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Header 1

List View

General Information | Contact | Default Values | Discount | Document Information

Procurement Folder: 547217

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

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Vendor ID: 000000165530 

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Legal Name: COPPERHEAD ENVIRONMENTAL CONSULTING INC


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Solicitation Description: Addendum 1 - Bat Survey- Camp Dawson  

Total of Header Attachments: 1

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Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

**State of West Virginia
 Solicitation Response**

Proc Folder : 547217
Solicitation Description : Addendum 1 - Bat Survey- Camp Dawson
Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2019-02-25 13:30:00	SR 0603 ESR02251900000003873	1

VENDOR
000000165530 COPPERHEAD ENVIRONMENTAL CONSULTING INC

Solicitation Number: CRFQ 0603 ADJ1900000009

Total Bid : \$87,000.00 **Response Date:** 2019-02-25 **Response Time:** 08:17:01

Comments:

FOR INFORMATION CONTACT THE BUYER
 Stephanie L Gale
 (304) 558-8801
 stephanie.l.gale@wv.gov

Signature on File	FEIN #	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Bat Survey-Camp Dawson Army Training Site				\$87,000.00

Comm Code	Manufacturer	Specification	Model #
77111507			

Extended Description : Critical Fauna Survey for the Indiana Bat and the Northern Long-Eared Bat per the attached specifications.



COPPERHEAD
ENVIRONMENTAL CONSULTING

Stephanie Gale
Senior Buyer
West Virginia Purchasing Division
2019 Washington Street, East
Charleston, WV 25305

25 February 2019

RE: Bat Survey - Camp Dawson

Ms. Gale,

Copperhead Environmental Consulting, Inc. (Copperhead) is pleased to submit the attached proposal referenced above to provide acoustic surveys, potential follow-up mist-net surveys, and subsequent radio-tracking for federally threatened and endangered (T&E) bats on Camp Dawson. Copperhead's technical expertise with T&E species and our extensive experience working with the military, including familiarity with Camp Dawson specifically, make us ideally suited to serve your environmental service needs.

The 2018 U.S. Fish and Wildlife Service (USFWS) Range-wide Indiana Bat Summer Survey Guidelines specify four phases for summer bat surveys: 1) initial project screening, 2) summer presence/absence surveys (acoustic or mist-netting), 3) mist-net surveys, and 4) radio-telemetry and emergence counts. The following document outlines our implementation plan and cost for phase 2-4. Please do not hesitate to contact me with any questions or clarifications needed.

Sincerely,

Piper Roby
Research Director
plroby@copperheadconsulting.com

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.
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INTRODUCTION

Military installations are responsible for protecting and managing threatened and endangered species on their lands. Camp Dawson Collective Training Area (CDCTA) is a compilation of four tracts totaling 3,797 acres in northeastern West Virginia and is managed by the West Virginia Army National Guard (WVARNG). Specialized surveys for Indiana bats (*Myotis sodalis*) and northern long-eared bats (*Myotis septentrionalis*) have been conducted in the past, with positive confirmation of northern long-eared bat presence and likely Indiana bat presence within portions of the property. To comply with U. S. Fish and Wildlife Service (USFWS) requirements, Camp Dawson (CD) is requesting a proposal to survey for these two federally-listed species and to characterize how they are using the property.

STUDY PLAN

Task 1 – Pre-Work Meeting

Within 15 days of the contract being signed, Copperhead personnel will meet with CD on-site to discuss field visits, use of necessary materials, scheduling, and any other logistics needed to successfully complete the project.

Task 2 – Summer Survey Work Plan

Based on discussions at the pre-work meeting, a summer survey work plan will be developed for the field portion of the project. The survey work plan will outline the proposed study methodologies, data management, report structure, and proposed project work schedule. The survey work plan will also include Curriculum Vitae (CV) for Copperhead staff members. Copperhead will utilize the information in the survey work plan to develop a project study plan that includes all phases of this proposal to be submitted to the USFWS Elkins Field Office for concurrence to proceed with the survey.

Task 3 – Bat Survey

Acoustic Survey

Copperhead proposes the use of acoustic surveys to determine presence/probable absence of Indiana and northern long-eared bats at the CDCTA. Surveys will be implemented in accordance with the USFWS 2018 (or most recent) Range-wide Indiana Bat Summer Survey Guidelines. Based on guidelines for the required number of detector nights (dn) for non-linear projects (8 dn/123 ac of forested habitat) and the estimated amount of forested habitat (3,136 ac), we expect that 208 dn (26 acoustic survey sites/8 dn per site) will be sufficient to provide regulatory compliance for the project. However, a CD-approved survey work plan confirming the required number of dn will be submitted to the USFWS Elkins Field Office prior to the start of field work.

Beginning no sooner than 15 May 2019, Copperhead will deploy 4 AnaBat SD2 or AnaBat Swift (Titley Electronics Pty Ltd, Ballina, NSW Australia) acoustic detectors at each site for 2 nights. Copperhead will utilize 3 teams (2 people per team) to complete the survey in 8 days.

The SD2 detectors have directional microphones while the Swifts will be fitted with omnidirectional microphones. Detectors will be placed in habitats where bats are likely to be foraging/traveling and in areas that increase the likelihood of recording high-quality calls (e.g., forest canopy openings, road or stream corridors with open canopies, ponds, wetlands). Detector microphones will be placed on 12' poles to increase the sample area and reduce distortion from the ground or vegetation. Sampling will begin at sunset and continue until sunrise. Sampling will be repeated if weather conditions become unsuitable for sampling during the first 5 hours of the survey period (i.e., temperatures below 50°F, strong winds, and/or precipitation, or fog). Finger rubs in front of microphones will be used prior to deployment and after pickup at each site to ensure proper functionality. Acoustic data will be downloaded in the field using software associated with the AnaBat system to confirm that each detector recorded the entire survey period.

Data Analysis

The presence of Indiana bats and northern long-eared bats will be determined using the manufacture recommended settings in Kaleidoscope Pro version 4.2.0 (or most recent USFWS approved version) (Wildlife Acoustics, Inc. Maynard, MA). If presence of Indiana or northern long-eared bat is considered unlikely (i.e., Maximum Likelihood Estimation [MLE] has a p-value >0.05) analysis will be complete at that site. If presence of either species is considered likely (i.e., MLE has a p-value ≤0.05), all files from that site/night will be visually examined by Copperhead biologists Steve Samoray or Gregg Janos to confirm or reject this determination.

Follow Up Mist-Net Survey

If Indiana or northern long-eared bats presence is considered likely at a site by both the acoustic software and Copperhead biologist, follow up mist-net surveys will be conducted at up to 10 positive detection sites. The goal of the mist-net effort is to capture bats, attach radio transmitters, and locate day roosts. Based on the 2018 USFWS guidelines, there is no minimum number of net nights (nn) required during this phase. Therefore, Copperhead will implement a minimum of 3 net-sets deployed over 2 calendar nights, for a minimum of 6 nn per positive detection site. Mist-net sites will be located as close as possible to positive detection sites.

Mist-nets will be set to maximize coverage of flight paths used by bats along suitable travel corridors, foraging areas, and/or drinking areas. Weather permitting, mist-nets will be monitored for a minimum of 5 hours after sunset each night. Mist-net surveys cannot be conducted during inclement weather (e.g., rain, strong winds, dense fog, <50°F); during those conditions, mist-net surveys will be suspended and site(s) resurveyed if not completed. Placement of mist-net sites will be based on the extent of canopy cover, presence of an open flyway, and forest conditions near the site. Actual location and orientation of each mist-net site will be determined in the field.

Bats will be live-caught in mist-nets, processed within 30 minutes from the time of the bat is removed from the net, and released near the point of capture. Biological and morphometric data will be recorded for each captured individual (e.g., time of capture, capture net, species, sex, age

class, reproductive condition, mass, and forearm length). Time, weather, GPS location of each net site, and hourly weather conditions will also be recorded. All data will be recorded on data sheets and included in final reports.

Special caution will be taken during mist-net activities to minimize the potential for transmission of White Nose Syndrome (WNS) by following the most recent decontamination protocols of the USFWS. Bats will be evaluated for potential WNS infection following the “Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome” by Reichard and Kunz (2009)¹.

Radio-Telemetry and Emergence Counts

If an Indiana or northern long-eared bat is captured, radio-telemetry will be conducted to determine location of diurnal roosts. Up to 5 Indiana or northern long-eared bats will be fitted with radio transmitters and radio-telemetry of each fitted bat will continue for at least 7 consecutive days (or until transmitter fails or sheds, whichever comes first). In addition, a minimum of 2 evening emergence counts will be conducted at each Indiana and northern long-eared bat roost tree located.

Potential Hibernacula Survey

A desktop review will be conducted to determine if caves/mines are present on CDCTA. Potential caves/mine portals located during desktop review will be assessed on the ground for their bat use suitability based on specifications outlined in the USFWS 2018 Pilot Potential Hibernacula Survey Guidance. Copperhead biologists will also survey the immediate area for potential cave/mine portals while conducting acoustic surveys and mist-netting/radio-telemetry surveys (if conducted). Any caves/mines located will be reported but not surveyed during this effort.

Task 4 - Reporting

A draft report including all data collected, maps of survey sites, locations of roost trees (if Indiana and/or northern long-eared bats are captured), copies of data sheets, and a summary and interpretation of data meeting regulatory expectations will be prepared after completion of field work. Three copies of the draft report (2 hard copies and 1 electronic copy) will be submitted by 15 September 2019. Upon review and subsequent return of the draft report, comments will be addressed, and a final report will be prepared. Four copies of the final report (3 hard copies and 1 electronic copy) will be submitted by 15 October 2019.

¹ Reichard, J. D. and T. H. Kunz. 2009. White-nose syndrome inflicts lasting injuries to the wings of little brown myotis (*Myotis lucifugus*). *Acta Chiropterologica* 11(2): 457-464.

COST PROPOSAL

Task 1 – Pre-Work Meeting

The cost for Copperhead personnel to attend a pre-work meeting at CDCTA to discuss field visits, use of necessary materials, scheduling, and any other logistics needed to successfully complete the project is **\$1,000**.

Task 2 – Summer Survey Work Plan

The cost to complete a summer survey work plan outlining the proposed study methodologies, data management, report structure, cost and proposed project work schedule is **\$1,400**.

Task 3 – Bat Survey

Acoustic Survey

The cost to complete acoustic survey for 26 sites (208 dn) is **\$41,300**. This cost includes USFWS study plan, field work, equipment, travel, food, lodging, management, and standard agency coordination during survey activities. If the survey guidelines change significantly for 2019, this cost may be re-evaluated.

Follow up Mist-Net Survey

The cost for mist-net surveys at up to 10 positive detection sites is **\$31,000**. This cost includes travel, field work, food, lodging, and standard agency coordination during survey activities.

Radio-Telemetry and Emergence Counts

The cost of up to 5 transmitters and tracking by a team already on-site for a total of 10 days results in a project cost of **\$10,000**. This cost includes field work, food, lodging, and standard agency coordination during survey activities.

Task 4 – Reporting

The cost to complete a draft and subsequent final report that includes all data collected, maps of survey sites, locations of roost trees (if Indiana and/or northern long-eared bats are tracked), copies of data sheets, and a summary and interpretation of data meeting regulatory expectations will be **\$2,300**.

Table 1. Cost breakdown by task

Task	Total
Task 1 - Pre-work meeting	\$1,000
Task 2 - Preparation of SOW	\$1,400
Task 3 - Field Work	\$82,300
Task 4 - Reporting	\$2,300
Total	\$87,000

Ecological Studies and Risk Assessment

- Reptile, amphibian, snail, small mammal, and bat identification surveys
- Field collection of fish and macro-invertebrates
- Habitat delineation
- Cave surveys for bats
- Vertical rope skills
- Radio telemetry tracking

Mapping and Application Experience

- ArcGIS 10.6
- Spatial Analyst
- 3D Analyst
- Animal Movement extension
- Geocoding
- Raster GIS Analysis
- Map production and presentation

Relevant Coursework

- Conservation Biology
- Herpetology
- Aquatic Ecology
- Ecology and Evolution
- Biodiversity
- Biogeography and Conservation
- Animal Behavior
- Animal Physiology
- Plant Taxonomy
- Geographic Information Systems
- Landscape Ecology

Education

PhD Animal Sciences, expected spring 2019,
University of Kentucky, Lexington, KY

M.S. Biology, 2006, University of Louisville,
Louisville, KY

Certificate in GIS 8, 2005, University of
Louisville, Louisville, KY

B.A. Biology, 1999, Hanover College, Hanover,
IN



Qualifications and Background

Ms. Roby is currently pursuing her PhD, studying the migration of Indiana bats (*Myotis sodalis*). The majority of her responsibilities throughout her time at Copperhead has been trapping and tracking bat species found in the eastern U.S. However, she has also conducted all-taxa surveys centering on herpetofauna, terrestrial snails, fish, and small mammals. In addition, she has surveyed for macro-invertebrates and conducted water quality analysis. She has surveyed for and worked with Threatened and Endangered species, including the Indiana bat, Gray bat (*Myotis grisescens*), northern long-eared bat (*Myotis septentrionalis*), Virginia big-eared bat (*Corynorhinus townsendii virginianus*), and the Cheat Threetooth snail (*Triodopsis platysayoides*). She has been on-rope in various caves since 2006 and is comfortable in underground situations. Ms. Roby conducted her Master's thesis work studying the colonization of vernal pools by amphibians. Between receiving her undergraduate degree and pursuing her Master's degree, she worked as a as a Wildlife Biotech trapping and tracking coyotes, bobcats, and mountain lions for the National Park Service in Southern California. She also conducted small mammal and stream surveys and constructed and monitored pit-fall trap arrays aimed at surveying reptiles. Ms. Roby has extensive experience in several versions of ArcGIS and is familiar with many aspects of the program, including digitizing, manipulation and data analysis, and map creation.

Certification

- **Rabies Pre-exposure Vaccination** to guard against rabies when handling bats and other carriers of the disease, 2002. Titer check in 2012, 2014, 2016, and 2018 at an acceptable level.
- **USFWS Federal Permit for Native Endangered and Threatened Species Recovery - E & T Wildlife** - [REDACTED]
- **Vertical Caving Training** - 2008 by Anmar Mirza; 2012 by Barbara Graham and Price Sewell; 2014 by Kentucky Karst Conservancy, Ken Bailey

Employment

Copperhead Environmental Consulting, Inc., Research Director, January 2015 - present.

Copperhead Environmental Consulting, Inc., Biologist, June 2006 - December 2014.

Copperhead Environmental Consulting, Inc., Field Technician, May 2005 - June 2006.

National Park Service, *Santa Monica Mountains National Recreation Area*, Wildlife Biotech, 2000 - 2003.

U.S. Fish and Wildlife Service, *Big Oaks National Wildlife Refuge*, Biotech, 1998 - 1999.

Sample Project Experience

Multi-year projects:

Principle Investigator - Indiana bat spring and fall migration projects since 2009. Organize, project-manage, and field-manage multi-year Indiana bat spring and fall migration projects for various agencies and in multiple states. Capture, process, and radio-tag bats in order to track them during spring or fall migration. Manually track bats as they migrate at night. Locate diurnal roosts along the migration route. Determine when bats have arrived at their destination. Analyze location point data collected while migrating and determine behaviors exhibited by these bats during migration. Determine how this behavior can be of use to the wind industry in terms of turbine siting and operation.

Principle Investigator - Annual monitoring of Indiana bat summer colonies on Ft. Knox, Kentucky, 2009 - present. Organize, project-manage, and field-manage annual monitoring of the largest Indiana bat summer colonies known within the range of the species. Capture, process, and radio-tag bats in order to track them to diurnal roosts and collect nocturnal foraging data, both from the ground and through aerial telemetry. Monitored known artificial roosts called BrandenBark™ (created by Copperhead) for bat use - check guano traps, capture bats emerging, listen for vocalizations, count bats emerging from roosts in evening. Analyze all data and compile in yearly reports submitted to Ft. Knox biologists and USFWS in Kentucky.

Project Manager - Gray bat survey on Ft. McClellan, Alabama, 2007, 2012, 2014, 2016, and 2018. Duties included acoustic surveys, mist-netting, and tracking this endangered bat to determine if it has continued to use the Base. The project incidentally documented an Indiana bat (federally endangered) and a northern long-eared bat (federally threatened) in mist nets for the first time in 2014. Tri-colored bats (petitioned for listing) were tracked to roost trees in 2018.

Project Manager - Indiana bat and northern long-eared bat surveys for the Camp Atterbury complex, central Indiana, 2013 and 2016. Plan, organize, project-manage, field-manage mist-netting and tracking of Indiana bats, evening bats, and northern long-eared bats in order to document usage of the properties and identify diurnal roosts.

Biologist - Cave surveys for bat census and documentation of White-nose Syndrome (WNS) at numerous caves in Kentucky, 2010 - present. Volunteer cave surveys from 2006 - 2010. Extensive vertical rope work required for entering caves and accessing bats within cave systems. Identify bats by species and determine if WNS was present on hibernating bats as evidenced by fungal hyphae on fur or membranes. Species identified include the federally endangered Indiana bat, gray bat and Virginia big-eared bats, small-footed bats, little brown bats, northern long-eared bats, tricolored bats, Rafinesque's big-eared bats, and big brown bats. Have also volunteer surveyed in North Carolina.

Capabilities

Ecological Studies

- Hibernating bat identification
- Vertical cave surveys
- Bridge bat surveys
- Bat trapping/netting surveys
- Bat habitat surveys
- Bat acoustical surveys
- Wildlife radio telemetry
- WNS identification
- Fish surveys
- Freshwater mussel surveys
- Natural area inventories

Natural Resource Evaluations

- Endangered and Threatened Species (State & Federal)
- Rare Plants and Natural Communities
- Baseline Ecological Conditions Surveys and Documentation
- Critical or Significant Wildlife Habitat
- Cave and Karst Investigations

Permitting Expertise

- NEPA Compliance and Documentation
- Section 7 Biological Assessments
- 401 & 404 Water Permits

Mapping and Technology Experience

- ArcGIS
- ArcEditor
- Microstation
- Anabat
- Sonobat

Education

B.A. Environmental Science, 1997, Rollins College, Winter Park, Florida

Minor: Biology

Certification

Rabies Vaccination: to guard against rabies when handling bats and other carriers of the disease, 1996, titer checked current.

PADI SCUBA Diver

NAUI Rescue Diver

DAN Emergency Oxygen 2010

DAN Advanced Emergency Oxygen 2010

Red Cross Adult CPR/First Aid/Bloodborne Pathogens/2010

Affiliations

- Southeastern Bat Diversity Network /1998-present
- Colloquium on the Conservation of Mammals /1998-present



Wildlife Biologist/Project Manager

Mr. Sewell joined Copperhead Environmental Consulting, Inc in February of 2006. He has been working with the bat fauna of the eastern United States for 19 years. Among his expertise are Section 7 Endangered Species surveys, general wildlife surveys, bat hibernacula surveys and WNS monitoring. His field expertise includes work with bats, fish, terrestrial and aquatic mollusks, reptiles, amphibians, and rare plants. In addition to field work, Mr. Sewell has conducted GIS ecological impact analysis for large scale transportation projects.

Mr. Sewell has extensive experience with eastern US species including all federally listed species: Indiana, northern long-eared, gray, and Virginia big-eared bats. He has conducted sampling for these species in Ohio, Indiana, Kentucky, Pennsylvania, New York, Illinois, Missouri, Maryland, Georgia and Tennessee. He has performed radio telemetry studies on Indiana bats, gray bats, Virginia big-eared bats, northern long-eared bats, eastern small-footed bats, evening bats, silver-haired bats, red bats, big brown bats, as well as several tropical species. Mr. Sewell has participated in fixed station night foraging, day roost location, and aerial radio telemetric studies. He also has extensive caving experience and is well versed in vertical caving techniques. He has conducted bat hibernacula counts in KY, TN, IN, and WV.

Mr. Sewell has taken the lead role in Copperhead's hibernacula surveys and vertical rope work and managed bat hibernacula and WNS survey contracts in 2010, 2011, 2012, 2013 and 2014. He has been a regular volunteer in KDFWR's hibernacula surveys since 2000. Mr. Sewell instructs Copperhead's yearly in-house vertical rope techniques training.

Experience

Copperhead Environmental Consulting, Inc., Biologist, February 2006 – Present.

HMB Professional Engineers, Inc., Chief Biologist, 2002 – 2006.

HMB Professional Engineers, Inc., Biologist, 1998 – 2002.

Contract Biologist, 1997 – 1998.

KY Div. of Fish & Wildlife Resources, Seasonal Fisheries Technician, 1995– 1996.

Professional Development

- National Environmental Policy Act of 1969 & Environmental Documentation/1998
- Regional Wetlands Symposium/1999
- ACOE Wetland Delineation & Management training/2000
- Hazardous Waste Site Worker-OSHA 40 hour course/1999; 8 hour refresher course/2005
- Bat Conservation & Mgmt. Workshop/2001
- Indiana Bat Symposium/2001
- USACOE & EPA Stream Bank & Channel Stabilization & Reservoir H2O Quality Enhancement/2001
- Bat Conservation & Forest Mgmt. Workshop/2002
- Soil Bioengineering Workshop-Big Sandy Resource Conservation & Development Area Inc. & KY Waterways Alliance/2003
- Snail Identification Workshop/2004
- Introduction to ArcGIS I & II /2005
- KY Transportation Cabinet's Erosion Control Plan Development Process /2005
- Ohio DOT's Ecological Training /2006
- Ohio DOT's Waterway Permits Training /2006
- Edge of Appalachia Freshwater Mussel Identification Workshop /2009

Selected Project Experience

Additional experience available upon request

Biologist/Project Manager – WNS and hibernating bats census in Kentucky for KDFWR. 2016-2018. Mr. Sewell was the lead biologist and project manager. Duties included bat identification and counting, collection of specimens for WNS testing, searching for signs of WNS, technical caving including extensive vertical caving.

Volunteer Biologist – KDFWR surveys of Priority 1 bat hibernacula. 2015. Mr. Sewell assisted with bat counts as a volunteer biologist for several caves in Kentucky.

Biologist/Project Manager – WNS and hibernating bats census in Kentucky for KDFWR. 2011-2014. Mr. Sewell was the lead biologist and project manager. Duties included bat identification and counting, collection of specimens for WNS testing, searching for signs of WNS, technical caving including extensive vertical caving.

Biologist – Ironton/Russell Bridge bat habitat assessment. 2010. Mr. Sewell was field leader for survey of the bridge for bat habitat. Duties included searching for bat sign, recording

temperatures at various points on the bridge, rappelling/ascending to bridge piers to search for bat habitat on piers.

Biologist – Skinner Mountain Bat Survey in Fentress County, TN. Internal cave survey in which male Indiana bats (*Myotis sodalis*) were captured and radio-tagged to determine spring roosting preferences in this rugged portion of northern Tennessee. Duties included technical caving, bat capture and identification, and radio telemetry.

Biologist/Project Manager – White Nose Syndrome cave surveys in Harlan, Letcher, and Bell counties, KY for Bat Conservation International. 2010. Mr. Sewell was the Copperhead Consulting lead for these cave surveys. Identified and counted bats, swabbed bats for WNS, searched for signs of WNS, technical caving including extensive vertical caving.

Biologist – Blackwater Canyon cave surveys in Tucker County, WV. 2010. Field manager for cave searches and internal cave surveys within the Blackwater Canyon. Duties included bat identification and technical caving including vertical rope work.

Biologist/Project Manager –Radio telemetry study of Indiana bat maternity colony on Fort Knox, KY. 2009. Captured and radio-tagged Indiana bats, tracked bats to diurnal roosts, conducted night time foraging telemetry, installed habitat enhancement features.

Biologist – Volunteer biologist for winter hibernacula counts for listed bat species. KY, TN, and IN, 2002 – 2010. Assisted with winter hibernacula counts chiefly in KY but also in TN and IN. Species encountered includes Indiana bat, gray bats, Virginia big-eared bats, eastern small-footed bats, Rafinesque's big eared bats, southeastern bats, and all common bats within range.

Biologist – White Nose Syndrome monitoring for non-infected sites, MI & KY. 2008 - 2009. Assisted with the design, implementation, and co-authored publication for WNS temperature/arousal monitoring in Michigan and Kentucky. Study utilized temperature sensitive transmitters and Ibat temperature dataloggers to monitor bat temperatures and arousal patterns during hibernation at non WNS infected sites. Included internal survey of mine hibernacula.

Biologist – Cumberland HCP, Tennessee. 2009. Conducted harp trap at Indiana bat hibernacula in TN during spring emergence and used radio telemetry to track bat migration.

Co-Project Manager – Indiana Bat Research Project, Fort Knox, Kentucky. 2007. Designed and conducted mist netting and radio telemetry study near known Indiana bat maternity colonies. Diurnal telemetry was conducted in order to locate roost trees. Conducted sound analysis at roost trees to determine bat responses to anthropogenic disturbance. Attached and monitored habitat improvement treatments to trees, monitored them for bat use and analyzed data from temperature dataloggers placed beneath treatments. Conducted internal and harp trapping surveys at a cave within the base holdings.

Biologist – Cumberland HCP, Tennessee. 2007. Conducted fall swarming harp trapping at Indiana bat hibernacula. Collected hair for stable hydrogen isotope analysis. Radio-tagged male Indiana bats and conducted aerial and ground telemetry to determine fall roosting areas. Entered caves to collect bat fur for stable hydrogen isotope analysis.

Biologist – PIT tag reader monitoring at Indiana bat hibernacula, IN. 2006 & 2007. Assembling and running passive integrated transponder (PIT) tag readers at cave entrances to detect Indiana bats tagged at their summer habitat. Conducted infra-red video analysis of bat interactions with PIT tag readers. Analyzing data and assisted with manuscript preparation on bat behavior in response to an antenna array aimed at detecting PIT-tagged bats.

Project Manager – Cherokee National Forest Bat Survey, Tennessee. 2006. Designed mist net and Anabat survey on selected areas within the Cherokee National Forest designed to capture Indiana and eastern small-footed bats. Conducted radio telemetry study to determine roost locations of reproductive female bats of both focus species.

Biologist – Cumberland Gap Historical Park Mammal Survey, Kentucky and Virginia. 2006. Conducted trapping, mist netting, Anabat, trail camera and road kill survey for all mammal species at Cumberland Gap Historical Park.

Lead Biologist – KYTC Mist Net Survey, Kentucky. 2001-2003. Designed and conducted a mist net survey for a baseline ecological conditions survey along a proposed highway corridor in Pulaski and Laurel Counties, KY. Duties included mist netting for all bat species, internal cave surveys, and radio telemetry with gray bats.

Biologist – KYTC and INDOT Mist Net Survey, Kentucky and Indiana. 2001-2002. Team leader for mist netting survey and radio telemetry study for listed bat species in Jefferson County, KY and Clark Count Indiana for a bi-state bridge project.

Winter Hibernacula Census Experience

Mr. Sewell has participated with Kentucky Department of Fish and Wildlife Resources in their yearly winter hibernacula censuses since 2000 and has conducted or assisted in counts in the following Kentucky caves:

Green, Line Fork, Crystal, Icebox, Pit Up Straight Creek, Copper Pit, Fire Tower, Ash, Sparkle, Cave Hollow, Cave Hollow Pit, Stillhouse, Cedar Post, Smokehole, Bat, Salt Peter (Carter Co), Cascade, Laurel, String, Humongus Canyon, Endless, Stabb, Cedar Creek, Stykes, Blowing, South Goldsen, Wind, 1813, Buzzard, Penitentiary, BNO, War Fork, Price's, Dead Raccoon, Frenchman's Knob Pit, Coach, Barefoot Pit and numerous other.

Mr. Sewell has participated with the TN Nature Conservancy in winter counts in 2007 and visited the following Indiana bat hibernacula between 2007 and 2010:

East Fork Salt Peter, Wolf River, New Mammoth, Z's, and Cornstarch.

Mr. Sewell participated in Indiana bat hibernacula censuses at the two largest hibernacula in the state of Indiana in 2008: Wyandotte and Ray's Cave

Additional experience available upon request.

Ecological Studies

- Bat surveys
- Bird surveys
- Fish surveys
- Anuran surveys
- Vegetation Monitoring
- Invasive Plant surveys
- Macroinvertebrate surveys
- TES surveys and habitat assessments
- Water Quality Sampling

Natural Resource Evaluations

- Endangered and Threatened Species
- Cave Investigations

Technology Experience

- Radio telemetry
- Anabat (collection and analysis)

Relevant Coursework

- Biostatistics
- Dendrology
- Behavioral Ecology
- Herpetology
- Ecological Field Methods
- Animal Ecology
- Plant Ecology
- GIS
- Ornithology

Affiliations

- Southeastern Bat Diversity Network
- Kentucky Bat Working Group (Secretary)
- Tennessee Bat Working Group

Education

M.S. Biology (not defended), Eastern Kentucky University, Richmond Kentucky

B.S. Biology- Environmental, 2009, The University of Tennessee at Martin, Martin, TN

Experience

Copperhead Environmental Consulting, Inc., Biologist II, May 2015 - Present

Copperhead Environmental Consulting, Inc., Biological Technician, May 2011 - 2015.

ATA, Field Biologist Intern, 2006 - 2009



Qualifications and Background

Ms. Wetzel is a wildlife biologist with extensive experience in terrestrial ecology and has completed many surveys for various species over a wide geographic area, including plants (Eggert's Sunflower and invasive species), bats, birds, aquatic macro invertebrates, herptiles (Gopher frog, and Northern Pine snake), and fish. She is proficient with various field techniques used to study terrestrial and aquatic organisms and their habitats. She has also participated in several threatened and endangered species projects.

Project Experience

Federally listed Bat Habitat Assessment and Presence/Absence Surveys for Arkansas Highway Transportation Department, Arkansas, 2017. As project manager and field supervisor, coordinated with client, managed crews and data through two projects. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, and banded bats. At the end of project, organized data, wrote, and submitted reports.

NCDOT Winter MYSE netting. February 2017. Site leader for a study on the coastal plain of North Carolina designed to study the life history of nonmigrating *Myotis septentrionalis* and other bats on the landscape. A team leader, selected and set up mist net sites and acoustic sites, removed bats from nets, identified bats, banded bats, and radio-tagged 2 northern long-eared bats captured. Performed tracking and emergence counts.

Hibernacula and White Nose Syndrome surveys, Kentucky. 2012- Ongoing. Surveyed caves to conduct population census' and examine bats for signs of WNS. Identified and counted hibernating bat species (including threatened and endangered species; Virginia big-eared bat (*Corynorhinus townsendii virginianus*), Indiana bat (*Myotis sodalis*), Eastern small-footed bat (*Myotis lebeii*), Gray bat (*Myotis grisescens*)). Trained for and surveyed on-rope vertical caves.

Multi-state federally listed bat species Presence/Absence Surveys, Arkansas and Oklahoma, 2016. As field supervisor, coordinated with client, assigned sites to field crews, managed and submitted nightly data, and organized tracking efforts. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, banded bats, radio-tagged and tracked northern long-eared bat.

Mist-Net Survey of Federally Listed Bat Species, Virginia, 2016.

Field manager and team leader. Responsibilities included client coordination, management of field crew, mist-netting, and report preparation. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, and banded bats. At the end of project, organized data, wrote, and submitted report.

Federally listed Bat Habitat Assessment and Presence/Absence Survey for Arkansas Highway Transportation Department, Arkansas, 2016. As field supervisor coordinated with client and managed crews and data throughout project. Habitat assessment walk along three proposed right-of-ways to identify suitable summer roosts for the Indiana and northern long-eared bat and bridge assessment for the gray bat. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, banded bats, radio-tagged and tracked northern long-eared bat. At the end of project, organized data, wrote, and submitted report.

Mist-Net Survey and Radio Telemetry of Federally Listed Bat Species in Ohio. 2016.

Field manager and team leader. Responsibilities included client coordination, management of field crews, mist-netting, diurnal and foraging telemetry of northern long-eared bats, and report preparation/submittal.

Spring Migration of Indiana bats. Tennessee. 2016. Identified and hand plucked Indiana bats from hibernaculum. Assisted in radio-tagging 5 female Indiana bats. Conducted spring migration telemetry and led ground crew tracking on Indiana bats for eleven days. Identified maternity colony in Trigg County, KY. At the end of project, organized data, wrote, and submitted report.

Fall migration of Indiana bats, Indiana. 2015. Worked as team leader in identifying mist-net sites, focusing specifically on Indiana bat habitat. Identified and radio-tagged Indiana bats, tracked and conducted emergence counts on bats.

Indiana bat acoustic lure mist-netting survey. 2015. Worked as team leader in identifying mist net sites, removing bats from nets, setting up and running acoustic lure, obtained morphometric data, and banded bats. (including threatened and endangered species; Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*).

Mist-Net Survey and Radio Telemetry of Federally Listed Bat Species for a Proposed Wind Energy Facility, Ohio. 2015

Served as Field Manager with responsibilities including client coordination, management of field crews, mist-netting, radio telemetry (roost tree and aerial foraging) of northern long-eared and Indiana bat, and report preparation.

Mist-Net Survey and Radio Telemetry of Federally Listed Bat Species in Ohio. 2015

Field manager and team leader. Responsibilities included client coordination, management of field crews, mist-netting, radio telemetry of northern long-eared and Indiana bats, and report preparation.

Imperiled bat study in the IBMA on Ft. Knox, KY. 2015.

As team leader, selected and set up mist net sites, removed bats from nets, identified bats, banded bats, and radio-tagged Indiana, little brown, and tri-colored bats.

Indiana bat and northern long-eared bat acoustic survey in Kansas. 2015.

As team leader, identified best bat habitat, picked acoustic sites and downloaded/analyzed acoustic data.

Spring Migration of Indiana bats. Tennessee. 2015. Identified and hand plucked Indiana bats from hibernaculum. Assisted in radio-tagging 30 female Indiana bats. Conducted spring migration telemetry and led ground crew tracking on Indiana bats for twenty days. Identified new cave connections to summer homes in Alabama and Tennessee. At the end of project, organized data, wrote, and submitted report.

KDFWR surveys of Priority 1 bat hibernacula. 2015. Assisted with bat counts as a volunteer biologist for several caves in Kentucky.

Indiana and northern long-eared bat habitat assessments in Illinois. 2014-2015. Conducted habitat assessments for a multi-state FERC regulated project. Identified potential primary and secondary roosts of Indiana and northern long-eared bats. Selected mist-net sites, identified, radio-tagged, and conducted radio-telemetry on bats.

Indiana bat summer presence/absence surveys in Virginia and Wisconsin. 2014. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, banded bats, and radio-tagged bats.

Tennessee Spring Migration of Indiana bats. 2014. Identified and hand plucked Indiana bats from hibernaculum. Conducted spring migration telemetry and led ground crew tracking an Indiana bat from its hibernacula in Middle TN to summer home in KY.

Portal Survey for Northern long-eared bat (*Myotis septentrionalis*) in Virginia. 2014. Harp trap survey to determine whether an old mine portal was being used by Northern long-eared bats as a hibernaculum.

Indiana bat summer presence/absence surveys in Ohio and Kentucky. 2013. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, and banded bats.

Indiana bat (*Myotis sodalis*) maternity colony monitoring. Ft. Knox, Kentucky. 2013. Used telemetry techniques to track Indiana bats to summer maternity roosts. Conducted nightly emergence counts

Indiana bat acoustic lure mist-netting survey. 2013. Worked as team leader in identifying mist net sites, removing bats from nets, setting up and running acoustic lure, obtained morphometric data, and banded bats. (including threatened and endangered species; Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*))

Spring telemetry study of seasonal movements and maternity colony locations of the Virginia big-eared bat (*Corynorhinus townsendii virginianus*), Kentucky. 2013. Under supervision of a permitted biologist set up mist nets, removed bats from nets, obtained morphometric measurements, identified and banded 17 Virginia big-eared bats, and radio-tagged 2 Virginia big-eared bats. Used telemetry techniques to track VBEBs to summer maternity roosts in Eastern Kentucky.

Tennessee Habitat Conservation Plan Spring Telemetry. 2013. Identified and radio-tagged Indiana bats (*Myotis sodalis*). Conducted spring migration telemetry from hibernacula in northern TN to summer grounds in Mississippi. Tracked multiple Indiana bats to summer roost trees in Lebanon, TN and conducted nightly emergence counts.

Effectiveness of using acoustic lures to increase capture rates of the Indiana bat (*Myotis sodalis*) at mist-net sites. 2012. Worked closely with the lead biologist and reported on a project that tested the use of acoustic lures to attract Indiana bats to mist-net sites.

Endangered bat survey. 2012. Conducted mist-netting and acoustic monitoring project for Arnold Air Force Base, Franklin and Coffee counties, Tennessee.

Endangered bat survey. 2012. Conducted mist-netting and acoustic monitoring work associated with several proposed projects in the Cherokee National Forest, Tennessee

Indiana bat (*Myotis sodalis*) maternity colony monitoring. Ft. Knox, Kentucky. 2012. Captured, identified, and assisted in radio-tagging Indiana bats.

Tennessee Habitat Conservation Plan Spring Telemetry. 2012. Hand Captured and radio-tagged Indiana bats (*Myotis sodalis*). Conducted spring migration telemetry from hibernacula in northern TN to new maternity colonies in Georgia and Alabama.

Spring telemetry study of seasonal movements and maternity colony locations of the Virginia big-eared bat (*Corynorhinus townsendii virginianus*), Kentucky. 2012. Assisted in Radio-tagging Virginia big-eared bats. Conducted spring migration telemetry and nightly foraging telemetry in Eastern Kentucky.

Fall migration study of an Indiana bat maternity colony on Fort Knox, KY. 2011. Captured and assisted in radio-tagging Indiana bats, tracked bats to diurnal roosts, and conducted emergence counts.

Radio telemetry study of an Indiana bat maternity colony on Fort Knox, KY. 2011 - Ongoing. Captured and assisted in radio-tagging Indiana bats, tracked bats to diurnal roosts, conducted emergence counts, and conducted night time foraging telemetry.

Behavioral study of eastern phoebes on the Bluegrass Army Depot, KY. 2010 - 2012. For my M.S. in Biology thesis work, conducted predator displays on eastern phoebes and videotaped behavioral reactions, focusing on tail-wagging movements.

Niche partitioning and overlap between red-headed and red-bellied woodpeckers during the winter in a bottomland hardwood forest. Martin, TN 2008-2009. As an undergraduate I completed and independent research project collecting behavioral data on red-headed and red-bellied woodpeckers in bottomland hardwood forests in Northwest TN. A poster of the study was presented at the ASB 70th Annual Meeting in Birmingham, Alabama.

Monitoring Avian Productivity and Survivorship (MAPS) 2006-2009. Mist netted and banded birds at the Spring Creek site on Arnold Air Force Base, TN.

Eggert's sunflower (*Helianthus egertii*) monitoring at Arnold Air Force Base, TN 2006-2008. Conducted yearly population surveys.

Great Blue Heron Monitoring at Arnold Air Force Base, TN 2006-2009. Searched within rookery for active and inactive Great Blue Heron nests, identified and tagged trees.

Henslow's Sparrows Banding at Arnold Air Air Force Base, TN 2006-2009. Mist-netted and banded Henslow's Sparrows as part of a population monitoring program on the base.

Tennessee Amphibian Monitoring Program (TAMP) 2006-2009. Conducted breeding pond surveys for the Gopher frog (*Rana capito*) and general point count surveys.

Invasive plant surveying at Arnold Air Force Base, TN 2006-2009. GPS and eradicate invasive species.

Gray bat population monitoring in middle TN 2006-2009. Harp trapped caves for summering gray bats, mist-netted creeks, ponds, and corridors, banded captured bats.

Regulatory Expertise

- ESA (Section 7 & 10)
- NEPA
- CWA
- Migratory Bird Treaty Act
- USFWS Land Based Wind Energy Guidelines

Industry Clientele

- Wind
- Utilities/Traditional Energy Sources
- Mines and Reclamation
- US Department of Defense
- US Forest Service
- US Fish and Wildlife Service
- Academic Institutions & NGOs
- FHWA & State DOTs

Survey Expertise

- Presence/Absence Surveys
- Habitat Assessments
- Radio Telemetry Studies
- Cave Hibernacula Censuses

Certifications/Trainings

- United States Fish and Wildlife Service bat permit
- FERC Environmental Review and Compliance for Natural Gas Facilities Seminar
- PEC Premier SafeGulf / SafeLandUSA Safety Training
- OSHA Construction Safety and Health Training
- American Red Cross Adult First Aid / CPR / AED
- American Red Cross Bloodborne Pathogens Training
- National Safety Council DDC Online 9.0 Edition
- Enbridge 2014, Wisconsin & Illinois Environmental Field Survey Program
- Marathon Contractor Safety
- OPSEC, United States Department of Defense
- Level 1 Antiterrorism Awareness Training
- Southwestern Energy HSE Trained



Education

- **B.S. Wildlife and Fisheries Science**, 2012, The Pennsylvania State University, State College, Pennsylvania
- **A.S. Wildlife Technology**, 2010, The Pennsylvania State University, DuBois, Pennsylvania

Qualifications and Background

Mr. Baer is a wildlife biologist with more than 7 years of experience working with multiple federal and state listed species. He has led hundreds of mist net surveys since receiving his U.S. Fish and Wildlife Service bat permit in the spring of 2013 and has worked extensively with the Indiana, gray, Virginia big-eared, northern long-eared, and little brown bats throughout the eastern United States. He has also led or assisted with surveys in over 25 Kentucky caves while helping with the Kentucky Department of Fish and Wildlife Resources yearly winter hibernacula census. He has served as field project manager on multiple surveys for threatened and endangered species and has worked on multiple consultations for both regulatory agencies and industrial clients. Mr. Baer also serves as point of contact for BrandenBark™, Copperhead's artificial bark mitigation/habitat enhancement tool.

Selected Project Experience

Fall Portal Survey, Indiana and Northern Long-eared Bat Harp Trap Survey; Boone and Kanawha Co., WV - 2018

Served as the project manager for a fall harp trap presence/absence survey for 10 portals in West Virginia. Served as primary client contact. Managed three field crews, and all associated project data. Participated in harp trap field work. Oversaw the completion of the final report and submittal to the client.

Gas Infrastructure Development, Indiana and Northern Long-eared Bat Mist Net Survey; Wetzel, Tyler, Pleasants, and Doddridge Co., WV - 2018

Served as the field project manager for a 24-mist net site and 1 acoustic site presence/absence survey in West Virginia. Served as primary client contact. Managed six mist netting teams, and all associated project data. Participated in mist net field work. Submitted final survey results to the client.

Conservation Plan Development for Oil and Gas Projects; WV - 2017

Authored bat conservation plans for multiple oil and gas facilities in West Virginia. Also conducted on the ground habitat assessments to locate potential bat roost trees, cave/mine portals and mitigation trees.

USFWS Grant, Northern Long-eared Bat Fall Migration Project; Doddridge Co., WV - 2017

Conducted mist netting and radio telemetry tracking to better understand the fall migration of northern long-eared bats. Documented roost tree locations and characteristics and performed exit counts.

Gas Well Pad, Indiana and Northern Long-eared Bat Mist Net Survey; Monroe Co., OH - 2017

Developed budget for and managed mist net survey and radio telemetry tracking for a presence/absence survey in Ohio. Captured a northern long-eared bat and located five roost trees. Authored the report and was able to facilitate a quick turnaround resulting in the project going from client conception to USFWS approval in 20 days.

Wind Energy Projects, Indiana and Northern Long-eared Bat Mist Net Survey; Erie and Huron Co., OH - 2017

Served as the field project manager for multiple wind energy project's presence/absence mist net surveys. Served as primary client contact. Managed eight mist netting teams, two radio telemetry ground crews, an aerial radio telemetry crew and all associated project data for 45-sites. Participated in mist net field work. Authored the project reports.

Wetland Enhancement Project; Trumbull Co., OH - 2017

Implemented invasive species control (cut stump) on glossy buckthorn (*Frangula alnus*) and autumn olive (*Elaeagnus umbellata*) over 13.8 acres of wetland.

Indiana Bat Spring Migration Study; TN - 2017

Aided in a spring Indiana bat migration study in order to document the migration paths of Indiana bats from their hibernacula to their summer maternity grounds. Duties included

collecting bats from the cave, identifying bats, collecting morphometric measurements, banding bats, activating transmitters and attaching radio telemetry transmitters to bats. Performed the task of ground tracking crew driver where I utilized radio telemetry techniques to track bats.

Northern Long-eared Bat Fall/Winter Study; Bertie, Bladen, Martin and Tyrell Co., NC - Fall/Winter of 2016/17

Assisted in mist netting and radio telemetry tracking in order to better understand the winter movements of northern long-eared bats in North Carolina.

Kentucky Department of Fish and Wildlife Resources, Bat Hibernacula Census; KY - Winter of 2016/17, 2015/16, 2014/13, 2013/12

Led and assisted in leading surveys into priority one and non-priority one cave hibernacula in order to identify bat species present, monitor bat populations and document the spread of White-nose Syndrome.

Indiana Bat Habitat Improvement, BrandenBark™ Installations; KY, OH, PA, WV - 2014, 2015, 2016

Developed budget for and implemented multiple BrandenBark™ Indiana bat habitat improvement projects. Duties included serving as the field project manager, coordinating installation details with clients and construction crews, instructing construction crews on the proper methods of BrandenBark™ installation and selecting the locations of each BrandenBark™ structure.

Energy Transmission Line Project, Indian, Northern Long-eared, Gray and Ozark Big-eared Bat Mist Net Survey; AR, OK and TN - 2016

Served as the field project manager for a 127-site presence/absence mist net survey for Indiana, northern long-eared, gray and Ozark big-eared bats. Duties included managing 12 mist netting teams, two radio telemetry teams and all associated project data. Served as primary client contact. Participated in mist net and radio telemetry field work. Submitted all project data to our client.

Phase 2 Fall Portal Bat Survey; Monroe Co., KY - 2015

Co-managed a fall cave survey to determine bat presence within three caves. Duties included setting up the harp traps, conducting the harp trap and AnaBat surveys at the cave entrances, contacting land owners and managing data.

Fort Drum Military Reservation Bat Survey; Jefferson and Lewis Co., NY - 2015

Served as the field project manager for a 71-site mist net and radio telemetry study designed to determine the presence and roosting preferences of bats on the Fort Drum Military Reservation. Duties included managing all project data, meeting weekly project deadlines, assisting in mist net site selection, and supervising eight mist netting teams, two ground radio telemetry tracking team and one aerial radio telemetry tracking crew. Served as primary client and sub-contractor contact. Participated in mist net and radio telemetry field work. The project resulted in 694 bats being captured, 22 bats being fitted with radio transmitters and 51-day roosts being discovered. Co-authored the final project report.

Gas Line Relocation, Indian and Northern Long-eared Bat Mist Net Survey; Jefferson Co., AL - 2015

Served as the field project manager for a six-site presence/absence mist net survey for Indiana and northern long-eared bats. Duties included selecting mist net sites, supervising two mist netting teams, managing project data and coordinating with a subcontracted company. Participated in mist net and radio telemetry field work. The project resulted in four bats being fit with radio transmitters and nine roost trees being located. Co-authored the final project report.

Gas Line, Bat Habitat Assessment and Subsequent Indian and Northern Long-eared Bat Mist Net Survey; IL - Summer of 2014, 2015

Conducted a habitat assessment to identify Indiana and northern long-eared bat habitat and potential roost trees and conducted presence/absence mist net surveys for Indiana and northern long-eared bats. Duties included utilizing a Trimble GPS unit to record positions of potential roost trees, recording notes on habitat quality, mist net and radio telemetry field work and managing project data.

Gas Line, Indiana and Northern Long-eared Bat Mist Net Surveys; OH - 2013, 2015

Conducted a presence/absence mist net survey for Indiana and northern long-eared bats. Duties included supervising a field technician, identifying mist net locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats and managing data.

GDOT Road Expansion, Northern Long-eared Bat Mist Net and Acoustic Survey; Douglas Co., GA - 2014

Served as the field project manager for a three-site presence/absence mist net and acoustic survey for northern long-eared bats. Duties included supervising a field technician, selecting mist net and AnaBat survey locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats and managing data. Co-authored the final project report.

Virginia Big-eared Bat Spring Migration Study; Watauga and Avery Co., NC - 2014

Served as a sub-consultant field project manager while working for an Indiana State University graduate student on a Virginia big-eared bat spring migration study. Duties included supervising three Copperhead technicians, coordinating with the graduate student on a daily basis, assisting in the constructing and testing of four radio telemetry towers, managing project data, attaching transmitters and using radio telemetry techniques to track bats fitted with transmitters.

Indiana Bat Mist Netting Survey; Harrison, Scott and Owen Co., KY - 2013

Assisted in a presence/absence mist net survey for Indiana bats as a federally permitted bat biologist. Duties included supervising a field technician, identifying mist net locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats, attaching transmitters, using radio telemetry techniques to track bats fitted with transmitters and managing data.

Virginia Big-eared Bat Maternity Roost Search; Lee, Morgan and Menifee Co., KY - 2013

Assisted with a spring Virginia big-eared bat maternity roost search project. Duties Included helping federally permitted bat biologists in setting up mist nets, removing bats from nets,

obtaining morphometric measurements, identifying and banding captured bats and using radio telemetry techniques to track bats that had been fitted with radio transmitters. I also worked with a fellow Copperhead technician to hike cliff line in search of unknown rock shelters that could possibly be used by Virginia big-eared bats.

Survey Experience

- Bat mist net and acoustic surveys
- Cave Hibernacula Censuses
- Bat habitat assessments
- Radio telemetry (ground and aerial)
- Owl playback surveys
- Freshwater mussel surveys
- Snail Surveys
- Macroinvertebrate surveys
- Invasive species removal

Regulatory Experience

- ESA (Section 7 & 10)
- NEPA

Relevant Coursework

- Ecology
- Principles of Wildlife Management
- Wildlife Population Analysis
- Plant Systematics
- Landscape Ecology
- Conservation Biology
- GIS
- Statistics

Affiliations

- Midwest Bat Working Group
- Southeastern Bat Diversity Network
- Ohio Bat Working Group
- Kentucky Bat Working Group
- Tennessee Bat Working Group

Education

M.S. Biology, 2013, Bowling Green State University, Bowling Green, OH

B.S. Wildlife Management, 2011, Eastern Kentucky University, Richmond, KY

Minors: Biology, Biology Teaching

Professional Experience

Copperhead Environmental Consulting, Inc., Biologist, summer 2012, May 2013-present.

Cincinnati Zoo & Botanical Garden, Summer Camp Instructor, summers 2010, 2011

BHE Environmental, Inc., Biological Technician, summers 2008, 2009.



Certifications

- Rabies Vaccination: to guard against rabies when handling bats and other carriers of the disease, 2009, titer current
- KY & IN certified pesticide applicator
- PADI scuba certification
- First AID/CPR

Qualifications and Background

Mr. Janos is a wildlife biologist with experience in terrestrial ecology. His undergraduate research was on the wintering ecology (home range size, habitat use, and diet of Eastern Bluebirds). His Master's degree research involved conducting acoustic bat surveys to assess habitat use and bat behavioral response to calling owls. He has conducted surveys for a variety of taxa, including bats, birds, small mammals, fish, aquatic macroinvertebrates, fresh water mussels, and snails. He is also a Kentucky certified pesticide applicator which has allowed him to lead a team conducting timber stand improvement (TSI). He has nine years of survey experience dealing with bat species of the eastern United States which has allowed him to handle and identify a large variety of bat species, including federally endangered Indiana bats, gray bats, Virginia big-eared bats, Florida bonneted bats, and federally threatened Northern long-eared bats. He is proficient in the use of mist nets, acoustic monitoring and analysis, radio telemetry, and roost tree exit counts.

Selected Project Experience

Kentucky bridge rehab/replacement T&E species habitat assessments, 2018. Visited bridges in eastern KY surveying for bat and aquatic species suitable habitat. Used water meter to collect data on water quality.

Indiana and northern long-eared bat habitat assessments, 2013-2016, 2018. Walked proposed pipeline right-of-ways in Illinois and West Virginia to locate potentially suitable Indiana bat and northern long-eared bat maternity roost trees.

Indiana bat and northern long-eared bat presence/absence surveys, 2016. As a team leader, selected and set up mist net sites, removed bats from nets, and identified, banded and radio tagged bats for projects in KY, TN, VA, and WV. Radio tracked 2 PESU and 1 MYLU for 8 days. Also lead two teams conducting acoustic bat surveys in KY and NY. Chose acoustic monitoring sites, set up acoustic devices, downloaded data, quantitatively analyzed the data using Kaleidoscope Pro, and qualitatively analyzed calls the programs identified as *M septentrionalis*.

Indiana bat and tri-colored bat spring migrations, AR & TN, 2018. Conducted aerial telemetry on migrating Indiana bats. Listened to signal strength and using a computer with mapping software, estimated gps locations of individual bats.

Raptor nest surveys, OH, 2018. As a team lead, walked five proposed pipelines searching for raptor nests. Five potential nest were identified but none were active.

Winter northern long-eared bat (*Myotis septentrionalis*) netting, North Carolina Department of Transportation, 2017-2018. Team leader for a study on the coastal plain of North Carolina designed to study the life history of non-migrating *Myotis septentrionalis* and other bats on the landscape. Mr. Janos selected and set up mist net sites, removed bats from nets, and identified, banded and radio-tagged bats. He set up acoustic devices, downloaded data, quantitatively analyzed the data using BCID East and EchoClass, and qualitatively analyzed calls. In teams, nine northern-long eared bats outfitted with radio transmitters were tracked to their roost trees and habitat assessments were done on the trees.

Northern long-eared bat fall migration research, WV, 2017. Was the field supervisor for two teams. Selected and set up mist net sites, removed bats from nets, and identified, banded and radio tagged bats. Tracked 9 MYSE for 2.5 weeks via ground and aerial telemetry. Bats were tracked to their roost tree and data was collected on the tree.

Freshwater mussel survey, OH, 2017. Used scuba and snorkels to search for mussels along transects and containment areas at two inadvertent return sites in the West Branch Huron River.

Indiana bat and northern long-eared bat presence/absence surveys, 2016. As a team leader, selected and set up mist net sites, removed bats from nets, and identified, banded and radio tagged bats for projects in KY, OH, and TN. Tracked 1 MYSO and 1 PESU outfitted with radio transmitters.

Timber stand improvement (TSI), 2014, 2016-2018. Led a team (3-8 people) conducting TSI at Fort Knox, KY. Used the frill and squirt method to kill maples, beech, elms, sassafras, sweetgum, blackgum, and invasive trees to aid in Oak/Hickory regeneration. Was part of a team using chainsaws to thin timber units in the Daniel Boone NF to aid in Oak/Hickory regeneration.

Hoosier National Forest invasive species removal, IN, 2017. Backpack sprayers were used to spray *Lespedeza* along logging roads and wildlife clearings. *Microstegium* was also sprayed along logging roads, ditches, and a creek.

Honeysuckle and glossy buckthorn removal, KY and OH, 2017. Weed eaters and backpack sprayers were used to cut and spray stumps. A follow up foliar spray treatment was conducted for honeysuckle.

Florida bonneted bat habitat assessment, FL, 2017. Walked a property proposed for development to locate potentially suitable Florida bonneted bat roost trees.

Hibernacula cave surveys, KY, 2014, 2016-2018. Surveyed caves to assess bat populations and examined bats for signs of WNS. Swabbed bats for WNS testing.

Terrapin Barrens Restoration, KY 2016, 2017. Multiple historical pastures were restored to tall grass/herb prairies. Transects were walked through all restoration areas and sericea lespedeza (*Lespedeza cuneata*) and Johnsongrass (*Sorghum halepense*) were removed using foliar herbicide treatments. Special care had to be taken to avoid overspray, drift from wind, and the spraying of species similar looking to target species and rare species located on the property.

Fall/winter aerial bat telemetry, TN, 2016. Assisting a graduate student, I conducted aerial telemetry on 4 gray bats and 1 small-footed bat. Bats were tracked until they returned to the cave.

Portal survey, KY, 2015 & 2016. Conducted portal surveys for Indiana bats and northern-long eared bats. Used a combination of harp traps and mist nets to close off portal openings.

Freshwater mussel survey, OH, 2016. Surveyed for mussels in the Ohio River for a proposed water intake structure. Used scuba to search for mussels along transects.

Indiana bat and northern long-eared bat presence/absence surveys, 2016. As a team leader, selected and set up mist net sites, removed bats from nets, and identified, banded and radio tagged bats for projects in AL, AR, IN, OH, and OK. For a week in IN, I tracked 7 MYSO and MYSE outfitted with radio transmitters. Bats were tracked to their roost tree and data was collected on the tree.

Gray bat bridge survey, KY, 2016. Surveyed a bridge looking for potential gray bat habitat. No bats were using the structure nor was there any indication of past use (guano staining).

Indiana bat spring and fall migration, TN and IN, 2014-2016. Conducted aerial telemetry on migrating Indiana bats. Listened to signal strength and using a computer with mapping software, estimated gps locations of individual bats. Ground tracked bats to roost trees.

Florida bonneted bat research, 2016. Working with a post-doctorate student, I assisted in setting up mist nets and acoustic lures in an attempt to capture bonneted bats. Assisted in data recording and holding bats while transmitters were attached. Conducted aerial telemetry on 5 bonneted bats for four nights.

TVA Brandenbark™ installation, 2016. Surveyed eight TVA properties to install Brandenbark™ structures. In the spring total of 25 structures were installed on four properties. Monitoring occurred later in the summer and acoustic recorders were deployed at one structure that showed use. Analyzed acoustic data and submitted report to TVA.

Florida bonneted bat acoustic survey, 2015. Selected acoustic monitoring locations for a development project. Set up acoustic devices, downloaded data, and quantitatively analyzed the data using BCID East and Kaleidoscope Pro.

Freshwater mussel survey, OH. 2015. Surveyed for mussels for a bridge replacement project. Used snorkels and scuba to collect and identify mussels.

Indiana bat and northern long-eared bat presence/absence surveys, 2015. As a team leader selected and set up mist net sites, removed bats from nets, and identified, banded and radio tagged bats for projects in OH, KY, IL, IN, NY, VA, and WV.

Indiana and northern long-eared bat acoustic surveys, 2015. Selected acoustic monitoring locations for a pipeline project in Illinois. Set up acoustic devices, downloaded data, and quantitatively analyzed the data using BCID East and Kaleidoscope Pro.

Northern long-eared bat acoustic survey, 2014. Led an acoustic survey for northern long-eared bats in Ohio for The Nature Conservancy. Chose acoustic monitoring sites, set up acoustic devices, downloaded data, quantitatively analyzed the data using BCID East and Kaleidoscope Pro, and qualitatively analyzed calls the programs identified as *M. septentrionalis*.

Indiana and northern long-eared bat acoustic surveys, 2014. Working with a permitted biologist, chose acoustic monitoring locations for a road expansion project in NC. Set up acoustic devices, downloaded data, quantitatively analyzed the data using EchoClass v.2 and BCID East, and qualitatively analyzed calls the programs identified as *M. septentrionalis*, or *M. grisescens*.

Indiana bat and northern long-eared bat presence/absence survey, 2014. Working with permitted biologists; chose mist net locations, set up nets, removed bats from nets, and obtained morphometric measurements from bats for projects in KY, VA, and WI. Transmitted one northern long-eared bat, tracked multiple bats to diurnal roosts, and conducted emergence counts.

Indiana bat, northern long-eared bat, Ozark big-eared bat habitat assessments, 2014. Walked a proposed pipeline right-of-way in Arkansas to locate potentially suitable Indiana bat and northern long-eared bat roost trees, and potentially suitable karst structures for Ozark big-eared bats.

Aquatic macroinvertebrate surveys, TN. 2014. Helped survey three streams in for macroinvertebrates. Specimens collected in the field were sorted out from leaf litter and debris to be identified and counted by permitted biologist. Assisted with further specimen sorting in the lab.

Snail survey, Cherokee National Forest, TN. 2014. Surveyed 10 stands for snails over the course of three days. Collected snails in the field and processed them in a lab.

Effectiveness of using acoustic lures to increase capture rates of the Indiana bat (*Myotis sodalis*) at mist-net sites, 2013. Worked closely with the lead biologist and other permitted biologists to identify potential mist net sites, set up mist nets and acoustic lures, remove bats from nets, obtain morphometric measurements to aid in identification, and assist with analyzing and reporting the data.

Indiana bat presence/absence survey, 2013. Working with permitted biologists; chose mist net locations, set up nets, removed bats from nets, and obtained morphometric measurements from bats for projects in KY, OH, TN, VA. Radio tagged Indiana bats and radio tracking bats to roost trees.

Utilizing acoustic methods to identify bat species, and to assess their habitat use and perception of Owls. M.S. Thesis, 2011-2013. Acoustically surveyed bat species to measure behavioral responses to owl playback calls. Also, looked at habitat utilization by individual bat species.

Indiana bat presence/absence survey, 2012. Working with a permitted biologist; scouted mist-net survey sites, chose mist net locations, set up mist nets, removed bats from nets, and obtained morphometric measurements for projects in OH and TN.

Winter owl playback surveys for the Toledo Metroparks, 2012. Conducted owl playback surveys for Great Horned Owls, Barred Owls, Eastern Screech-Owls, and Northern Saw-whet Owls. Surveys were conducted to assist with the Metroparks Raptor Monitoring Project.

Winter ecology and diet of Eastern Bluebirds. Undergraduate research, 2009-2011. Attached radio transmitters to nine bluebirds. Tracked birds to determine home range and habitat use. Analyzed fecal samples to determine diet composition.

Indiana bat presence/absence survey, 2009. Working with permitted biologists; chose mist net locations, set up nets, removed bats from nets, and obtained morphometric measurements from bats for a proposed road project in WV.

Indiana bat presence/absence survey, 2008. Working with permitted biologists; identified mist net locations, set up nets, and recorded morphometric measurements from bats for projects in OH and TN. Tracked Indiana bats to diurnal roosts, conducted emergence counts, and assisted in conducting foraging telemetry.

Publications

Weinkam, T.J., G.A. Janos, and D.R. Brown. 2017. Habitat Use and Foraging Behavior of Eastern Bluebirds (*Sialia sialis*) in Relation to Winter Weather. *Northeastern Naturalist*, 24(Special Issue 7):B1-B18.

Janos, G.A. and K.V. Root. 2014. Bats do not Alter their Foraging Activity in Response to Owl Calls. *American Midland Naturalist*, 171(2):375-378.

Reports

Janos, G. and P. Roby. 2017. Northern Long-eared Bat (*Myotis septentrionalis*) 2017 Fall Activity Research Project, Doddridge County, West Virginia. Prepared for USFWS and WDNR.

Janos, G. and J. Adams. 2017. Florida Bonneted Bat (*Eumops floridanus*) Habitat Assessment for the Turnpike Distribution Center East Property, Miami-Dade County, Florida. Prepared for Langan.

Janos, G. and J. Adams. 2017. Florida Bonneted Bat (*Eumops floridanus*) Habitat Assessment for the Turnpike Distribution Center West Property, Miami-Dade County, Florida. Prepared for Langan.

Stinson, R., G. Janos, and J. Adams. 2017. Northern long-eared bat West Virginia fall mist-net surveys. Prepared for USFWS, Elkins, WV.

Janos, G. and J. Adams. 2016. 2016 TVA BrandenBark™ Installation Project Interim Report. Prepared for Tennessee Valley Authority, Knoxville, TN.

Roby, P., G. Janos, and S. Samoray. 2016. Bat population Survey with Emphasis on Myotis Species at the Fort McClellan Army National Guard Training Center. Prepared for Ft. McClellan ARNG Training Center.

Roby, P. and G. Janos, 2016. Northern Long-eared Bat (*Myotis septentrionalis*) & Indiana Bat (*Myotis sodalis*) Mist Netting & Roost Site Study. Prepared for Indiana Army National Guard.

Roby, P. and G. Janos, 2016. Indiana Bat Presence/Probable Absence Mist-net Survey for the Proposed Kroger U-606 Development, Madison County, Alabama. Prepared for Sembler and USFWS, Birmingham, AL.

Janos, G., J. Adams, 2015. Summer 2015 Listed Bat Presence/Probable Absence Surveys for Two Proposed Pipeline Replacements Segments in Delaware and Licking Counties, Ohio. Prepared for USFWS and ODNR, Columbus, OH.

Janos, G., C. Leftwich. 2015. Summer 2015 Bat Mist Net Survey for the Proposed Olde Park Development Project, Licking County, Ohio. Prepared for Willis Engineering and Surveying.

Samoray, S., G. Janos, P. Roby, and M. Gumbert. 2014. Effectiveness of acoustic lures for increasing capture success of Indiana bats (*Myotis sodalis*). Prepared for USFWS – KFO, Frankfort, KY.

Hawkins, J.A., and G.A. Janos. 2014. Northern Long-eared Bat (*Myotis septentrionalis*) Acoustic Survey and Habitat Evaluation of the NCDOT US221 Widening Project, Ashe and Watauga Counties, North Carolina. Prepared for NCDOT.

Hawkins, J.A., and G.A. Janos. 2014. Northern Long-eared Bat (*Myotis septentrionalis*) Acoustic Survey and Habitat Evaluation of the US 268 Widening and Improvements Project Wilkes County, North Carolina. Prepared for NCDOT.

Janos, G., and S. Samoray. 2014. Acoustic surveys for the TNC northern long-eared bat conservation project, Adams County Ohio. Prepared for TNC, Dublin, OH.

Samoray, S., M. Gumbert, and G. Janos. 2013 Use of an acoustic lure to increase capture success of Indiana bats (*Myotis sodalis*) at Fort Knox, Kentucky. Prepared for USFWS – KFO, Frankfort, KY.

Presentations

BrandenBark™, a management tool for bark roosting bats, 2017. National Cave and Karst Management Symposium and the Southeastern Association of Fish and Wildlife Agencies meeting.

Aerial radio tracking of Florida bonneted bats (*Eumops floridanus*), 2017. Southeastern Bat Diversity Network.

Comparison of methods for acoustic identification of bat species using echolocation calls, 2013. Midwest Bat Working Group Meeting.

How do bats perceive owls: friend or foe? 2013. Midwest Ecology & Evolution Conference.

How do bats perceive owls: friend or foe? 2013. Oak Openings Research Forum.

Survey Experience

- Bat presence/absence surveys
- Bat habitat assessments
- Radio telemetry, ground and aerial
- White-nose Syndrome assessments
- TES surveys and habitat assessments
- Acoustic monitoring
- Herpetology Surveys and habitat assessments

Relevant Coursework

- Behavioral Ecology
- Ecology and management of wild mammals
- Ecology and management of wild birds
- Measurements and sampling
- Wildlife techniques
- GIS

Education & Training

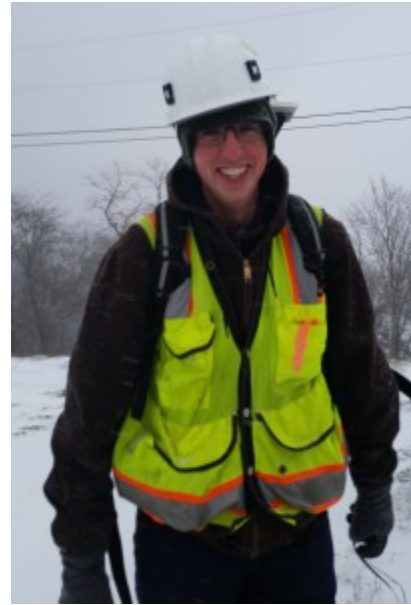
B.S. Wildlife and Fisheries Science, Management, 2013, University of Tennessee, Knoxville TN.

TDEC Hydrologic Determination Training, 2016. Montgomery Bell State Park, Burns TN. QHP-IT

Professional Experience

Copperhead Environmental Consulting, Inc., Biological Technician, May 2013 – January 2016
Biologist, January 2016 – Present

The Tennessee Izaak Walton League, Conservation Technician, summer of 2011 and 2012



Qualifications and Background

Mr. Stinson is a wildlife biologist with extensive experience in terrestrial ecology and has completed many surveys for various species over a wide geographic area, including, snails, fish, aquatic macro invertebrates, and herptiles. He has had 3 years of survey experience dealing with eastern bat species. His field experience has given him the opportunity to handle and identify individuals and roost trees including the endangered Indiana bat and gray bat. He is proficient in the use of mist nets, radio telemetry, acoustic monitoring/analysis, and bat counts using various techniques such as guano measurements, and direct counts

Selected Project Experience

Macroinvertebrate surveys, 2015, 2016, 2017. With the supervision of a qualified biologist, chose appropriate kick-net sites and collected samples according to protocols. Lab work includes sorting a picking of invertebrates, creating a sub-sample when necessary, and some species identification.

NCDOT Winter MYSE netting. Fall and Winter 2016. Acting as a field supervisor directed a group of teams on site conducting a study on the coastal plain of North Carolina about the life history of nonmigrating *Myotis septentrionalis* and other bats on the landscape. Mist nets and acoustic detection was used and several MYSE were tracked to their roosts.

Bonneted Bat Acoustic Lure Trials. 2016. Assisting biologists from the University of Florida, set up nets in order to catch Florida Bonneted bats (*Eumops floridanus*). Upon capture performed aerial foraging telemetry on EUFL on the landscape to study foraging habits and locate roosts.

Bonneted Bat Acoustic Survey. 2016. Deployed Acoustic detectors in order to determine presence/absence of Florida Bonneted Bats in southern Florida.

Ft Knox South End MYSE Netting. Summer 2017. Acted as a site leader performing mist net surveys in order to catch MYSE and MYSO on the southern end of the Ft Knox military reservation. Upon capture of listed species, and one juvenile hoary bat, led a crew performing radiotelemetry in order to locate roost trees. Found one new colony of MYSO on the south end of the reservation and multiple MYSE roost trees.

Timber stand improvement. Summer and fall 2014-2017. Assisted with a timber stand improvement project for USFW on the Ft. Knox Military installation utilizing hack and squirt techniques. Acted as a field supervisor managing multiple small crews of 3 to 4 people as well as coordinating with Ft Knox range control and the project manager.

Cleanline ARAP TN. 2016. Along with 2 other biologists, assisted with the hydrologic determination of several wet weather conveyances in Shelby and Tipton county Tennessee.

WV fall MYSE netting. 2016. Assisted with a presence/absence mist net survey for northern long-eared bats. Upon capture a transmitter was applied and the bat tracked to its roost. During this project he was responsible for supervising a technician, identifying his assigned site's mist net locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats and managing data. He also acted as field supervisor coordinating with another netting crew as well as North Bend state park and the project manager.

Terrapin Barrens Invasive Species Management. KY 2016-2017. Utilizing backpack sprayers sprayed herbicide in order to control growth of *Sericea Lespedeza*.

Redstone Arsenal, AL 2016. Assisted with a presence/absence mist net survey for Indiana, northern long-eared bats. During this project, He was responsible for supervising a field technician, identifying his assigned site's mist net locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats and managing data.

Multi-state Transmission Line Survey AR. 2016. Assisted in a presence/absence mist net survey for Indiana and northern long-eared bats. During this project, He was responsible for supervising a field

technician, identifying his assigned site's mist net locations, setting up mist nets, removing bats from nets, obtaining morphometric measurements, identifying and banding captured bats and managing data.

USFWS MYSO Migration and Foraging Study. 2015. Assisted with netting in order to facilitate gathering foraging data and migration routes for a colony of Indiana bats in Indiana. Conducted numerous nights of aerial foraging data as well as the aerial telemetry for a bat that migrated south across the landscape over 10 hours.

KDFWR Winter Bat Hibernacula Surveys. 2015-2016. Assisted with winter cave surveys. Gained experience identifying MYSO, MYLU, CORA, COVI, EPFU, and PESU in a cave setting.

Winter Bat Hibernacula Survey Alabama. 2015. Working with another biologist, conducted winter cave surveys in Alabama. Notable species identified include Tricolored Bats.

Tennessee MYSO Migration and Foraging Study. 2015. Assisted with banding and transmitter application in order to facilitate gathering foraging data and migration routes for a colony of Indiana bats in Tennessee. Assisted with the banding of numerous female MYSO as well as the transmitter application of approximately 7 females at two caves.

Effectiveness of using acoustic lures to increase capture rates of the Indiana bat (*Myotis sodalis*) at mist-net sites. 2015. Chose mist net sites, deployed nets, removed bats from net, applied transmitters to Indiana Bats as well as PESU and MYLU. Banded and obtained morphometric measurements for all species on a project for the USFWS at Ballard Wildlife Management Area that tested the use of acoustic lures to attract Indiana bats to mist-net sites in Ballard County, Kentucky. Species handled and identified: Indiana Bats, Little brown bats (*Myotis lucifugus*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) tri-colored bat (*Perimyotis subflavus*), Southeastern myotis (*Myotis austroriparius*). Supervised by Steve Samoray.

Ft. McConnell multi taxa survey. 2015. Assisted with a multi taxa survey covering reptiles and amphibians. A wide variety of sampling techniques were using including minnow traps, coverboard arrays, hoop traps, box traps, road cruising, and manual searches under logs and other debris. Bats were surveyed for acoustically. Notable species include, Graham's Crayfish Snake (*Regina grahamii*), Blanchard's cricket frog (*Acris crepitans blanchardi*), Great plains narrowmouthed toad (*Gastrophryne olivacea*).

Indiana bat and Northern Myotis presence/absence survey. 2015. Working with permitted biologists; chose mist net sites, deployed nets, removed bats from nets, banded and obtained morphometric measurements from bats for a project designed to determine the presence and roosting preferences of bats on the Fort Drum Military Reservation. Gained experience coordinating telemetry efforts as a team leader, tracking big brown bats and little brown bats on the ground as well as from the air. Species identified: big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), one little brown bat (*Myotis lucifugus*.)

Habitat assessments for Indiana and Northern Myotis. 2015. Conducted roost tree habitat assessments for both Indiana Bats and Northern Myotis in the state of Illinois over a 30 mile pipeline right of way. Gained experience using Trimble GPS units as well as basic forest survey equipment (prisms, DBH tape, etc.) in the process of taking forest composition plots.

Summer acoustic surveys for Indiana and northern long-eared bat. 2015. Worked with another biologist and another team of 2 to survey a 104km right of way with over 208 detector nights in the state of Illinois and part of Iowa. Gained experience deploying and recovering anabat units as well as site selection and data recovery.

Virginia big-eared bat roost and movement telemetry. 2014. Tracked Virginia big-eared bats (*Corynorhinus townsendii virginianus*) across the landscape to roosts as well as conducted foraging telemetry around the maternity roost.

Indiana bat and Northern Myotis presence/absence survey. 2014. Working with permitted biologists; chose mist net sites, deployed nets, removed bats from nets, and obtained morphometric measurements from bats for a pipeline project in Ohio. Banded all 4 northern long-eared bats caught. Species handled and identified: big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), four northern bats (*Myotis septentrionalis*), and one little brown bat (*Myotis lucifugus*). Supervised by Kelsey Pearman.

Effectiveness of using acoustic lures to increase capture rates of the Indiana bat (*Myotis sodalis*) at mist-net sites. 2013. Observed and documented bats on a project for the USFWS that tested the use of acoustic lures to attract Indiana bats to mist-net sites in Bullitt and Spencer counties, Kentucky. Species identified: two Indiana bats (*Myotis sodalis*), two little brown bats (*Myotis lucifugus*), tri-colored bats (*Perimyotis subflavus*), red bats (*Lasiurus borealis*), and two northern bats (*Myotis septentrionalis*). Supervised by Steve Samoray.

Indiana bat Myotis presence/absence and acoustic survey. 2013. Working with permitted biologists deployed anabat units and documented morphometric measurements from bats for a project on Smyrna Volunteer Training Site. Species identified: gray bat (*Myotis grisescens*), evening bat (*Nycticeius humeralis*), Supervised by Steve Samoray.

Indiana bat Myotis presence/absence and acoustic survey. 2013. Working with permitted biologists deployed and recovered Anabat acoustic monitoring devices for a TNARNG project in Smyrna, Milan, and Catoosa volunteer training site. Supervised by Steve Samoray.

Indiana bat presence/absence and acoustic survey. 2013. Working with permitted biologists deployed anabat units and documented morphometric measurements from bats for a pipeline project in Ohio. Species identified: Little brown bats (*Myotis lucifugus*), tri-colored bats (*Perimyotis subflavus*), Hoary bat (*Lasiurus cinereus*), and one northern bat (*Myotis septentrionalis*). Supervised by Steve Samoray.

Regulatory Expertise

- ESA (Section 7 & 10)
- CWA

Industry Clientele

- Wind
- Utilities/Traditional Energy Sources
- Mines and Reclamation
- US Department of Defense
- US Forest Service
- US Fish and Wildlife Service
- National Park Service
- Corresponding State Agencies
- Transportation
- Tribal Lands
- Academic Institutions & NGOs

Listed Taxa Expertise

- Federal Threatened and Endangered Species Permit Number TE-88809B-0
Corynorhinus townsendii virginianus,
Myotis grisescens, *Myotis sodalis*,
Myotis septentrionalis

Survey Expertise

- Habitat Assessments
- Wetland Delineation
- Presence/Absence
- Vegetation Index of Biotic Integrity

Certifications/Trainings

- Hands-on Wetland Restoration Workshop (Biebighauser), 2015
- Bats and Fire Workshop (CAFMS), 2014
- Wetland Plant Identification Course (NCTC), 2014
- Advanced Hydric Soils Course (WTI), 2014
- Vertical Rope Training (Mirza), 2013
- Acoustic Bat Research Techniques (Anabat) Course, 2013
- USACE Wetland Delineation Course (Chin), 2012
- KY Prescribed Fire Council Controlled Burn Workshop, 2012
- USFWS Range-wide Indiana Bat Protection and Enhancement Plan Guidelines Workshop, 2010
- Developing a Biological Assessment (ECS3152), 2009



Qualifications and Background

After earning a B.S. degree in Environmental Studies from Eastern Kentucky University, Ray Eaton started his environmental consulting career in 2009 as an environmental scientist. He worked on a wide variety of natural resource conservation issues for a few years before deciding on the specialty of bat ecology. Since then, conservation research has led him to 18 states and tribal lands. He stays up-to-date with bat research and volunteers with educational programs, winter bat census, and white-nose syndrome (WNS) research.

Ray's skill-set includes designing and implementing study-plans for bat research. He has an understanding of the habitat requirements of all bat species living in the eastern US and can assess habitat suitability for listed and non-listed bats. Research-techniques that he is experienced with include: mist-netting, cave census using photography, IR and thermal video recording, ultra-sonic acoustic recording and analysis, and harp-trapping portals. He has a strong understanding of radio-telemetry, and thrives to gather new data on foraging, migration, and roosting. He is adept with GIS and home-range analysis.

Ray has also been working with stream and wetland restoration since 2011, and regularly attends professional conferences regarding the CWA and training courses on the subjects of soils and botany. He has planted thousands of trees and shrubs, delineated countless wetlands, and classified miles of streams and enjoys the work.

Education

B.S. Environmental Studies, 2008,
Eastern Kentucky University,
Richmond, Kentucky

Selected Project Experience

Indiana Bat Migration Tracking, Arkansas DOT, Optimus, Arkansas to Brandsville, MO - 2018

Mr. Eaton conducted radio-tagging and tracking, roost tree emergence analysis, and habitat characterization of migrating Indiana bats (*Myotis sodalis*) in support of Arkansas DOT's migration tracking project.

Northern Long-Eared Bat Fall and Winter Ecology Study, North Carolina DOT, Alligator River NWR, Gull Rock State Game Lands, North Carolina - 2017-2018

Mr. Eaton conducted mist-netting, radio-tagging and tracking, roost-tree identification and emergence, and habitat characterization of northern long-eared bats (*Myotis septentrionalis*). This NCDOT funded project provided important data about the ecology of an imperiled species that is being decimated by the WNS. Bats were found to "winter roost" in tree cavities and break torpor and become active during warmer periods of the winter, in which prey is readily available.

Tricolored Bat Spring Migration Study, Arnold Air Force Base, Franklin County, Tennessee to Peach City, Georgia - 2018

Mr. Eaton conducted the collection and radio-tagging of tricolored bats (*Perimyotis subflavus*) as part of a study that documented a bat migrating 240 kilometers south-southeast to her maternity colony. This project was funded by Arnold Air Force Base. The research began at Wet Cave, near Suwanee, TN and finished in a forested area in surrounding a reservoir south of Atlanta

Northern Long-Eared Bat Fall Migration Study, Iowa DNR, Hardin County, Iowa - 2017

Mr. Eaton conducted radio-tracking, roost-tree identification and emergence, and habitat characterization of northern long-eared bats. This Iowa DNR funded project allowed for the research to be conducted. Bats were documented using trees late into the fall and traveling short distances to cracks in the cliff-lines and rocky hillsides along the Iowa River.

T&E Bat Presence/Absence Surveys, Eastern Band of Cherokee Indians, multiple locations throughout western North Carolina - 2016

Mr. Eaton conducted surveys targeting T&E bat species on tribal lands located in the western region of North Carolina. No targeted bats were captured during the surveys.

Northern Long-Eared Bat Summer Maternity Colony Studies, Naval Weapons Station Earle, Colts Neck, Monmouth County, New Jersey - 2015

Mr. Eaton conducted mist-netting, roost-tree identification, and habitat characterization of northern long-eared bats. This US Navy funded project allowed for the research to be conducted. Bats were documented utilizing dead trees with sloughing bark, this type of maternity roost is typical throughout the range, based on anecdotal evidence gather through experience.

Virginia Big-Eared Bat Spring Census and Mist-Netting Demonstration, Daniel Boone National Forest, Kentucky - 2014

Mr. Eaton led a mist-netting site near Stillhouse Cave as part of an educational outreach demonstration for USFWS and KDFWR biologists. The netting was in conjunction with emergence counts on all known winter hibernacula of the species in Kentucky.

Indiana Bat Home-Range Analysis, Proposed Champaign County Wind Farm, Cable, Ohio - 2009

Mr. Eaton assisted with mist-netting, radio-tagging and tracking, roost tree identification, and habitat characterization of a colony of Indiana bats in east-central Ohio. He directed three teams triangulating the location of multiple foraging bats for the life of the transmitters. He then used the data to complete a home-range analysis on the colony and delivered maps and GIS data used in the USFW's biological assessment of the proposed wind-farm.

Survey Experience

- Bat presence/absence surveys
- Bat habitat assessments
- Radio telemetry, ground and aerial
- White-nose Syndrome assessments
- TES surveys and habitat assessments
- Herpetology Surveys and habitat assessments

Relevant Coursework

- Behavioral Ecology
- Ecology and management of wild mammals
- Ecology and management of wild birds
- Measurements and sampling
- Wildlife techniques
- GIS

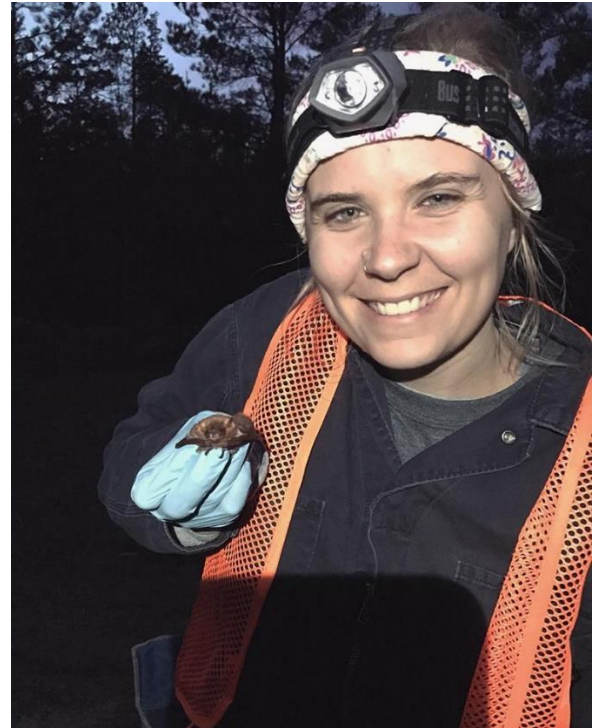
Education & Training

B.S. Wildlife and Fisheries Science, Management, 2015, University of Tennessee, Knoxville TN.

Professional Experience

Copperhead Environmental Consulting, Inc.,
Biological Technician, March 2017 – March 2018
Biologist, March 2018 – Present

The University of Tennessee, Knoxville,
Bat Field Technician, summer of 2015 and 2016



Qualifications and Background

Ms. Cotham is a wildlife biologist with extensive experience in terrestrial ecology. She has completed many surveys for various species over a wide geographic area, including bats, birds, fish, aquatic macro invertebrates, and herptiles. She has 4 years of survey experience dealing with eastern bat species. Her field experience has given her the opportunity to handle and identify individuals and roost trees including the endangered Indiana bat, Northern long-eared bat, and gray bat. She is proficient in the use of mist nets, radio telemetry, and bat counts using various techniques such as guano measurements, and direct counts

Selected Project Experience

Federally listed Bat Presence/Absence Surveys for Tennessee Department of Transportation, Tennessee, 2018. As field supervisor, coordinated with client, assigned sites to field crews, managed and submitted nightly data, and organized tracking efforts. As team leader, selected and set up mist net sites, removed bats from nets, identified bats, and banded bats. At the end of project, organized data, wrote, and submitted reports.

Foraging Telemetry for MYGR, 2018. Upon capture by The Nature Conservancy performed aerial foraging telemetry on MYGR on the landscape to study foraging habits and locate roosts.

Mist-Net Survey and Radio Telemetry of MYGR, 2018. Acted as a site leader performing mist net surveys in order to catch MYGR on Arnold Airforce Base. Upon capture a transmitter was applied and the bat tracked to its roost.

Federally listed Bat Presence/Absence Surveys for Georgia Department of Transportation, 2018. Acted as a site leader performing mist net surveys to catch MYSE and MYSO. Selected and set up mist net sites, removed bats from nets, identified bats, and banded bats.

Spring Migration of tri-colored bats, Tennessee, 2018. Conducted spring migration aerial telemetry on tri-colored bats.

Spring Migration of Indiana bats, Tennessee, 2018. Identified and hand plucked Indiana bats from hibernaculum. Assisted in radio-tagging 7 female Indiana bats. Conducted telemetry and located stop over trees on migration path.

Spring Migration of Indiana bats, Arkansas, 2018. Identified Indiana bats from hibernaculum. Assisted in radio-tagging 5 female Indiana bats. Conducted spring migration telemetry from the ground on Indiana bats for fourteen days.

Raptor survey, Ohio, 2018. Walked proposed pipeline rights-of-way looking for raptor nests.

Hibernacula and White Nose Syndrome surveys, Kentucky, 2018. Surveyed caves to conduct population census' and examine bats for signs of WNS. Identified and counted hibernating bat species (including threatened and endangered species; Indiana bat (*Myotis sodalis*)).

NCDOT Winter MYSE netting, 2018. Technician for a study on the coastal plain of North Carolina designed to study the life history of nonmigrating *Myotis septentrionalis* and other bats on the landscape. A team leader, selected and set up mist net sites and acoustic sites, removed bats from nets, identified bats, banded bats, and radio-tagged 4 northern long-eared bats captured. Performed tracking and emergence counts.

Foraging Telemetry on MYLE, Tennessee, 2017. Conducted a winter foraging study on *Myotis leibei* in Tennessee for Copperhead Consulting. This included aerial tracking of the bat while it foraged.

Fall Migration of MYSE, Iowa, 2017. Conducted radio telemetry on *Myotis septentrionalis* in Iowa for Copperhead Consulting. This included successfully tracking bats to accessible trees, collecting foraging telemetry from the plane, and conducting emergence counts

Fall Migration of MYSE, West Virginia, 2017. Worked as a technician in identifying mist-net sites, focusing specifically on Northern long-eared bat habitat. Identified and radio-tagged Northern long-eared bats, tracked and conducted emergence counts on bats.

Regulatory Habitat Assessment for MYSO and MYSE, Tennessee, 2017. Assisted with a habitat assessment for MYSO and MYSE. Collected vegetation data and helped compile data into report.

Building Survey for Presence of Bats, Kansas, 2017. Survey of a historical building for the presence of bats including acoustic monitoring in.

Spring Migration of Indiana bats. Tennessee. 2017. Identified Indiana bats from hibernaculum. Assisted in radio-tagging 5 female Indiana bats. Conducted migration telemetry.

NCDOT Winter MYSE tracking. 2017. Technician for a study on the coastal plain of North Carolina designed to study the life history of nonmigrating *Myotis septentrionalis* and other bats on the landscape. Performed tracking and emergence counts.

Harp Trapping During Fall Swarming, Tennessee, 2016. Assisted in harp trapping efforts at multiple caves for MYGR, MYSO, and MYLU. Once captured a PIT tag was inserted and a band was applied.

Presence of Bats in Anthropogenic Structures in Great Smoky Mountains NP, Tennessee, 2016. Assisted in searching buildings for active or past bat roosts. Located guano or other signs of use by bats to collect data on building. When bats were found actively using the building they were plucked and biometric data was collected and a band applied.

Harp Trapping for MYGR, Tennessee, 2016. Assisted in harp trapping efforts at multiple caves conducting summer roost counts for MYGR. Once captured biometric data was collected and a band was applied.

Presence of Bats in Anthropogenic Structures in Great Smoky Mountains NP, Tennessee, 2015. Assisted in searching buildings for active or past bat roosts. Located guano or other signs of use by bats to collect data on building. When bats were found actively using the building they were plucked and biometric data was collected and a band applied.

Presence/absence mist net and radio telemetry surveys for tri-colored bats in Great Smoky Mountains NP, Tennessee, 2015. Assisted with netting in order to facilitate roosting ecology of tri-colored bats in Great Smoky Mountains NP. Assisted in selecting mist-net sites, setting up nets, and plucking and collecting data on captured bats. Applied radio transmitters to target species and then tracked them to their roost trees for the duration of the transmitter life. Collected vegetation data around roost trees.

Survey Expertise

- Bat Presence/Absence
- Radio telemetry, (Ground and Aerial)
- Acoustic Monitoring/Lure
- Harp Trapping
- Bat Habitat Assessments
- Cave Survey
- Freshwater Mussel Presence/Absence
- Mussel Relocation
- Mussel Habitat Assessment
- Invasive Species Removal
- Habitat Restoration
- Electroshock/Seining Fish Surveys
- Remote Sensing Habitat Assessment

Certifications/Training

- PADI Advanced Open Water Diver
- PADI Enriched Air Diver
- KY Commercial Pesticide Applicator License
- IN Pesticide Applicator License
- OSHA 10hr Safety and Health
- CPR, AED, and First Aid for Children, Infants, Adults
- PEC Basic 10hr
- Safe Land USA
- Type 2 Firefighter

Relevant Coursework

- Mammalogy
- Population Analysis
- Field Techniques
- GIS
- Ichthyology
- Wetland Ecology
- Wetland and Aquatic Plant Biology

Education

B.S. Wildlife Management, Anticipated
Graduation: May. 2018, Eastern Kentucky
University, Richmond, Kentucky



Qualifications and Background

Mr. Seiter is a Wildlife Biologist with extensive experience working with Federal and State listed fauna across much of the eastern United States. Mr. Seiter has 4 years of survey experience with eastern bat species including Indiana Bats, Gray Bats, Northern Long-eared Bats, and Little Brown Bats. He is proficient in handling and identifying eastern bats and their respective roosts, the use of mist-nets, harp traps, radio telemetry, acoustic monitoring, and bat counts. His experience has also allowed him to find and identify freshwater mussels, relics, and fish in streams of various conditions using snorkeling, SCUBA, and Electroshock methods. He has also participated in the removal of invasive species such as Autumn Olive, Buckthorn, Honey Suckle, Johnson Grass and Lespedeza using both mechanical and chemical methods.

Professional Experience

Copperhead Environmental Consulting, Inc.,
Biological Technician, Summer 2014, May 2016 -
Present.

Selected Project Experience

Northern Long-Eared Bat Presence/Absence Survey. 2018.

Working with a permitted biologist; Mr. Seiter chose and deployed mist-net sites, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for The Kentucky Bat Working Group Bat Blitz in Bell County Kentucky. Species identified: 1 Big Brown Bat (*Eptesicus fuscus*), 4 Eastern Red Bats (*Lasiurus borealis*), 1 Gray Bat (*Myotis grisescens*), and 1 Little Brown Bat (*Myotis lucifugus*). Supervised by Rob Stinson.

Indiana and Northern Long-Eared Bat Presence/Absence Survey and BrandenBark™ Monitoring. 2018.

Working with permitted biologists; Mr. Seiter chose and deployed mist-nets on the landscape and around BrandenBark™ structures, removed bats from nets, identified, banded, and obtained morphometric measurements, and activated/attached radio transmitters to bats on a project in Ft. Knox. Species identified: Big 7 Brown Bats (*Eptesicus fuscus*), 10 Eastern Red Bats (*Lasiurus borealis*), 2 Gray Bats (*Myotis grisescens*), 57 Indiana Bats (*Myotis sodalis*), 19 Little Brown Bats (*Myotis lucifugus*), and 19 Evening Bats (*Nycticeius humeralis*). Supervised by: Gregg Janos, Piper Roby, Rob Stinson, and Price Sewell.

Indiana Bat Presence/Absence Survey for BrandenBark™ Structures. 2018.

Working with permitted biologists; Mr. Seiter chose and deployed mist-nets around BrandenBark™ structures, removed bats from nets, identified, banded, and obtained morphometric measurements, and activated/attached radio transmitters to bats throughout the summer on a project in Ft. Knox. Species identified: 312 Indiana Bats (*Myotis sodalis*). Supervised by: Piper Roby, Gregg Janos, Josh Adams, Rob Stinson, Nikki Davis, Mark Gumbert, and Ray Eaton.

Radio Telemetry Study of an Indiana Bat Maternity Colony. 2018.

Working with permitted biologists; Mr. Seiter captured, identified, banded, and radio tagged bats in conjunction with a BrandenBark™ Monitoring project. He also tracked bats to diurnal roosts, and conducted emergence counts. Species identified: Indiana Bats (*Myotis sodalis*). Supervised by Piper Roby, Gregg Janos, Josh Adams, Rob Stinson, Nikki Davis, and Mark Gumbert.

Freshwater Mussel Monitoring Site Assessments. 2018.

Working with a permitted biologist; Mr. Seiter assessed streams across West Virginia for potential mussel habitats, searched for live mussels and relics, and chose sites to be used as water withdraw monitoring locations. Supervised by Price Sewell.

BrandenBark™ Structure Monitoring and Guano Collection. 2018.

Mr. Seiter conducted weekly monitoring of, and the collection of guano, from BrandenBark™ structures at Ft. Knox, for further laboratory analysis.

Indiana Bat and Northern Long-Eared Bat Presence/Absence Survey in West Virginia. 2018.

Working with permitted biologists; Mr. Seiter chose and deployed mist-net sites, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for a regulatory project in Tyler County, West Virginia. Species Identified: 7 Big Brown Bats (*Eptesicus fuscus*), 3 Eastern Red Bats (*Lasiurus borealis*), 6 Northern Long-Eared Bats (*Myotis septentrionalis*), and 1 Tri-Colored Bat (*Perimyotis subflavus*). Supervised by: Price Sewell and Taylor Culbertson.

Northern Long-Eared Bat Acoustic Presence/Absence Survey. 2018.

Mr. Seiter chose locations and deployed Anabat Swift units for a project in Lake County, IL.

Endangered Mussel Presence/Absence Survey. 2018.

Working with a permitted biologist; Mr. Seiter surveyed stream beds for live mussels using both SCUBA and snorkel methods for a project in Laurel County, Kentucky. Supervised by Price Sewell.

Indiana Bat Presence/Absence Survey. 2017.

Working with permitted biologists; Mr. Seiter chose and deployed mist-net sites, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for a project in Huron County, Ohio. He also gained experience in both ground and aerial radio tracking an Indiana Bat (*Myotis sodalis*) to day time roosts and gathered night time foraging data. Species identified: 33 Big Brown Bat (*Eptesicus fuscus*), 7 Eastern Red Bats (*Lasiurus borealis*), and 3 Hoary Bats (*Lasiurus cinereus*). Supervised by: Gregg Janos, Taylor Culbertson, Kate Baer, and Piper Roby.

Rafinesque's Big-Eared Bat Presence/Absence Survey. 2017.

Working with a permitted biologist; Mr. Seiter chose and deployed mist-nets and a harp trap site, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for a project in Bullitt County, Kentucky. He also gained experience activating and attaching radio transmitters to Northern Long-Eared Bats as well as tracking them to diurnal roosts. Species Identified: 26 Big Brown Bats (*Eptesicus fuscus*), 9 Eastern Red Bats (*Lasiurus borealis*), 1 Little Brown Bat (*Myotis lucifugus*), 4 Northern Long-Eared Bats (*Myotis septentrionalis*), and 1 Evening Bat (*Nycticeius humeralis*). Supervised by Price Sewell.

Endangered Bats Presence/Absence Survey. 2016.

Working with permitted biologists; Mr. Seiter chose and deployed mist-net sites, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for a project across Northern Arkansas and Oklahoma. Species Identified: 1 Big Brown Bat (*Eptesicus fuscus*), 31 Eastern Red Bats (*Lasiurus borealis*), 2 Gray Bats (*Myotis grisescens*), 4 Evening Bats (*Nycticeius humeralis*), and 16 Tri-colored Bats (*Perimyotis subflavus*). Supervised by: Adam Heist and Price Sewell

Endangered Mussel Presence/Absence Survey. 2016.

Working with permitted biologists; Mr. Seiter surveyed stream beds for live mussels using both SCUBA and snorkel methods for a project across Northern Ohio. Supervised by Price Sewell and Jeff Hawkins.

Indiana Bat Presence/Absence Survey. 2014.

Working with permitted biologists; Mr. Seiter chose and deployed mist-net sites, removed bats from nets, identified, banded, and obtained morphometric measurements from bats for a project in Ft. McClellan, AL. Species Identified: 7 Big Brown Bats (*Eptesicus fuscus*), 1 Eastern Red Bat (*Lasiurus borealis*), 3 Gray Bats (*Myotis grisescens*), 1 Evening Bat (*Nycticeius humeralis*), and 4 Tri-colored Bats (*Perimyotis subflavus*). Supervised by: Jeff Schwierjohann and Piper Roby.

Survey Experience

- Bat presence/absence surveys
- Bat habitat assessments
- Radio telemetry
- White-nose Syndrome assessments
- Acoustic monitoring
- Wetland Delineations
- Stream Quality Assessments
- Environmental Site Assessments
- Air Quality Assessments

Professional Experience

Copperhead Environmental Consulting, Inc.,
Biological Technician, May 2017 - Present

Intertek - PSI: Professional Service Industries,
Project Scientist, January 2016 - May 2017

Education

B.A. Environmental Earth Science and Sustainability, 2015, Miami University, Oxford OH

Certifications/Trainings

- OSHA 30 hour, 2018
- OSHA 10 hour, 2018
- First Aid CPR / AED, 2018
- Ohio Wetlands Association Wetlands Science Summit and vernal pool workshop, 2017

Affiliations

- Ohio Wetlands Association
- Ohio Geological Society

Selected Project Experience

Fall Portal/Cave Surveys. 2018. Working with permitted biologists; deployed harp traps, applied exclusion netting, removed bats from nets, obtained morphometric measurements from bats, and deployed AnaBat Swift acoustic detectors for a project in Boone and Kanawha Counties in West Virginia. Species identified and handled: Tri-colored bat (*Perimyotis subflavus*). Supervised by Taylor Culbertson and Rob Stinson.

Indiana bat (*Myotis sodalis*) and Northern Myotis (*Myotis septentrionalis*) presence/absence and Acoustic survey. 2018. Working with permitted biologists; Chose mist net sites, deployed nets, removed bats from nets, obtained morphometric measurements from bats, and deployed AnaBat Swift acoustic detectors for a project on Fort McClellan in AL. Species identified and handled: gray bat (*Myotis grisescens*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), evening bat (*Nycticeius humeralis*),



Qualifications and Background

Miss Eshler is a wildlife biologist with multiple years in the consulting business completing wildlife surveys, habitat assessments, and environmental site assessments. She has two years of survey experience dealing with eastern bat species. Her field experience has given her the opportunity to handle and identify thirteen different species of bats, including the federally endangered Indiana bat and Gray bat as well as the federally threatened Northern Long-Eared bat. Additionally, Miss Eshler has tracked to and identified roost trees and rock features for six different species of bats in eight different states. She is proficient in the use of mist nets, radio telemetry, acoustic monitoring/analysis, and bat counts using various techniques such as guano measurements, and direct counts.

Tri-colored bat (*Perimyotis subflavus*), Seminole bat (*Lasiurus seminolus*), Mexican Free-tailed bat (*Tadarida brasiliensis*). Supervised by Mark Gumbert and Piper Roby.

Radio telemetry study of an Indiana bat bridge bachelor colony near Fort Knox, KY. 2018. Tracked bats from a bridge colony to other diurnal roosts, conducted bridge bat survey counts, and conducted emergence counts. Supervised by Piper Roby.

Kentucky Endangered Species Bridge Program. 2018. Performed 200+ preliminary desktop habitat assessments, including the use of GIS, for the potential of listed species including but not limited to the Kentucky Arrow Darter, Snuffbox mussel, Virginia Big-Eared Bats, and Big Sandy Crayfish underneath bridges throughout Kentucky. Supervised by Marty Marchaterre.

Indiana bat and Guano Collection on Fort Knox, KY. 2018. Biweekly monitored the usage of BrandenBark™ structures by an Indiana bat maternity colony located on Ft. Knox and took guano pellet samples from seven of the BrandenBark™ structures per visit for further laboratory dietary analysis.

Radio telemetry study of an Indiana bat maternity colony on Fort Knox, KY. 2018. Captured Indiana bats, tracked bats to diurnal roosts, and conducted emergence counts. Species handled and identified: Indiana bats, Little Brown Bats (*Myotis lucifugus*). Supervised by Piper Roby.

Indiana bat monitoring of a maternity colony on Fort Knox, KY. 2018. Deployed nets around BrandenBark™ structures, removed bats, and obtained morphometric measurements from bats. Banded and applied radio transmitters to Indiana bats. Species handled and identified: Indiana bat, Little Brown bat, Evening bat.

Gray Bat roost and foraging telemetry study. 2018. Working with permitted biologist; Choose mist net site locations, deployed nets, removed bats, and obtained morphometric measurements from bats on Arnold Air Force Base in TN. Actively applied radio transmitters to gray bats, and tracked them to their diurnal roosts and conducted emergence counts. Species handled and identified: Gray bat (*Myotis grisescens*), red bat (*Lasiurus borealis*), evening bat (*Nycticeius humeralis*), little brown bat (*Myotis lucifugus*), and hoary bat (*Lasiurus cinereus*). Supervised by Steve Samoray.

Indiana bat and Northern Myotis presence/absence survey. 2018. Working with permitted biologists; Choose mist net sites, deployed nets, removed bats from nets and obtained morphometric measurements from bats for a project near Pikeville, TN. Species identified and handled: gray bat (*Myotis grisescens*) big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), evening bat (*Nycticeius humeralis*). Supervised by Steve Samoray.

Migration study of a Tri-Colored Bat (*Perimyotis subflavus*) starting near Dechard, TN. 2018. Captured Tri-Colored bats, tracked bats to diurnal roosts, and conducted emergence counts. Species handled and identified: Tri-Colored bats, Gray Bats. Supervised by Piper Roby.

Migration study of an Indiana bat starting near Mountain View, AR. 2018. Captured Indiana bats from cave, tracked bats to diurnal roosts, and conducted emergence counts. Species handled and identified: Indiana bats. Supervised by Piper Roby.

Winter behavior of Northern Myotis. Fall 2017 / Winter 2018.

Working with permitted biologist; Choose mist net site locations, deployed nets, removed bats, and obtained morphometric measurements from bats. Actively applied radio transmitters to Northern Myotis bats and tracked them to their diurnal roosts and conducted emergence counts. Also conducted wing punch biopsy sampling, WNS swabbing, hair sampling, and guano collection on all Myotis species.

Species handled and identified: Northern myotis (*Myotis septentrionalis*), Rafinesque's Big-Eared bat (*Corynorhinus rafinesquii*), Seminole bat (*Lasiurus seminolus*), Evening bat (*Nycticeius humeralis*), Big brown bat (*Eptesicus fuscus*), Red bat (*Lasiurus borealis*), Tri-colored bat (*Perimyotis subflavus*). Supervised by Theresa Wetzel.

Migration study of Northern Myotis throughout central-northern Iowa. 2017. Working with permitted biologist; Choose mist net site locations, deployed nets, removed bats, and obtained morphometric measurements from bats. Deployed acoustic lures at net sites to attract Northern Myotis. Applied radio transmitters to Northern Myotis bats and Little Brown bats and tracked them to their diurnal roosts and conducted emergence counts. Additionally, conducted WNS swabbing, dog scent swabbing, hair sampling, and guano collection on all Myotis species. Species handled and identified: Northern Myotis (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and evening bats (*Nycticeius humeralis*). Supervised by Piper Roby.

Indiana bat and Northern Myotis presence/absence survey. 2017. Working with permitted biologists; Deployed nets, removed bats from nets and obtained morphometric measurements from bats for a project on Fort Knox, KY. Also tracked a radio tagged Indiana bat (*Myotis sodalis*) to a new bridge colony. Species handled: red bat (*Lasiurus borealis*), and tri-colored bat (*Perimyotis subflavus*). Supervised by Piper Roby.

Indiana bat presence/absence and acoustic survey. 2017. Working with permitted biologists; Deployed nets, removed bats from nets, obtained morphometric measurements from bats, and deployed SD2 AnaBat units for a project in Hot Springs, AR. Species handled: big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), evening bat (*Nycticeius humeralis*), Little Brown bat (*Myotis lucifugus*). Supervised by Theresa Wetzel.

Indiana bat and Northern Myotis presence/absence survey. 2017. Working with permitted biologists; Deployed nets, removed bats from nets and obtained morphometric measurements from bats for a project in NW Ohio. Also gained experience tracking Indiana bats (*Myotis sodalis*) the ground. Species handled: big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), and hoary bat (*Lasiurus cinereus*). Supervised by Zack Baer.

Survey Experience

- Bat presence/absence surveys
- Bat habitat assessments
- Ground/aerial radio telemetry
- White-nose Syndrome assessments
- Acoustic monitoring

Professional Experience

Copperhead Environmental Consulting, Inc.,
Biological Technician, May 2016 – Present

Education

B.S. Fisheries and Wildlife Biology, 2015,
California University of Pennsylvania,
California, PA.

Relevant Coursework

- Principals of Wildlife Management
- Wildlife Management Techniques
- Conservation Biology
- Animal Population Dynamics
- Ornithology
- Herpetology
- Forest Ecology and Dendrology
- Plant Ecology
- GIS

Certifications/Trainings

- Kentucky Department of Agriculture Commercial Pesticide License
- OSHA 10-hour general industry safety and health
- CPR, AED, and first aid for infants, children, and adults.

Selected Project Experience

BrandenBark structure monitoring. KY, WV. 2016-2018. Assisted permitted biologists with checking structures, deploying nets around structures, removing bats from nets, and recording morphometric characteristics. Handled and identified Indiana bat (*Myotis sodalis*), Northern-long eared bat (*Myotis septentrionalis*) Little Brown bat (*Myotis lucifugus*), and Evening bat (*Nycticeius humeralis*).

Radio telemetry study of an Indiana bat (*Myotis sodalis*) maternity colony, KY. 2018. Assisted permitted biologists with choosing net sites, deploying nets, removing bats from nets, recording morphometric characteristics, and applying transmitters. Bats were then tracked to their diurnal roosts and emergence counts were conducted. Handled and identified Indiana Bat (*Myotis sodalis*).

Indiana bat presence/absence acoustic surveys. WV. 2018. Assisted a permitted biologist with selecting sites, deploying AnaBat SD2/Swift acoustic detectors, downloading and analyzing the data.



Qualifications and Background

Mr. Burns is a biological technician with experience in terrestrial ecology. He has multiple years' experience completing surveys for eastern bat species, including the federally endangered Indiana bat and Gray bat as well as the federally threatened Northern Long-Eared bat. In doing these surveys he has become proficient in the use of mist nets, acoustic monitoring devices, radio telemetry, and roost tree emergence counts. He also has experience in the site selection and installation of bat mitigation/habitat enhancement structures such as BrandenBark and rocket boxes. He also has experience applying pesticides using hack and squirt as well as the cut stump method.

Indiana bat (*Myotis sodalis*) migration study. TN. 2018. Worked with permitted biologists to remove Indiana bats from a cave, take morphometric data, and apply transmitters. Then tracked them to their diurnal roosts and conducted emergence counts. Handled and identified Indiana bat (*Myotis sodalis*)

Northern-long eared bat (*Myotis septentrionalis*) winter migration study. NC. 2016-2018. Assisted permitted biologists with choosing net sites, deploying nets, removing bats from nets, recording morphometric characteristics, applying transmitters and deploying acoustic monitoring devices. Also conducted wing punch biopsy sampling, white-nose syndrome swabbing, hair sampling, and guano collection on *Myotis* species. Also led ground tracking teams as well as gaining experience in aerial telemetry. Handled and identified Northern-long eared bat (*Myotis septentrionalis*), Southeastern myotis (*Myotis austroriparius*), Tri-colored bat (*Perimyotis subflavus*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Evening bat (*Nycticeius humeralis*), Seminole bat (*Lasiurus seminolus*), Hoary bat (*Lasiurus cinereus*), Eastern red bat (*Lasiurus borealis*), and Big brown bat (*Eptesicus fuscus*).

Winter mine survey. PA. 2018. Assisted a permitted biologist with surveying a limestone mine in the winter. Identified Little brown bat (*Myotis lucifugus*), Tri-colored bat (*Perimyotis subflavus*), and Big brown bat (*Eptesicus fuscus*).

Kentucky Bat Working Group Bat Blitz. KY. 2018. Assisted a permitted biologist with choosing net sites, deploying nets, removing bats from nets, and recording morphometric characteristics. Identified and handled Gray bat (*Myotis grisescens*), Little brown bat (*Myotis lucifugus*), Evening bat (*Nycticeius humeralis*), and Big brown bat (*Eptesicus fuscus*).

Northern-long eared bat (*Myotis septentrionalis*) fall migration study. IA. 2017. Assisted permitted biologists with choosing net sites, deploying nets, removing bats from nets, recording morphometric characteristics, and applying transmitters. In addition to morphometric data, also collected guano samples, white nose and scent swabs, and guano samples of *Myotis* species. Also led ground tracking teams as well as gaining experience in aerial telemetry. Handled and identified Northern-long eared bat (*Myotis septentrionalis*), Little brown bat (*Myotis lucifugus*), Tri-colored bat (*Perimyotis subflavus*), Hoary Bat (*Lasiurus cinereus*), Eastern red bat (*Lasiurus borealis*), Evening bat (*Nycticeius humeralis*), Silver-haired bat (*Lasionycteris noctivagans*), and Big brown bat (*Eptesicus fuscus*).

Indiana (*Myotis sodalis*) and Northern-long eared bat (*Myotis septentrionalis*) presence/absence survey. OH. 2017. Assisted a permitted biologist with choosing net sites, deploying nets, removing bats from nets, recording morphometric characteristics, and applying a transmitter. Also tracked, using radio telemetry, to diurnal roosts and conducting emergence counts. Handled and identified Northern-long eared bat (*Myotis septentrionalis*), Eastern red bat (*Lasiurus borealis*), and Big brown bat (*Eptesicus fuscus*).

Indiana (*Myotis sodalis*) and Northern-long eared bat (*Myotis septentrionalis*) presence/absence survey. KY. 2017. Assisted a permitted biologist with choosing net sites, deploying nets, removing bats from nets, and recording morphometric characteristics. Also tracked a Tri-colored bat (*Perimyotis subflavus*) to its diurnal roost. Handled and identified Eastern red bat (*Lasiurus borealis*), and Big brown bat (*Eptesicus fuscus*).

Indiana and Northern long-eared bat presence/absence acoustic survey. NY. 2017. Assisted a permitted biologist with selecting sites, deploying AnaBat SD2 acoustic detectors, downloading, and analyzing the data.

Indiana and Northern long-eared bat presence/absence. 2016. AR. Assisted permitted biologists with choosing net sites, deploying nets, removing bat from nets, recording morphometric characteristics, and tracking using radio telemetry. Handled and identified Gray bat (*Myotis grisescens*), Southeastern myotis (*Myotis austroriparius*), Tri-colored bat (*Perimyotis subflavus*), Evening bat (*Nycticeius humeralis*), Hoary bat (*Lasiurus cinereus*), Eastern red bat (*Lasiurus borealis*), and Big brown bat (*Eptesicus fuscus*).

Indiana bat habitat assessments. WV. 2016-2018. Walked proposed pipeline right of ways identifying potential Indiana bat maternity roosts. Also installed mitigation structures if needed.

Mitigation/habitat enhancement projects. 2016-2018. Selected sites and installed structures, such as BrandenBark and rocket boxes, for mitigation or habitat enhancement purposes.

Timber stand improvement. KY. 2016-2018. Conducted timber stand improvement utilizing the hack and squirt method.

Glossy Buckthorn Removal. OH. 2017. Utilized weed eaters and backpack sprayers to cut invasive Glossy Buckthorn, then applied herbicide to the cut stump.



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 34 — Service - Prof

Proc Folder: 547217

Doc Description: Bat Survey- Camp Dawson

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-02-08	2019-02-25 13:30:00	CRFQ 0603 ADJ1900000009	1

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Copperhead Environmental Consulting, Inc.
 471 Main St.
 Paint Lick, KY 40461
 859-925-9012

FOR INFORMATION CONTACT THE BUYER

Stephanie L Gale
 (304) 558-8801
 stephanie.l.gale@wv.gov

Signature X *Piper Raby*

FEIN # 27-0083689

DATE 22 February 2019

All offers subject to all terms and conditions contained in this solicitation

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Piper Roby Research Director

 (Name, Title)
 Piper Roby, Research Director

 (Printed Name and Title)
 471 Main St., Paint Lick, KY 40461

 (Address)
 859-925-9012/859-925-9816

 (Phone Number) / (Fax Number)
 plrobby@copperheadconsulting.com

 (email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Copperhead Environmental Consulting

 (Company)

Piper Roby Research Director

 (Authorized Signature) (Representative Name, Title)

Piper Roby, Research Director

 (Printed Name and Title of Authorized Representative)

22 February 2019

 (Date)

859-925-9012/859-925-9816

 (Phone Number) (Fax Number)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: ADJ190000009

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

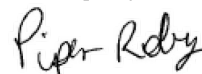
(Check the box next to each addendum received)

<input checked="" type="checkbox"/> Addendum No. 1	<input type="checkbox"/> Addendum No. 6
<input type="checkbox"/> Addendum No. 2	<input type="checkbox"/> Addendum No. 7
<input type="checkbox"/> Addendum No. 3	<input type="checkbox"/> Addendum No. 8
<input type="checkbox"/> Addendum No. 4	<input type="checkbox"/> Addendum No. 9
<input type="checkbox"/> Addendum No. 5	<input type="checkbox"/> Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Copperhead Environmental Consulting, Inc.

Company



Authorized Signature

22 February 2019

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.
Revised 6/8/2012

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SOLICITATION NO.:

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Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

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(Check the box next to each addendum received)

- Addendum No. 1
- Addendum No. 2
- Addendum No. 3
- Addendum No. 4
- Addendum No. 5

- Addendum No. 6
- Addendum No. 7
- Addendum No. 8
- Addendum No. 9
- Addendum No. 10

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Copperhead Environmental Consulting
Company

Piper Reby
Authorized Signature

22 February 2019
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

REQUEST FOR QUOTATION
Bat Survey Camp Dawson Army Training Site

10. VENDOR DEFAULT:

10.1. The following shall be considered a vendor default under this Contract.

10.1.1. Failure to perform Contract Services in accordance with the requirements contained herein.

10.1.2. Failure to comply with other specifications and requirements contained herein.

10.1.3. Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

10.1.4. Failure to remedy deficient performance upon request.

10.2. The following remedies shall be available to Agency upon default.

10.2.1. Immediate cancellation of the Contract.

10.2.2. Immediate cancellation of one or more release orders issued under this Contract.

10.2.3. Any other remedies available in law or equity.

11. MISCELLANEOUS:

11.1. Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Piper Roby

Telephone Number: 859-925-9012

Fax Number: 859-925-9816

Email Address: plroby@copperheadconsulting.com

EXHIBIT A
Pricing Page

ALL LABOR, MATERIALS, EQUIPMENT, AND SUPPLIES NECESSARY TO CONDUCT CRITICAL FAUNA SURVEY FOR THE INDIANA BAT AND NORTHERN LONG-EARED BAT, ON CAMP DAWSON ARMY TRAINING SITE AT KINGWOOD, WV

The undersigned, hereafter called the Bidder, being familiar with and understanding the bidding documents; and being familiar with the required qualifications and the mandatory requirements of the Project with regards to the deliverables and associated timelines, hereby proposes to furnish labor, material, equipment, supplies, and transportation to perform the work as described in the bidding documents

BIDDERS COMPANY NAME: Copperhead Environmental Consulting, Inc.

VENDOR ADDRESS: 471 Main St.

Paint Lick, KY 40461

TELEPHONE: 859-925-9012

FAX NUMBER: 859-925-9816

E-MAIL ADDRESS: plroby@copperheadconsulting.com

TOTAL BID AMOUNT:

Eighty-seven thousand dollars

(\$ 87,000)

(Contract bid to be written in words and numbers.)

Failure to use this bid form may result in bid disqualification.

SIGNATURE:  DATE: 22 February 2019

NAME: Piper Roby
(Please Print)

TITLE: Research Director



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

02/18/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER R. J. Roberts, Inc. dba Roberts Insurance P. O. Box 1177 Richmond, KY 40476-1177 John H. Roberts		CONTACT NAME: John H. Roberts PHONE (A/C, No, Ext): 859-623-7684 FAX (A/C, No): 859-623-0242 E-MAIL ADDRESS:	
		INSURER(S) AFFORDING COVERAGE	
		NAIC #	
INSURED COPPERHEAD ENVIRONMENTAL CONSULTING, INC. P O Box 73 Paint Lick, KY 40461		INSURER A : Kentucky Employer's Mutual Ins 10320	
		INSURER B : Motorists Insurance Companies 14621	
		INSURER C : MCM INSURANCE AGENCY INC.	
		INSURER D :	
		INSURER E :	
		INSURER F :	

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY	X		FEI-GCC-25416-00	09/25/2018	09/25/2019	EACH OCCURRENCE \$ 5,000,000
	<input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000
	<input checked="" type="checkbox"/> PROFESSIONAL						MED EXP (Any one person) \$ 10,000
	<input checked="" type="checkbox"/> POLLUTION						PERSONAL & ADV INJURY \$ 5,000,000
GEN'L AGGREGATE LIMIT APPLIES PER:							GENERAL AGGREGATE \$ 5,000,000
<input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC							PRODUCTS - COMP/OP AGG \$ 5,000,000
	OTHER:						\$
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY	X		3327662560	11/04/2018	11/04/2019	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
	<input type="checkbox"/> ANY AUTO ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS						BODILY INJURY (Per person) \$
	<input checked="" type="checkbox"/> HIRED AUTOS						BODILY INJURY (Per accident) \$
							PROPERTY DAMAGE (Per accident) \$
							\$
C	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR	X		FEI-EXS-25417-00	09/25/2018	09/25/2019	EACH OCCURRENCE \$ 4,000,000
	<input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE						AGGREGATE \$ 4,000,000
	DED RETENTION \$						\$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY			336746	04/26/2018	04/26/2019	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)						E.L. EACH ACCIDENT \$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE \$ 1,000,000
							E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER IS SHOWN AS ADDITIONAL INSURED PER CONTRACT

CERTIFICATE HOLDER

CANCELLATION

WEST VIRGINIA NATIONAL GUARD 1707 COONSKIN DRIVE CHARLESTON, WV 25311	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE John H. Roberts

West Virginia Ethics Commission Disclosure of Interested Parties to Contracts

(Required by W. Va. Code § 6D-1-2)

Copperhead Environmental
Consulting, Inc.

Name of Contracting Business Entity: _____ Address: 471 Main St., Paint Lick, KY 40461

Name of Authorized Agent: Piper Roby Address: 471 Main St., Paint Lick, KY 40461

Contract Number: _____ Contract Description: Bat Survey on Camp Dawson

Governmental agency awarding contract: State of West Virginia

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (attach additional pages if necessary):

1. Subcontractors or other entities performing work or service under the Contract

Check here if none, otherwise list entity/individual names below.

2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)

Check here if none, otherwise list entity/individual names below.

Mark Gumbert

3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)

Check here if none, otherwise list entity/individual names below.

Signature: Piper Roby

Date Signed: 22 February 2019

Notary Verification

State of Kentucky, County of Garrard

I, Vicky Abrams, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 22nd day of February, 2019.

Vicky Abrams
Notary Public's Signature

Exp: 1-19-20

To be completed by State Agency:

Date Received by State Agency: _____

Date submitted to Ethics Commission: _____

Governmental agency submitting Disclosure: _____

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Copperhead Environmental Consulting, Inc.

Authorized Signature: *Piper Raby* Date: 22 February 2019

State of Kentucky

County of Garrard, to-wit:

Taken, subscribed, and sworn to before me this 22 day of February, 2019.

My Commission expires 1-19-20, 20 .

AFFIX SEAL HERE

NOTARY PUBLIC

Kathy [Signature]

STATE OF WEST VIRGINIA - PURCHASING DIVISION

**VENDOR REGISTRATION AND DISCLOSURE STATEMENT
AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS
CERTIFICATION APPLICATION**

Before a vendor is eligible to sell goods and/or services to the State of West Virginia, the *West Virginia Code* §5A-3-12 requires all vendors to have on file with the West Virginia Purchasing Division a completed Vendor Registration and Disclosure Statement. Vendors supplying sole source goods or services to West Virginia state agencies, or competitive purchases of \$2,500 or less annually in aggregate across all state agencies are required to complete the Vendor Registration and Disclosure Statement (WV-1A form). If the amount for competitive purchases exceed \$2,500 in aggregate across all state agencies in any one year, a **\$125.00** annual fee is required. Payment of the annual fee includes email notifications on bid opportunities based on the commodities and services selected upon registering in the Vendor Self-Service (VSS) portal at wvOASIS.gov. Please complete **Part I** of this form in its **ENTIRETY** and return to the state agency listed below for their completion of **Part II**. The agency will forward this form to the West Virginia Purchasing Division for processing. Incomplete forms will not be processed and will be returned to the vendor. **Please return all correspondence to:**

STATE AGENCY: Camp Dawson Collective Training Area

ADDRESS: 240 Army Rd

CITY, STATE, ZIP: Kingwood, WV 26537

Whenever a change occurs in the information submitted, such change shall be reported immediately in the same manner as required in the original disclosure statement (*West Virginia Code* §5A-3-12). Vendors doing business with the State of West Virginia are expected to abide by the **Vendor Code of Conduct** available online at www.state.wv.us/admin/purchase/vrc/vendorconduct.pdf.

Privacy Notice: The Purchasing Division is required to collect certain information as stated in *West Virginia Code* §5A-3-12, other applicable sections of the *West Virginia Code*, the Vendor Registration and Disclosure Statement forms, and other documents to facilitate the state bidding and contract administration processes. This information is stored in a secure environment, but unless specifically protected under state law, any information provided may be inspected by or disclosed to the public.

Vendors are also required to be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or other state agencies or political subdivisions. Failure to do so may result in delay of or disqualification from a contract award, pursuant to *West Virginia Code of State Rules* §148-1-6.1.7. If you have any questions concerning this *Vendor Registration and Disclosure Statement*, please contact the Purchasing Division at (304) 558-2311.

Questions concerning this Vendor Registration and Disclosure Statement may be directed to the Purchasing Division at (304) 558-2311. Should you need additional information relating to vendor registration, please visit www.state.wv.us/admin/purchase/VendorReg.html.

VENDOR REGISTRATION AND DISCLOSURE STATEMENT AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS CERTIFICATION APPLICATION

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION
To Be Completed by the Vendor and Returned to the Purchasing Division

1. Legal Name of Company/Individual Copperhead Environmental Consulting, Inc

Bidding Address P.O. Box 73

Ordering Address P.O. Box 73

Payment Address P.O. Box 73

City, State, Zip Paint Lick, KY 40461

Telephone Number 859-925-9012 Fax Number _____

Principle Contact Person Chris Leftwich E-mail cleftwich@copperheadconsulting.com

Contact's Telephone Number 859-925-9012 Contact's Fax Number _____

DBA, if any _____

Bidding Address _____

Ordering Address _____

Payment Address _____

City, State, Zip _____

Telephone Number _____ Fax Number _____

Principle Contact Person _____ E-mail _____

Contact's Telephone Number _____ Contact's Fax Number _____

2. Vendor Tax Classification:

- Individual
- Sole Proprietor
- Partnership
- Corporation
- Board Member
- Trust
- Estate

- Government
- Medical Corporation
- Attorney Corporation
- Non-Profit Organization
- Payroll
- Employee

VENDOR REGISTRATION AND DISCLOSURE STATEMENT AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS CERTIFICATION APPLICATION

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION
To Be Completed by the Vendor and Returned to the Purchasing Division

3. **Taxpayer Identification Number (TIN):** If you have an Identification Number, enter it below. All partnerships, corporations, or companies with employees must have an EIN.

2	7	0	0	8	3	6	8	9
---	---	---	---	---	---	---	---	---

 EIN

If you do not have a EIN, please enter Social Security number (SSN), Individual Taxpayer Identification Number (ITIN) or Adoptive Identification Number (ATIN) and check the correct below.

--	--	--	--	--	--	--	--	--

 - (SSN , ITIN , ATIN)

4. (A) Small, Women-Owned, Minority-Owned Businesses

West Virginia Code §5A-3-59 establishes a procurement certification program in West Virginia for small, women-, and minority-owned businesses. Requirements related to the certification program are provided in the **West Virginia Code of State Rules** §148-2-1 et seq. Note that this certification provides nonresident vendors preference that is equivalent to competing resident (West Virginia) vendors that have applied for resident vendor preference, in accordance with **West Virginia Code** §5A-3-37. This certification may assist resident small, women-, and minority-owned businesses when soliciting business in other states. If you are renewing your two-year SWAM business certification status, please indicate the appropriate designation below.

Certification of Status (Check all those which apply)

- Minority-owned Business** [1] means a business concern that is at least fifty-one percent owned by one or more minority individuals or in the case of a corporation, partnership, or limited liability company or other entity, at least fifty-one percent of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals and both the management and daily business operations are controlled by one or more minority individuals.
- A "minority individual" means an individual who is a citizen of the United States or a noncitizen who is in full compliance with United States immigration law and who satisfies one or more of the following definitions:
 - **African American** means a person having origins in any of the original peoples of Africa and who is regarded as such by the community of which this person claims to be a part.
 - **Asian American** means a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands, including, but not limited to, Japan, China, Vietnam, Samoa, Laos, Cambodia, Taiwan, Northern Mariana, the Philippines, a U.S. territory of the Pacific, India, Pakistan, Bangladesh, or Sri Lanka and who is regarded as such by the community of which this person claims to be a part.
 - **Hispanic American** means a person having origins in any of the Spanish-speaking peoples of Mexico, South or Central America, or the Caribbean Islands or other Spanish or Portuguese cultures and who is regarded as such by the community of which this person claims to be a part.
 - **Native American** means a person having origins in any of the original peoples of North America and who is regarded as such by the community of which this person claims to be a part or who is recognized by a tribal organization.

VENDOR REGISTRATION AND DISCLOSURE STATEMENT AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS CERTIFICATION APPLICATION

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION
To Be Completed by the Vendor and Returned to the Purchasing Division

- Small Business** [2] means a business, independently owned or operated by one or more persons who are citizens of the United States or noncitizens who are in full compliance with United States immigration law, which, together with affiliates, has two hundred fifty or fewer employees, or average annual gross receipts of \$10 million or less averaged over the previous three years.
- Women-owned Business** [3] means a business concern that is at least fifty-one percent owned by one or more women who are citizens of the United States or noncitizens who are in full compliance with United States immigration law, or in the case of a corporation, partnership or limited liability company or other entity, at least fifty-one percent of the equity ownership interest is owned by one or more women who are citizens of the United States or noncitizens who are in full compliance with United States immigration law, and both the management and daily business operations are controlled by one or more women who are citizens of the United States or noncitizens who are in full compliance with United States immigration law.

(B) Other Federal Designations

Additionally, by providing the following information, I represent that this enterprise is a small business as defined by the **Code of Federal Regulations**, Title 13, Part 121, as appended - which contains detailed industry definitions and related procedures - and/or the characteristics of the enterprise's control, operation and/or ownership are accurately reflected in the information provided. *Check all that apply.*

- Disabled Small Business Ownership [4]
- Veteran Small Business Ownership [5]

5. Commodity Codes: You may register for commodity codes for the products and services that you offer, which will provide you with bid opportunity alerts and notifications should you become a paid registered vendor. To perform this function, visit the Vendor Self-Service (VSS) portal at wvOASIS.gov.

6. List the name, title, city and state of residence for all owners/officers. If the vendor is an **individual**, list his or her name and city and state of residence, and, if he or she has associates or partners sharing in his or her business, list their names and city and state of residence. If the vendor is a **firm**, list the name and city and state of residence of each member, partner or associate of the firm. If the vendor is a **corporation** created under the laws of this state or authorized to do business in this state, list the names and city and state of residence of the president, vice president, secretary, treasurer and general manager, if any, of the corporation; and the names and city and state of residence of each stockholder of the corporation owning or holding at least ten percent of the capital stock thereof. Attach an additional sheet if space is needed.

Name	Position	City and State of Residence
Mark Gumbert	President	Lexington, Kentucky

If the vendor has only one owner/officer, list the name, position, and city and state of residence above and please initial here: VA

VENDOR REGISTRATION AND DISCLOSURE STATEMENT AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS CERTIFICATION APPLICATION

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION
To Be Completed by the Vendor and Returned to the Purchasing Division

7. List the name and telephone number of one or more banking institutions to serve as reference for the vendor.
Chase Bank, Gary McKale, 859-231-2739

8. What is the latest Dun & Bradstreet number and rating on the vendor? 145002197

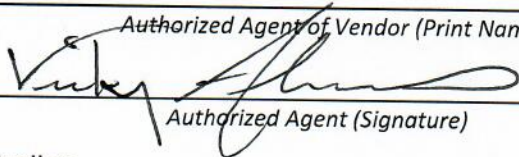
9. Is the vendor acting as an agent for some other individual, firm or corporation? If yes, attach statement of the principal authorizing such representation. No Yes

By signing below and submitting this form, the vendor certifies and acknowledges that: 1) it has obtained all licenses, certifications, and authorizations necessary to lawfully conduct business in the state of West Virginia; and 2) that the assertions made by completing this form and delivering it to the Purchasing Division are accurate and true in accordance with the applicable law and rules. As authorized agent of the vendor named herein, I do solemnly swear that the above information is true and complete, in accordance with **West Virginia Code** §5A-3-12(e).

In the event that the vendor is applying for certification as a small, women-, or minority-owned business, the vendor's signature below further certifies that: 1) the state in which the vendor has its headquarters or principal place of business does not deny a like certification to a West Virginia based small, women-owned, or minority-owned business; 2) the state in which the vendor has its headquarters or principal place of business does not provide a preference to small, women-owned, or minority-owned firms that is unavailable to West Virginia based businesses; and, 3) that it has read and understands this form, along with the law and rules governing certification as a small, women-owned, or minority-owned business.

Vicky Abrams

Authorized Agent of Vendor (Print Name)



Authorized Agent (Signature)

Controller

Title

2/19/19

Date

PURCHASING DIVISION USE ONLY

Vendor ID: _____

Check No. : _____

Memo No. : _____

Date: _____

Entered by: _____

VENDOR REGISTRATION AND DISCLOSURE STATEMENT AND SMALL, WOMEN-, AND MINORITY-OWNED BUSINESS CERTIFICATION APPLICATION

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION
To Be Completed by the Vendor and Returned to the Purchasing Division

Part II: FOR STATE USE ONLY - To Be Completed by State Agency and Returned to Purchasing Division

1. Please provide a concise description of the goods and/or services the vendor is providing with your specific transaction.

2. Cite the corresponding exemption code from Section 9 of the Purchasing Division Procedures Handbook, if applicable.

3. Are the goods and/or services considered sole source? No Yes

4. Will the goods and/or services provided by this vendor exceed \$2,500 in aggregate across all state agencies? If not, and an award under this dollar threshold is pending, please also contact the wvOASIS Finance Team at financeteam@wvoasis.gov for a processing code to use on your wvOASIS award document.

No Yes

State Agency Procurement Officer Signature

Date

Telephone No.

FAX No.

Return to: WV Purchasing Division
Vendor Registration
2019 Washington Street, East
Charleston, WV 25305-0130