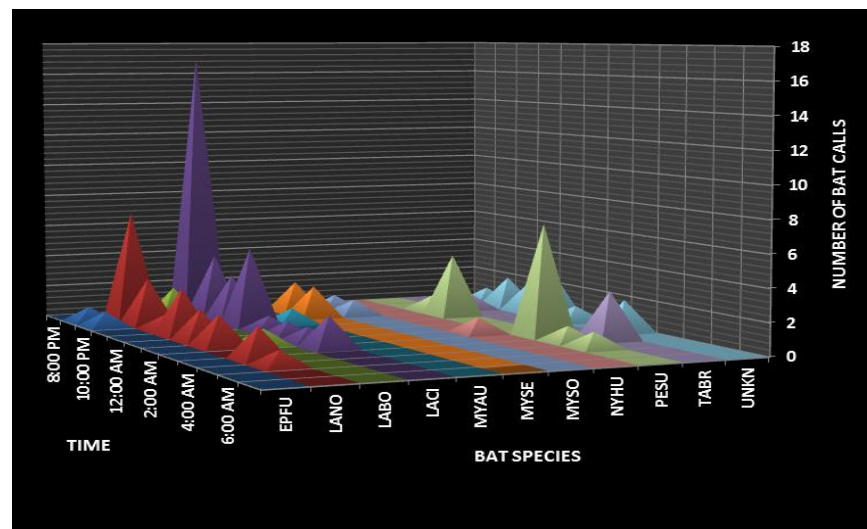
ORR-08 ETPP open field area (near west ponds)

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).

UPPER EAST FORK POPLAR CREEK

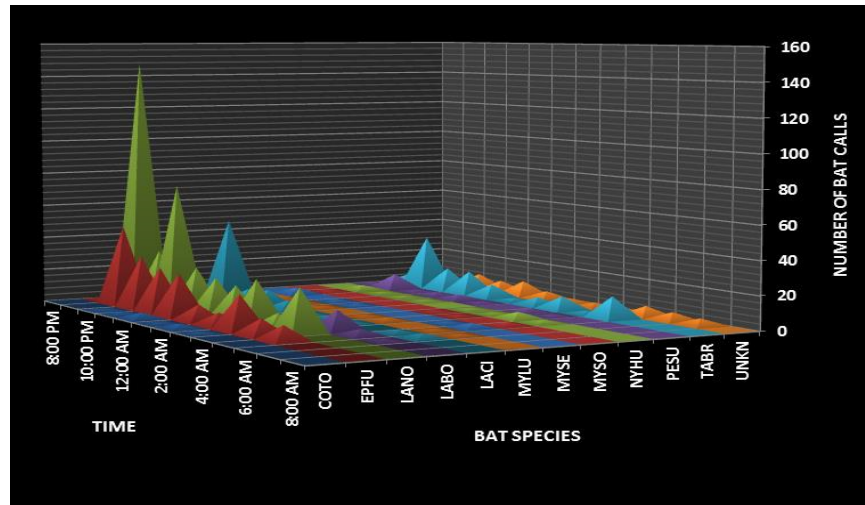


Figure 3.1.3.2.5 Upper East Fork Poplar Creek (EFPC) area



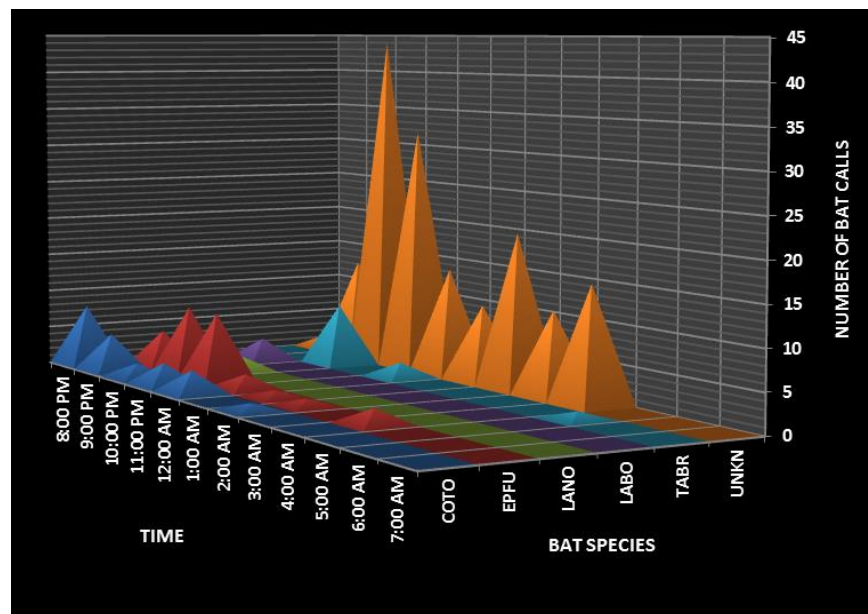
ORR-9 Upper EFPC km 22.0/riparian zone

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



ORR-10 Upper EFPC km 21.0/open field adjacent to riparian zone

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



ORR-11 Upper EFPC/City of Oak Ridge Water Treatment Plant

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).

WHITE WING SCRAP YARD AREA

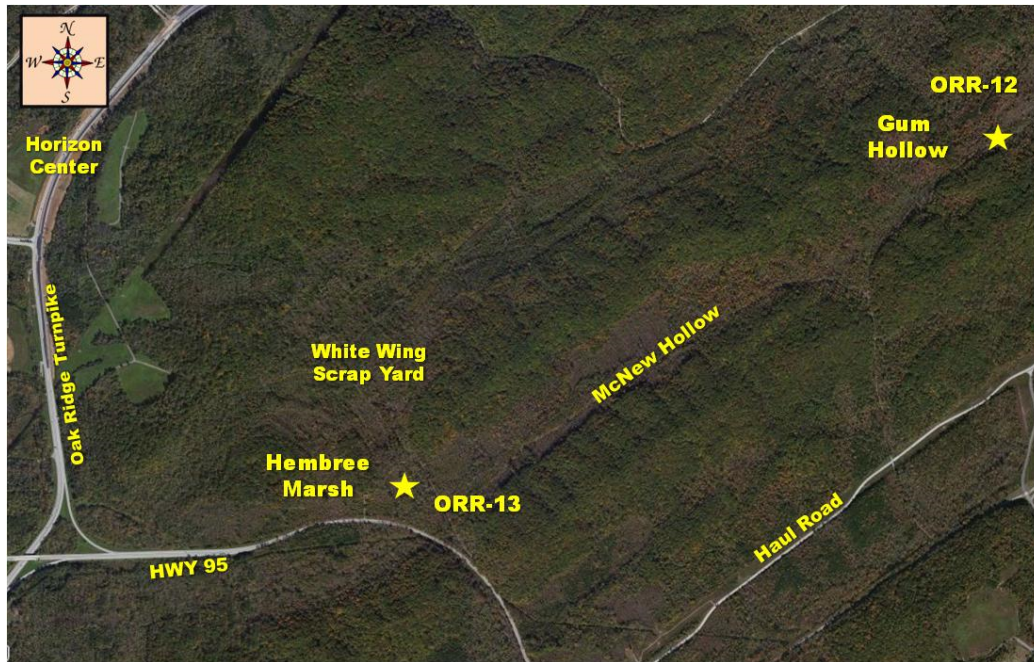
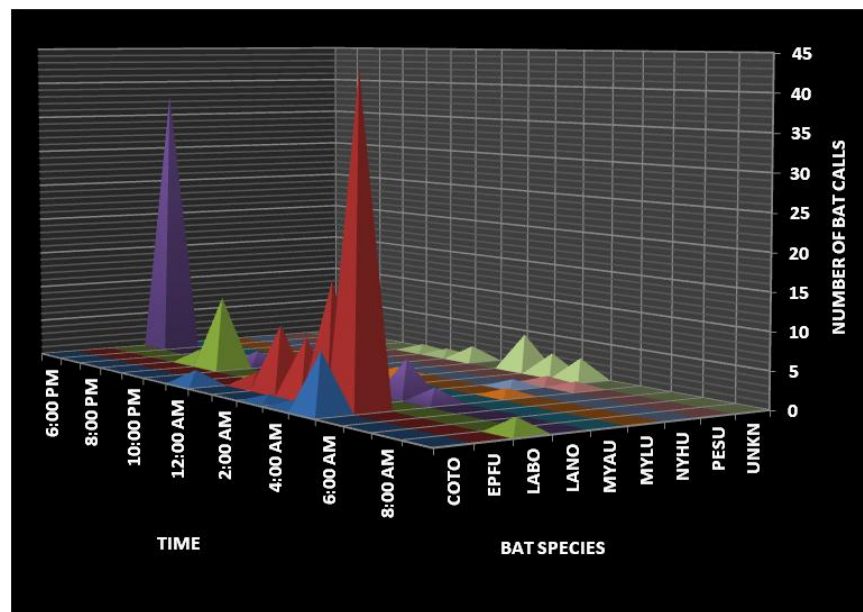
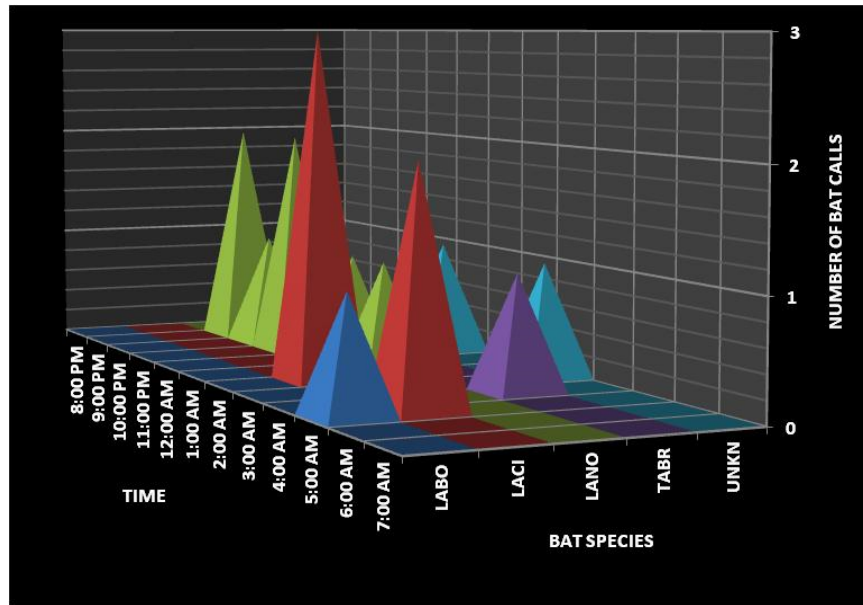


Figure 3.1.3.2.6 White Wing Scrap Yard (WWSY) area



ORR-12 Gum Hollow access road near spring/White Wing Scrap yard area

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-13 Hembree Marsh/White Wing Scrap Yard area

Bat species codes: LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).

ETTP PROPOSED AIRPORT AREA

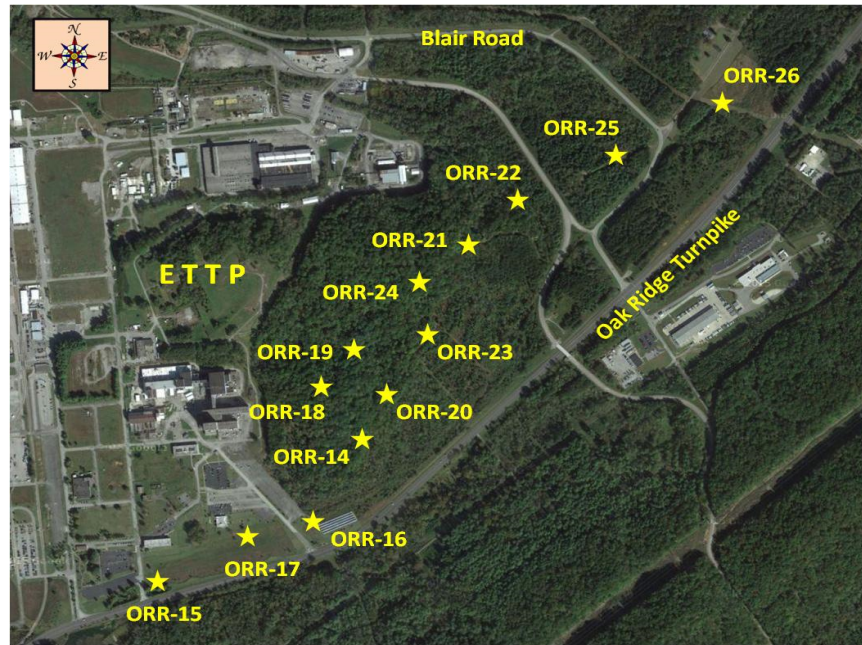
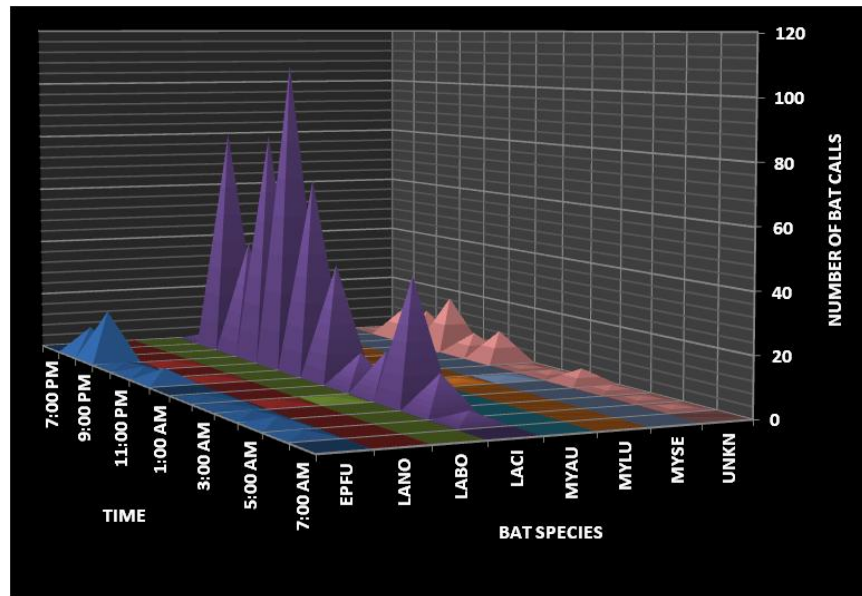
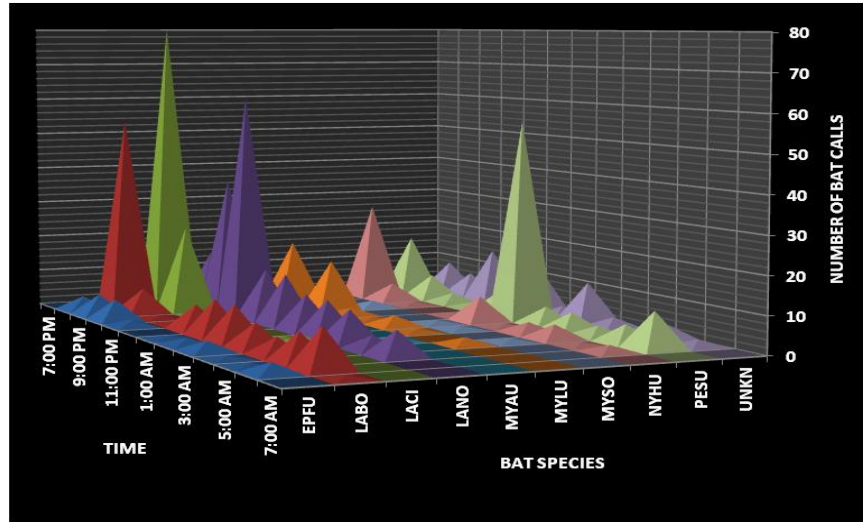


Figure 3.1.3.2.7 ETTP proposed airport site



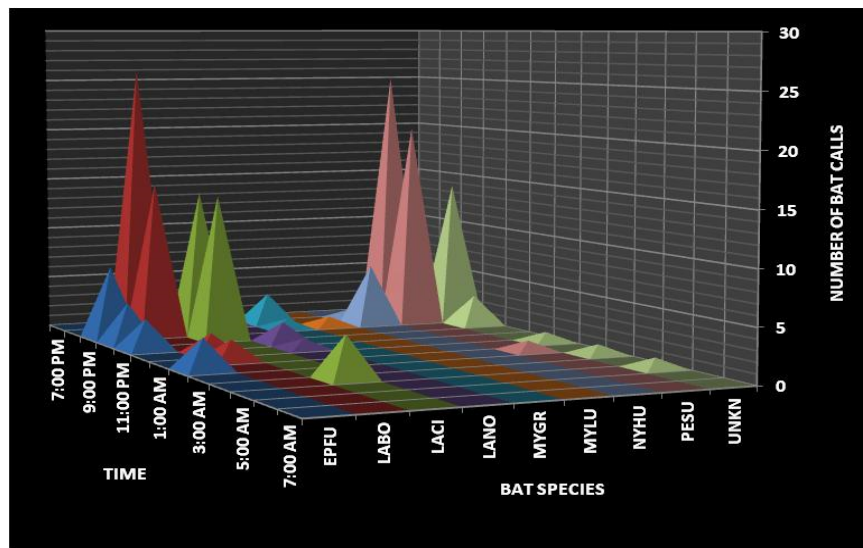
ORR-14 ETTP airport site/forested ridge north of Oak Ridge Turnpike

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



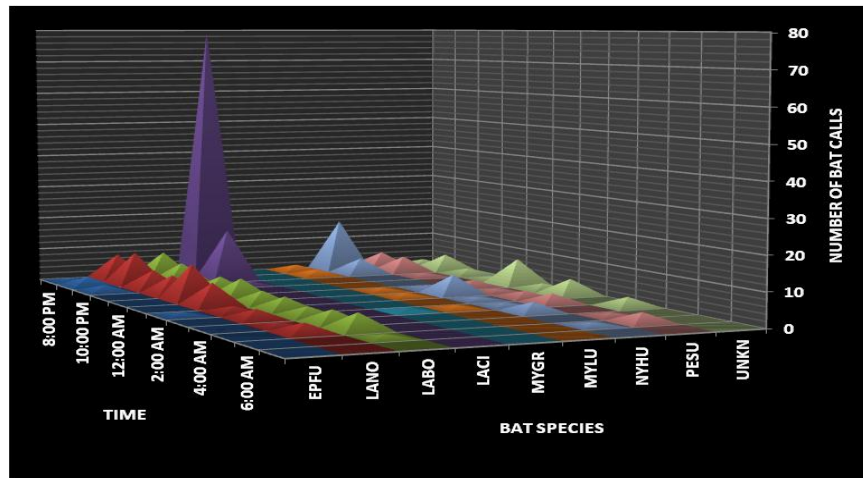
ORR-15 ETP airport site/small pond near turnpike

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



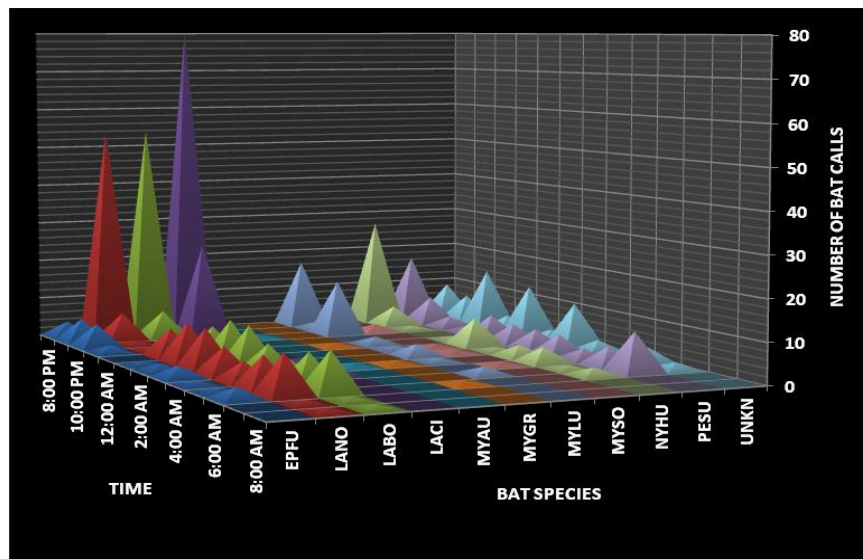
ORR-16 ETP airport site/RSI Brightfield near Oak Ridge Turnpike

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



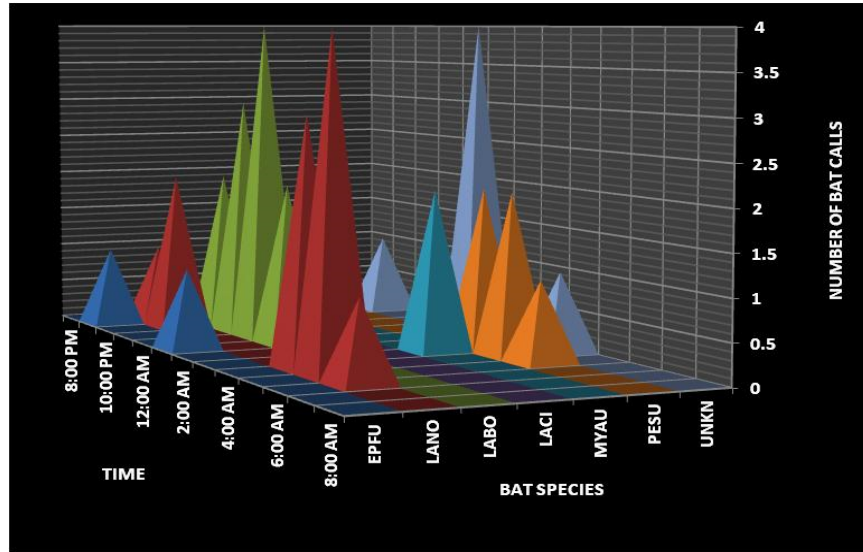
ORR-17 ETTP airport site/office building near open field

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



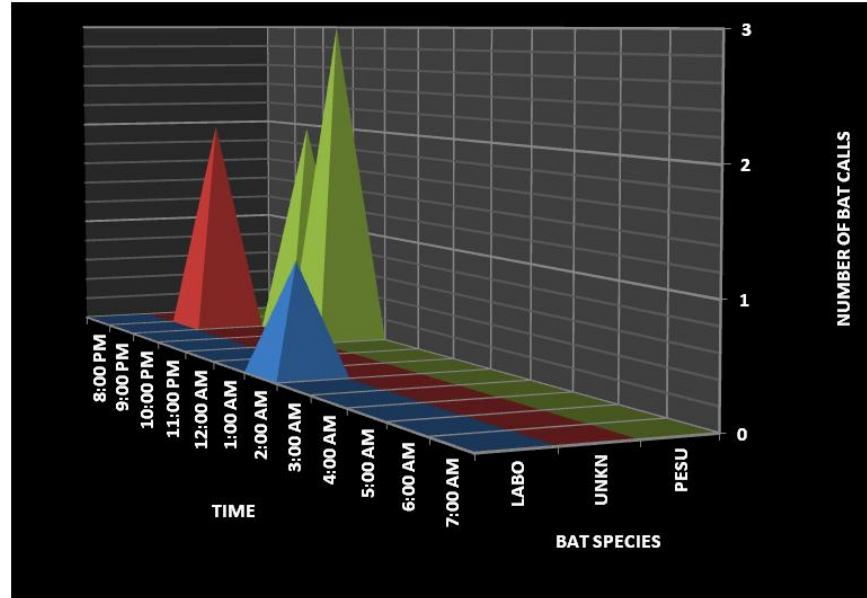
ORR-18 ETTP airport site/forested ridge north of Oak Ridge Turnpike

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), TABR = *Tadarida brasiliensis* (Mexican free-tailed bat), UNKN = unknown (bat detected but not identified).



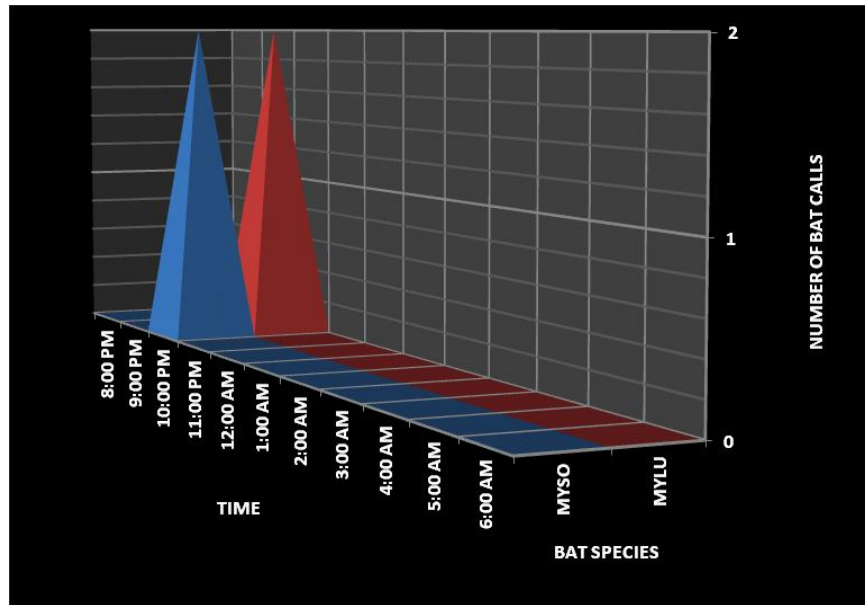
ORR-19 ETPP airport site/wetlands in low-lying section of forested ridge

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



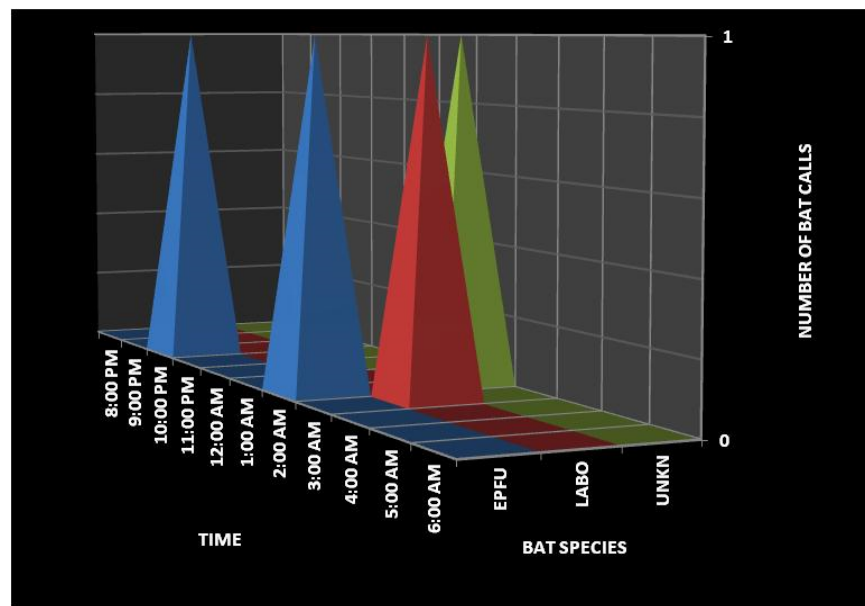
ORR-20 ETPP airport site/forested ridge north of Oak Ridge Turnpike

Bat species codes: LABO = *Lasiurus borealis* (eastern red bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



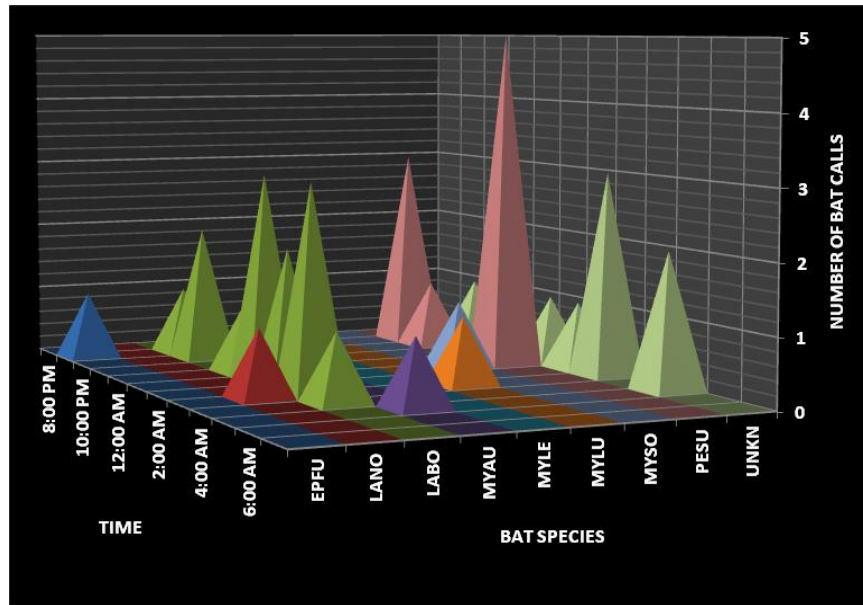
ORR-21 ETPP airport site/large abandoned water tank on forested ridge

Bat species codes: MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered).



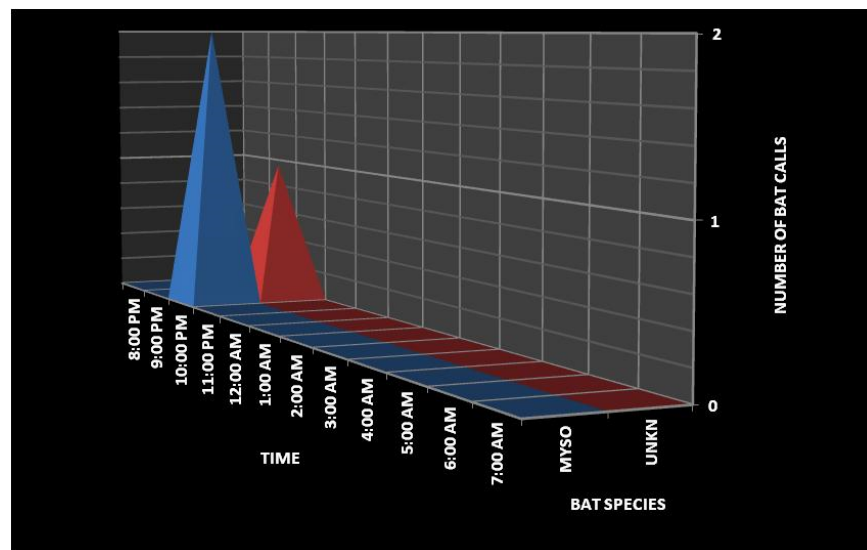
ORR-22 ETPP airport site/wetlands in low-lying section of forested ridge

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), UNKN = unknown (bat detected but not identified).



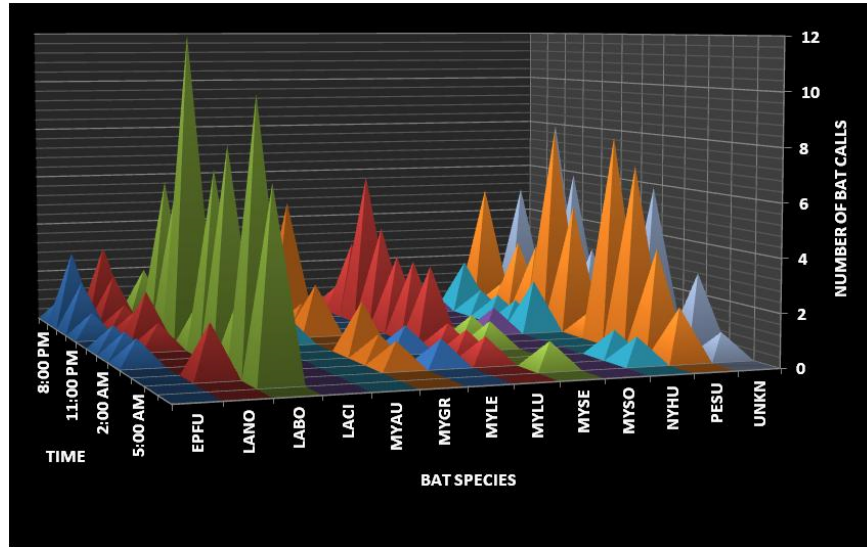
ORR-23 ETTP airport site/pine plantation north of Oak Ridge Turnpike

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYLE = *Myotis leibii* (eastern small-footed bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



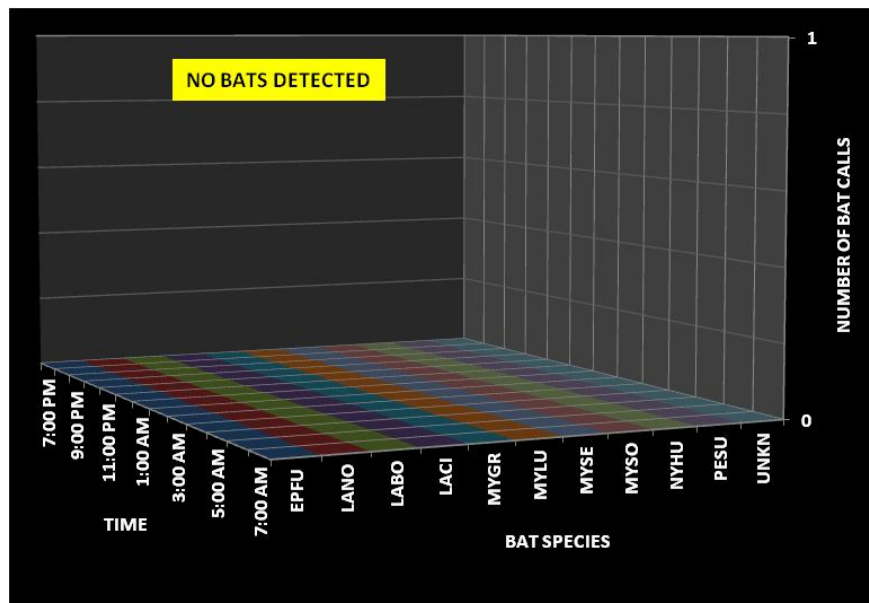
ORR-24 ETTP airport site/wetlands in low-lying section of forested ridge

Bat species codes: MYSO = *Myotis sodalis* (Indiana bat, endangered), UNKN = unknown (bat detected but not identified).



ORR-25 ETTP airport site/groundwater well access trail near Blair Road

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYAU = *Myotis austroriparius* (southeastern bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLE = *Myotis leibii* (eastern small-footed bat), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-26 ETTP airport site/pipeline ROW near George Jones Church

PARCEL ED-5 AREA

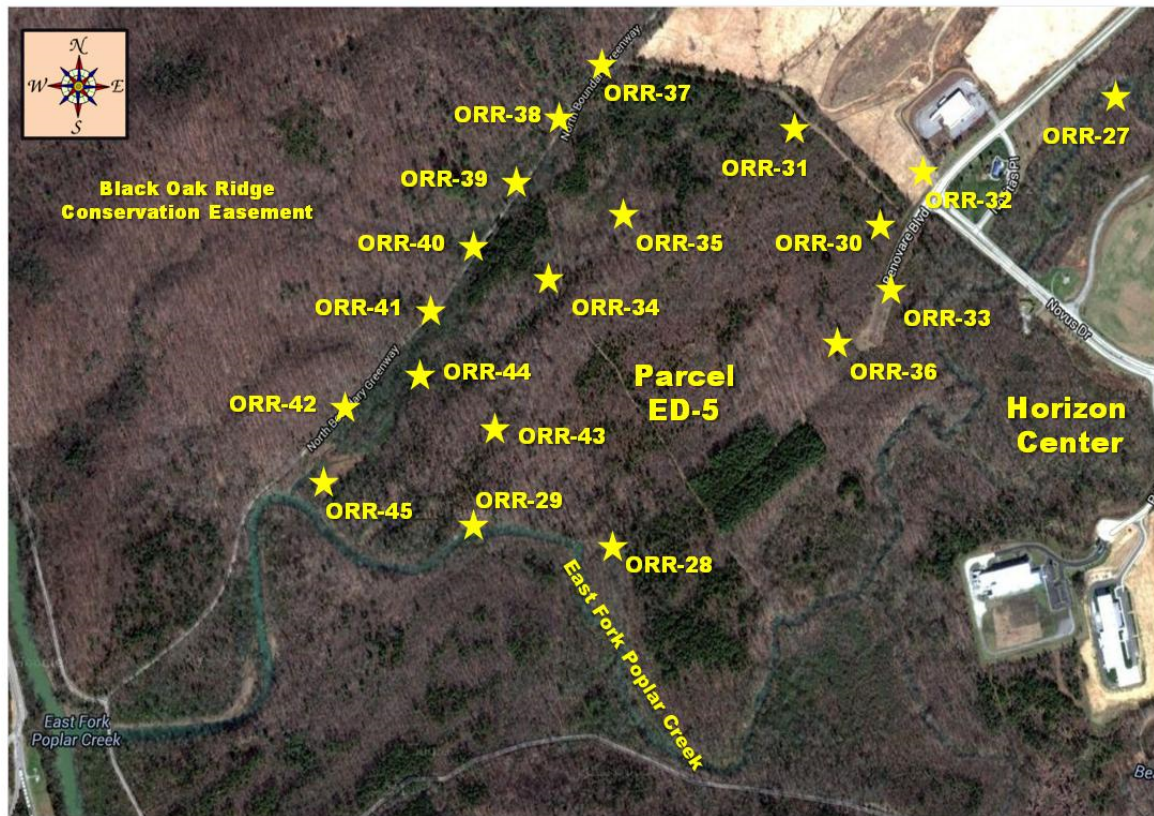
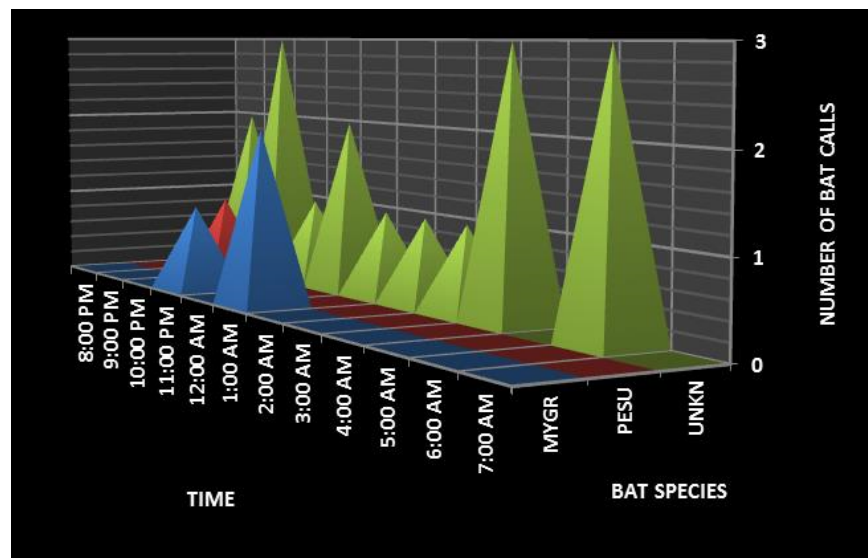
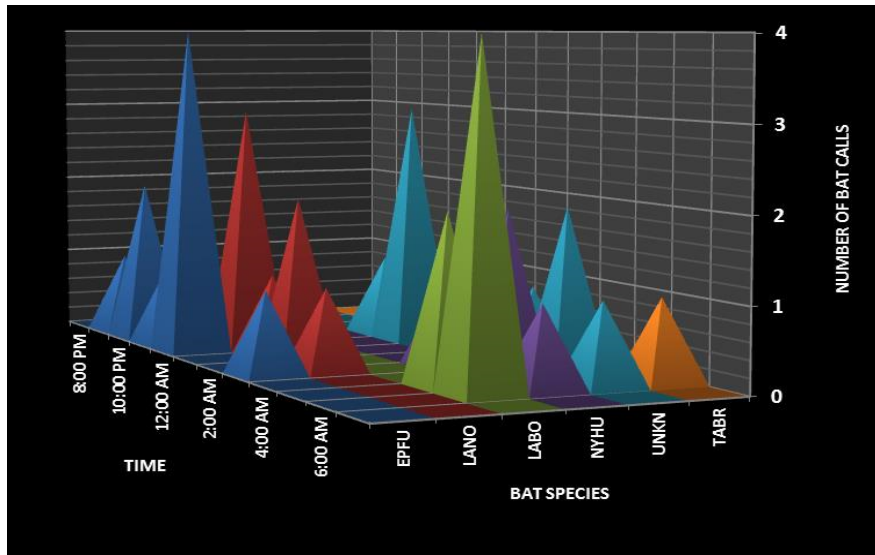


Figure 3.1.3.2.8 Parcel ED-5 (proposed area to be cleared of trees)



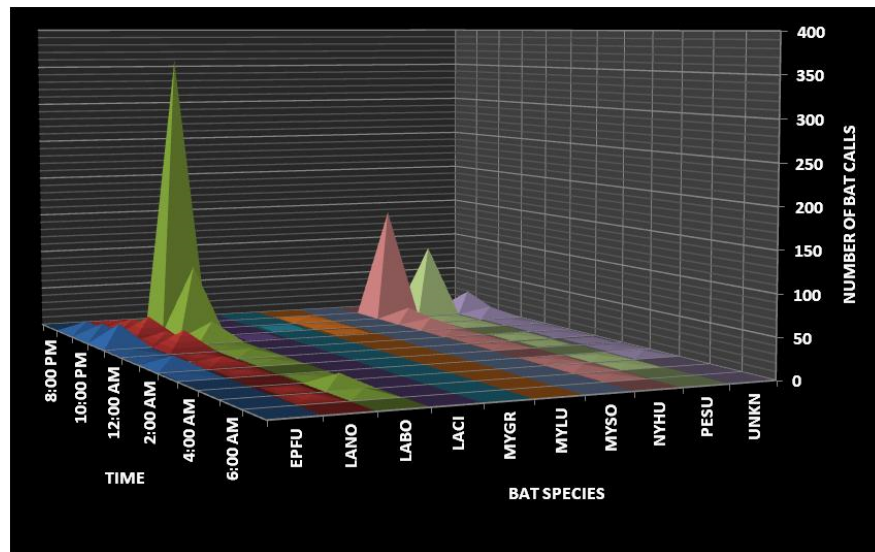
ORR-27 Horizon Center/EFPC 6.3 km/ limestone bluff w/white oaks

Bat species codes: MYGR = *Myotis grisescens* (gray bat, endangered), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



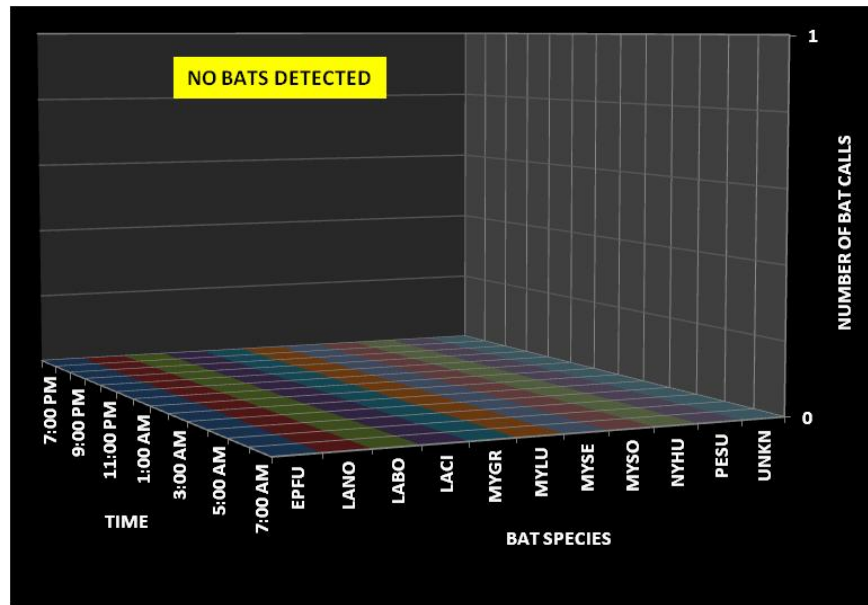
ORR-28 ED-5 /wetlands in forest near East Fork Poplar Creek

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).

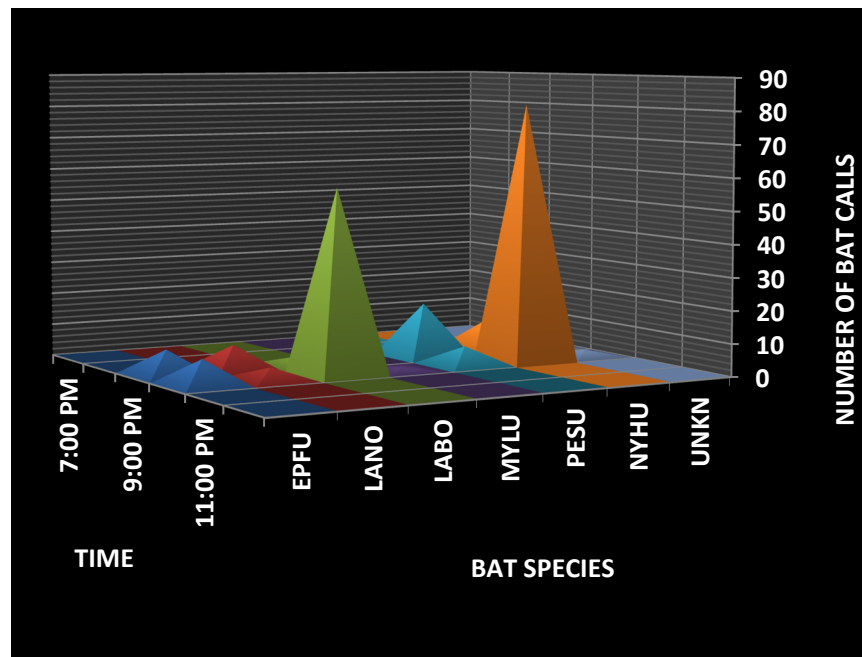


ORR-29 ED-5 parcel/East Fork Poplar Creek shoreline embankment

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).

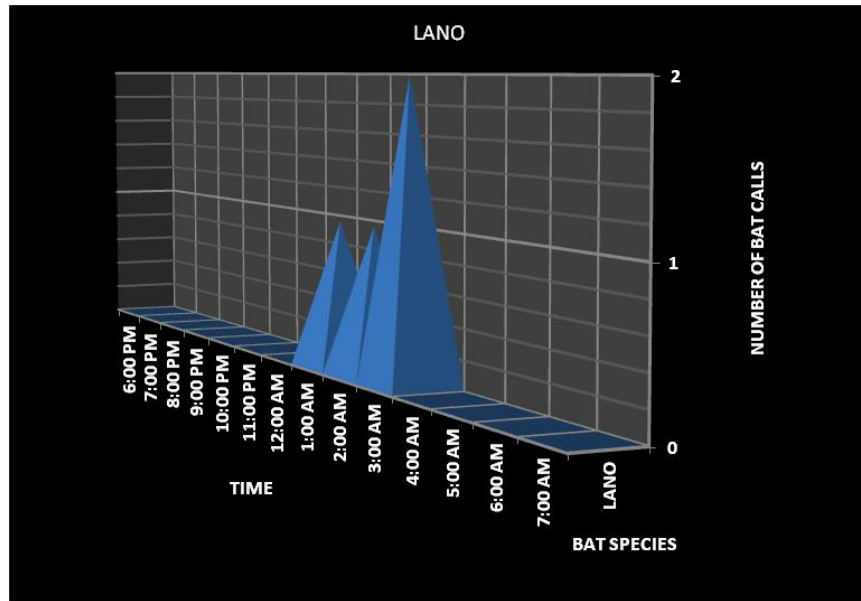


ORR-30 ED-5 parcel/gas pipeline right-of-way (ROW).



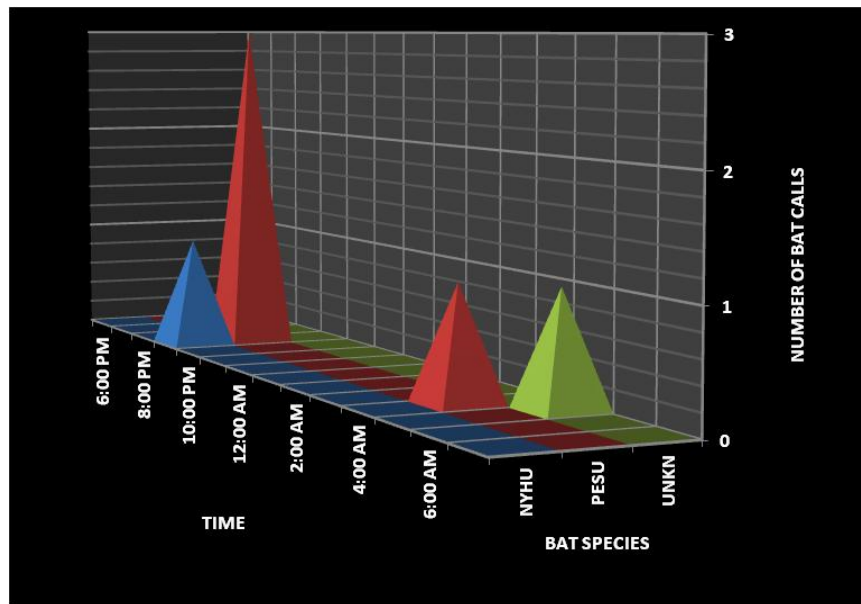
ORR-31 ED-5 parcel/gas pipeline right-of-way (ROW)

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



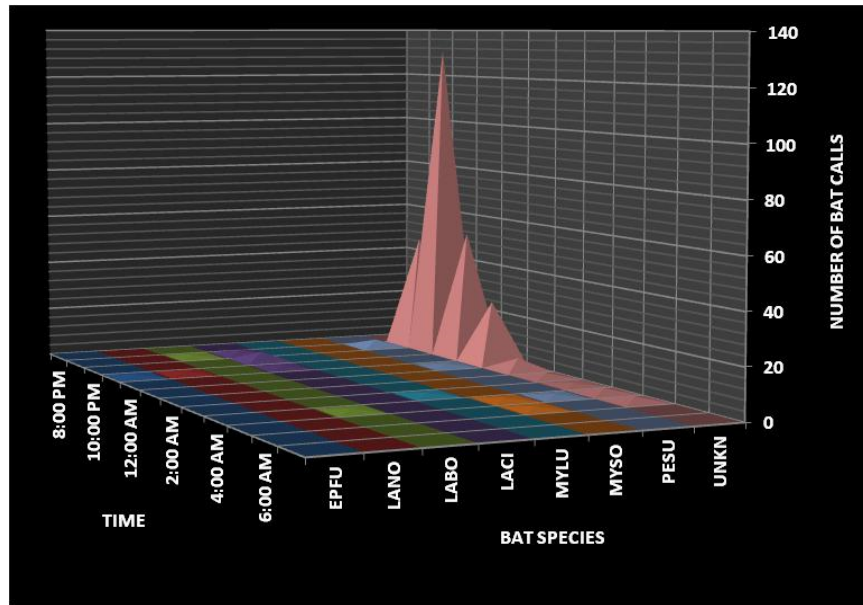
ORR-32 Horizon Center/open field near Horizon Center office building

Bat species codes: LANO = *Lasionycteris noctivagans* (silver-haired bat)



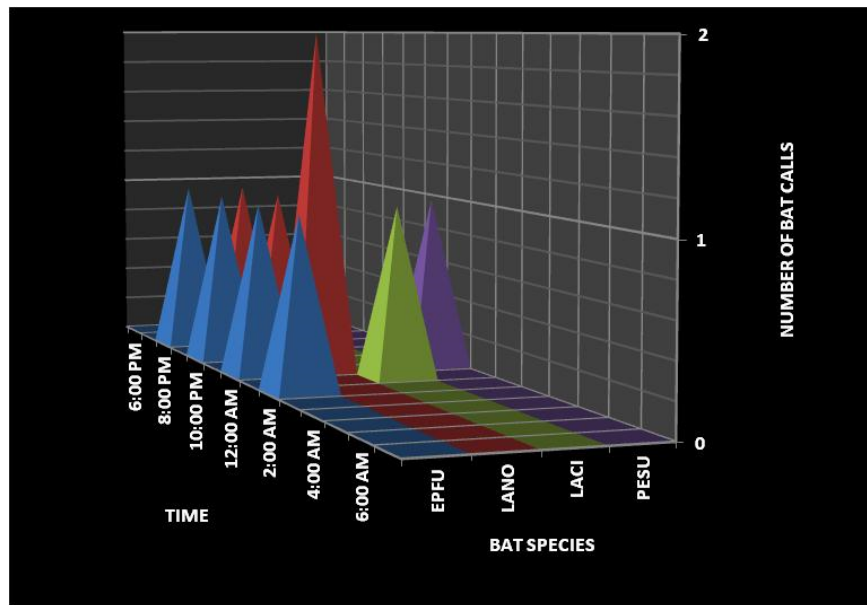
ORR-33 Horizon Center/open area at gated dead-end road

Bat species codes: NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



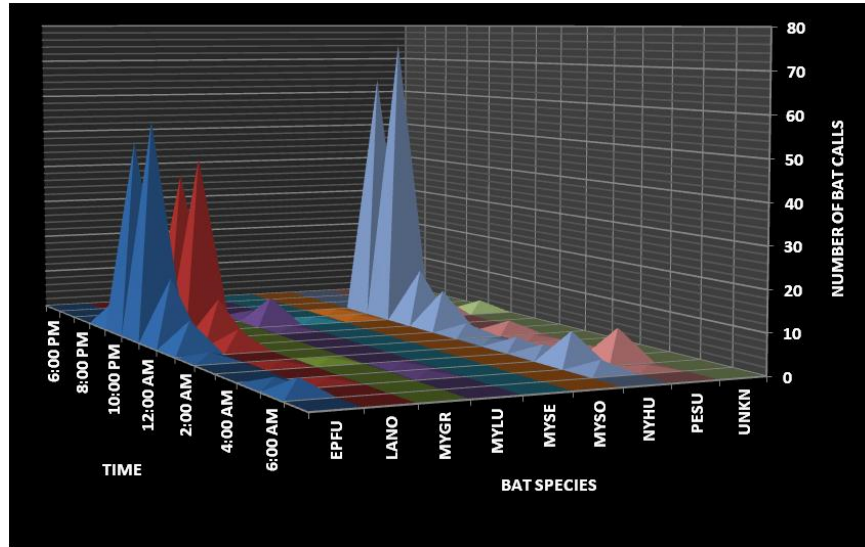
ORR-34 ED-5 parcel/interior forested area along old access trail

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



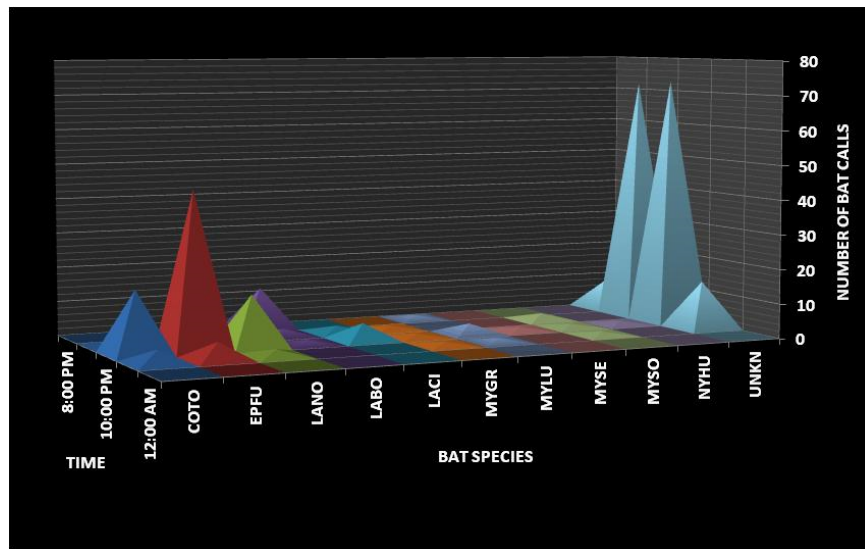
ORR-35 ED-5 parcel/interior forested area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle).



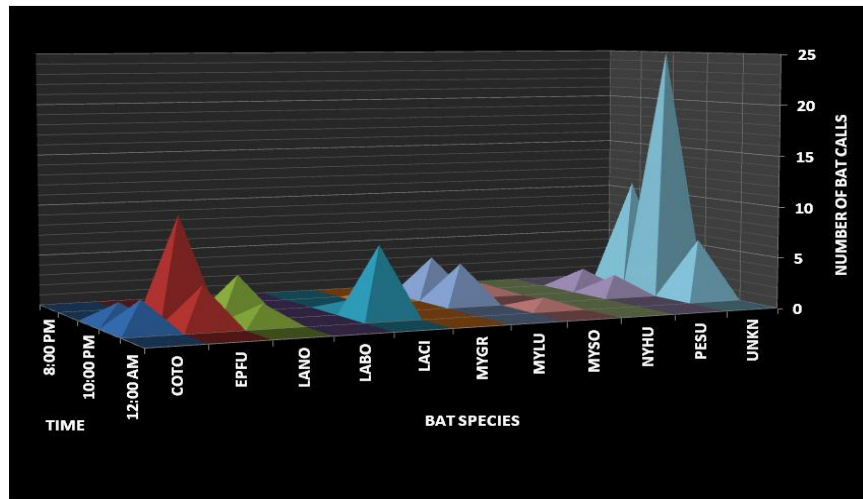
ORR-36 Horizon Center/open area at gated dead-end road

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



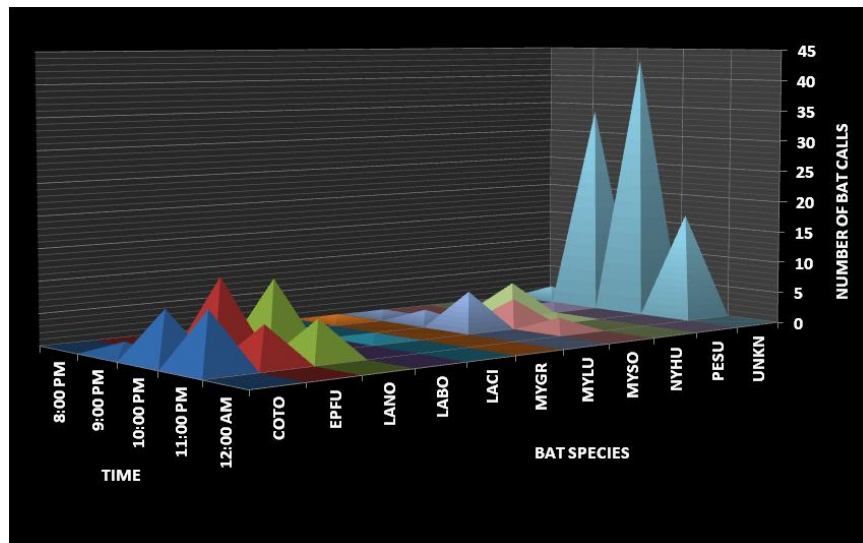
ORR-37 ED-5 parcel/EFPC access road

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), UNKN = unknown (bat detected but not identified).



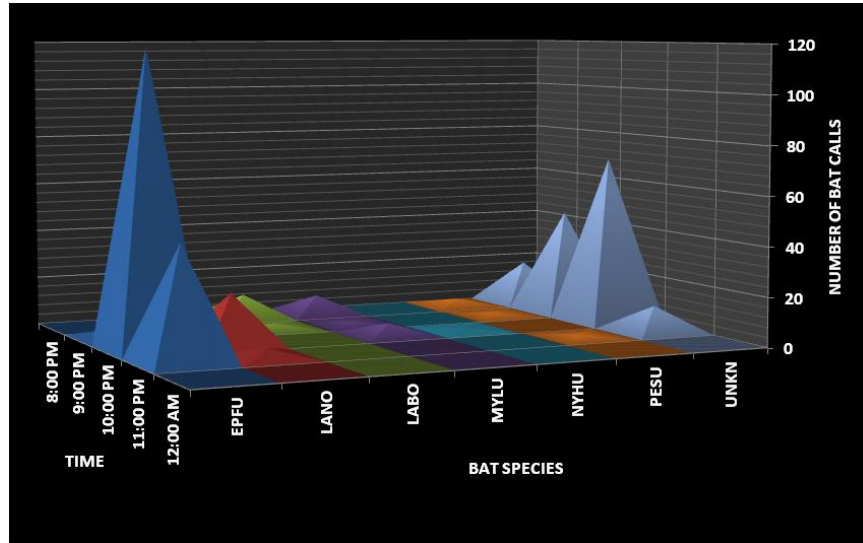
ORR-38 ED-5 parcel/EFPC access road

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



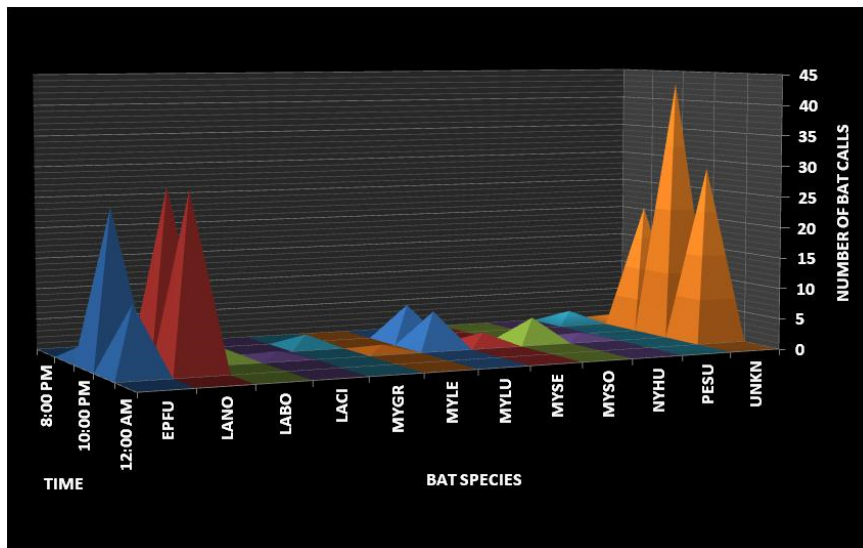
ORR-39 ED-5 parcel/EFPC access road

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



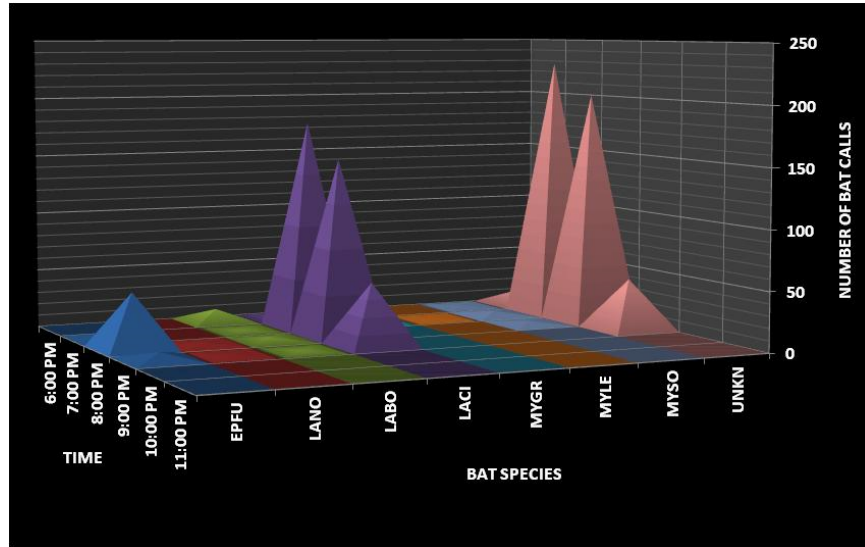
ORR-40 ED-5 parcel/EFPC access road

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLU = *Myotis lucifugus* (little brown bat), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



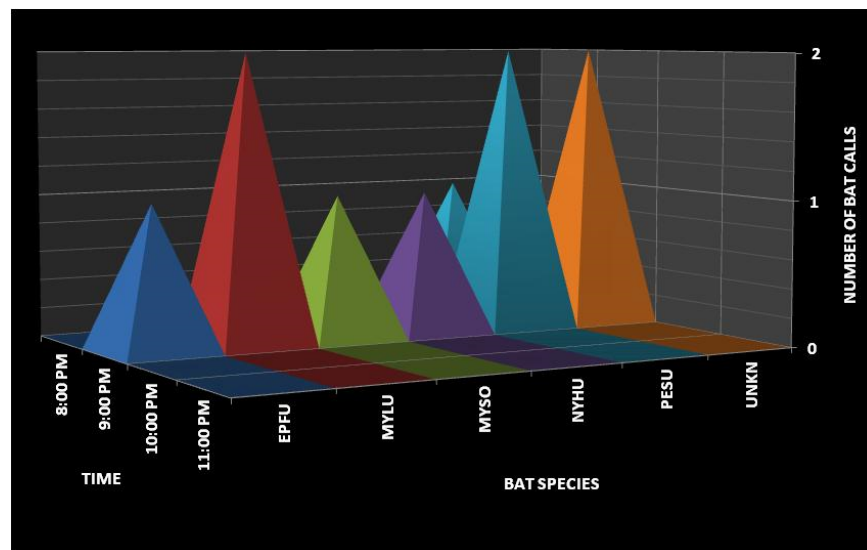
ORR-41 ED-5 parcel/EFPC access road

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLE = *Myotis leibii* (eastern Small-footed bat), MYLU = *Myotis lucifugus* (little brown bat), MYSE = *Myotis septentrionalis* (northern long-eared bat, threatened), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



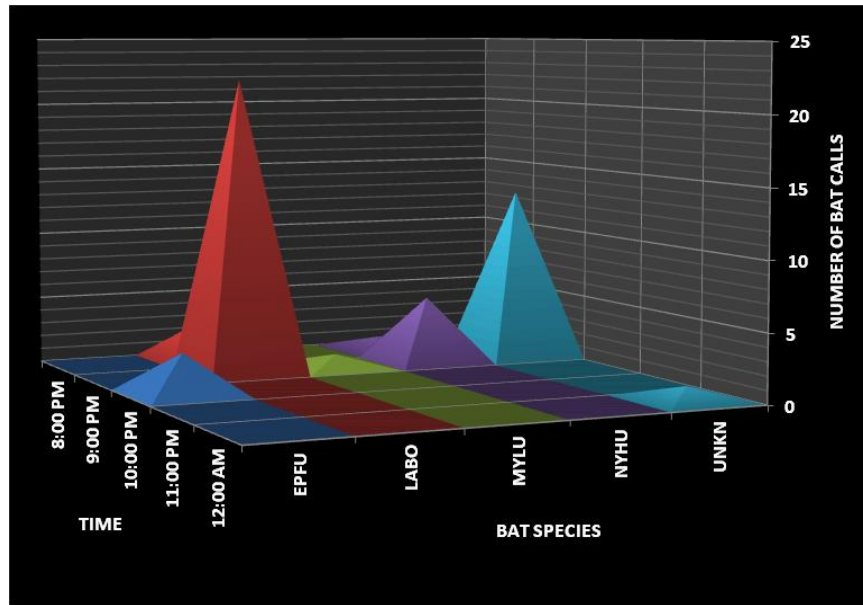
ORR-42 ED-5 parcel/EFPC access road

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), MYLE = *Myotis leibii* (eastern Small-footed bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), UNKN = unknown (bat detected but not identified).



ORR-43 ED-5 parcel/interior forested ridge area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-44 ED-5 parcel/interior forested ridge area

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), MYLU = *Myotis lucifugus* (little brown bat), MYSO = *Myotis sodalis* (Indiana bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), UNKN = unknown (bat detected but not identified).

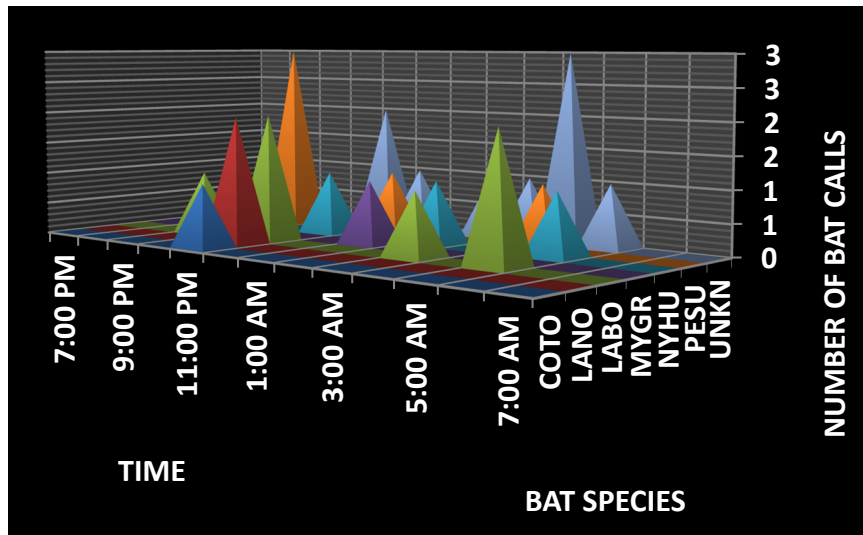


Figure ORR-45 ED-5 parcel/large wetland area near EFPC access road

COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYGR = *Myotis grisescens* (gray bat, endangered), NYHU = *Nycticeius humeralis* (evening bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).

FREELS BEND WILDLIFE MANAGEMENT AREA

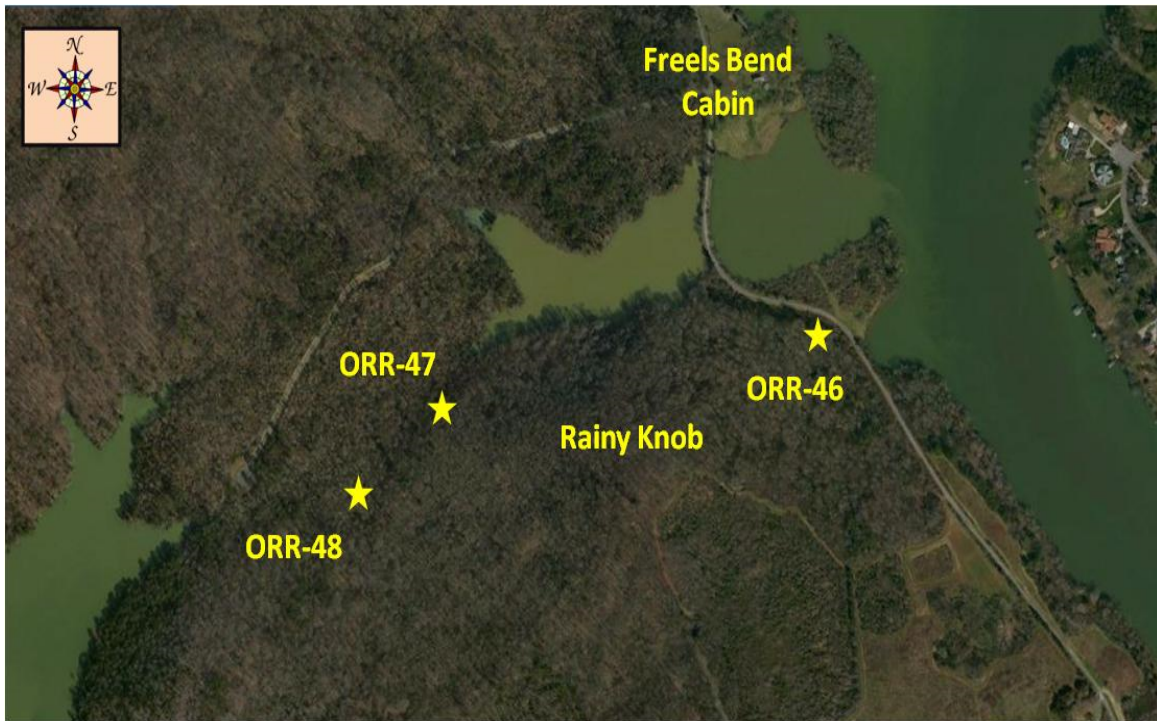
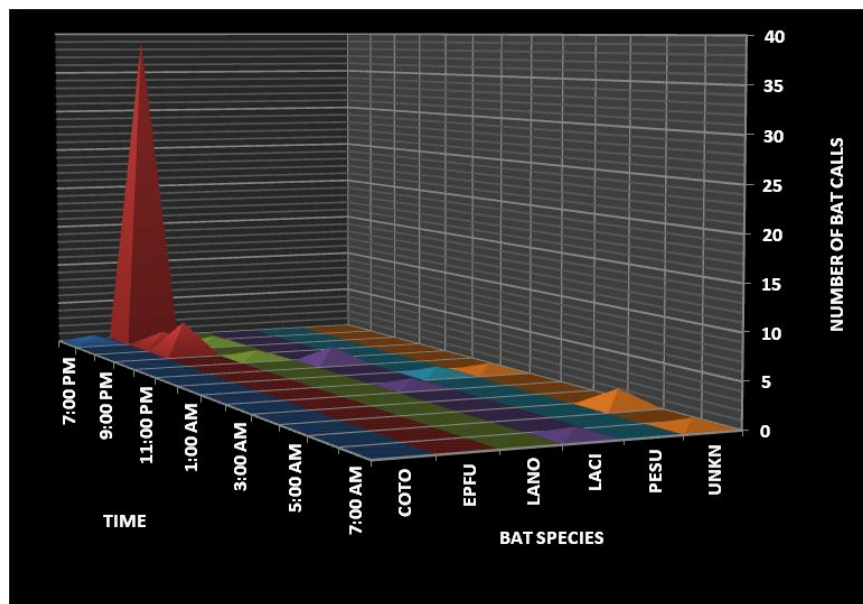
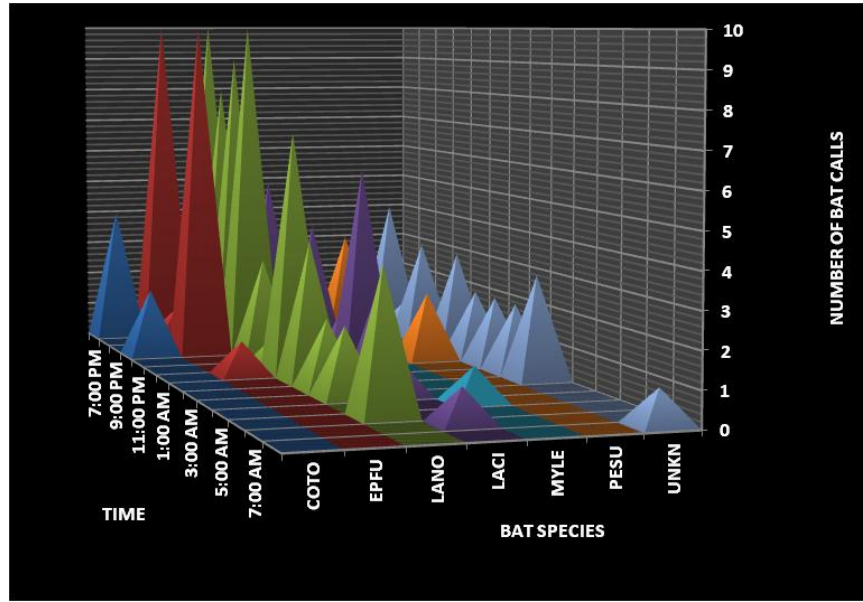


Figure 3.1.3.2.9 Freels Bend Wildlife Management Area (TWRA Three Bends)



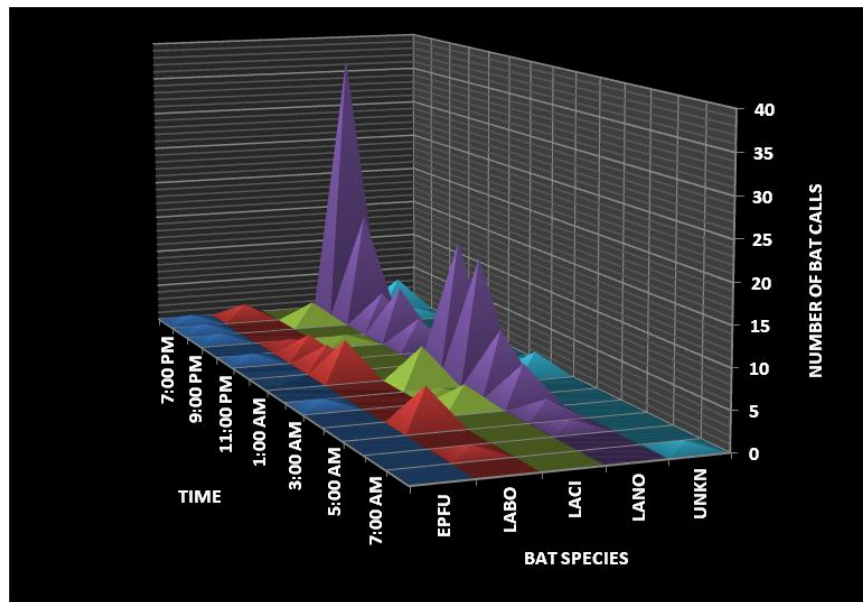
ORR-46 Freels Bend Wildlife Management Area/Rainy Knob karst feature

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-47 Freels Bend Wildlife Management Area/limestone bluff

Bat species codes: COTO = *Corynorhinus townsendii* (Townsend's big-eared bat), EPFU = *Eptesicus fuscus* (big brown bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), MYLE = *Myotis leibii* (eastern small-footed bat), PESU = *Perimyotis subflavus* (tri-colored bat; eastern pipistrelle), UNKN = unknown (bat detected but not identified).



ORR-48 Freels Bend Wildlife management Area/limestone karst feature

Bat species codes: EPFU = *Eptesicus fuscus* (big brown bat), LABO = *Lasiurus borealis* (eastern red bat), LACI = *Lasiurus cinereus* (hoary bat), LANO = *Lasionycteris noctivagans* (silver-haired bat), UNKN = unknown (bat detected but not identified).

CONCLUSIONS

TDEC monitored 48 sites on the ORR with acoustic detectors through the course of 37 dusk to dawn surveys. Over 226,000 bat call files were collected over 209 survey nights. Approximately 12,567 bats were identified to species; 2,249 were not identified. Threatened and endangered bats were detected at 25 of 48 sites surveyed. Information will be used to facilitate the protection of these species.