APPENDIX C-4   BAT SURVEY REPORT FOR THE KINGS MOUNTAIN LITHIUM MINE, CLEVELAND COUNTY, NORTH CAROLINA

Bat Survey Report for the Kings Mountain Lithium Mine, Cleveland County, North Carolina

NOVEMBER 2022 (REVISED JULY 2024)

PREPARED FOR

Albemarle U.S., Inc.

PREPARED BY

SWCA Environmental Consultants

BAT SURVEY REPORT
FOR THE KINGS MOUNTAIN LITHIUM MINE,
CLEVELAND COUNTY, NORTH CAROLINA

Prepared for

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1 INTRODUCTION

On behalf of Albemarle U.S., Inc. (Albemarle), SWCA Environmental Consultants (SWCA) conducted bat surveys at the proposed Kings Mountain Lithium Mine Project (Project) in Cleveland County, North Carolina (Figure 1). Several bat species, including some listed, or proposed for listing, by U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act, have potential to occur within the Project area. Therefore, in June 2022 acoustic bat surveys were conducted within the Project area. The objective of the surveys was to determine the species composition of the local bat population, document the presence or probable absence of currently listed species and those under review, and collect any other data that may be useful for Project design and development (e.g., roost locations for *Myotis* species).

The Project is in the range of the tricolored bat (*Perimyotis subflavus*) and little brown bat (*Myotis lucifugus*), and gray bats (*Myotis grisescens*) have been documented in neighboring Gaston County (USFWS 2024, USFWS personal communication, May 13, 2024). USFWS has proposed listing the tricolored bat as endangered, the little brown bat is under review for listing, and the gray bat is listed as endangered.

2 METHODS

SWCA proposed a phased approach designed to meet or exceed all recommendations found in the USFWS's 2022 *Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (USFWS Guidelines; USFWS 2022). The intended data collection would begin with preliminary acoustic surveys and continue with mist-net and radiotelemetry studies if acoustic data suggested additional data were necessary.

2.1 Level of Effort Determination

For the purposes of this survey, SWCA has assumed that all forested habitat qualifies as suitable summer bat habitat. The USFWS Guidelines recommend 14 detector nights of survey and two detector locations for every 123 acres of suitable northern long-eared bat summer habitat but do not provide a recommendation for other species. The Project area contains approximately 600 acres of forested habitat and is bordered by another 136 acres of suitable habitat to the north and east. Meeting the recommended level of effort in the USFWS Guidelines required a minimum level of effort of 84 detector nights. SWCA's study design included a survey level of effort of 114 detector nights, more than 33% higher than the minimum level of effort. It is presumed that the additional level of effort accounts for differences in detectability in other species that occur within the Project area and is more than sufficient to determine the presence or absence of bats. Fifteen acoustic deployment locations were selected throughout representative habitat, and one detector was deployed at each for a minimum of seven nights.

Mist-net and radiotelemetry levels of effort were based on the acoustic data collection and were to be conducted only if the additional data would be useful for project design or agency consultation.
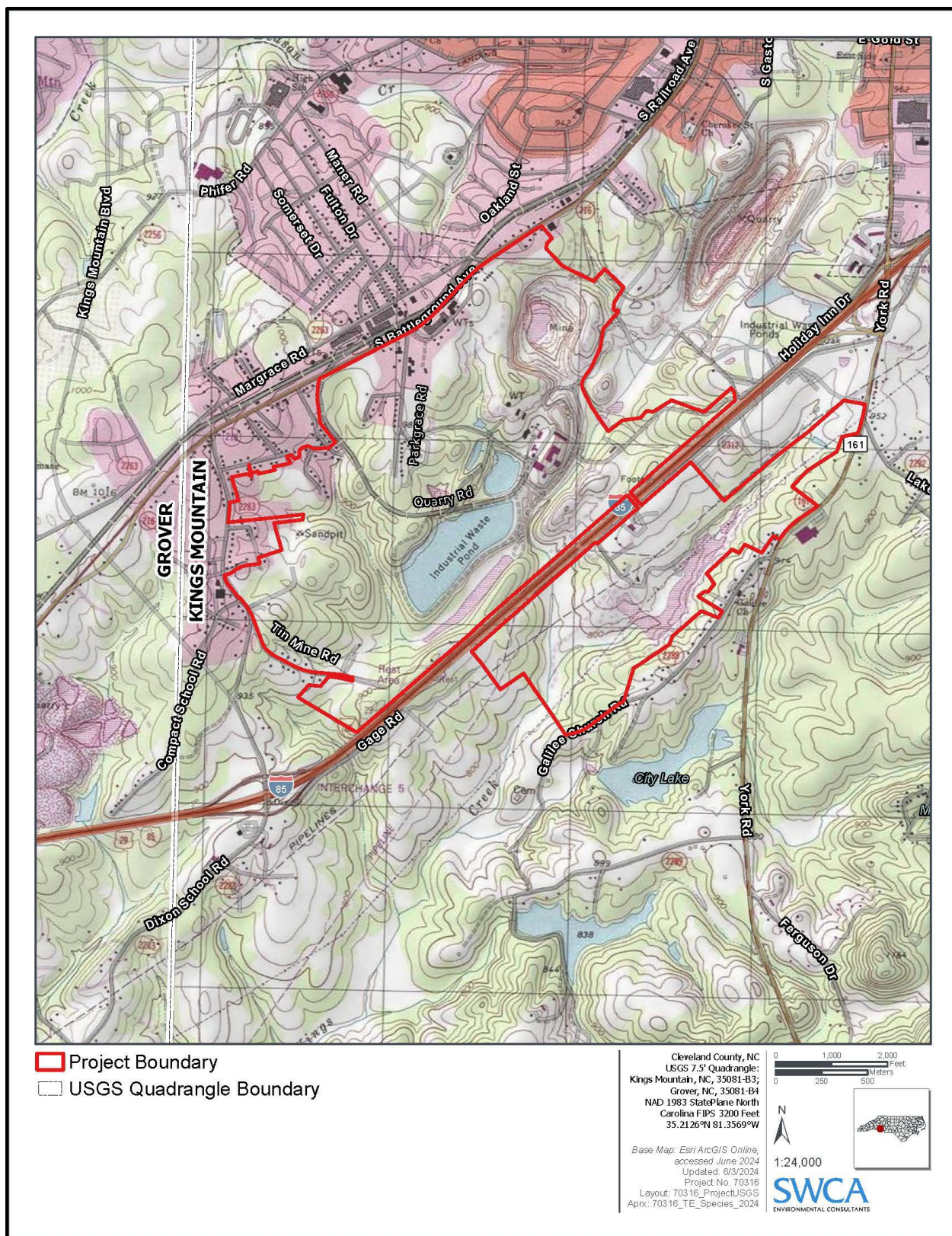
Figure 1. Kings Mountain Project area, Cleveland County, North Carolina.

2.2 Acoustic Survey

2.2.1 Detector Deployment

An SWCA qualified biologist (Sam Schratz, resume provided in Appendix A) deployed acoustic detectors (Titley Scientific AnaBat Express or Swifts both recording in zero-crossing format) at each detector location. Detector locations were chosen on-site by a qualified bat biologist trained and experienced in acoustic survey methods. Each detector was equipped with a directional express or swift microphone atop approximately 3-meter (m) poles. Microphones were angled up at an approximately 45-degree angle away from vegetation into the targeted flight corridor or foraging area. No aftermarket weatherproofing was added. Photographs of detector setups and deployment locations are provided in Appendix B. Selection of detector deployment locations was based on on-site conditions with an emphasis on locations that are more likely to lead to collection of high-quality, diagnostic calls. Diagnostic bat calls are most useful from recordings collected in areas that contain little "clutter" (i.e., anything perceived by a bat that provokes it to modulate echolocate in an attempt to navigate more quickly). SWCA reviewed Project area maps for areas of ecological importance (e.g., water sources, foraging habitat, travel corridors) and selected a mixture of higher and lower clutter areas to place detectors. In the field, detector locations were adjusted to sample these areas while remaining at least 3 m in any direction from vegetation or other obstructions in the cone of reception.

Detectors were deployed at 15 detector locations to sample various habitat types (10 on-site and five off-site locations; Figure 2). The 15 detector deployment locations were recorded using handheld geographical positioning system units (Table 1). Prior to mobilization, all detectors were reviewed for firmware updates and proper functioning. Functionality was confirmed by a qualified bat biologist at the time of deployment and at the conclusion of survey.

2.2.2 Survey Conditions

Detectors were programmed to begin data collection 30 minutes prior to sunset and conclude 30 minutes after sunrise on each day of survey.

Certain weather criteria must be met for acoustic data to be valid. A survey night was considered invalid if any of the following occurred during the first 5 hours of sampling effort:

- Temperatures fell below 10 degrees Celsius
- Precipitation exceeded 30 minutes or continued intermittently
- Windspeed was greater than 4 m/second for 30 minutes or more

Hourly weather conditions were monitored using Visual Crossing Corporation historical weather data function, which extrapolates weather data available from nearby weather stations (Visual Crossing Corporation 2022). This allows for the most accurate remotely collected data, though a known and relevant limitation is that wind speeds are calculated at 10 m above ground level, which in many scenarios will overestimate wind speed in forest interiors where many acoustic detectors were deployed.
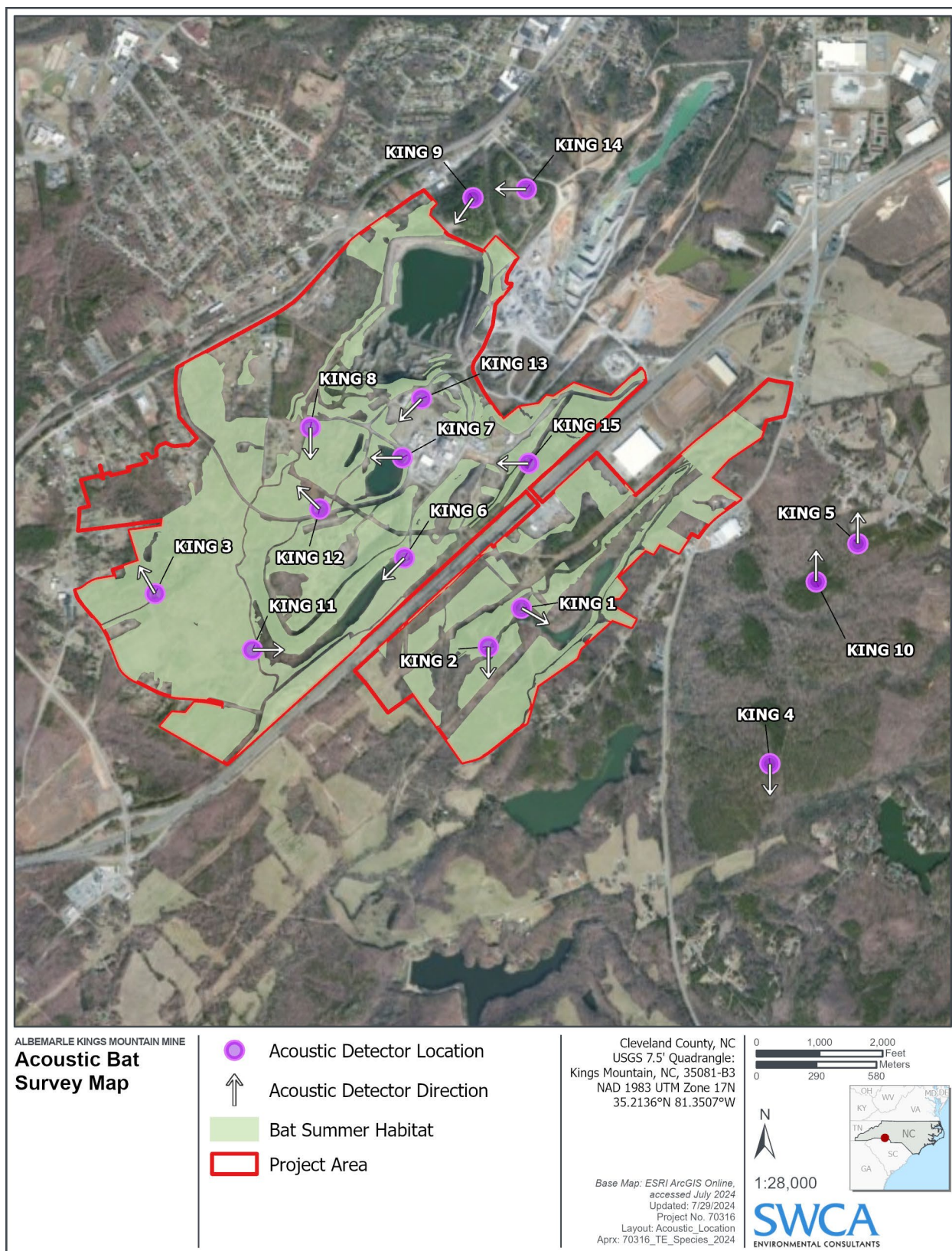
Figure 2. Detector locations used during the Kings Mountain acoustic bat survey, Cleveland County, North Carolina.

Table 1. Summary of Acoustic Detector Deployment Locations for the Kings Mountain Acoustic Bat Survey

Detector Location	Latitude and Longitude*	Valid Survey Nights	Habitat Description**
KING-1	35.20984, -81.34863	7	KING-1 was placed along a travel corridor connecting a deciduous forest patch to Executive Club Lake, which offers water resources and foraging habitat.
KING-2	35.20816, -81.35038	0	KING-2 was placed in mixed forest and scrub/shrub along a travel corridor connecting other forest with a small pond and wetland habitat.
KING-3	35.21042, -81.36811	8	KING-3 was placed in an opening near mixed hardwood (oaks, sweetgum saplings) and pine forest with numerous travel corridors.
KING-4	35.20309, -81.33539	7	KING-4 was placed in an opening at the intersection of three travel corridors through upland primarily deciduous forest.
KING-5	35.21271, -81.33075	7	KING-5 was placed in an opening along a travel corridor through mixed forest.
KING-6	35.21202, -81.35486	8	KING-6 was placed in a mowed clearing by a lake and assorted hardwoods (maples, oaks) and pines.
KING-7	35.21639, -81.35499	7	KING-7 was placed in a maintained lawn near a large impoundment with an emergent wetland fringe.
KING-8	35.21770, -81.35989	8	KING-8 was placed in old-field habitat along a network of travel corridors through upland forested habitat.
KING-9	35.22774, -81.35128	8	KING-9 was placed along a travel corridor in a kudzu (*Pueraria montana*)-dominated opening surrounded by upland deciduous forest.
KING-10	35.21104, -81.33296	7	KING-10 was placed along a travel corridor in a mixed upland forest.
KING-11	35.20798, -81.36293	8	KING-11 was placed within early successional forest dominated by mixed hard and softwood species.
KING-12	35.21414, -81.35938	8	KING-12 was placed between a pond and railroad tracks in heavily vegetated grasses and wild berry bushes.
KING-13	35.21897, -81.35398	8	KING-13 was placed in grassland/old-field habitat near patches of scrub/shrub and forest.
KING-14	35.22813, -81.34845	8	KING-14 was placed near scrub/shrub, old-field, and upland deciduous forest habitat.
KING-15	35.21616, -81.34827	0	KING-15 was placed within old-field/right-of-way habitat adjacent to upland deciduous forest.

*Expected accuracy is <3m
**References to upland and wetland habitat are based on qualitative observations only and independent from regulatory definitions of either upland or wetland relative to potentially jurisdictional waters.

2.2.3   *Acoustic Analysis*

Data were initially analyzed using Kaleidoscope Pro Version 5.6.5 software and its Bats of North America classifier version 5.4.0 set to neutral sensitivity. Species included for consideration were big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), silver-haired bat (*Lasionycteris noctivagans*), Seminole bat (*Lasiurus seminolus*), gray bat, little brown bat, evening bat (*Nycticeius humeralis*), and tricolored bat. Follow-up qualitative manual analysis was performed by a qualified biologist (Drew Carson, resume provided in Appendix A) to confirm or refute determinations of presence made by Kaleidoscope Pro. Calls were compared against accepted quantitative parameters such as characteristic frequency (Fc), slope, and time between calls; qualitative parameters such as red bats' typical variation of Fc across a call sequence in comparison to other species' relative consistency; and numerous voucher calls for each target species. Example voucher calls for the target species are provided in Appendix C.

2.3   Mist-Net Survey and Radiotelemetry

A determination of the necessity for mist-net surveys and radiotelemetry would be conducted at the conclusion of acoustic surveys.

If determined necessary, mist-net sites would be selected during field reconnaissance by qualified bat biologists with appropriate permits allowing for survey of the target species. Site selection would be based on the presence of appropriate habitat and conditions conducive to effective mist-netting. Primary site selection criteria included presence of canopy cover and an open flyway in areas that provided optimum chance to capture the target species. Biologists would place nets across a flight corridor where the canopy cover and vegetation created a funneling effect to facilitate capture of bats to the maximum extent possible. Biologists would remove captured bats from the nets and record the following data: species, sex (if readily obvious upon capture), time of capture, and capture height in net. Biologists would identify all bats to species based upon distinctive morphological characteristics (e.g., body size, hair color, ear length, tragus shape, presence/absence of a keeled calcar, and additional characters). If *Myotis* species are captured, it can be beneficial to determine their diurnal roost locations via radiotelemetry.

3   RESULTS

3.1   Acoustic Survey

3.1.1   Detector Deployment

In June 2022, detectors were deployed following the USFWS Guidelines in areas where bats would be expected to occur if the species were present within and near the Project area. Detectors were deployed at 15 detector locations to sample various habitat types (10 on-site and five off-site locations; Figure 2). Each detector was deployed for a minimum of seven nights. The survey consisted of 99 valid detector nights (see Table 1). Detectors at locations King2 and King15 experienced equipment malfunction and did not record data. The detector at location King8 recorded comparatively few calls, including nights with no calls. However, bats were detected at King8, and log files indicated proper functionality for the duration of survey.

3.1.2   Survey Conditions

Acoustic data was collected between June 8 and June 30, 2022. Weather was monitored throughout the survey to confirm conditions were appropriate for recording acoustic data. A summary of hourly conditions throughout the survey is provided in Appendix D. Weather was confirmed to be valid for the duration of the survey.

3.1.3   Acoustic Analysis

A total of 19,846 bat calls were identified by Kaleidoscope Pro analysis. Of these, the software assigned 14,632 calls to species, leaving 5,214 calls that were determined to have been created by bats but were indiscernible to species (Table 2). After the automated analysis, the results were manually verified. Table 2 presents the results of the automated analysis, depicting for each site how many passes were assigned to each species followed by the maximum likelihood estimator (MLE) for each species at each site. Bolded text indicates a statistically significant likelihood (i.e., <0.05) of occurrence of a given species at a given

site according to Kaleidoscope. The output from Kaleidoscope automated identification which provide number of passes and MLE for each site/night were submitted along this report.

Table 2. Results of Automated and Manual Analysis for the Kings Mountain Acoustic Bat Survey

Site	Big Brown Bat	Eastern Red Bat	Hoary Bat	Silver-Haired Bat	Seminole Bat	Gray Bat	Little Brown Bat	Evening Bat	Tricolored Bat	Brazilian Free-Tailed Bat
	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE	# Passes MLE
KING1	**60** **0.00**	8 1.00	15 0.39	26 0.94	**128** **0.00**	**2** **0.00**	0 1.00	15 1.00	**100** **0.00**	**123** **0.00**
KING2	Equipment Malfunction									
KING3	**253** **0.00**	**29** **0.00**	**133** **0.00**	6 1.00	**56** **0.00**	**22** **0.00**	2 1.00	13 1.00	**124** **0.00**	25 1.00
KING4	**703** **0.00**	5 0.93	31 1.00	**146** **0.01**	48 **0.00**	0 1.00	2 1.00	13 1.00	**117** **0.00**	62 0.08
KING5	**136** **0.00**	**19** **0.00**	**19** 0.04	19 1.00	**51** **0.00**	0 1.00	4 0.68	15 1.00	8 0.85	**61** **0.00**
KING6	**69** **0.00**	4 1.00	**74** **0.00**	31 1.00	**268** **0.00**	**5** **0.00**	1 1.00	11 1.00	**213** **0.00**	**248** **0.00**
KING7	147 0.73	9 1.00	**211** **0.00**	216 0.94	**580** **0.00**	**13** **0.00**	2 1.00	20 1.00	**1,001** **0.00**	**1,433** **0.00**
KING8	0 1.00	1 0.34	**3** **0.01**	0 1.00	1 0.73	0 1.00	0 1.00	0 1.00	**8** **0.00**	**2** **0.24**
KING9	**3,514** **0.00**	**72** **0.01**	146 1.00	86 1.00	**321** **0.00**	3 1.00	5 1.00	24 1.00	**139** **0.00**	**518** **0.00**
KING10	**128** **0.00**	**14** **0.00**	7 0.99	3 1.00	**62** **0.00**	1 0.19	0 1.00	10 1.00	**28** **0.00**	11 0.47
KING11	**52** **0.00**	**8** **0.01**	**15** **0.00**	**33** **0.00**	**35** **0.00**	0 1.00	1 1.00	6 1.00	7 0.33	**35** **0.00**
KING12	**116** **0.00**	**9** **0.00**	**17** **0.00**	8 1.00	1 1.00	0 1.00	0 1.00	0 1.00	**18** **0.00**	9 0.94
KING13	**132** **0.00**	**8** **0.00**	**90** **0.00**	33 1.00	**13** **0.00**	0 1.00	0 1.00	0 1.00	**22** **0.00**	**420** **0.00**
KING14	**196** **0.00**	**17** **0.00**	**145** **0.00**	111 1.00	**53** **0.00**	0 1.00	1 1.00	14 1.00	**19** **0.00**	**726** **0.00**
KING15	Equipment Malfunction									

Kaleidoscope determined that tricolored bats were statistically likely to have occurred at all sites with where equipment functioned properly except for sites King7 and King8 (Table 2). Manual verification confirmed that tricolored bats are present within the dataset at all sites. Examples of calls recorded during this survey that were classified by Kaleidoscope as tricolored bats and confirmed as such through manual review are provided in Appendix C.

Kaleidoscope determined that gray bats were statistically likely to have occurred at four sites: King1, King3, King6, and King7. There were no sites where the software determined statistical likelihood of little brown bats occurrence. A SWCA qualified bat biologist reviewed all calls classified as gray bat or little brown bat by Kaleidoscope, and reviewed all high-frequency (i.e., calls with Fc >35 kHz as

determined by Kaleidoscope) calls for each site/night where statistical likelihood of gray bats was determined via the software's analysis. No additional filters were used.

Through manual review it was determined that none of the calls classified as gray bats or little brown bats are likely to have been made by either species. Justifications for changes to each species identification for each call are provided in Appendix C. The primary categories for misidentification were:

- Calls more likely to have been produced by red bats due to the inconsistency in Fc across pulses

- Calls with insufficient data (e.g., too few pulses) to make a positive determination

- Likely tricolored bat calls made in higher clutter situations that trend toward resembling gray bat calls, but that did not have consistent key characteristics of gray bat calls.

Red bats have an extensive call repertoire with pulses that can vary significantly within and between calls, and routinely produce *Myotis*-like call sequences (e.g., three or more pulses) as a portion of an overall call. This can, and regularly does, lead to false identification by automated identification software, as is the case in this situation. Though portions of these calls may resemble others known to have been made by *Myotis*, when reviewed in context, they are clearly most likely to have been made by red bats rather than gray bats or little brown bats.

Review of the high-frequency calls on site/nights with statistical likelihood of presence of gray bats as determined by Kaleidoscope did not reveal any evidence of gray bat presence within the dataset.

Manual review confirmed that tricolored bats are present within the Project area, but demonstrated probable absence of gray bats and little brown bats.

3.2   Mist-Net Surveys and Radiotelemetry

Based on the results of the acoustic bat surveys, it was determined that additional data from mist-net and radiotelemetry studies would not be valuable for the Project. Species presence was confidently assessed through acoustic survey alone. It was determined that no additional data would be necessary for project design or agency coordination and that the value of the data that could be collected via mist-net survey and radiotelemetry would not appropriately offset the stress to the local bat population. Therefore, no mist-net survey or radiotelemetry studies were recommended or conducted.

4   DISCUSSION

Acoustic bat surveys used survey methods that met or exceeded the recommendations provided by the USFWS Guidelines to determine the presence or probable absence of the tricolored bat, little brown bat, and gray bat. SWCA surveyed for 99 complete detector nights on nights with valid weather conditions. Automated analysis indicated a statistical likelihood of presence of tricolored bats throughout the Project area. It was confirmed via qualitative, manual review that tricolored bats (a proposed endangered species) are present within the dataset collected at each detector site. Probable absence of gray bats and little brown bats was determined via manual review.

Recommended management practices that may be beneficial to all bat species include minimizing forest clearing, avoiding impacts to large and intact contiguous forested blocks, and avoiding impacts to water quality by limiting stream/wetland impacts and implementing erosion and sediment controls. Additionally, revegetating with native grassland species using a pollinator mix could promote prey diversity and abundance.

5   LITERATURE CITED

U.S. Fish and Wildlife Service (USFWS). 2022. *Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines*. Fort Snelling, Minnesota: Region 3 U.S. Fish and Wildlife Service. March.

———. 2024. Environmental Conservation Online System. https://ecos.fws.gov/ecp/. Accessed June, 2024.

Visual Crossing Corporation. 2022. Visual Crossing Weather (June 2022). [data service]. Retrieved from https://www.visualcrossing.com/. Accessed September 2022.

APPENDIX A

Biologist Qualifications

DREW R CARSON, BAT BIOLOGIST AND SENIOR PROJECT MANAGER

Mr. Carson is a Biologist specializing in providing assistance with Endangered Species Act (ESA) compliance. He has 18 seasons of presence/absence bat survey experience. Mr. Carson has been trained in and is experienced with both mist-netting and conducting acoustic monitoring surveys as described in the USFWS guidelines. He has held state permits and/or conducted bat surveys in AR, GA, IL, IN, IA, KY, MD, MO, OH, OK, PA, SD, TN, TX, VA, and WV. He currently holds permit ES06873B which grants broad authority to capture and handle Indiana bats, gray bats, northern long-eared bats, and Ozark big-eared bats.

Mr. Carson's acoustic survey experience includes conducting long-term, passive monitoring surveys for wind energy development projects ranging from Texas to Ohio; conducting presence/probable absence surveys following USFWS guidelines for such efforts as multi-state transmission lines down to single-parcel efforts; species inventories; Indiana bat maternity colony monitoring; and activity monitoring at potential hibernacula. He has attended multiple, week-long detector deployment and analysis training courses hosted by Kim Livengood and Chris Corben, in addition to attendance at various bat working group workshops. He recently co-hosted a week-long internal acoustic analysis training at SWCA with Vesper Bat Detection Services. He has experience with various types of acoustic survey equipment, including the AnaBat II and ZCAIM, AnaBat SD1, AnaBat SD2, AnaBat Swift, AnaBat Express, Wildlife Acoustics SM4Bat, and Wildlife Acoustics Echometer Touch II. He has been trained to use AnaLook, Kaleidoscope Pro, and BCID.

YEARS OF EXPERIENCE

18

EXPERTISE

Ecology of bats in the Eastern U.S.

ESA compliance, specifically relating to listed bat species

Midwestern botany

EDUCATION

B.S., Environmental and Plant Biology; Ohio University; Athens, Ohio; 2009

Certification, Environmental Studies; Ohio University, Athens, Ohio; 2009

ACOUTIC SURVEY TRAINING

AnaBat (Acoustic Bat Monitoring) Techniques Workshop; 2010 and 2012

SELECTED PROJECT EXPERIENCE

Indiana Bat Maternity Colony Status Monitoring, Southwestern Pennsylvania. Confidential Client – January 2020-Present. SWCA's client requested assistance with determining the status of a previously identified maternity colony that had shifted on the landscape and its location was no longer known. Using the previously collected acoustic, mist-net, and telemetry data, SWCA created a habitat suitability model and analyzed our clients various land holdings in the vicinity to identify areas where the colony was most likely to occur. SWCA conducted acoustic surveys at nine study areas to determine which locations had the highest acoustic activity levels for Indiana bats and other *Myotis* species. Mist-netting was conducted on the three study areas with the highest levels of activity. Mr. Carson prepared the study design and preformed the acoustic identification and mist-net surveys.

Listed Bat Species Surveys, Clean Line Plains & Eastern Transmission Line; Oklahoma, Arkansas, and Tennessee – August 2015 – August 2017. SWCA's client proposed development of a ~750 mile transmission line to connect the large electricity market in the southeast U.S. with ongoing wind energy development in the Great Plains. SWCA conducted surveys for listed bat species across the proposed route. Mr. Carson was the Deputy Task Manager for listed bat species surveys. In that role, he developed and executed state-specific study plans in close coordination with each state's USFWS Ecological Services Field office. He conducted mist-net surveys and acoustic surveys in each state, and oversaw all data collection and reporting at the conclusion of the survey. In addition to summer mist-netting, Mr. Carson conducted acoustic presence/absence surveys in locations that were not conducive to mist-netting. In the winter of 2016-2017, Mr. Carson conducted long-term acoustic monitoring at potential hibernacula as well.

Northern Long-eared Bat Swarming Habitat Acoustic Survey, Confidential Client, Upper Midwest – June 2021 – May 2022. SWCA's client requested assistance with understanding northern long-eared bat swarming activity and behavior around a known northern long-eared bat hibernaculum. SWCA developed an acoustic survey study plan to determine the habitat characteristics, weather factors, seasonality, and other factors that influence northern long-eared bat swarming at the hibernaculum. Up to 25 acoustic detectors were deployed at various distances

and within various habitat types up to 5 miles from the known hibernaculum. Species occurrence and activity levels were compared across the detectors and the covariates were modeled to determine influence. Mr. Carson led the study design, agency coordination, acoustic analysis, and reporting for this effort.

Bat Species Inventory and Northern Long-Eared Bat Presence/Absence Survey – Patuxant Naval Air Station, Maryland – June 2012.
Mr. Carson completed two seasons of survey at the Patuxant Naval Air Station to develop a bat species inventory and determine the presence or absence of northern long-eared bats. As the project manager, Mr. Carson was responsible for development and implementation of a study plan that included acoustic and mist-net survey techniques.

2012-2022 Long-Term, Passive Acoustic Monitoring Bat Studies – Confidential Wind Project Sites – Texas, South Dakota, North Dakota, Indiana, Ohio, Minnesota, Iowa, and Illinois – 2010 - Present.
Mr. Carson led pre-construction, passive, acoustic monitoring studies at numerous facilities in the central and eastern U.S.: three in Texas. His responsibilities included selecting survey sites based on bat habitat within the Project areas, managing field staff, analysis of the data collected, and preparing reports for each study. Analyses included use of automated identification programs as well as manual verification.

PRESENTATIONS

Modeling Indiana Bat Population Densities in the Midwest and Ozark-Central Recovery Units: Implications for Regional Development; Poster, AWEA 2018 Wind Project Siting Seminar (in preparation)

WNS – Endangering Bats and Your Bottom Line; Oral Presentation, Environmental Federation of Oklahoma 2017

Changed Circumstances: Operational Facilities and Federally Listed Bat Species AWEA 2016 Wind Project Siting Seminar

Bat Listings – Reasons, Challenges, and Opportunities; Oral presentation, AWEA 2014 Wind Project Siting Seminar

Northern Long-eared Eastern Small-footed Bats: Are Indiana bats Just the Beginning?; Poster Presentation, AWEA WINDPOWER 2014

Indiana Bat Presence/Absence Survey at a Proposed Wind Energy Development in Shelby County, Ohio* - Confidential Client – May-August 2011. In order to understand the potential for impacts to local bat populations, the client requested bat surveys following USFWS and ODNR guidelines. Coordination was conducted with staff in the USFWS Columbus Ecological Services Field office and the ODNR Division of Wildlife to develop a project specific study-plan that met the request of the client and the requirements of agencies. The study plan included long-term acoustic monitoring as well as summer mist-net surveys *Role: Project Manager, Lead Field Biologist. Managed and conducted all aspects of the acoustic monitoring project, including agency coordination, and served as a lead field biologist for mist-net surveys.*

Indiana Bat and Northern Long-Eared Bat Presence Absence Survey at a Proposed Utility Scale Wind Energy Facility in Illinois – May-August 2014. The client proposed to develop an 8,000 acre utility scale wind energy facility in northern Illinois, within the known range of the Indiana bat and northern long-eared bat. The client requested presence/absence surveys for the species in order to understand the potential for the facility to have impacts on local populations of these and other bat species. *Role: Project Manager, Lead Field Biologist. Managed all aspects of the project, including budget, schedule, agency coordination, field surveys, and reporting.*

Indiana Bat Presence/Absence Survey at a proposed Quarry Expansion Site in Northern Ohio - Confidential Client – May – August 2013. As part of Section 7 consultation for a proposed quarry expansion project, the client was informed that they would need to address the potential presence of the Indiana bat within their proposed project area. The client requested the development of a project-specific study plan and the execution of that plan. Summer mist-net surveys were performed following USFWS guidelines to determine the presence or absence of the Indiana bat within the project area. *Role: Lead field biologist. Lead a team of biologists conducting field surveys.*

Bat Species Surveys for Utopia Pipeline Projects; Ohio; Kinder Morgan, Inc - February 2015 – December 2016. SWCA is providing environmental services for a 240-mile pipeline. The project includes surveys for listed bat species. Mr. Carson is the lead for listed bat species surveys issues for the project, which includes coordination with agency personnel and management of all field survey crews. *Role: Threatened and Endangered Species Lead, Bat Ecologist.*

Indiana Bat, Northern Long-Eared Bat, and Virginia Big-Eared Bat Presence Absence Survey Along a Proposed 23 Mile Transmission Line Improvement Project in West Virginia* - May – August 2014. As part of a series of transmission line improvements, including upgrades and replacements to both transmission lines and substations, the client requested assistance with ESA compliance specific to Indiana bats, northern long-eared bats, and Virginia big-eared bats. Presence/absence studies were executed following a study plan developed to follow the West Virginia guidelines, including mist-net surveys and a mine/cave portal survey. *Role: Task Manager, Lead Field Biologist. Managed the listed bat species portion of the project, including schedule, agency coordination, field surveys, and reporting.**

SAMUEL SCHRATZ, M.S., ACOUSTIC DETECTOR DEPLOYMENT LEAD

Sam Schratz is a federally permitted (ESPER0003023) bat biologist for SWCA's Chicago office. He specializes in bat research and also has experience in avian, mammal, and amphibian studies. Mr. Schratz has worked for or with state, federal, and tribal agencies in matters regarding wildlife and natural resources. He has participated in two training courses: an 8-day Comprehensive Bat Acoustic Training Course with Bat Survey Solutions and a virtual acoustic training workshop with Titley Electronics. His master's research focused on southeastern *Myotis* and Rafinesque's big-eared bat occupancy in the Cache River National Wildlife Refuge using acoustic and mist-net survey methods.

YEARS OF EXPERIENCE

9

TRAINING

8-Day Comprehensive Bat Acoustic Course, Bat Survey Solutions

Titley Electronic Acoustic Training Workshop, Titley Electronics

EXPERTISE

Bat surveys and identification (Mist-Netting and Acoustics)

Geographic Information Systems (GIS)

Esri GIS mapping software and programming (ArcGIS, ArcInfo, etc.)

Stormwater Pollution Prevention Plans (SWPPPs)

Water quality monitoring and analysis

EDUCATION

M.S., Biology; Arkansas State University, Jonesboro, Arkansas; 2016

B.S., Biology; Illinois State University, Normal, Illinois; 2012

PERMITS

Former West Virginia Division of Natural Resources Scientific Collecting Permit (Tyler, Wetzel, Doddridge Counties)

MEMBERSHIPS

Member, Bat Conservation International

Member, Arkansas State University

Member, Arkansas State University

Member, Midwest Bat Working Group

Member, The Wildlife Society

SELECTED PROJECT EXPERIENCE (∗ denotes project experience prior to SWCA)

Indiana Bat Habitat Assessment; EBI Consulting; Pike County, Kentucky. SWCA assessed the survey area for Indiana bat suitability for a proposed communication infrastructure project. *Role: Volunteer. Collected and uploaded data in Collector.*

Bat Migration Mist-Net Survey; U.S. Fish and Wildlife Service; Marrion and Ralls Counties, Missouri. SWCA assisted with mist-net deployment, data collection, and transmitting of Indiana bats for spring migration study. *Role: Support Staff.*

Bat Acoustic Surveys; Invenergy; Worth County, Iowa, and Cass County, North Dakota. SWCA deployed Anabat Swifts on MET Towers using K-Bat system. *Role: Site Lead. Deployed ground-based detectors within suitable habitat.*

*Surveyed for Threatened and Endangered Bats; Arkansas State Wildlife Management Areas; Arkansas. *Role: Bat Survey Consultant. Duties included deploying and recovery of acoustic monitoring equipment, mist netting for bats, and identifying bats to species.*

*Survey for Northern Long-Eared Bats; Arkansas State Wildlife Management Areas; Arkansas. *Role: Bat Survey Consultant. Located optimal sites for mist net deployment, mist net handling and monitoring techniques, and identified and handled eastern U.S. bat species such as gray bat.*

Journeyman Pad Mist Net Survey; Confidential Client; Confidential Location. SWCA conducted wetlands services for a new well pad location. *Role: Crew Leader. Site lead for crew of up to three persons; compiled data and generated reports.*

Hilltopper Wind Project Post-Construction Monitoring; Enel Green Power North America, Inc.; Sangamon County, Illinois. SWCA provided post-construction avian and bat monitoring and on-site worker environmental training support in accordance with the U.S. Fish and Wildlife Service Wind Energy Guidelines and approved project Bird and Bat Conservation Strategy. The final report included methods, results, and estimated project fatality levels for birds and for bats (per megawatt or per turbine basis), adjusted to account for search frequency, searcher efficiency, carcass removal rates, and proportion of area searched. SWCA worked with state and federal agencies to attain handling permits for migratory birds and threatened or endangered species. Role: *Field technician. Seeded carcasses for searcher efficiency trials throughout wind farm.*

Fairbanks Solar; Invenergy, LLC; Sullivan County, Indiana. SWCA conducted a desktop water resources survey, performed a field water resources delineation; and performed additional field studies to support the development of an approximately 250-megawatt solar facility. *Role: Biological Consultant.*

APPENDIX B

Photograph Log

Photograph 1. KING 1, facing south (6/8/2022).

Photograph 2. KING 2, facing north (6/8/2022).

Photograph 3. KING 3 , facing east (6/14/2022).


Photograph 4. KING 4, facing east (6/7/2022).

Photograph 5. KING 5, facing east (6/7/2022).

Photograph 6. KING 6, facing north (6/14/2022).

Photograph 7. KING 7, facing west (6/30/2022).

Photograph 8. KING 8, facing west (6/14/2022).

Photograph 9. KING 9, facing west (6/22/2022).

Photograph 10. KING 10, facing east (6/7/2022).

Photograph 11. KING 11, facing north (6/14/2022).

Photograph 12. KING 12, facing north (6/14/2022).

Photograph 13. KING 13, facing east (6/30/2022).

Photograph 14. KING 14, facing east (6/22/2022).

Photograph 15. KING 15, facing south (6/30/2022).

APPENDIX C

Manual Review Summary
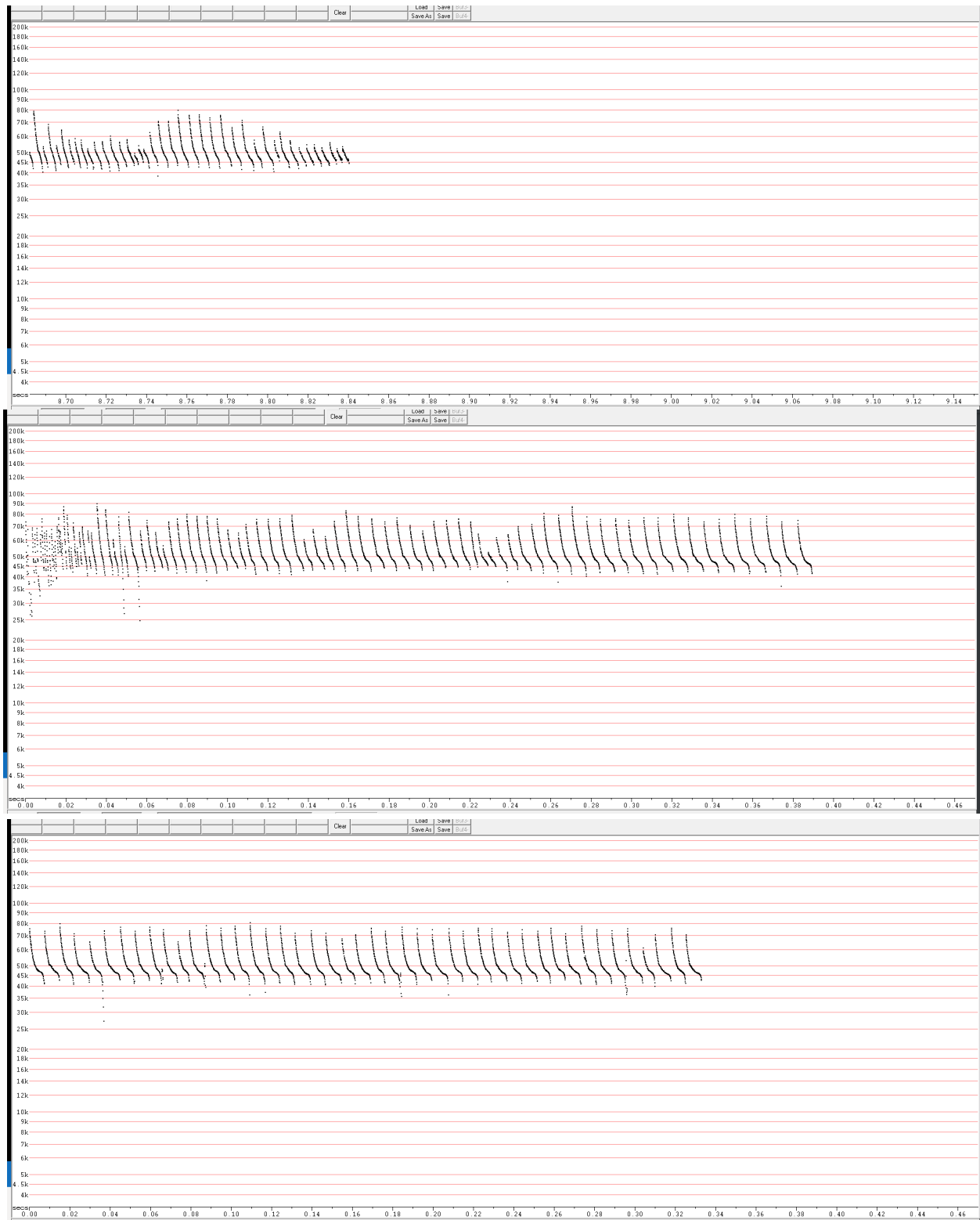
Figures 1-3. Voucher gray bat calls. Expected Fc = 45 kHz, may dip to 40 kHz. These exhibit a characteristic sharp decrease in slope at midpoint in the call (i.e., approximately 47-50 kHz in these calls), which manifests as an angular inflection point rather than curved. Images above depicted at F7 scale in AnalookW.
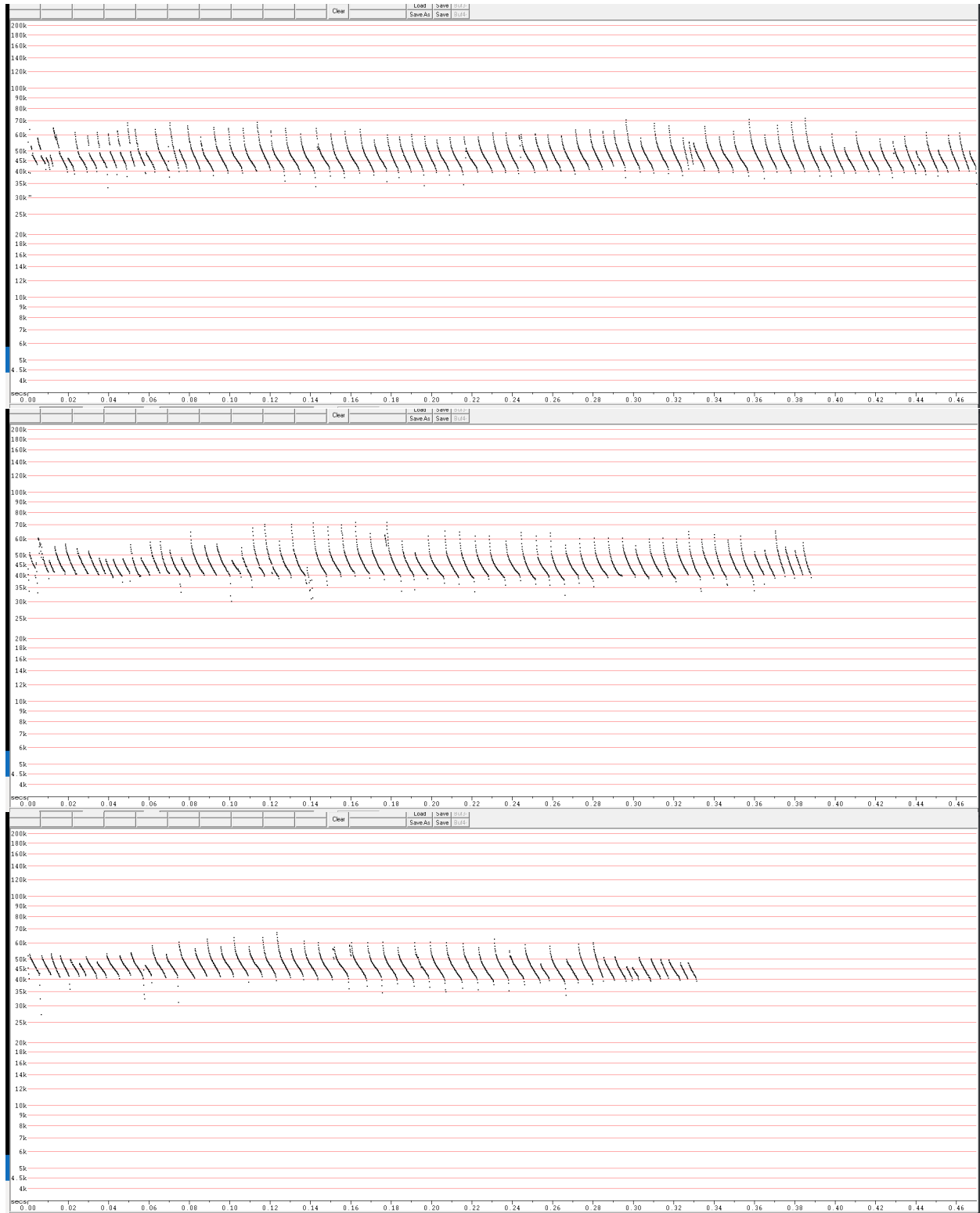
Figures 4-6. Voucher little brown bat calls. Expected Fc = 40 kHz, may dip to 35 kHz. Calls in the open have lower slope than other *Myotis*, and will have a more gradual change in slope. Images above depicted at F7 scale in AnalookW.
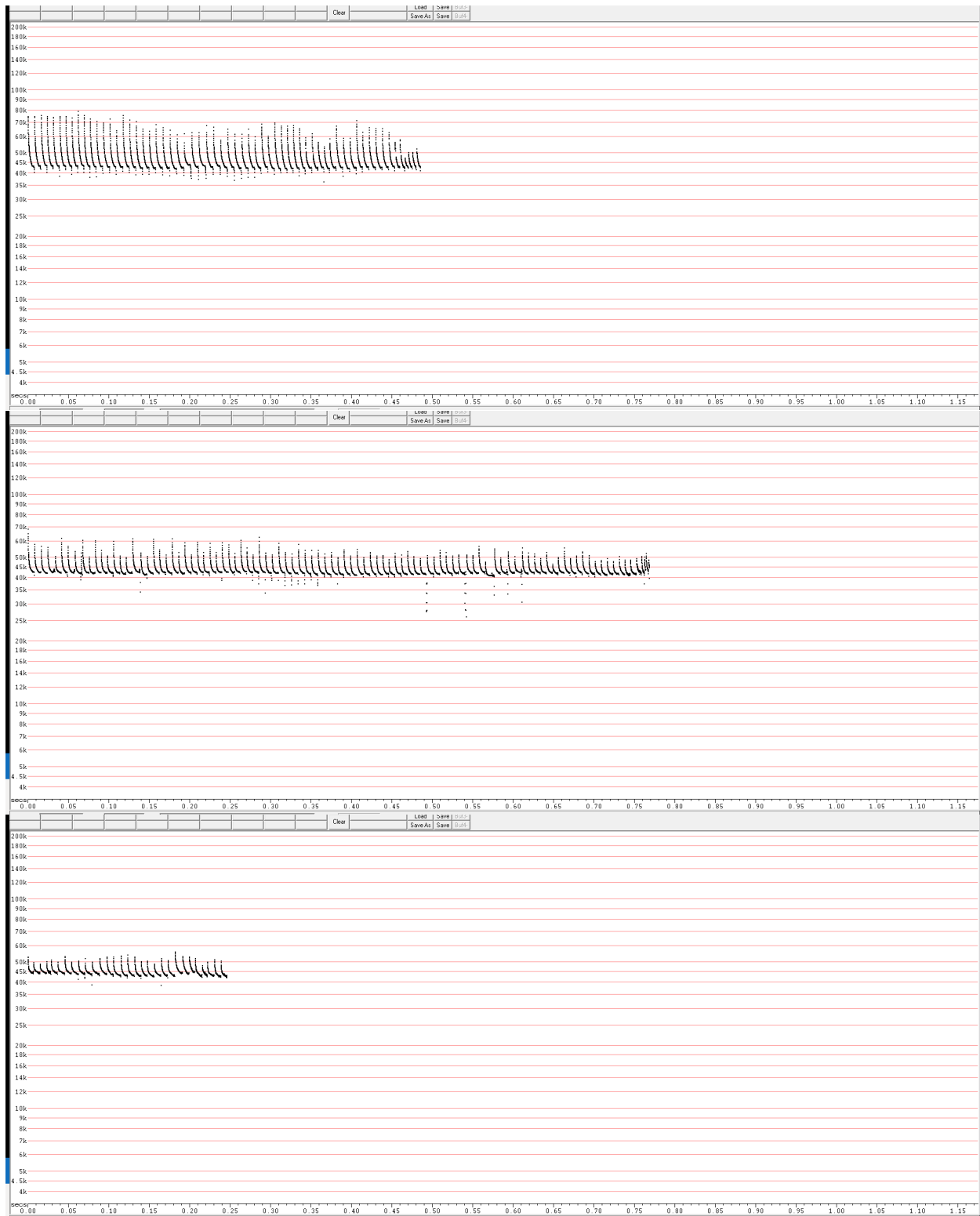
Figures 7-9. Voucher tricolored bat calls. Expected Fc = 40-45 kHz. Tend to exhibit long sequences of similar calls, with low slope "hockey stick" shape in low clutter calls. Images above depicted at F6 scale in AnalookW.
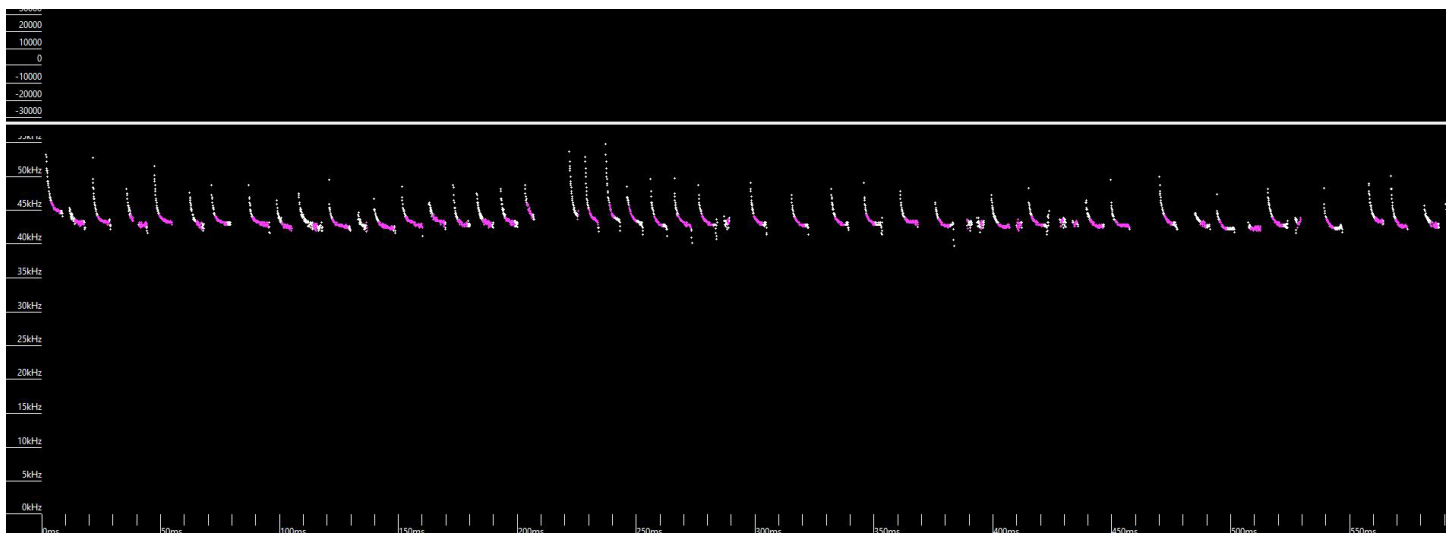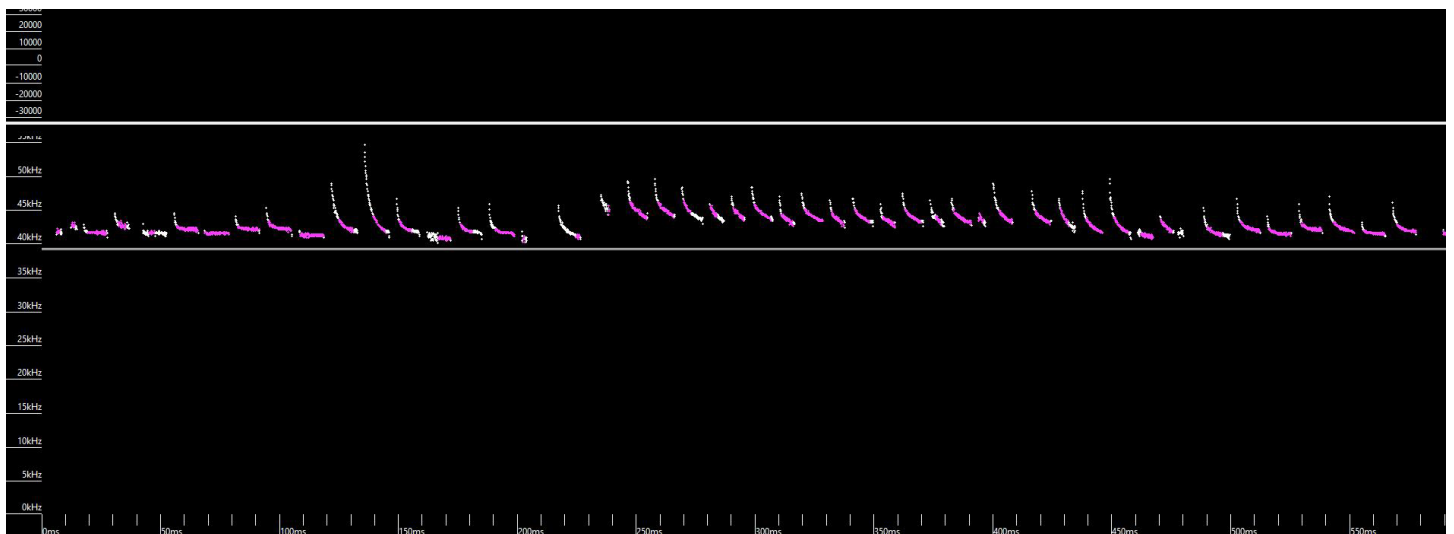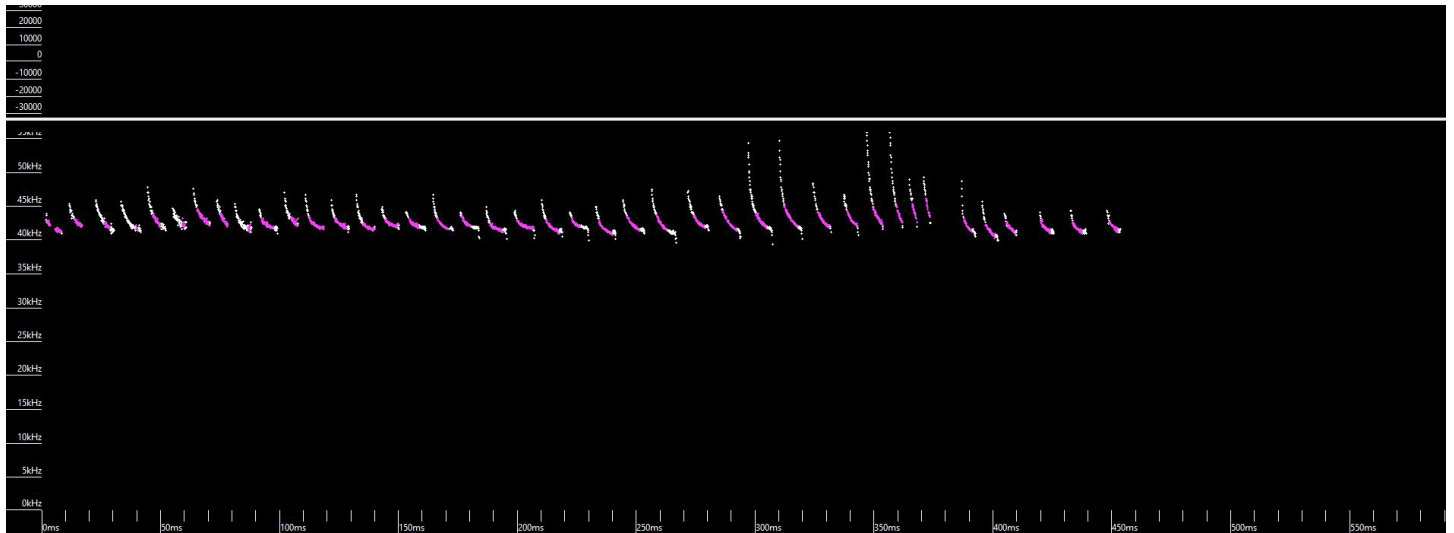
Figures 10-12. Representative tricolored bat calls collected within the Kings Mountain Project Area sites King7, King6, and King9 on June 24, June 22, and June 6, 2024. Calls exhibit Fc within tricolored bat expected range and relatively consistent across entire call. Examples of characteristic "hockey stick" shape evident
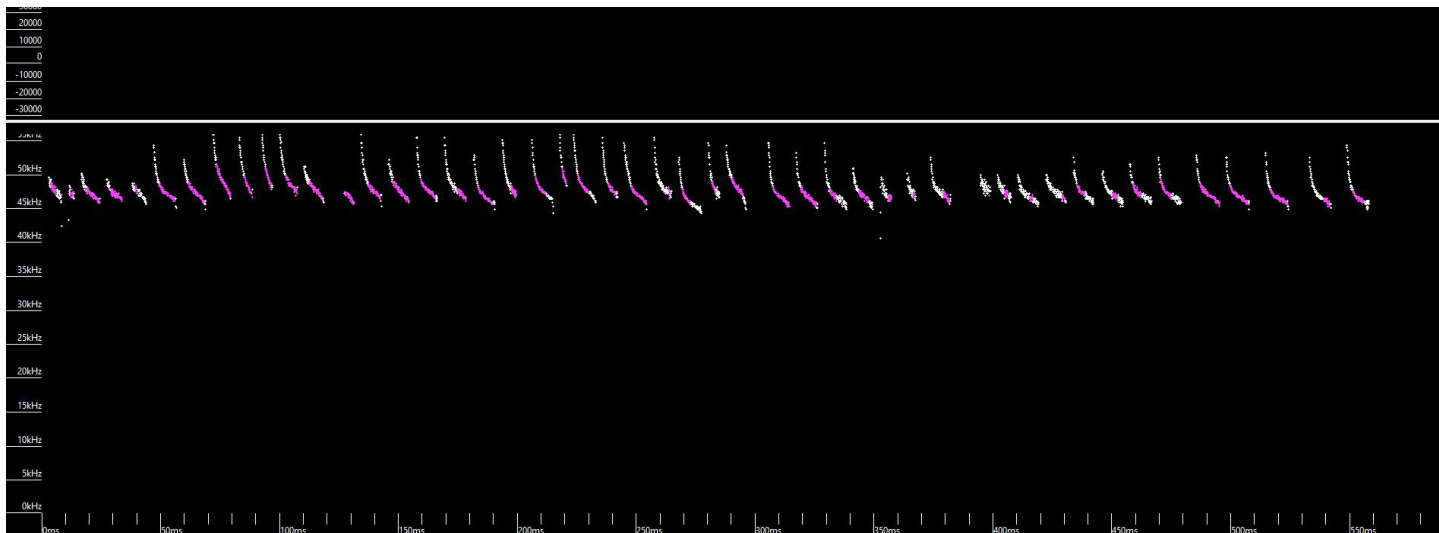
Figure 13. Call "2022-06-13 21-10-10.zc" collected at King1, classified as MYGR by Kaleidoscope. Lacks characteristic consistency across pulses. Few pulses show sharp slope decrease, others show a slower, more curved decrease.
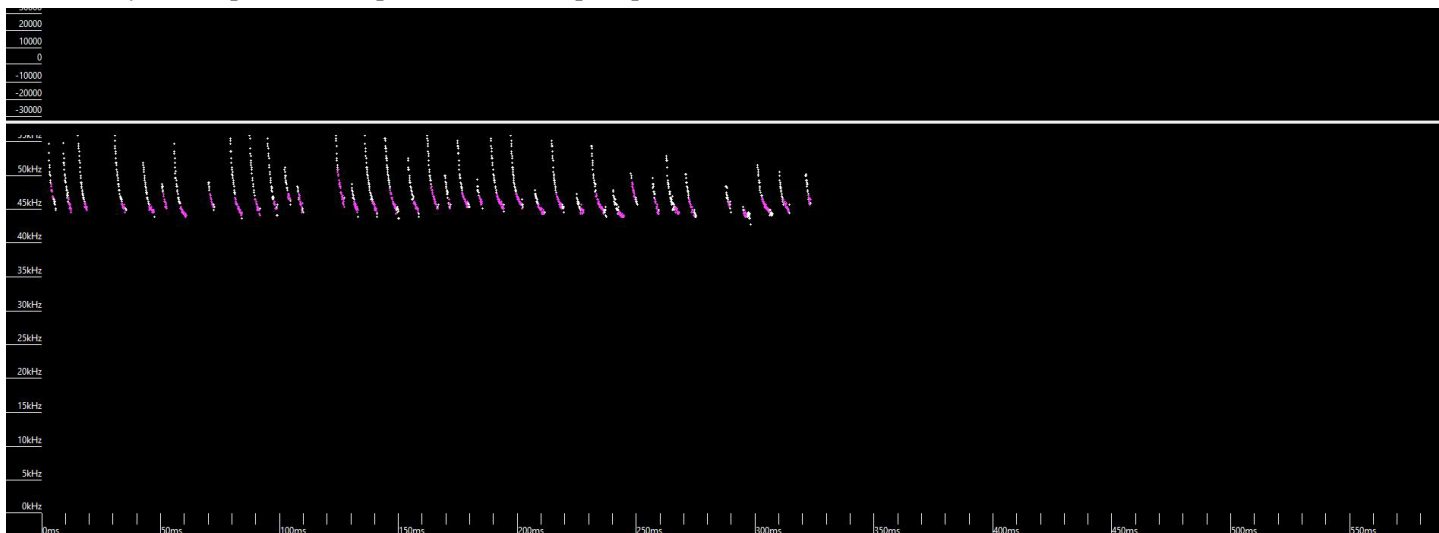

Figure 14. Call "2022-06-17 02-05-56.zc" collected at King3, classified as MYGR by Kaleidoscope. A high clutter call that lacks sufficient information to make confident species identification.
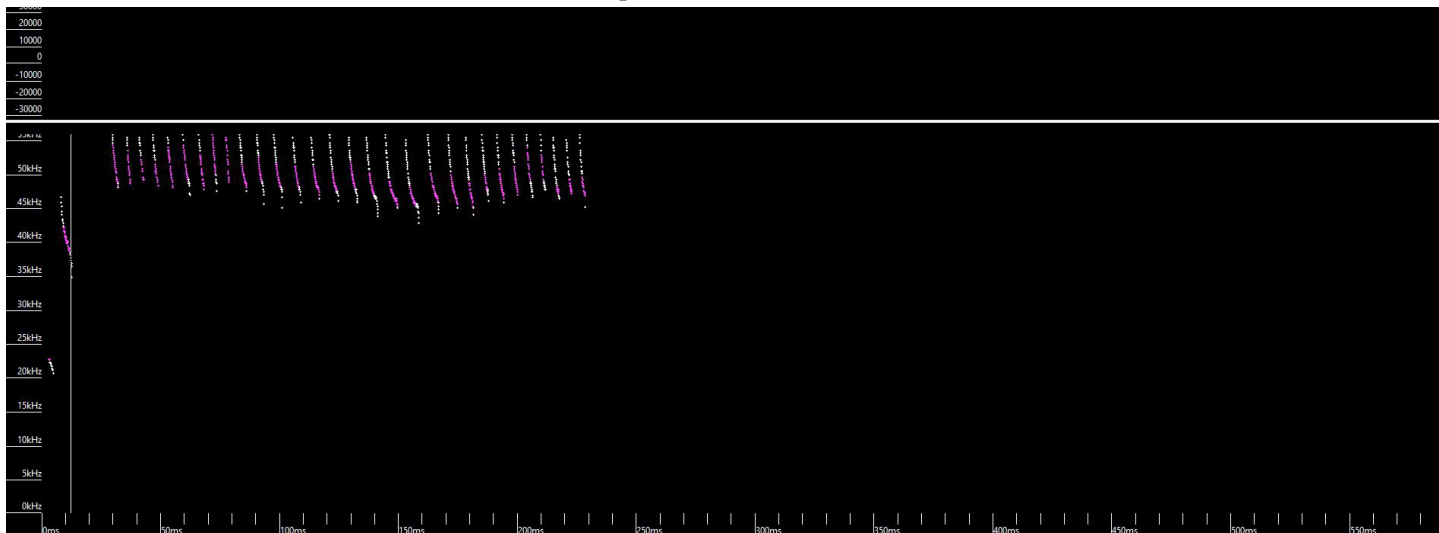

Figure 15. Call "2022-06-26 00-18-10.zc" collected at King6, classified as MYGR by Kaleidoscope. Inconsistent Fc across sequence. A high clutter call that lacks sufficient information to make confident species identification.
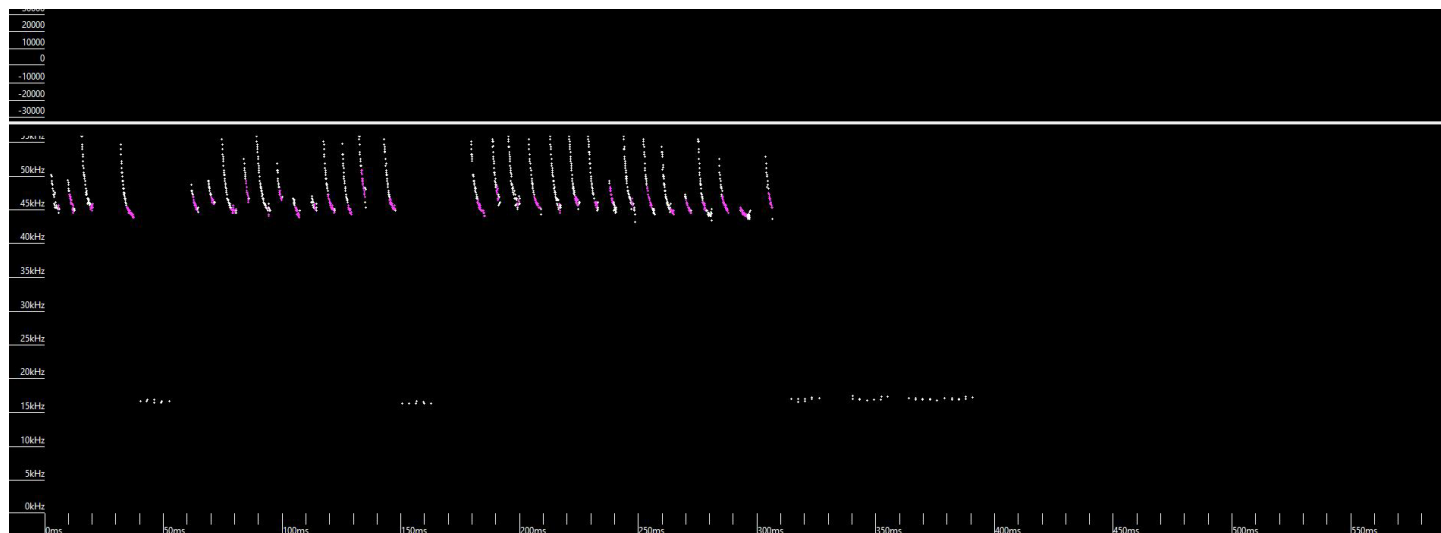
Figure 16. Call "W6162136.03#" collected at King6, classified as MYGR by Kaleidoscope, lacks the characteristic sharp decrease in slope and consistency across pulses. This is more likely a red bat.

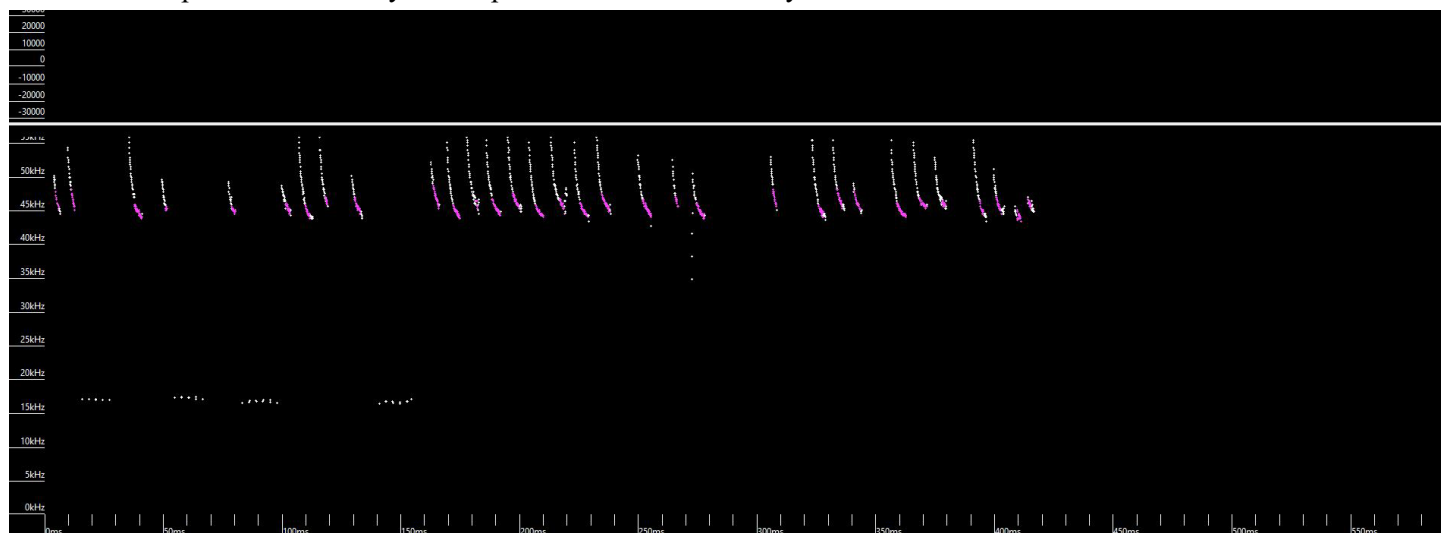Figure 17. Call "2022-06-17 02-01-27.zc" collected at King3, classified as MYGR by Kaleidoscope. Fc is inconsistent across sequence, some pulses have sharp decrease in slope others more curved. This is more likely red bat.
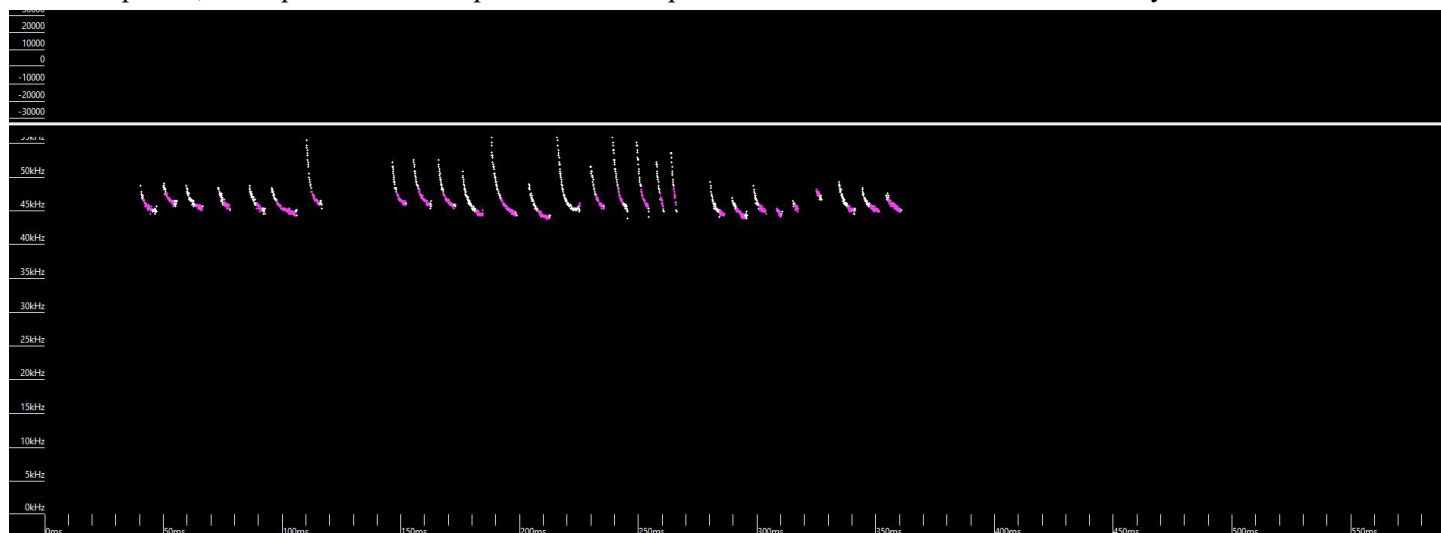

Figure 18. Call "2022-06-17 02-00-38.zc" collected at King3 classified as MYGR by Kaleidoscope. Most pulses have long and slow decrease in slope. More indicative of tricolored bat or red bat.
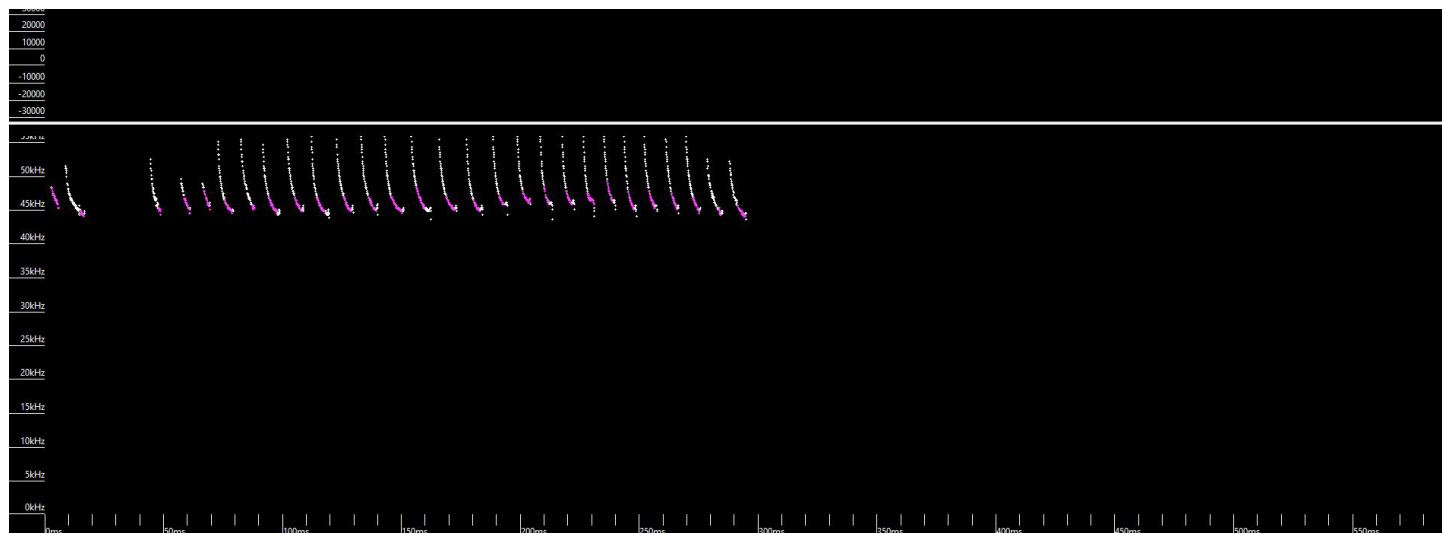
Figure 19. Call "2022-06-26 22-40-50.zc" collected at King7, classified as MYGR by Kaleidoscope. Lacks characteristic sharp decrease in slope. More likely tricolored bat in higher clutter.
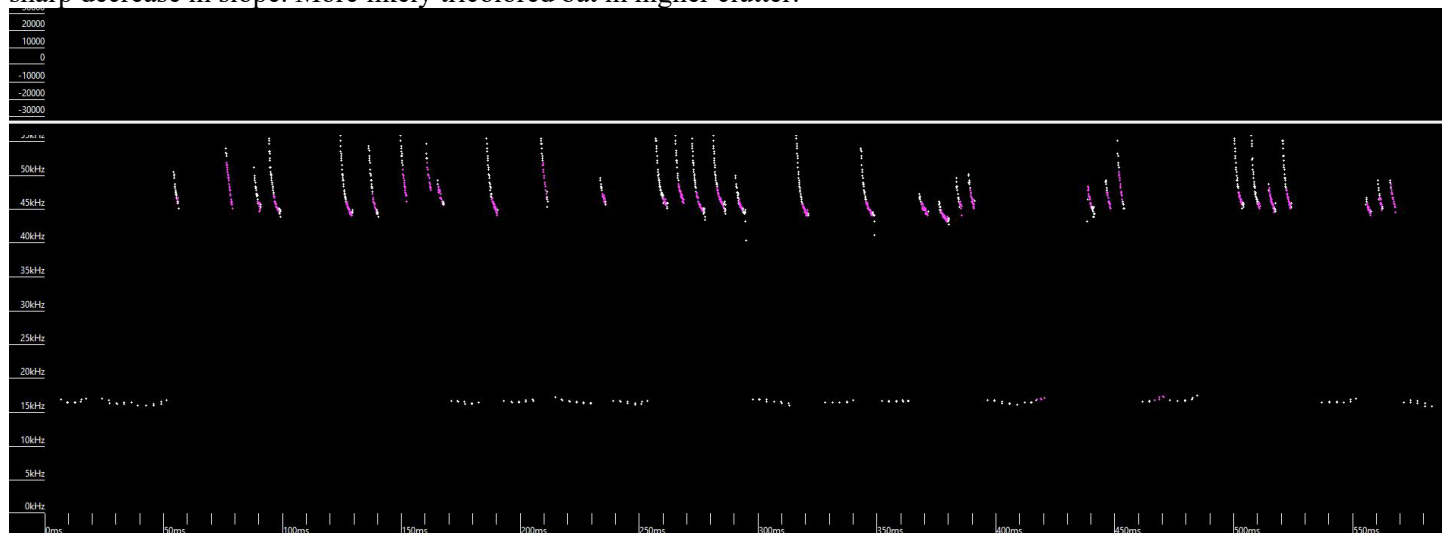
Figure 20. Call "2022-06-17 01-59-25.zc" collected at King3, classified as MYGR by Kaleidoscope. Inconsistent Fc across sequence is characteristic of red bat.
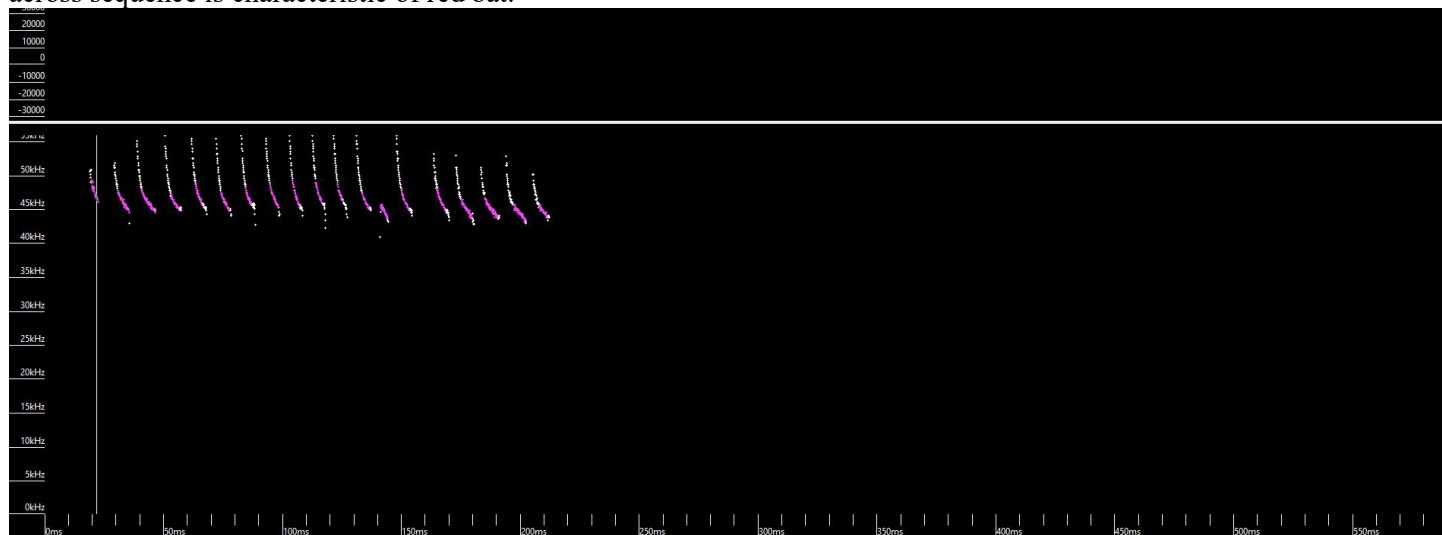
Figure 21. Call "W6142145.15#" collected at King6, classified as MYGR by Kaleidoscope. Decrease in slope within pulses varies significantly across calls, more suggestive of red bat.

Figure 22. Call "2022-06-17 02-01-07.zc" collected at King3, classified as MYGR by Kaleidoscope. Inconsistent slopes and Fc throughout sequence indicative of red bat.
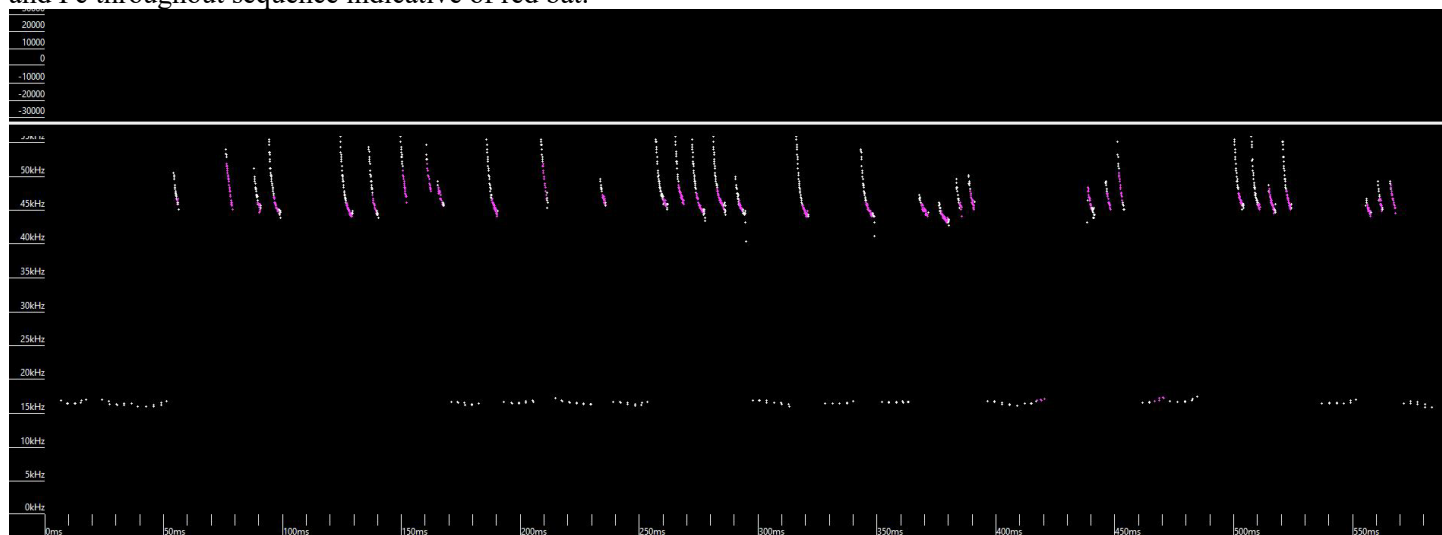
Figure 23. Call "2022-06-17 01-59-42.zc" collected at King3, classified as MYGR by Kaleidoscope. Inconsistent slopes and Fc throughout sequence indicative of red bat.
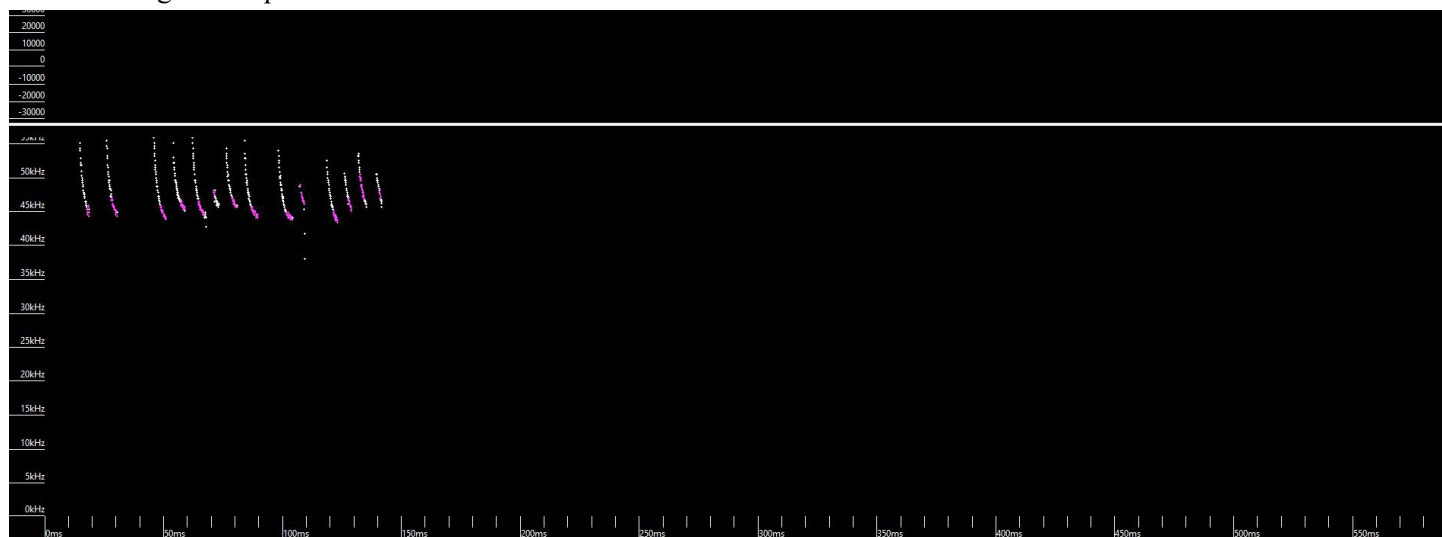
Figure 24. Call "2022-06-17 02-05-48.zc" collected at King3, classified as MYGR by Kaleidoscope. Inconsistent slopes and Fc throughout sequence indicative of red bat.

Figure 25. Call "2022-06-17 01-58-32.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination, however inconsistent slopes and Fc throughout sequence indicative of red bat.

Figure 26. Call "2022-06-17 02-00-20.zc" collected at King3, classified as MYGR by Kaleidoscope. Inconsistent slopes and Fc throughout sequence indicative of red bat.
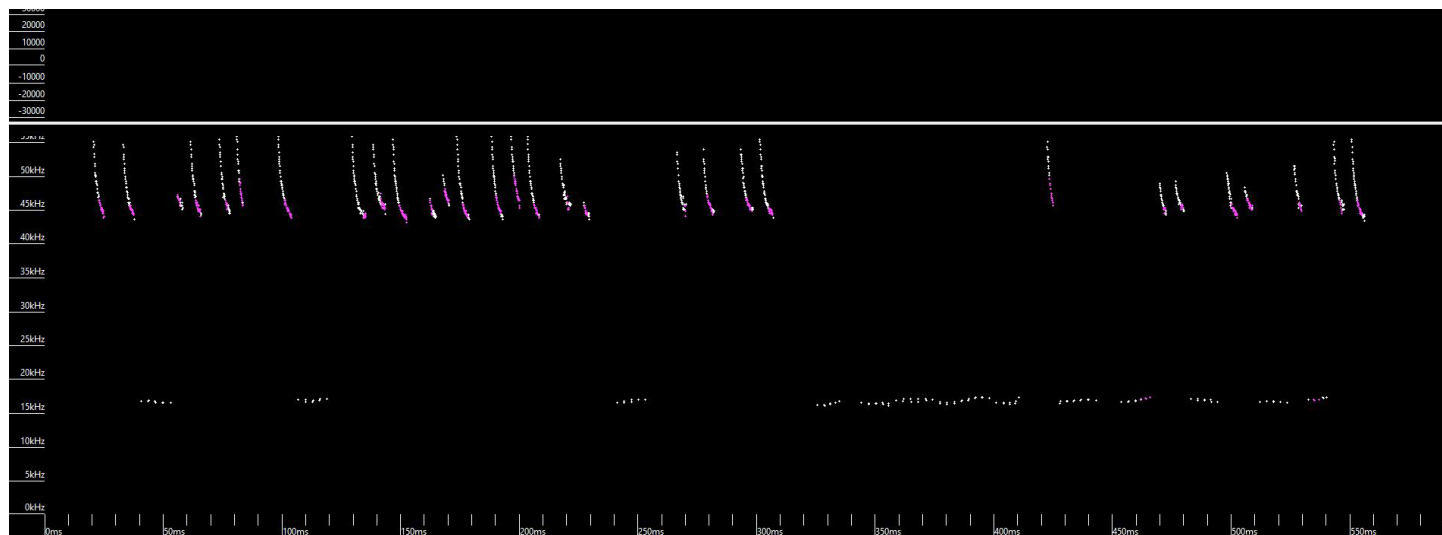

Figure 27. Call "2022-06-17 00-16-47.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 28. Call "W6162147.03#" collected at King6, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 29. Call "2022-06-16 21-46-41.zc" collected at King7, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 30. Call "W6162212.04#" collected at King6, classified as MYGR by Kaleidoscope. Insufficient data to make determination. Pulses indicate slow decrease in slope, uncharacteristic of gray bats.

Figure 31. Call "2022-06-17 02-05-28.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination, though variation across pulses indicative of red bat.
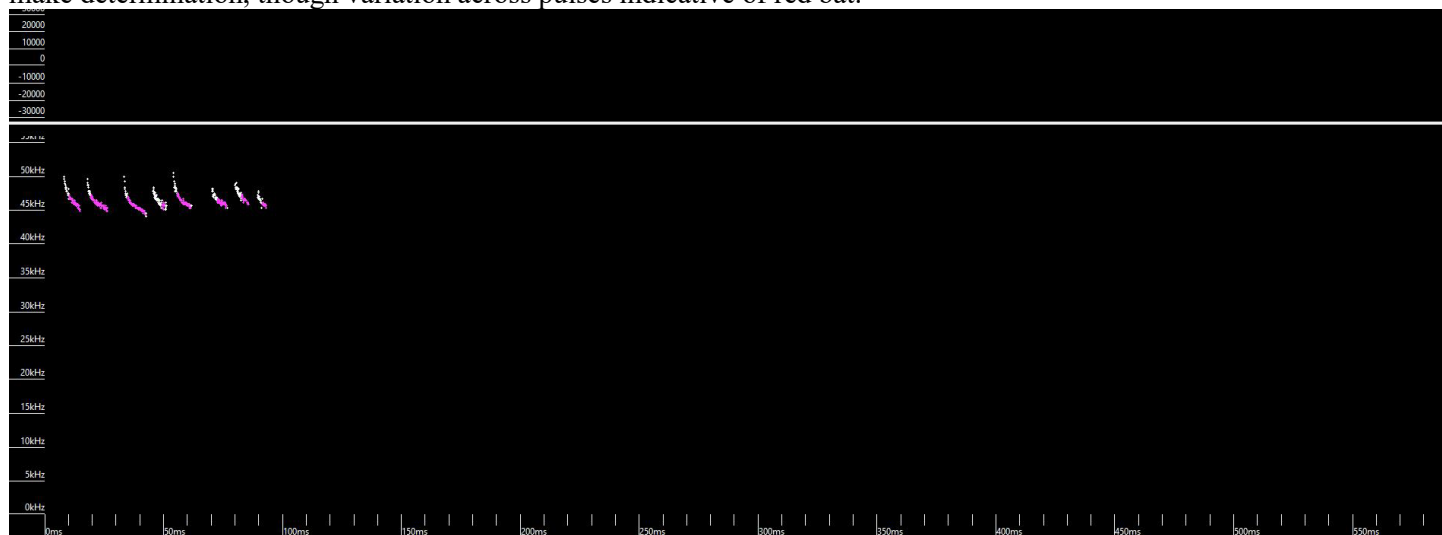
Figure 32. Call "2022-06-23 22-36-46.zc" collected at King7 classified as MYGR by Kaleidoscope. Duration of call more indicative of tricolored bat.
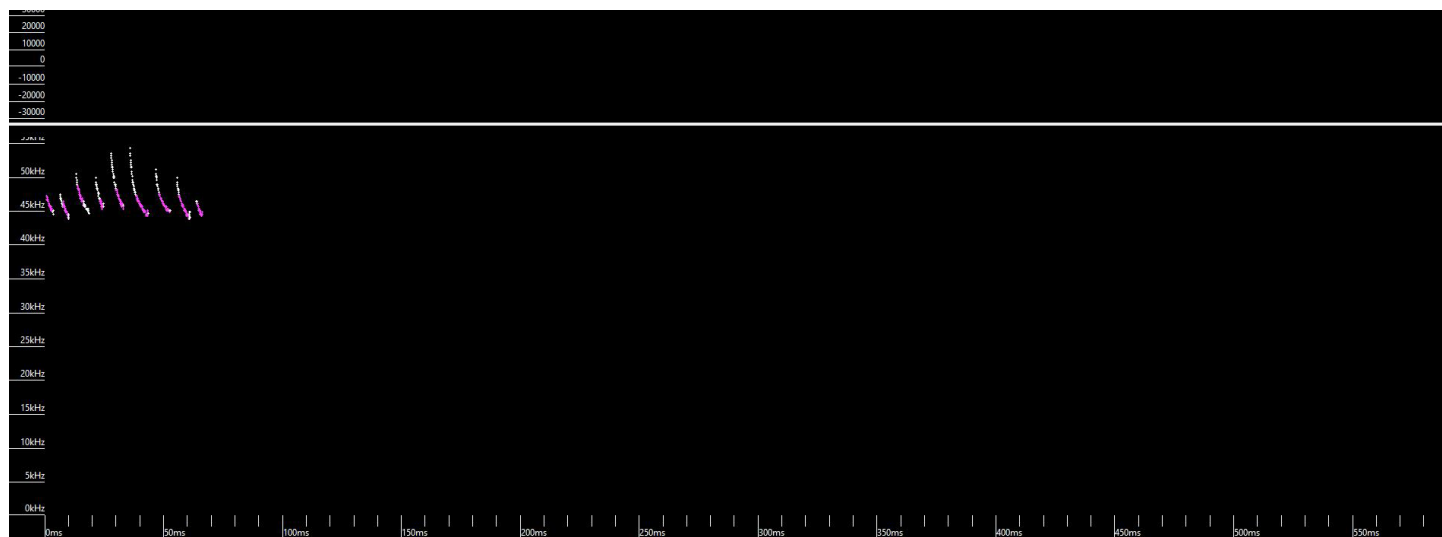
Figure 33. Call "2022-06-12 03-04-20.zc" collected at King1, classified as MYGR by Kaleidoscope. Insufficient data to make determination. Variation in Fc and shape indicative of red bat.
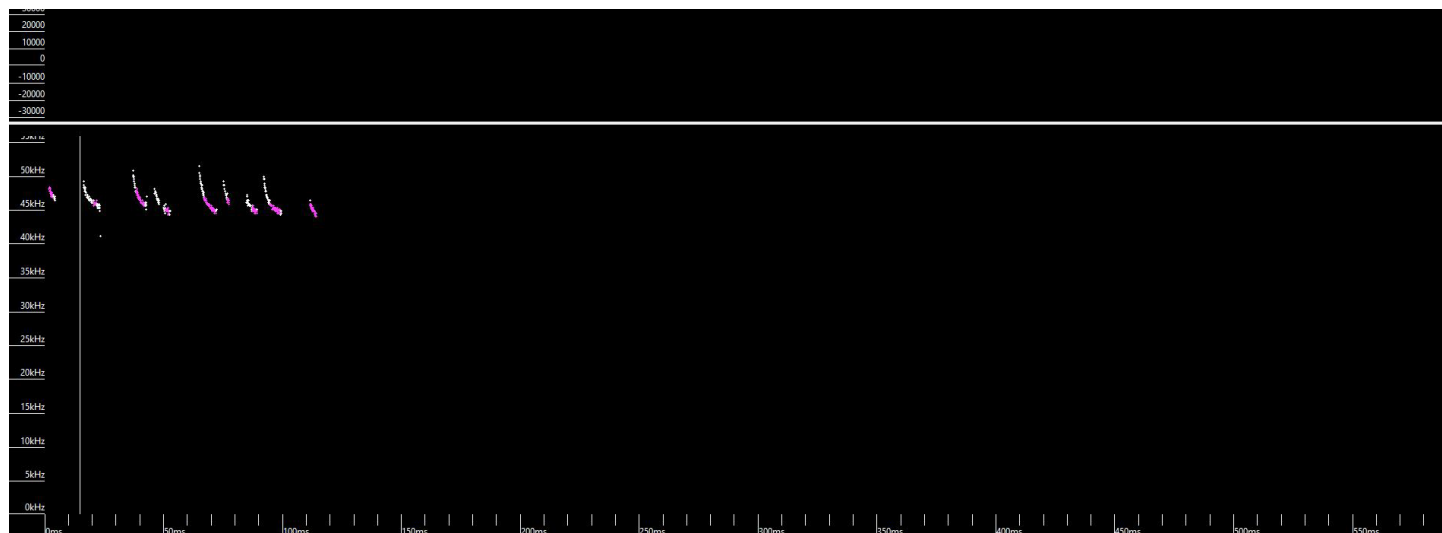
Figure 34. Call "W6162228.42#" collected at King 6, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 35. Call "2022-06-19 23-11-36.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 36. Call "2022-06-17 02-04-35.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
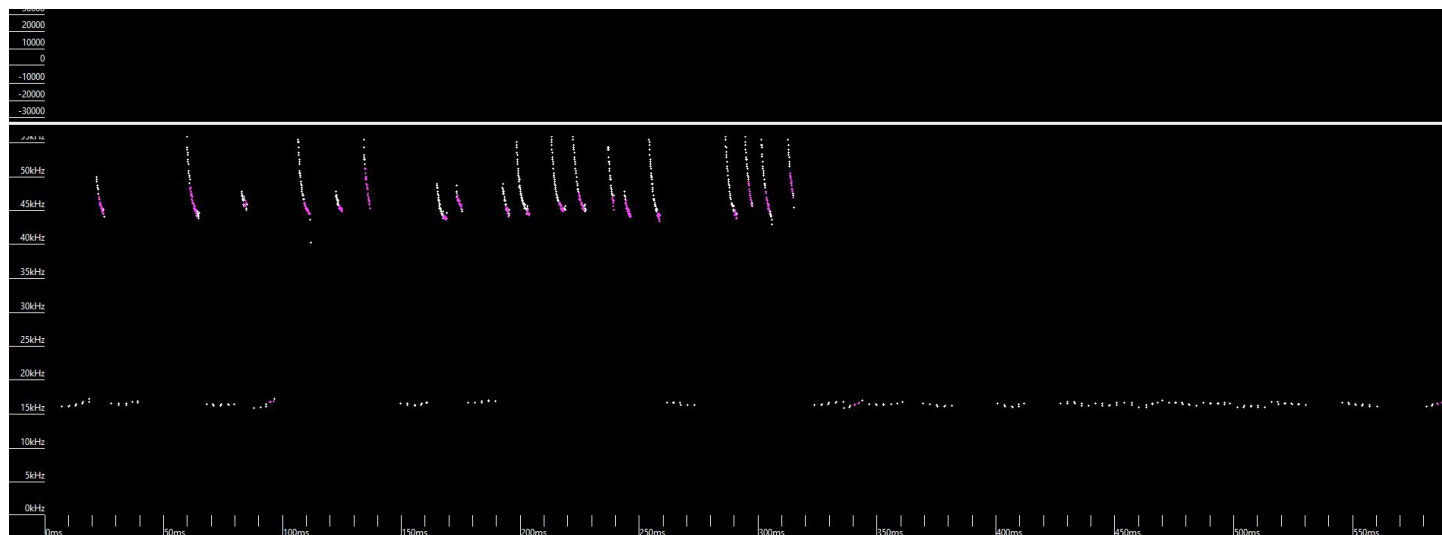
Figure 37. Call "2022-06-17 02-30-36.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination, though variation in Fc throughout sequence indicative of red bat.
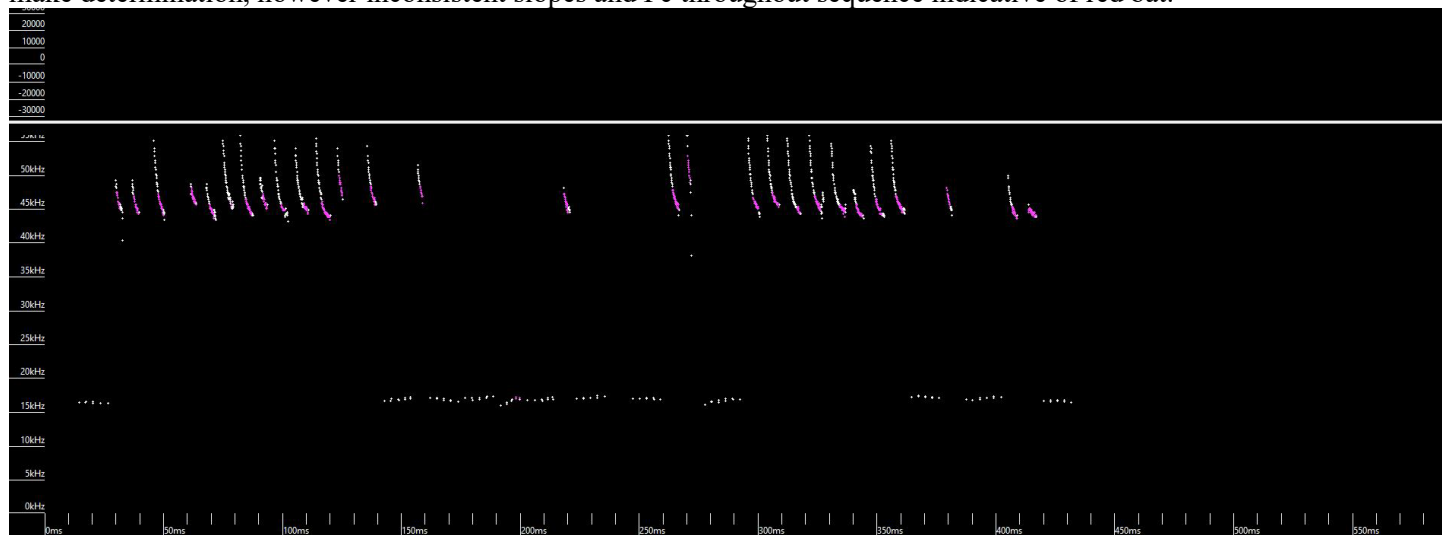

Figure 38. Call "2022-06-17 02-00-00.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.

Figure 39. Call "2022-06-18 02-54-27.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
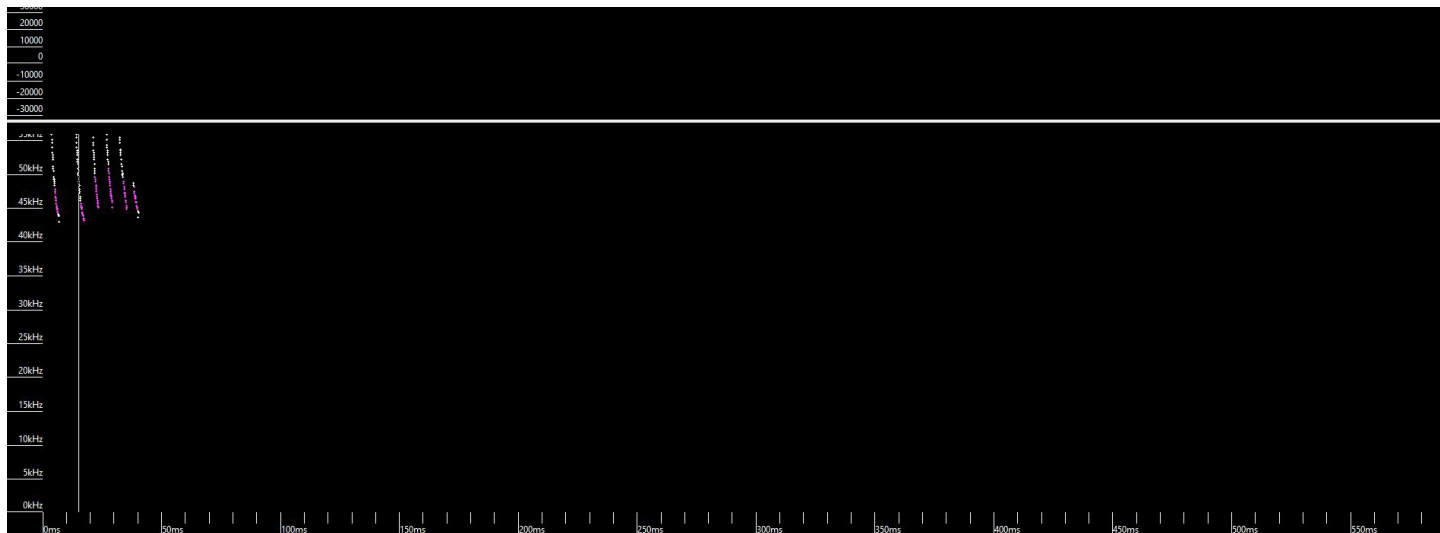
Figure 40. Call "2022-06-25 04-45-43.zc" collected at King9, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
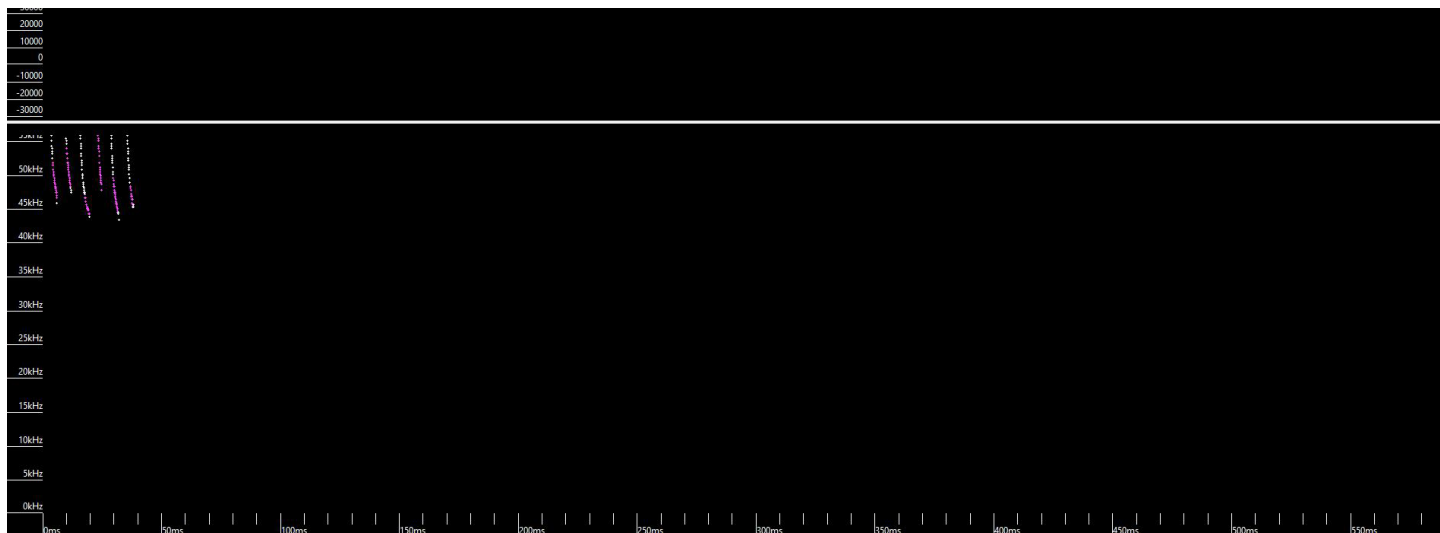
Figure 41. Call "2022-06-29 04-56-50.zc" collected at King9, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
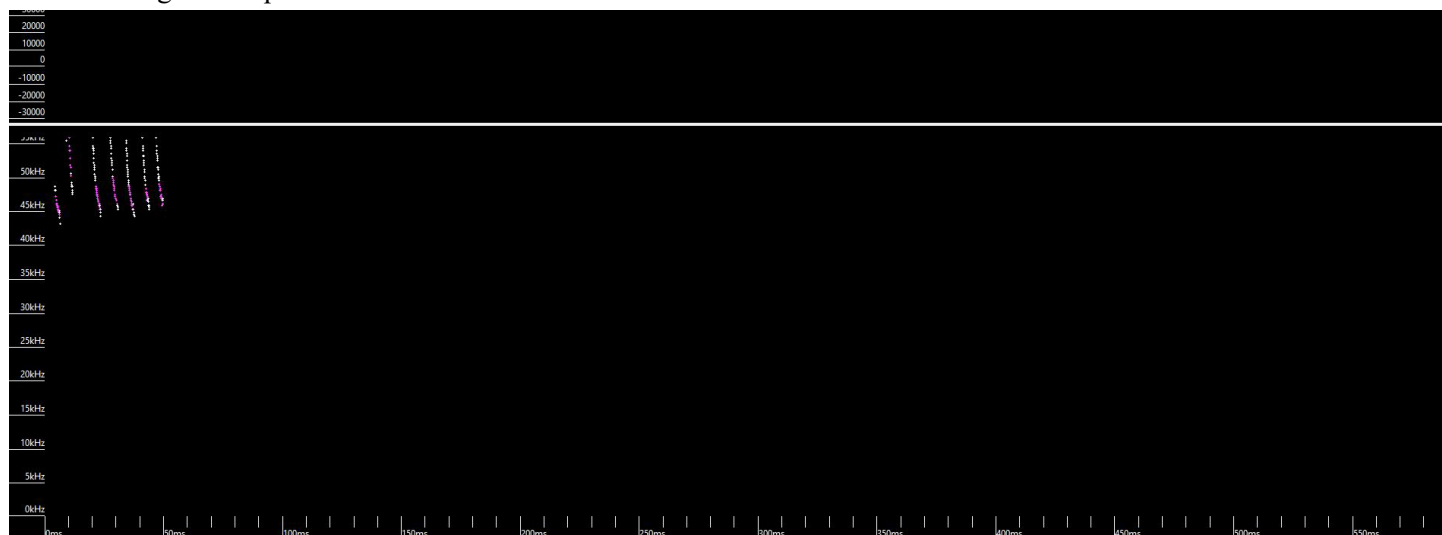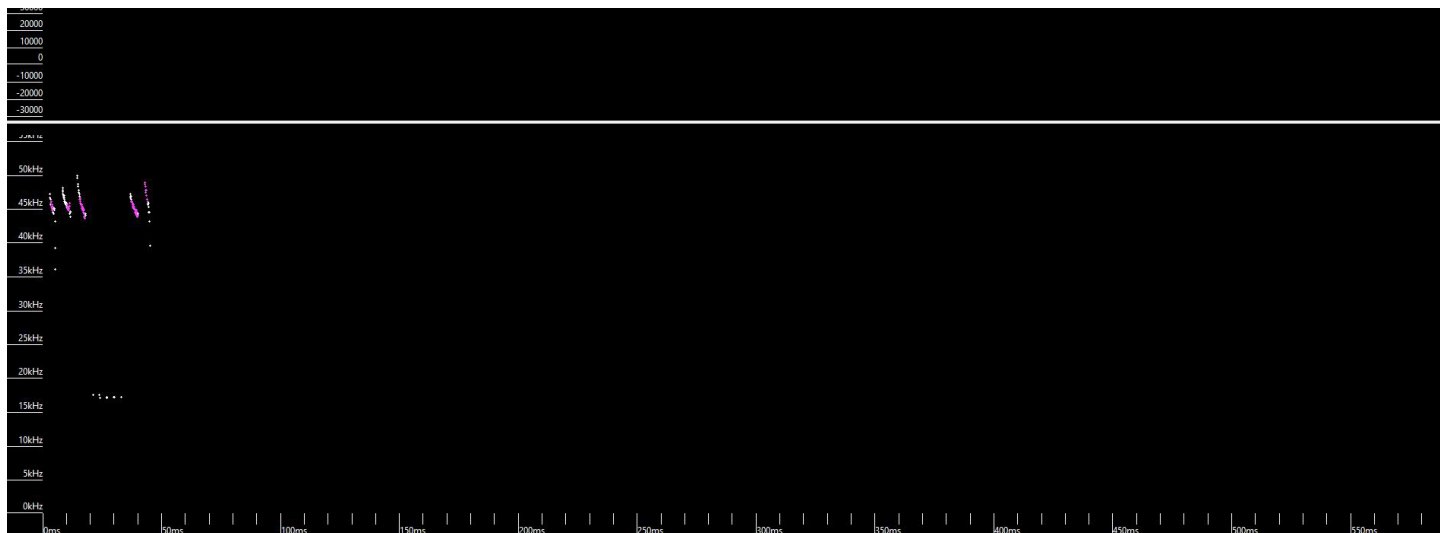

Figure 42. Call "2022-06-17 02-27-12.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
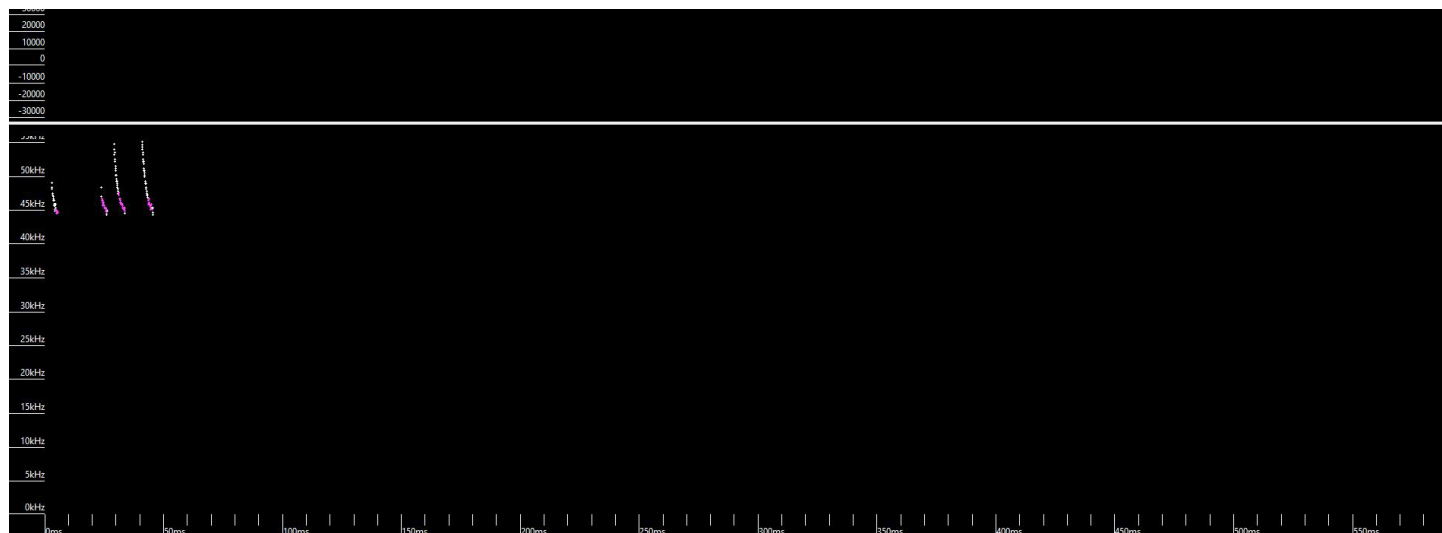
Figure 43. Call "2022-06-17 02-05-24.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
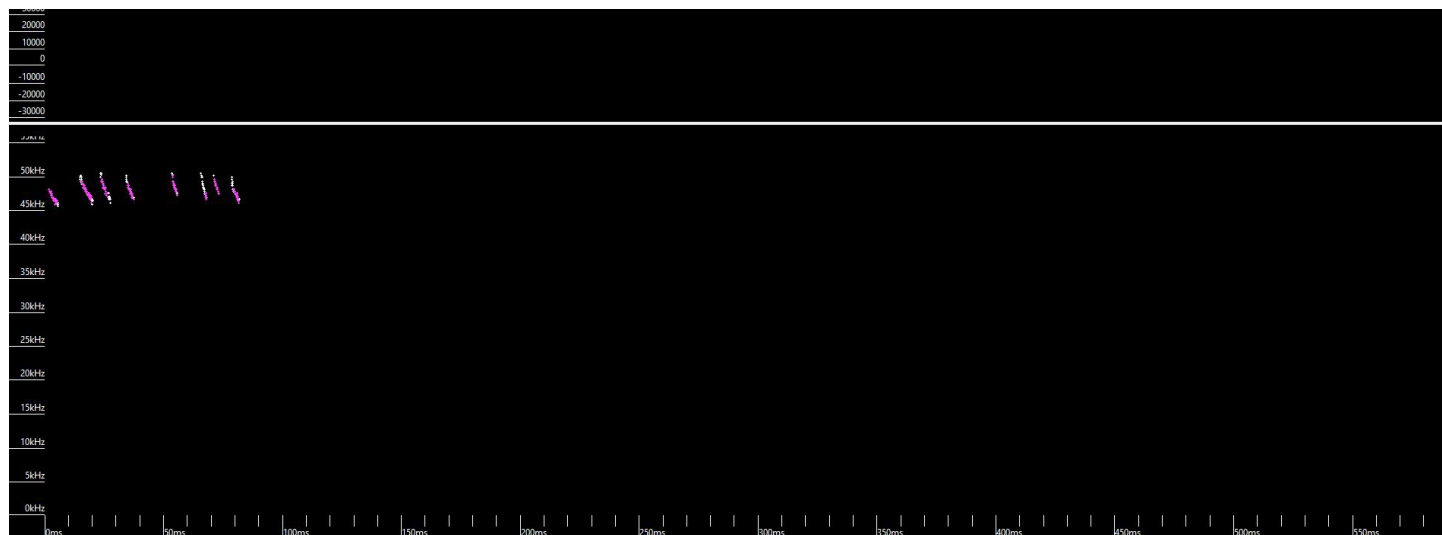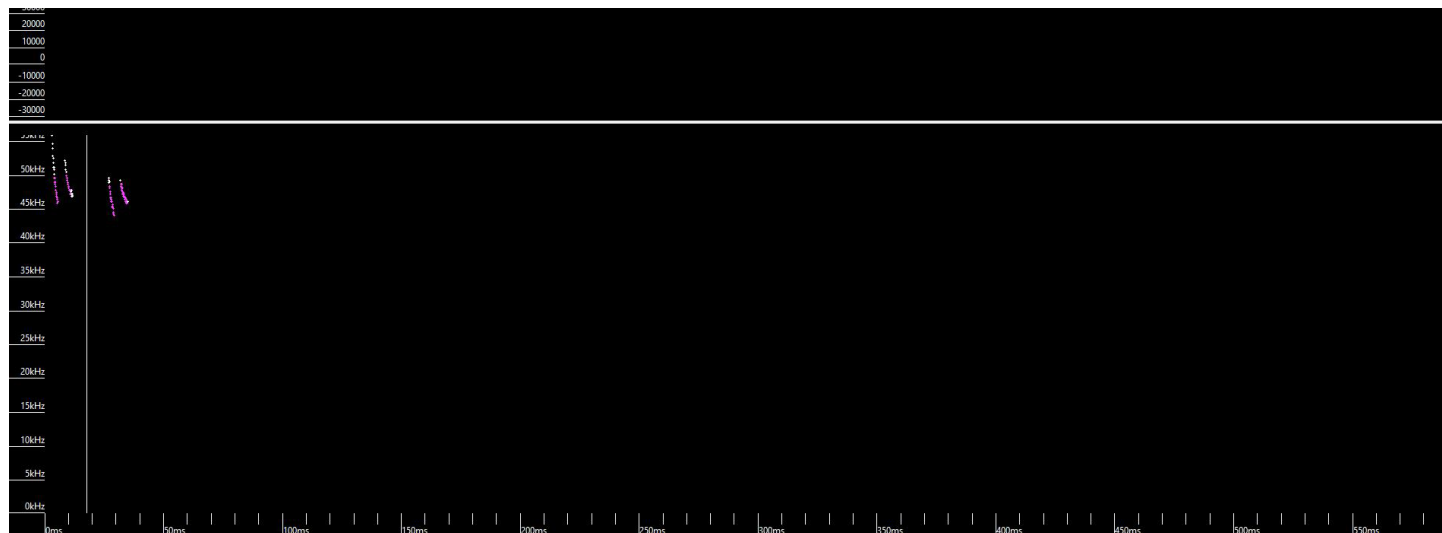

Figure 44. Call "2022-06-19 23-12-45.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
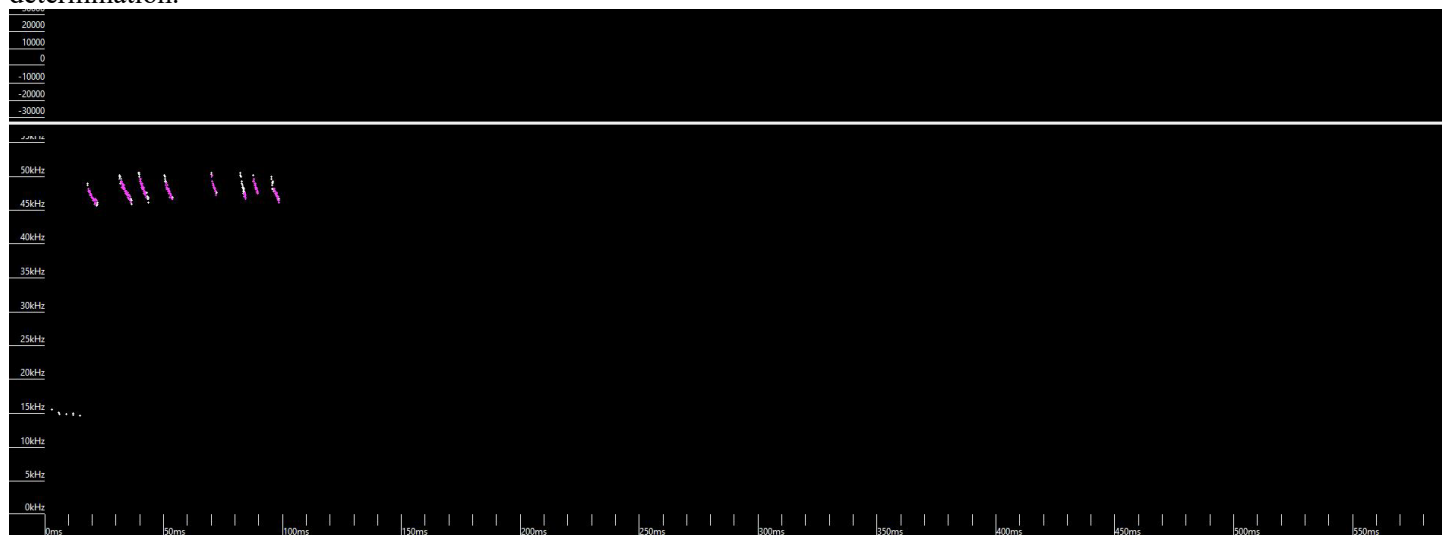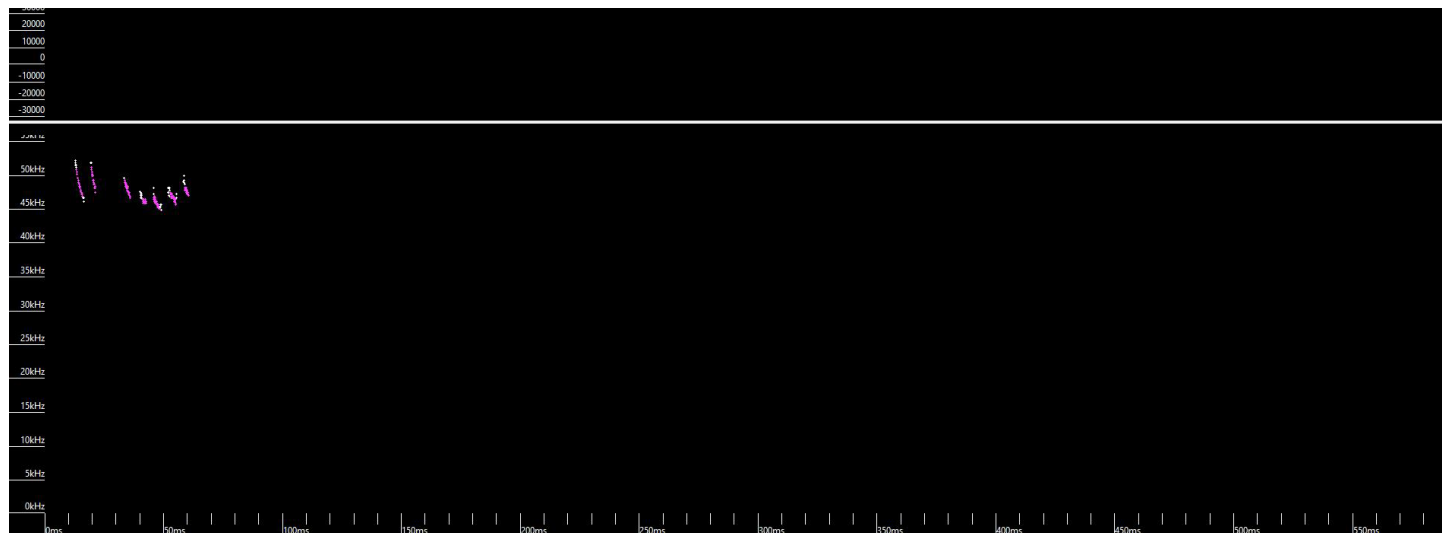

Figure 45. Call "2022-06-23 22-16-51.zc" collected at King7, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
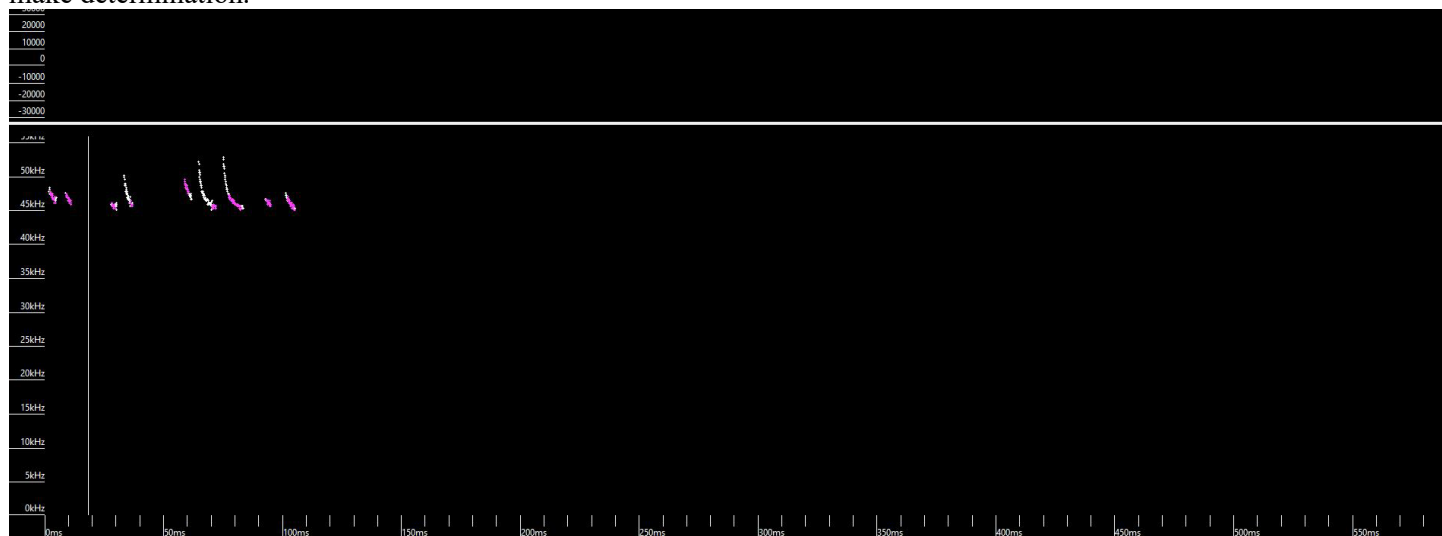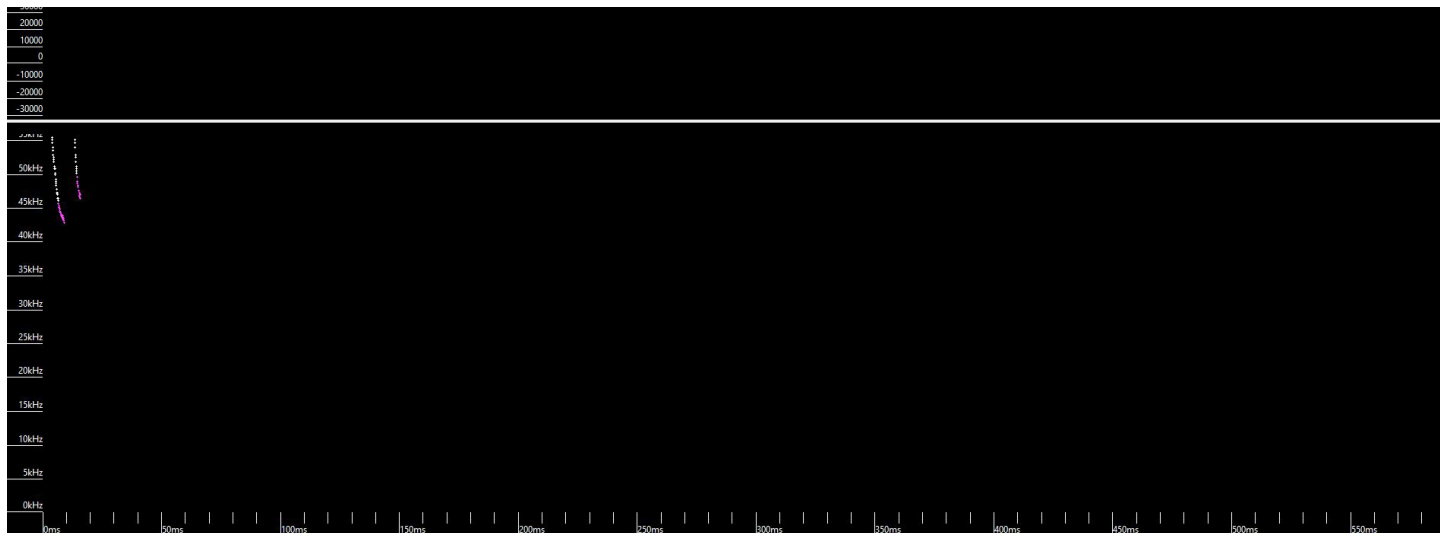
Figure 46. Call "2022-06-10 00-30-06.zc" collected at King1, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
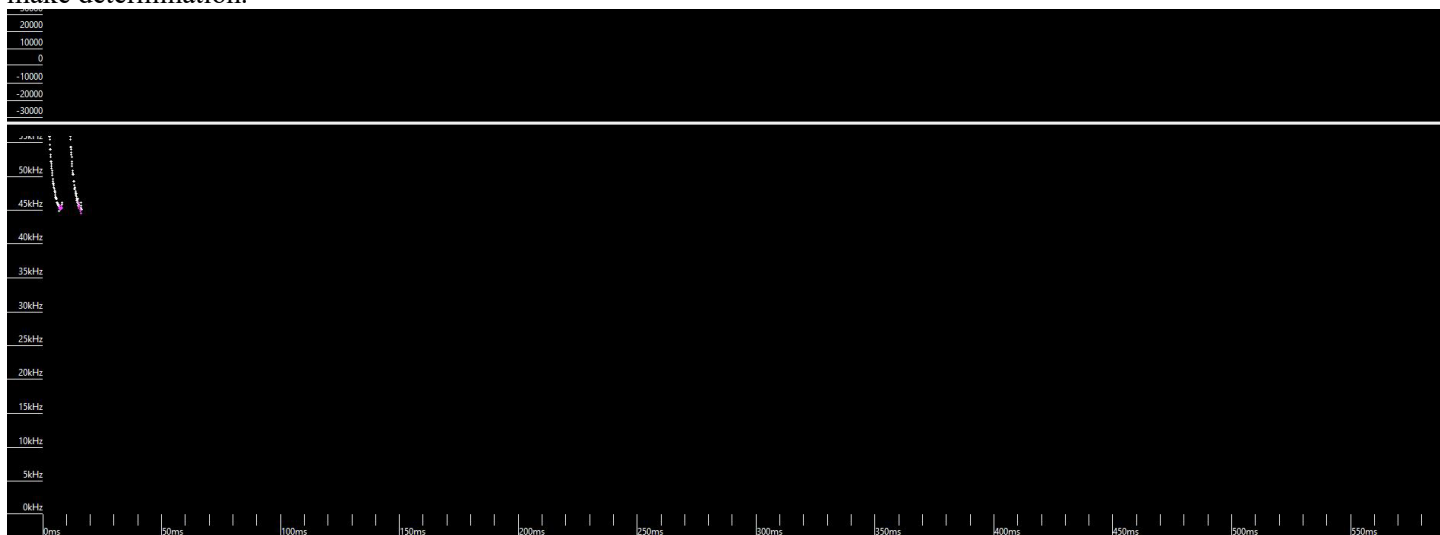
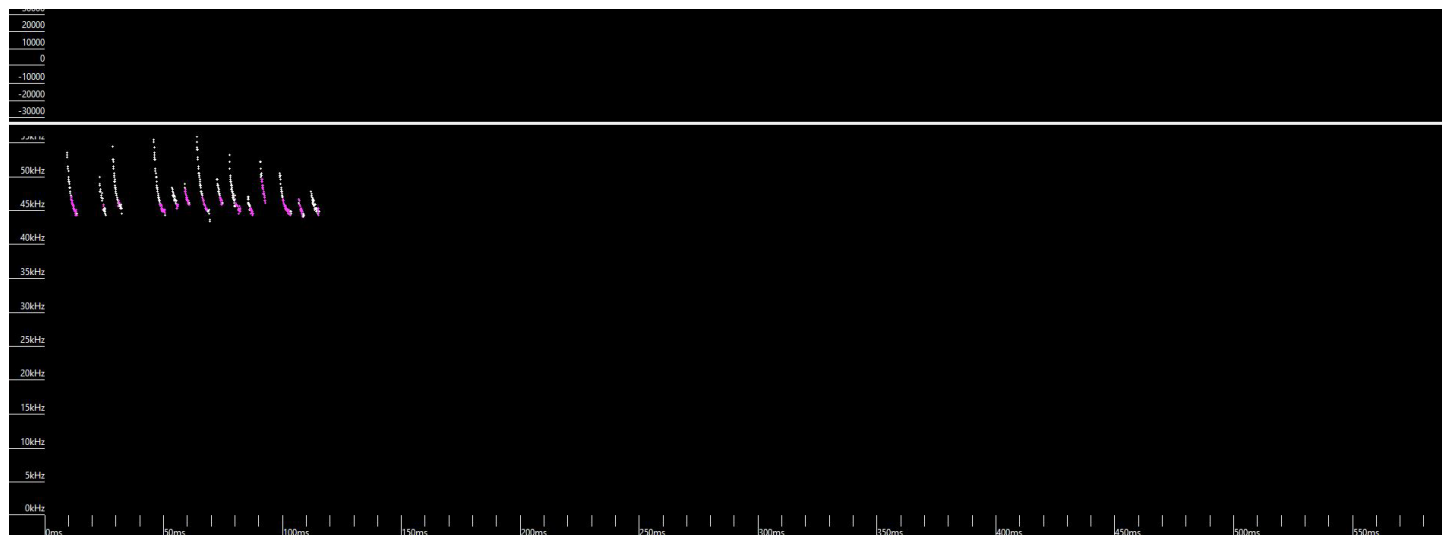Figure 47. Call "2022-06-19 22-59-05.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
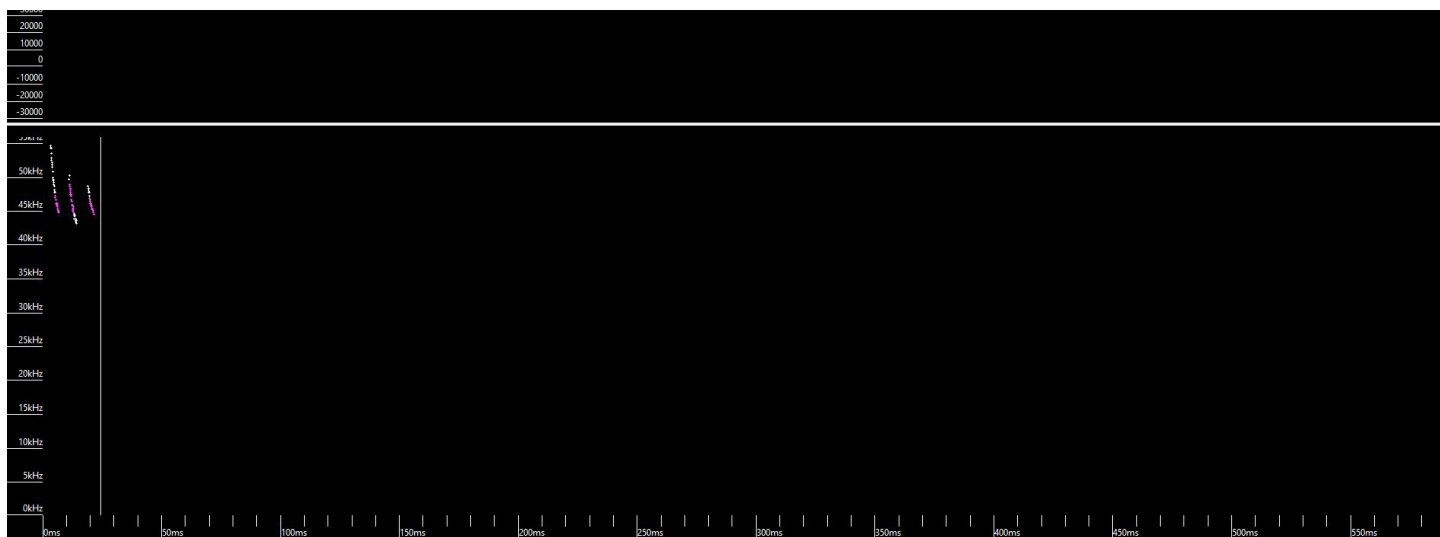
Figure 48. Call "2022-06-18 02-24-48.zc" collected at King3, classified as MYGR by Kaleidoscope. Insufficient data to make determination.
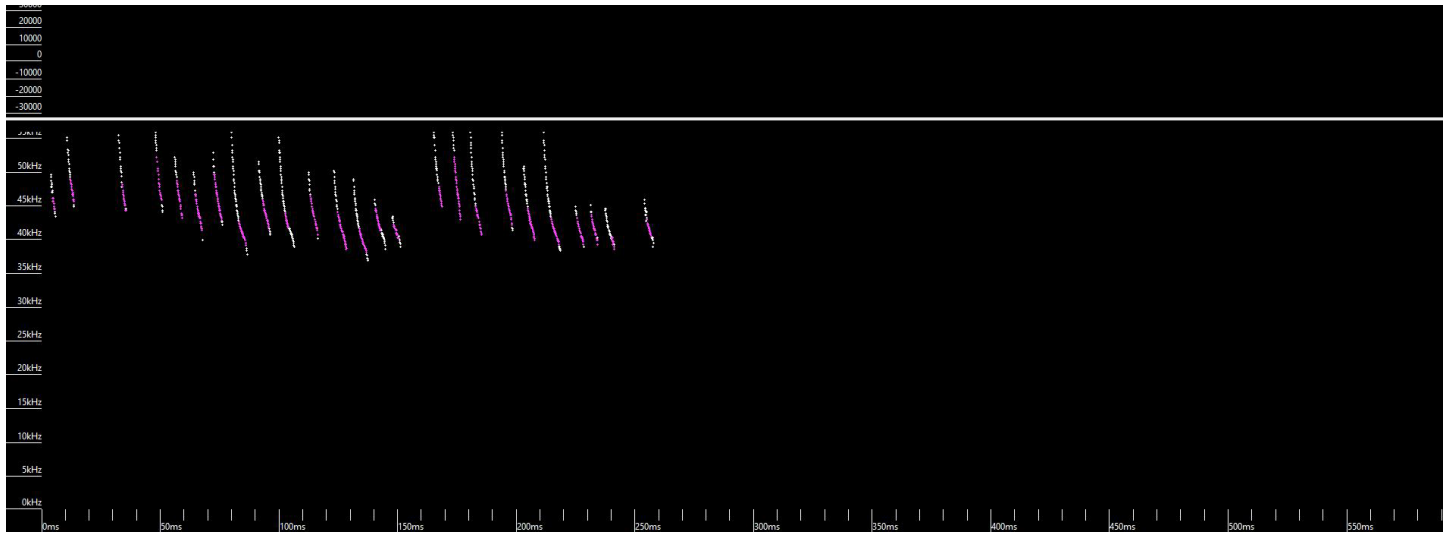
Figure 49. Call "2022-06-13 02-00-30.zc" collected at King5, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
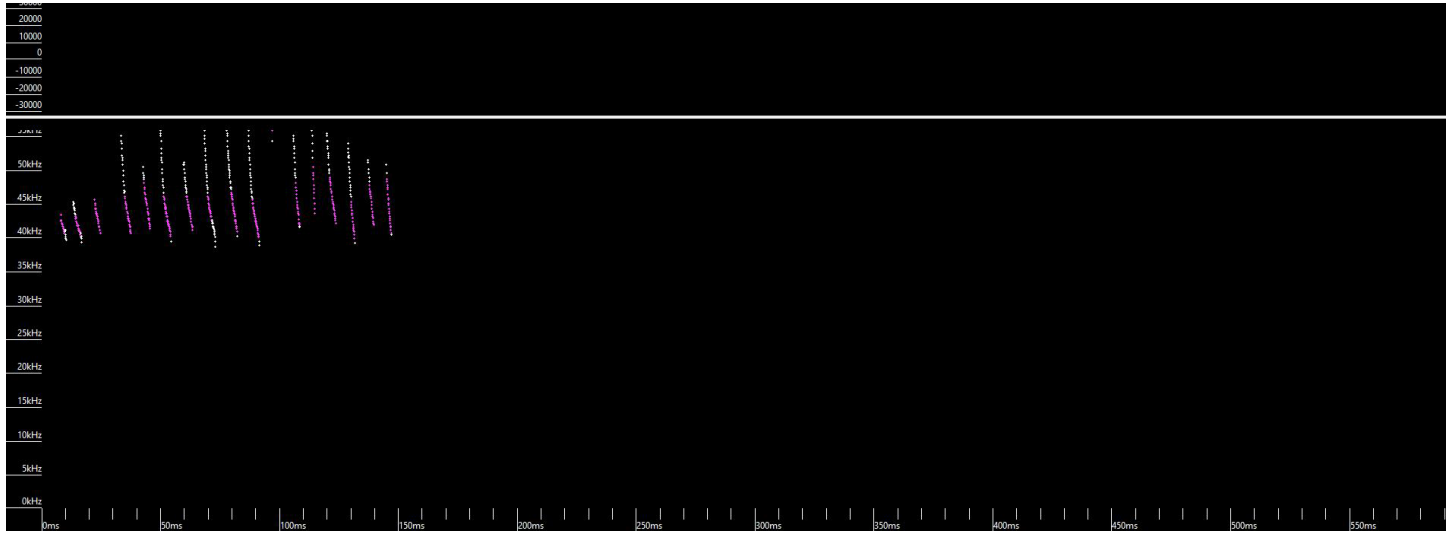
Figure 50. Call "2022-06-09 22-50-18.zc" collected at King4, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
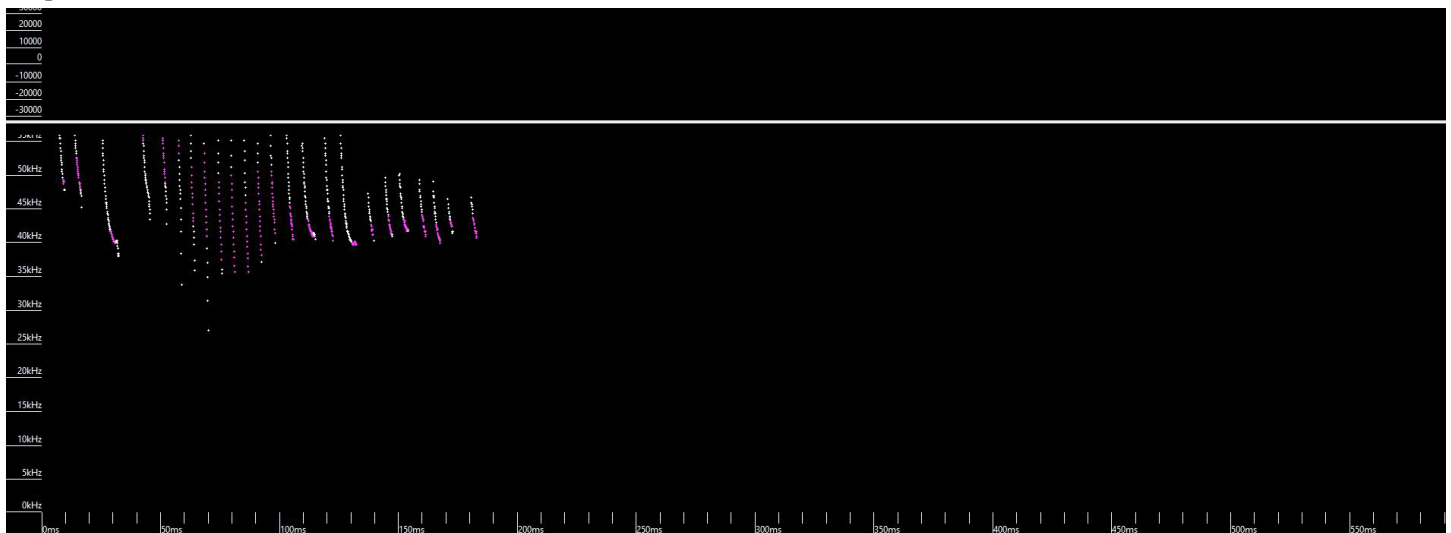
Figure 51. Call "2022-06-16 21-46-40.zc" collected at King3, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
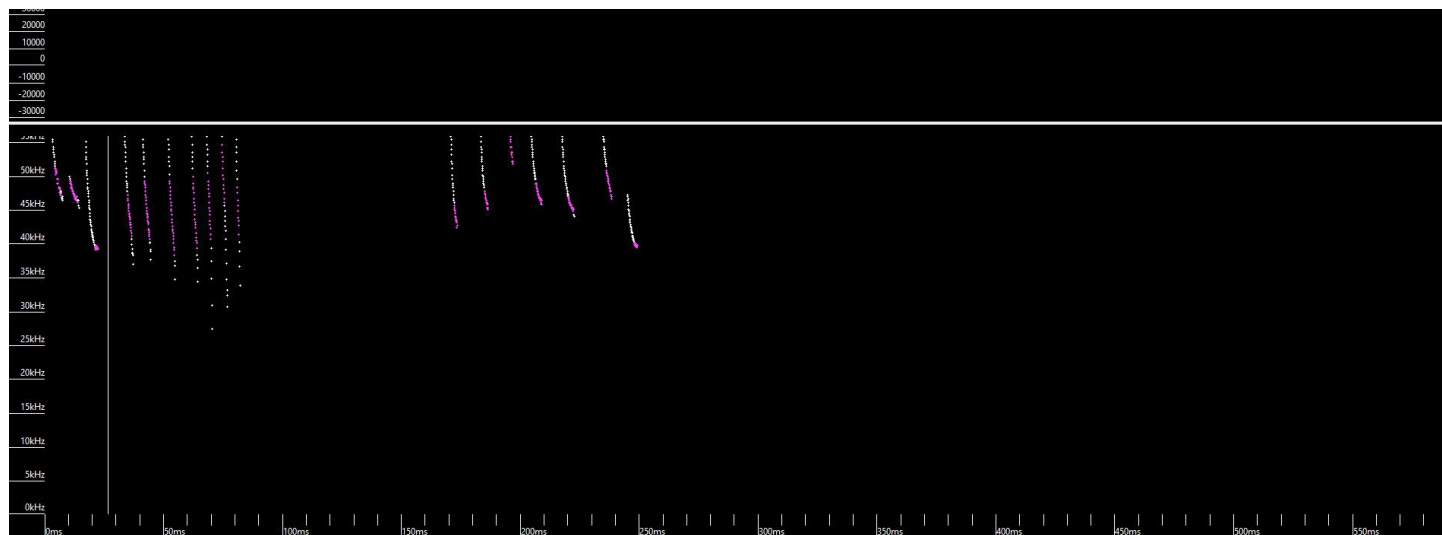
Figure 52. Call "2022-06-30 02-19-20.zc" collected at King9, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call inconsistent with little brown bat.
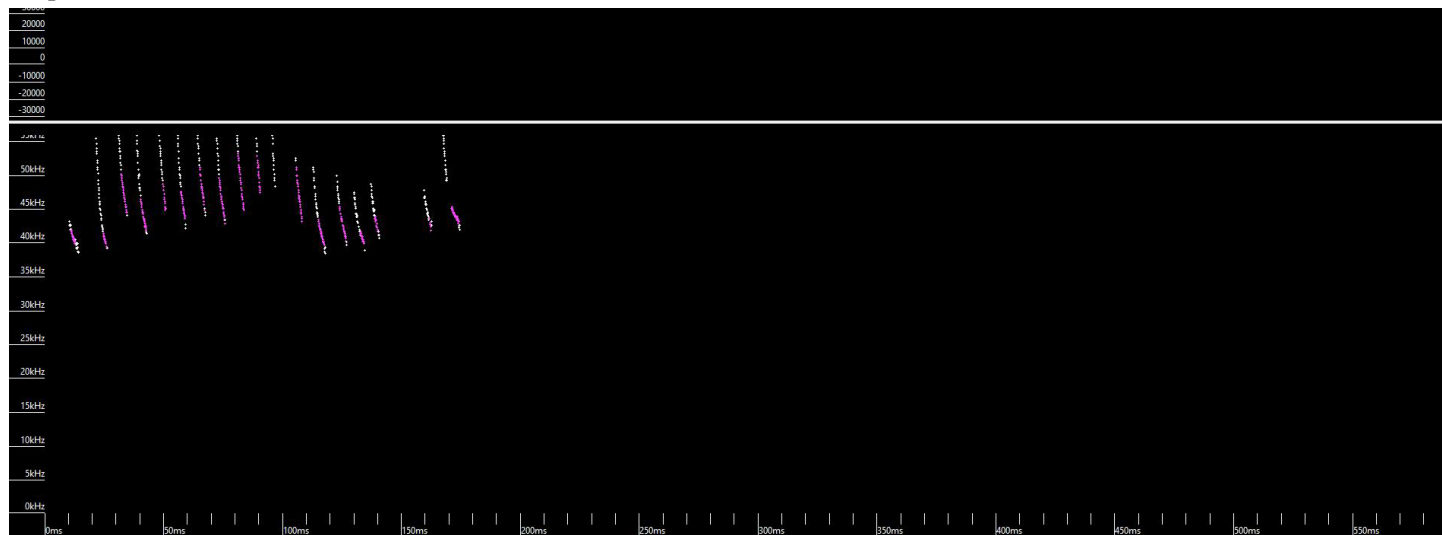
Figure 53. Call "2022-06-09 22-58-03.zc" collected at King5, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
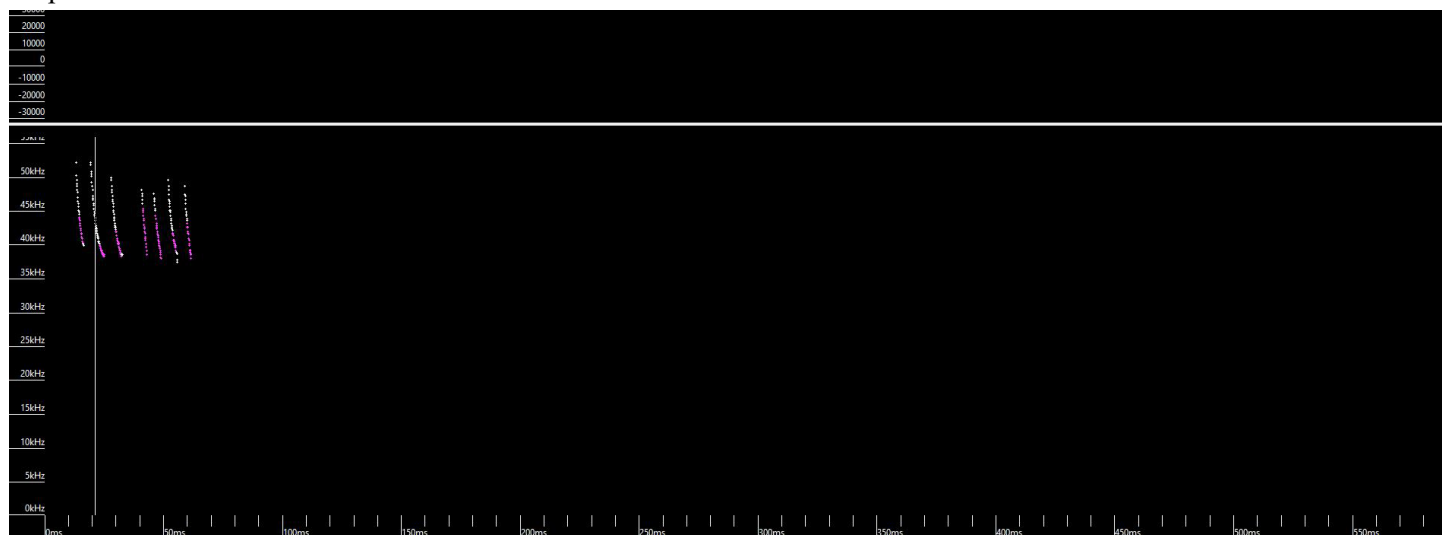
Figure 54. Call "2022-06-10 05-21-03.zc" collected at King4, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat, but insufficient data to make determination.
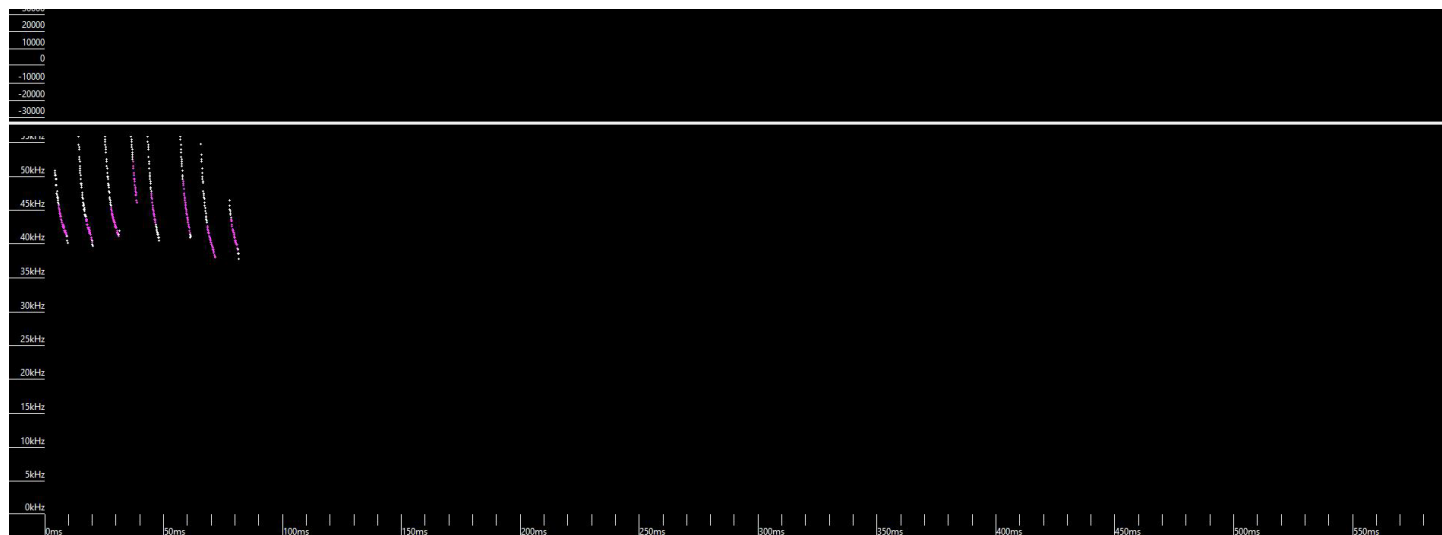
Figure 55. Call "2022-06-09 22-52-42.zc" collected at King5, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
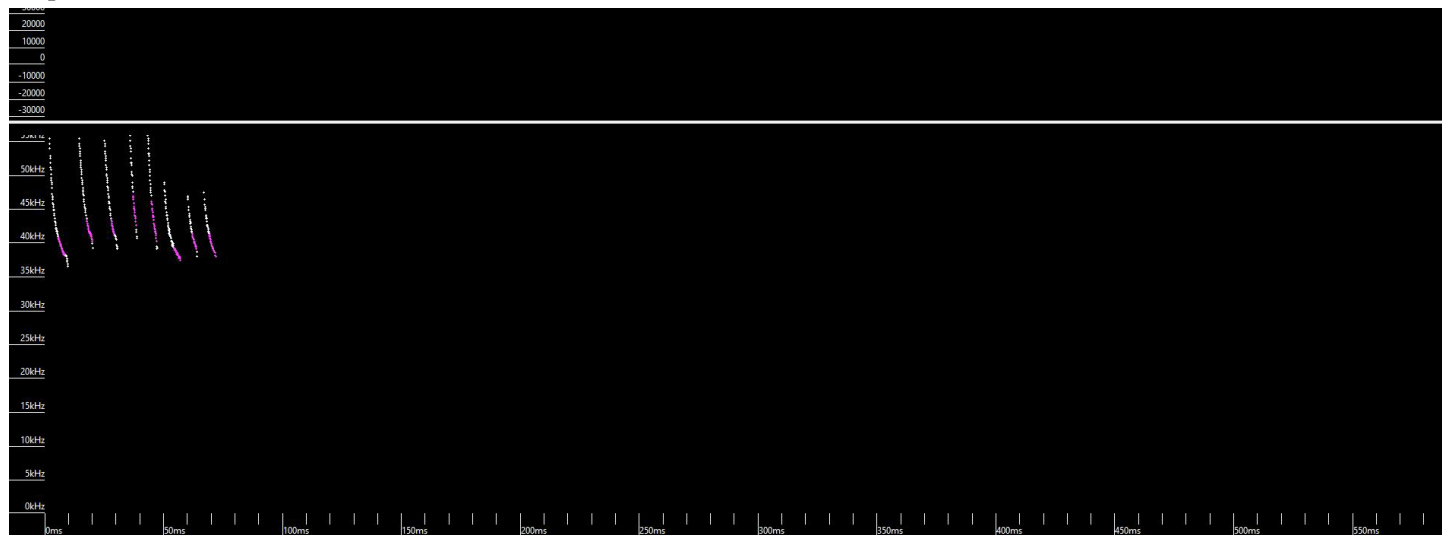
Figure 56. Call "W6172227.04#" collected at King6, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
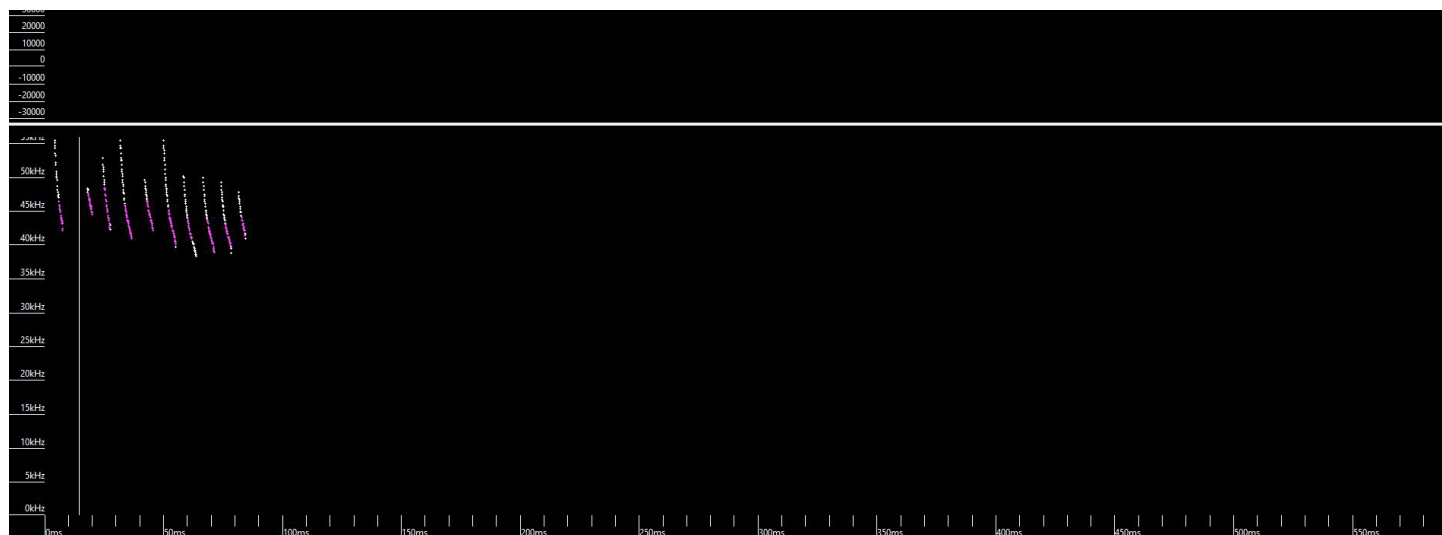
Figure 57. Call "2022-06-10 21-31-37.zc" collected at King5, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
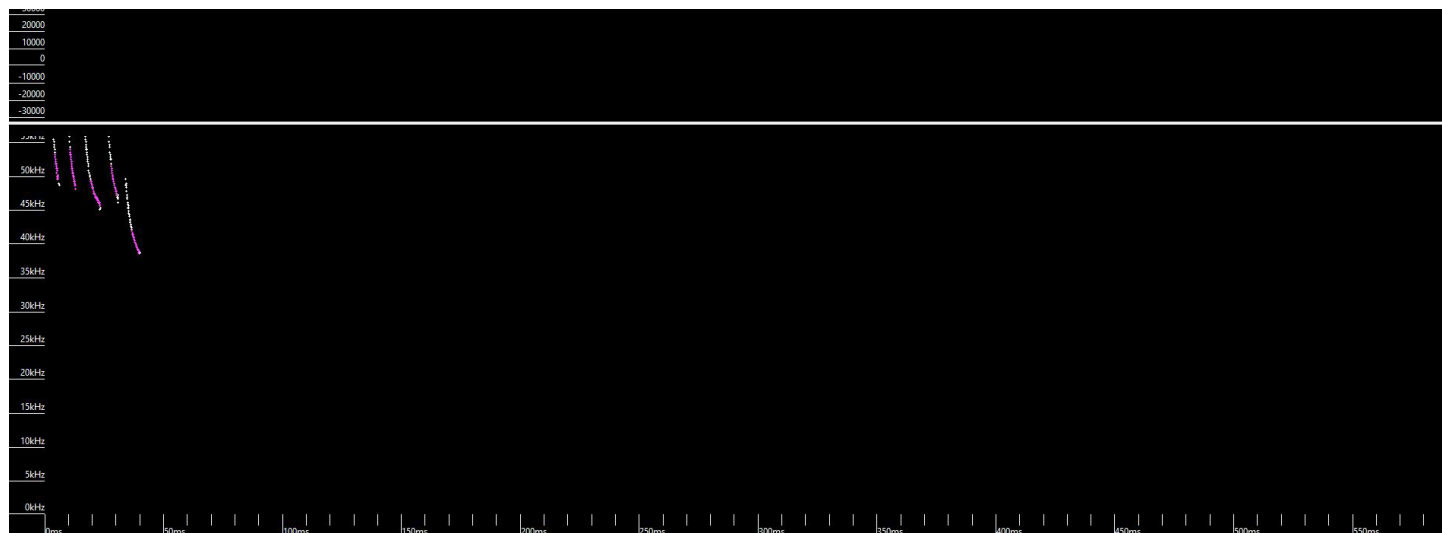
Figure 58. Call "2022-06-30 02-17-58.zc" collected at King9, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
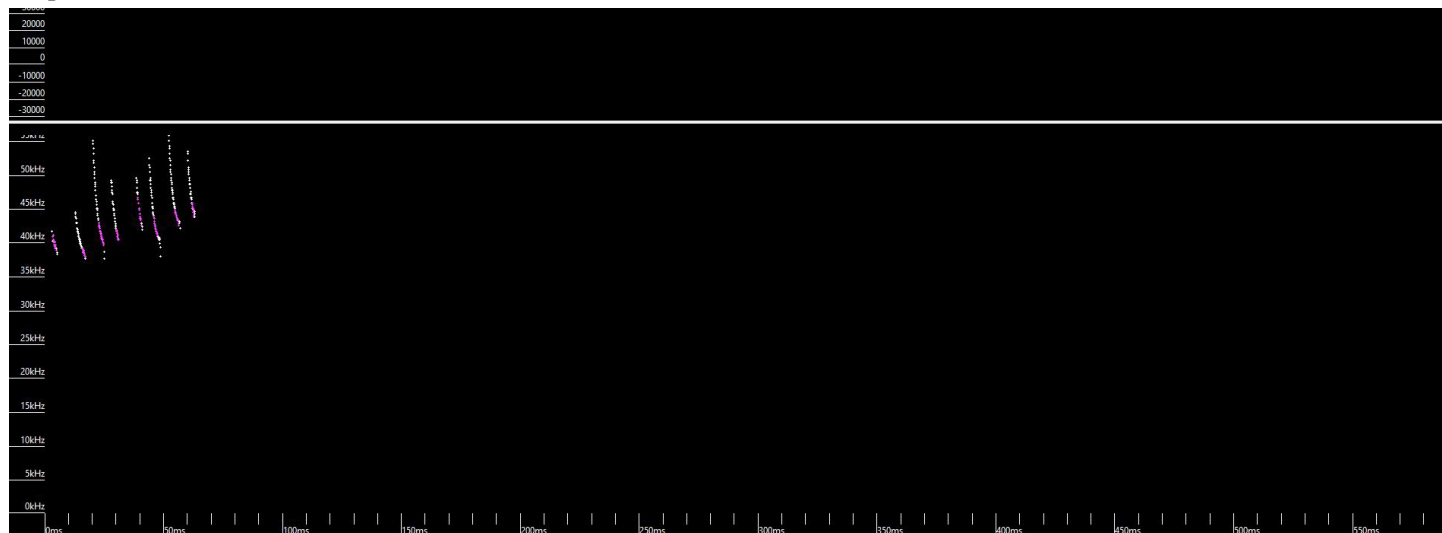
Figure 59. Call "2022-06-29 21-18-25.zc" collected at King9, classified as MYLU by Kaleidoscope. Variation of Fc and shape across call indicative of red bat.
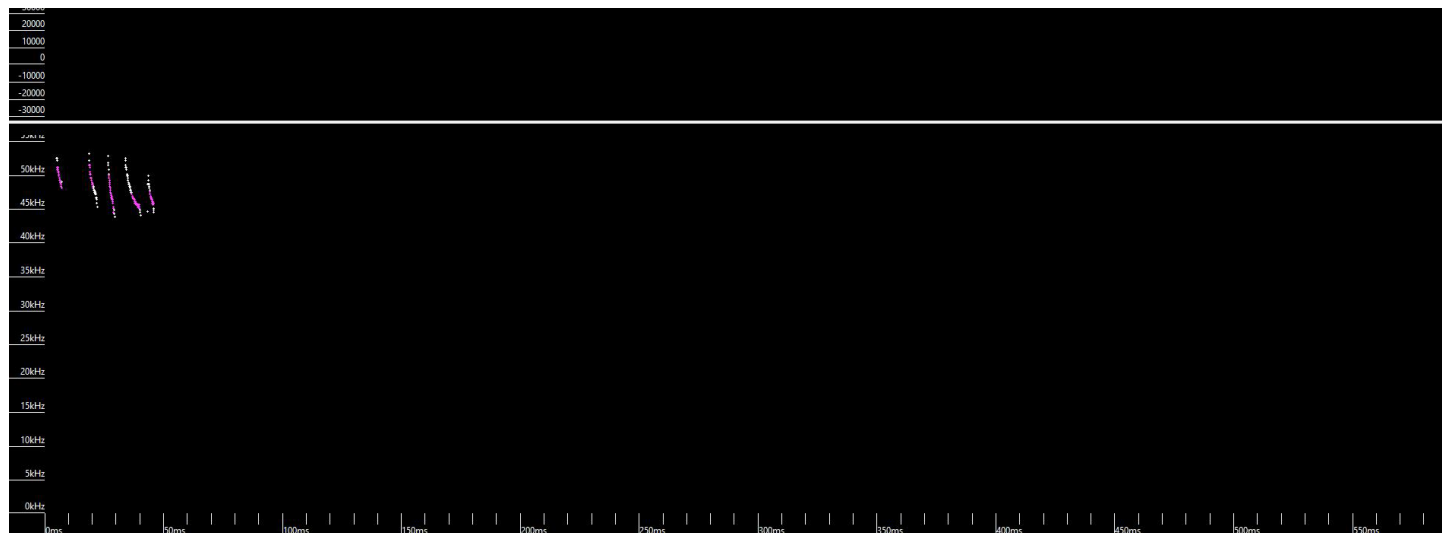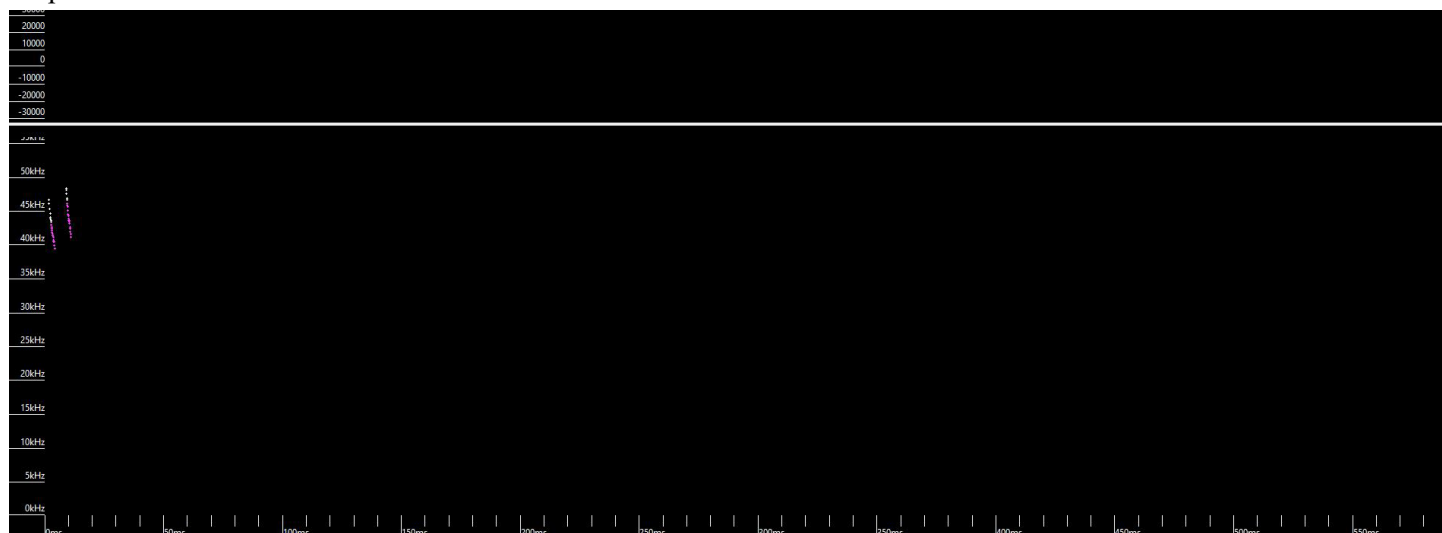

Figure 60. Call "2022-06-20 21-27-47.zc" collected at King14, classified as MYLU by Kaleidoscope. Insufficient data to make determination.
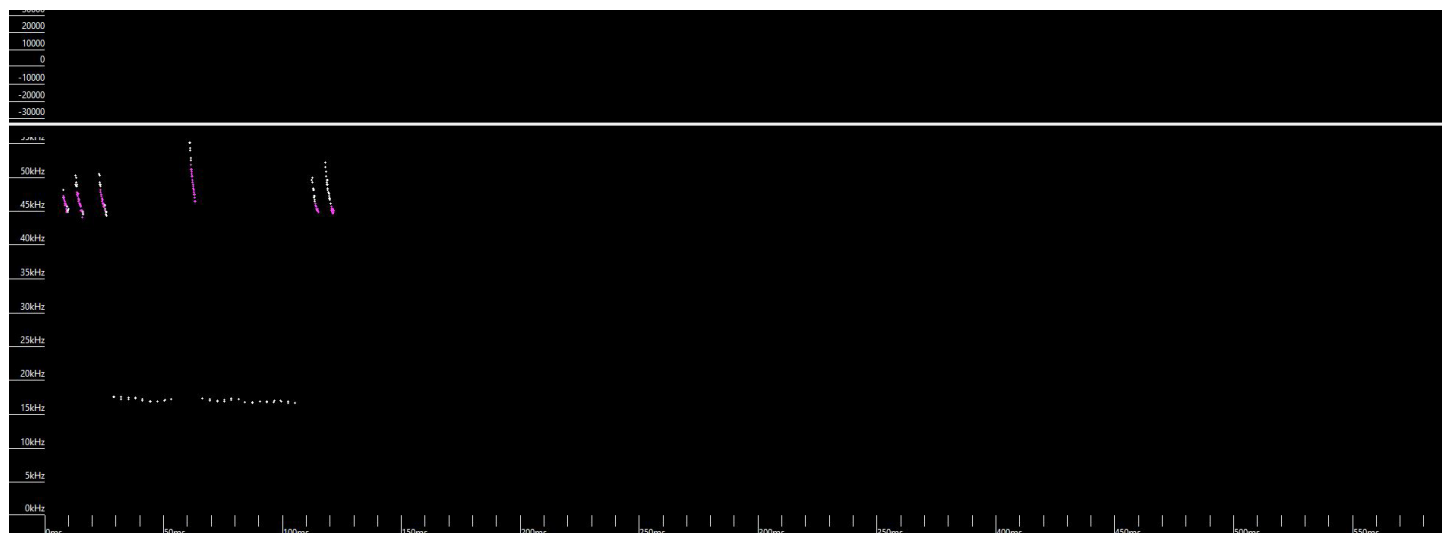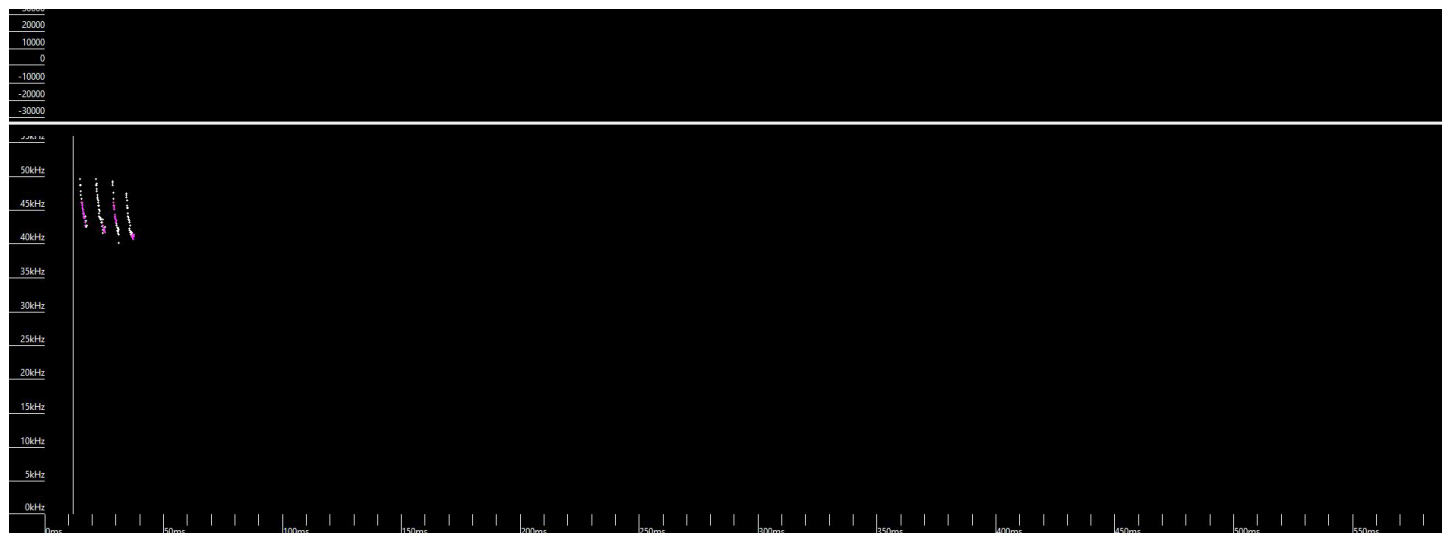
Figure 61. Call "2022-06-15 00-07-42.zc" collected at King3, classified as MYLU by Kaleidoscope. Insufficient data to make determination.
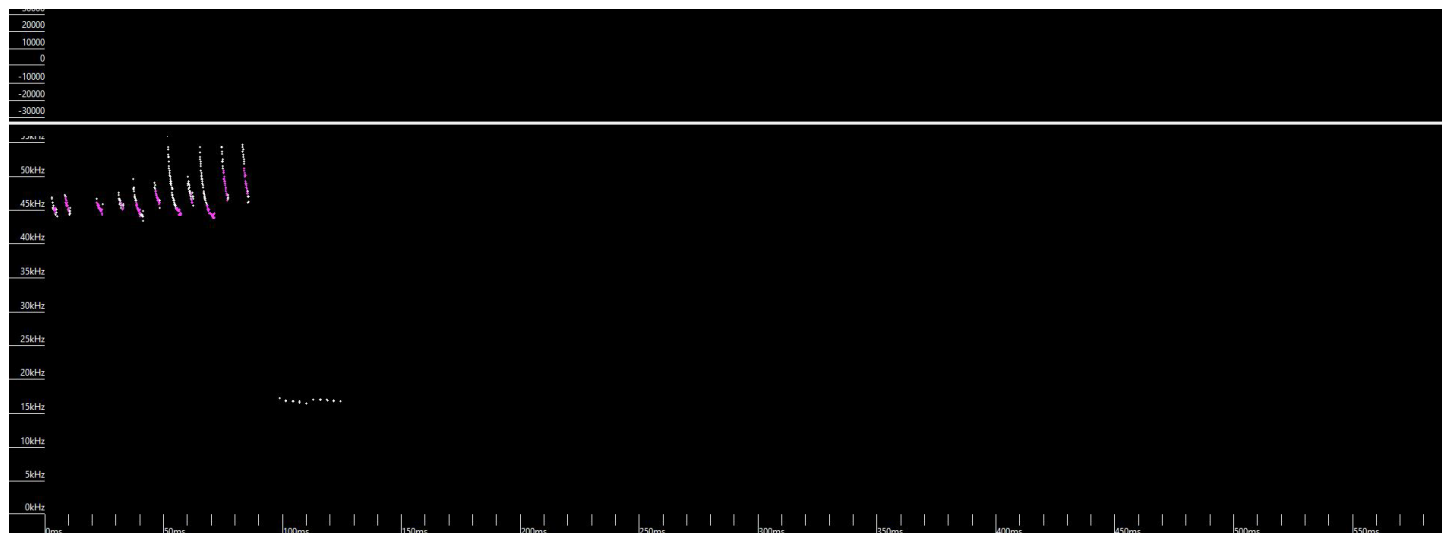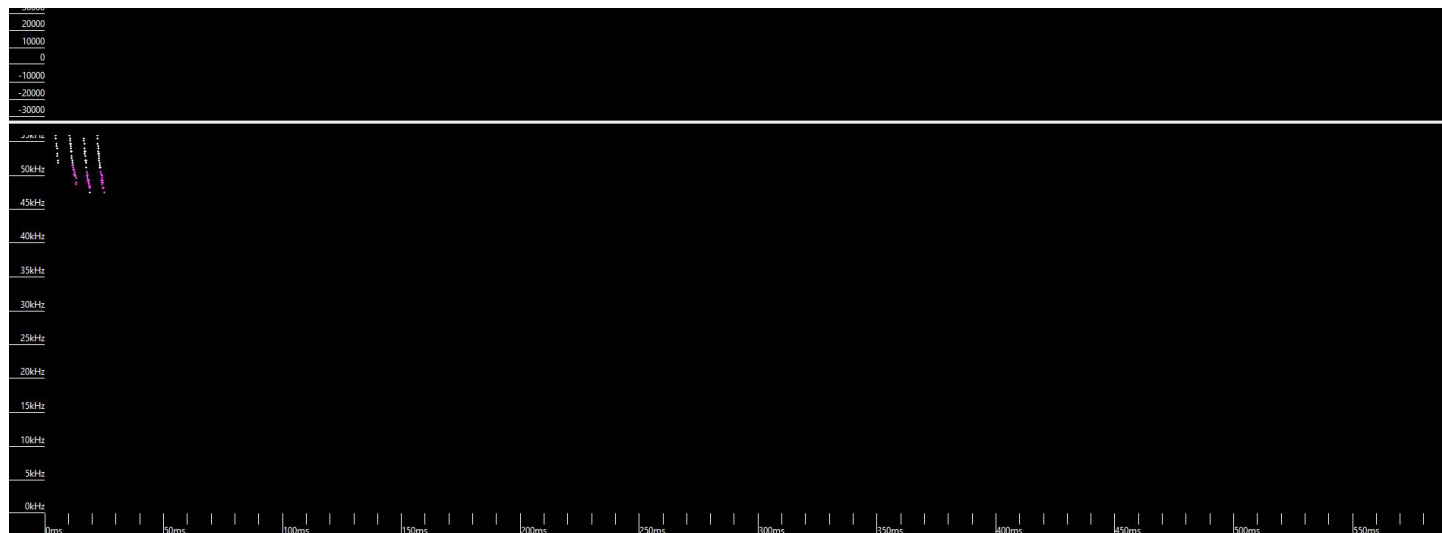

Figure 62. Call "2022-06-30 02-17-55.zc" collected at King9, classified as MYLU by Kaleidoscope. Insufficient data to make determination.
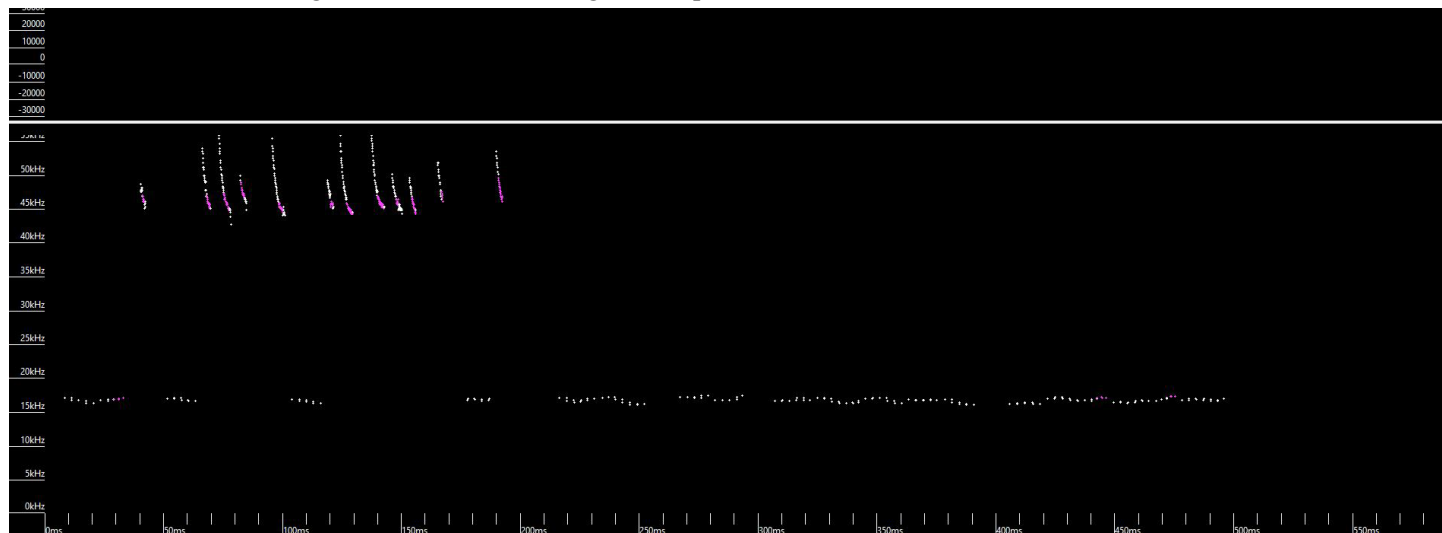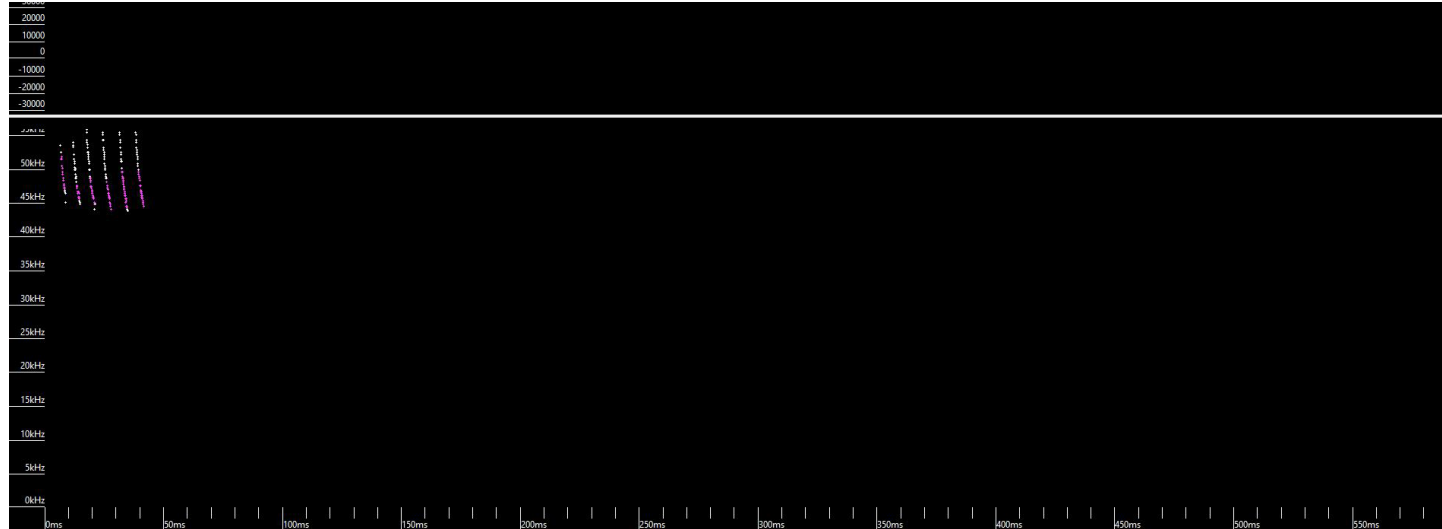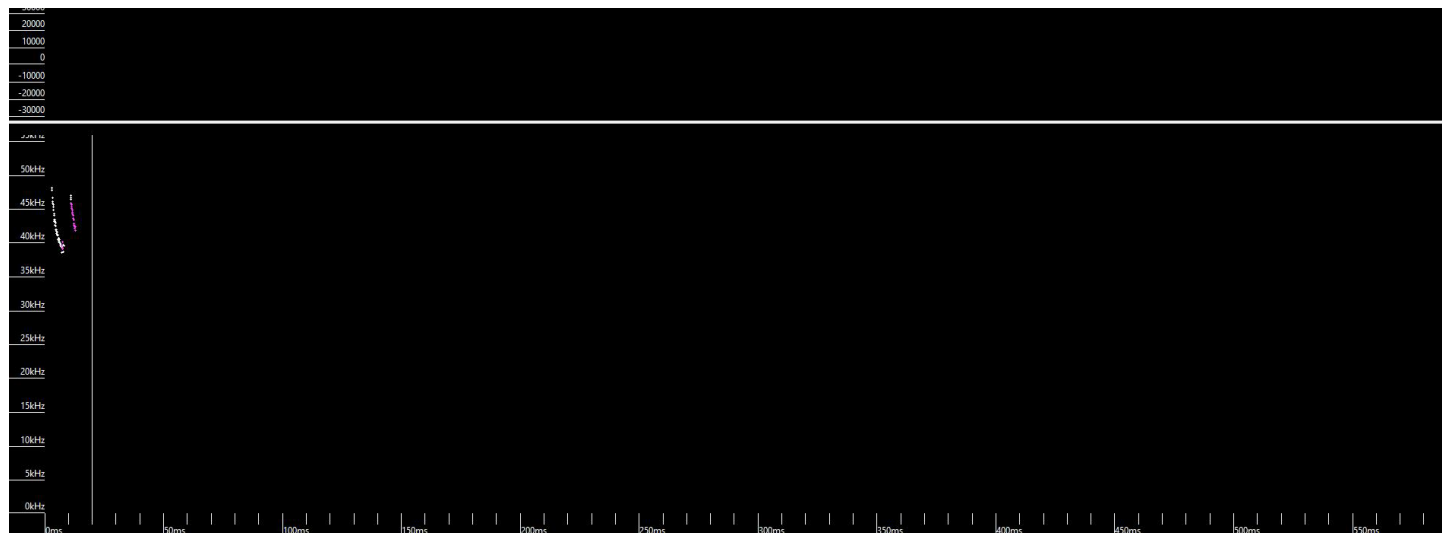

Figure 63. Call "2022-06-23 22-25-42.zc" collected at King9, classified as MYLU by Kaleidoscope. Insufficient data to make determination.
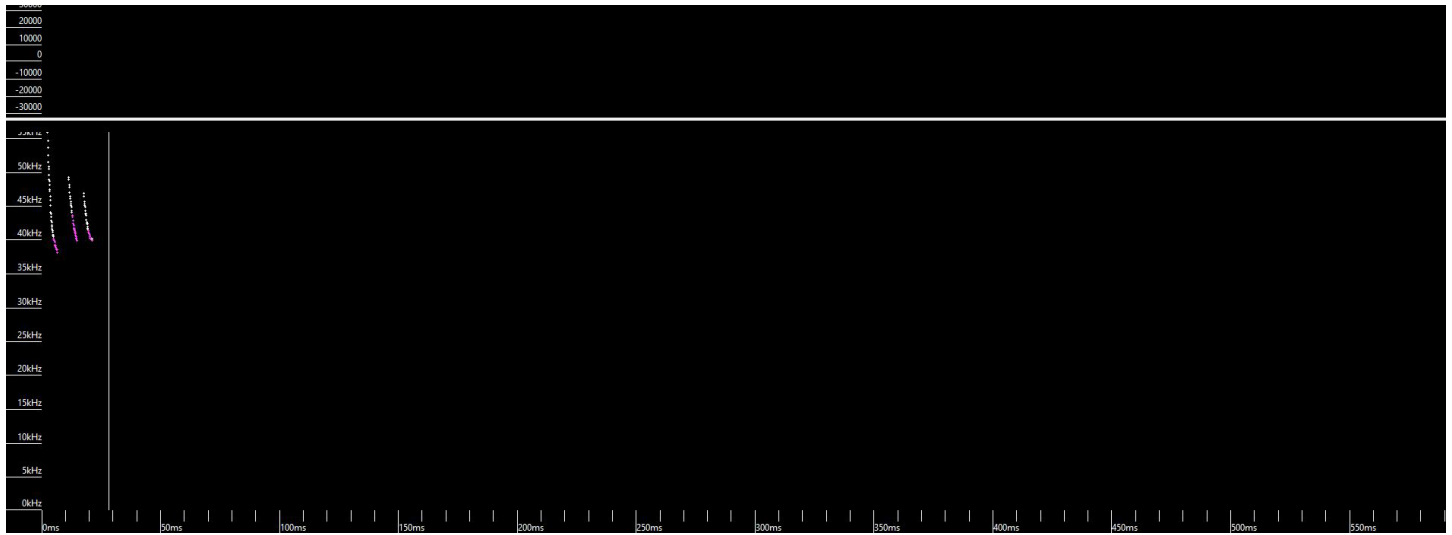
Figure 64. Call "W6190101.24#" collected at King9, classified as MYLU by Kaleidoscope. Insufficient data to make determination.

APPENDIX D

Weather Log

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
6/8/2022	20:38	6:10	6/7, 20:00	77.9	0	3.4	Valid
			6/7, 21:00	74.9	0	2.3	
			6/7, 22:00	72.8	0	0	
			6/7, 23:00	70.5	0	0	
			6/8, 00:00	69.1	0	0.5	
			6/8, 01:00	68.6	0	1	
			6/8, 02:00	68.1	0	0	
			6/8, 03:00	67.5	0	0	
			6/8, 04:00	66.7	0	0	
			6/8, 05:00	66.7	0	0	
			6/8, 06:00	66.8	0	0	
			6/8, 07:00	67.6	0	0	
6/9/2022	20:38	6:10	6/8, 20:00	79.8	0	5.4	Valid
			6/8, 21:00	77.9	0	4.9	
			6/8, 22:00	75.8	0	5.3	
			6/8, 23:00	75.2	0	4.4	
			6/9, 00:00	75	0	6	
			6/9, 01:00	74.3	0	5.6	
			6/9, 02:00	73.9	0	3.6	
			6/9, 03:00	73.2	0	4.9	
			6/9, 04:00	72	0	1.7	
			6/9, 05:00	71.1	0	3.8	
			6/9, 06:00	70.7	0	3.6	
			6/9, 07:00	70.4	0	4.5	
6/10/2022	20:39	6:10	6/9, 20:00	80.6	0	5.6	Valid
			6/9, 21:00	77.3	0	5.3	
			6/9, 22:00	74.5	0	5.8	
			6/9, 23:00	72.2	0	4.9	
			6/10, 00:00	69.6	0	4.2	
			6/10, 01:00	66.3	0	0.6	
			6/10, 02:00	65.7	0	4.7	
			6/10, 03:00	63.3	0	4.1	
			6/10, 04:00	63.7	0	4.9	
			6/10, 05:00	62.6	0	4.2	
			6/10, 06:00	60.7	0	4.2	
			6/10, 07:00	62.9	0	5.4	
6/11/2022	20:39	6:10	6/10, 20:00	73.4	0	0.7	Valid
			6/10, 21:00	70.5	0	0	
			6/10, 22:00	67.4	0	0.7	
			6/10, 23:00	66.4	0	0	
			6/11, 00:00	65.9	0	0	
			6/11, 01:00	66.6	0	1.5	
			6/11, 02:00	66.4	0	0	
			6/11, 03:00	64.2	0	1	
			6/11, 04:00	63.6	0	0	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
			6/11, 05:00	61	0	0	
			6/11, 06:00	61.9	0	0.6	
			6/11, 07:00	62.2	0	0	
6/12/2022	20:39	6:10	6/11, 20:00	79	0	0	Valid
			6/11, 21:00	74.8	0	0.6	
			6/11, 22:00	74.7	0	2.7	
			6/11, 23:00	73.6	0	6.1	
			6/12, 00:00	73	0	3.6	
			6/12, 01:00	72.5	0	4.4	
			6/12, 02:00	71.6	0	3.4	
			6/12, 03:00	70.7	0	0	
			6/12, 04:00	69.4	0	0	
			6/12, 05:00	68.5	0	0	
			6/12, 06:00	67.3	0	0	
			6/12, 07:00	68.6	0	0	
6/13/2022	20:40	6:10	6/12, 20:00	84.6	0	0.7	Valid
			6/12, 21:00	80.1	0	0.7	
			6/12, 22:00	78.2	0	0	
			6/12, 23:00	75.1	0	0.6	
			6/13, 00:00	73.7	0	0.7	
			6/13, 01:00	72.8	0	0	
			6/13, 02:00	71.5	0	0	
			6/13, 03:00	72.7	0	2.1	
			6/13, 04:00	71	0	0	
			6/13, 05:00	69.7	0	2.1	
			6/13, 06:00	69.6	0	2.1	
			6/13, 07:00	71.3	0	0	
6/14/2022	20:40	6:10	6/13, 20:00	86.7	0	1.2	Valid
			6/13, 21:00	84.6	0	0.7	
			6/13, 22:00	81.9	0	0.6	
			6/13, 23:00	80.7	0	0.7	
			6/14, 00:00	78	0	0	
			6/14, 01:00	76	0	2.1	
			6/14, 02:00	77.8	0	2.1	
			6/14, 03:00	77.2	0	0.7	
			6/14, 04:00	75.2	0	0	
			6/14, 05:00	74	0	0.6	
			6/14, 06:00	73.2	0	2	
			6/14, 07:00	76.5	0	7.5	
6/15/2022	20:41	6:10	6/14, 20:00	83.4	0	2.7	Valid
			6/14, 21:00	80.9	0	1.5	
			6/14, 22:00	78.1	0	2.1	
			6/14, 23:00	76.4	0	0.6	
			6/15, 00:00	75.5	0	2.1	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
			6/15, 01:00	75.2	0	2.1	
			6/15, 02:00	73.9	0	0	
			6/15, 03:00	73.8	0	0	
			6/15, 04:00	72.9	0	0	
			6/15, 05:00	72.4	0	0	
			6/15, 06:00	71.8	0	0	
			6/15, 07:00	74.3	0	4.4	
6/16/2022	20:41	6:10	6/15, 20:00	86.1	0	0	Valid
			6/15, 21:00	83.2	0	0	
			6/15, 22:00	81	0	0	
			6/15, 23:00	81.2	0	0	
			6/16, 00:00	78.9	0	0	
			6/16, 01:00	78.2	0	1.8	
			6/16, 02:00	78.6	0	3	
			6/16, 03:00	78	0	3.7	
			6/16, 04:00	77.4	0	5.2	
			6/16, 05:00	77	0	3.5	
			6/16, 06:00	76	0	4.7	
			6/16, 07:00	76.6	0	4.3	
6/17/2022	20:41	6:10	6/16, 20:00	71.5	0.01	1.8	Valid; precipitation extremely light, stops within first hour
			6/16, 21:00	70.6	0.01	3.5	
			6/16, 22:00	70.4	0	5.7	
			6/16, 23:00	69.6	0	0.8	
			6/17, 00:00	68.9	0	0	
			6/17, 01:00	68.6	0	0.7	
			6/17, 02:00	69.3	0	3.7	
			6/17, 03:00	70.2	0	0	
			6/17, 04:00	69.9	0	3.8	
			6/17, 05:00	70.9	0	2.9	
			6/17, 06:00	71.6	0	4.8	
			6/17, 07:00	72.6	0	5.8	
6/18/2022	20:42	6:10	6/17, 20:00	76.7	0	3.8	Valid
			6/17, 21:00	73.5	0	0.5	
			6/17, 22:00	71.1	0	0	
			6/17, 23:00	70.8	0	1	
			6/18, 00:00	69.8	0	0.9	
			6/18, 01:00	68.5	0	0	
			6/18, 02:00	67.3	0	0	
			6/18, 03:00	67.9	0	0.5	
			6/18, 04:00	66.2	0	0.7	
			6/18, 05:00	65.4	0	0.5	
			6/18, 06:00	63.2	0	0.7	
			6/18, 07:00	65.6	0	1	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
6/19/2022	20:42	6:11	6/18, 20:00	80.6	0	8.2	Valid
			6/18, 21:00	76.5	0	5.4	
			6/18, 22:00	74	0	5.8	
			6/18, 23:00	71.1	0	4.4	
			6/19, 00:00	68.8	0	5.2	
			6/19, 01:00	65.1	0	2.9	
			6/19, 02:00	63.2	0	5	
			6/19, 03:00	61.8	0	4.8	
			6/19, 04:00	59.4	0	4.1	
			6/19, 05:00	57.5	0	4.8	
			6/19, 06:00	55.2	0	3.2	
			6/19, 07:00	56.2	0	4.3	
6/20/2022	20:42	6:11	6/19, 20:00	74.1	0	0	Valid
			6/19, 21:00	67.9	0	0	
			6/19, 22:00	64.5	0	0	
			6/19, 23:00	63.4	0	0	
			6/20, 00:00	61.9	0	0	
			6/20, 01:00	59.4	0	0	
			6/20, 02:00	58.1	0	0.5	
			6/20, 03:00	56.7	0	0.9	
			6/20, 04:00	55.9	0	0.7	
			6/20, 05:00	56.7	0	3.1	
			6/20, 06:00	54.9	0	2.3	
			6/20, 07:00	56.4	0	1.8	
6/21/2022	20:43	6:11	6/20, 20:00	77.5	0	4.5	Valid
			6/20, 21:00	73.6	0	3.9	
			6/20, 22:00	70.7	0	3.9	
			6/20, 23:00	68.5	0	1.5	
			6/21, 00:00	65.7	0	1.5	
			6/21, 01:00	63.7	0	0	
			6/21, 02:00	62.6	0	0.7	
			6/21, 03:00	61	0	0	
			6/21, 04:00	60	0	3.4	
			6/21, 05:00	59	0	2	
			6/21, 06:00	58.7	0	0.7	
			6/21, 07:00	61.8	0	1.9	
6/22/2022	20:43	6:11	6/21, 20:00	83	0	0.5	Valid
			6/21, 21:00	76.2	0	0	
			6/21, 22:00	72.9	0	0	
			6/21, 23:00	70.1	0	0	
			6/22, 00:00	67.2	0	0	
			6/22, 01:00	65.5	0	0.5	
			6/22, 02:00	63.1	0	1.8	
			6/22, 03:00	63	0	0	
			6/22, 04:00	61.9	0	0.5	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
			6/22, 05:00	61.4	0	0	
			6/22, 06:00	61.2	0	0	
			6/22, 07:00	61	0	0	
6/23/2022	20:43	6:12	6/22, 20:00	90.6	0	2.7	Valid
			6/22, 21:00	88.2	0	4.1	
			6/22, 22:00	84.2	0	1.3	
			6/22, 23:00	81	0	1.8	
			6/23, 00:00	80.3	0	0.8	
			6/23, 01:00	76	0	0	
			6/23, 02:00	73.7	0	0	
			6/23, 03:00	73.6	0	0.7	
			6/23, 04:00	74.9	0	4.3	
			6/23, 05:00	74.5	0	0.5	
			6/23, 06:00	73	0	2.5	
			6/23, 07:00	73	0	1.8	
6/24/2022	20:43	6:12	6/23, 20:00	80.1	0	4.1	Valid
			6/23, 21:00	75.7	0	0.5	
			6/23, 22:00	73	0	0	
			6/23, 23:00	72.1	0	0	
			6/24, 00:00	71	0	0	
			6/24, 01:00	70.9	0	0	
			6/24, 02:00	71.2	0	1	
			6/24, 03:00	72	0	4.1	
			6/24, 04:00	71	0	4.3	
			6/24, 05:00	70.4	0	5.2	
			6/24, 06:00	70.8	0	6.6	
			6/24, 07:00	70.7	0	5.1	
6/25/2022	20:43	6:12	6/24, 20:00	82.6	0	0	Valid
			6/24, 21:00	77	0	0	
			6/24, 22:00	75.7	0	0	
			6/24, 23:00	73.8	0	0	
			6/25, 00:00	73	0	0.5	
			6/25, 01:00	70.8	0	0.5	
			6/25, 02:00	73	0	1.8	
			6/25, 03:00	72.7	0	2.8	
			6/25, 04:00	72.5	0	2.2	
			6/25, 05:00	71.7	0	0.7	
			6/25, 06:00	70.9	0	1.3	
			6/25, 07:00	70.3	0	2.4	
6/26/2022	20:43	6:12	6/25, 20:00	80.6	0	0	Valid
			6/25, 21:00	76.8	0	0	
			6/25, 22:00	76.6	0	0	
			6/25, 23:00	73.8	0	0	
			6/26, 00:00	72.7	0	0	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
			6/26, 01:00	71.2	0	0	
			6/26, 02:00	69.9	0	0	
			6/26, 03:00	71.3	0	2.5	
			6/26, 04:00	70.3	0	1.8	
			6/26, 05:00	69	0	1.8	
			6/26, 06:00	69.1	0	0.5	
			6/26, 07:00	68.7	0	1.2	
6/27/2022	20:43	6:13	6/26, 20:00	79.4	0	0	Valid
			6/26, 21:00	75.9	0	0	
			6/26, 22:00	75.3	0	0	
			6/26, 23:00	74.5	0	0.5	
			6/27, 00:00	73.7	0	0	
			6/27, 01:00	73.1	0	1.8	
			6/27, 02:00	72.9	0	0.5	
			6/27, 03:00	71.5	0	0	
			6/27, 04:00	72.6	0	3.5	
			6/27, 05:00	72.7	0	3.5	
			6/27, 06:00	72.6	0	4.1	
			6/27, 07:00	71.8	0	3.7	
6/28/2022	20:43	6:13	6/27, 20:00	72.6	0.42	0.6	Valid; rainfall stops within first hour
			6/27, 21:00	71.7	0	1.8	
			6/27, 22:00	70.8	0	0	
			6/27, 23:00	70.3	0	0	
			6/28, 00:00	70.7	0	0.9	
			6/28, 01:00	71	0	2	
			6/28, 02:00	70.6	0	3.4	
			6/28, 03:00	68.7	0	5.6	
			6/28, 04:00	67.2	0	4.9	
			6/28, 05:00	66.9	0	4.2	
			6/28, 06:00	67.1	0	5.2	
			6/28, 07:00	67.9	0	6	
6/29/2022	20:43	6:14	6/28, 20:00	76.5	0	0	Valid; rainfall occurred after first 5 hours
			6/28, 21:00	74	0	0	
			6/28, 22:00	72.9	0	0.5	
			6/28, 23:00	73.4	0	3	
			6/29, 00:00	73.2	0	1.8	
			6/29, 01:00	72.3	0	0	
			6/29, 02:00	68.1	0.05	0	
			6/29, 03:00	66.8	0	0	
			6/29, 04:00	66.8	0	0	
			6/29, 05:00	66.8	0	0	
			6/29, 06:00	66.8	0	0	
			6/29, 07:00	69.2	0	0	

Survey Night	Sunset	Sunrise	Date and Time	Temperature (F)	Precipitation (inches)	Wind Speed (mph)	Comment
6/30/2022	20:43	6:14	6/29, 20:00	80.5	0	2.2	Valid
			6/29, 21:00	78.1	0	2.2	
			6/29, 22:00	75.3	0	2.6	
			6/29, 23:00	73.6	0	0	
			6/30, 00:00	72.8	0	0	
			6/30, 01:00	70.5	0	0	
			6/30, 02:00	69.2	0	0	
			6/30, 03:00	68.2	0	0	
			6/30, 04:00	67.9	0	0	
			6/30, 05:00	67.1	0	0	
			6/30, 06:00	66.4	0	0	
			6/30, 07:00	67	0	0	

APPENDIX D   FEDERALLY LISTED SPECIES FOR THE ARCHDALE TAILINGS STORAGE FACILITY

APPENDIX D-1   FEDERALLY LISTED AND STATE-LISTED SPECIES REPORT FOR THE ALBEMARLE KINGS MOUNTAIN ARCHDALE TRACT, CLEVELAND COUNTY, NORTH CAROLINA

Federally Listed and State-Listed Species Report for the Albemarle Kings Mountain Archdale Tract, Cleveland County, North Carolina

JANUARY 2024

PREPARED FOR

Albemarle U.S., Inc.

PREPARED BY

SWCA Environmental Consultants

FEDERALLY LISTED AND STATE-LISTED SPECIES REPORT FOR THE ALBEMARLE KINGS MOUNTAIN ARCHDALE TRACT, CLEVELAND COUNTY, NORTH CAROLINA

Prepared for

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SWCA Project No. 70316

January 2024

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Appendices

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1   INTRODUCTION

On behalf of Albemarle U.S., Inc. (Albemarle), SWCA Environmental Consultants (SWCA) has prepared an assessment of federally listed and state-listed species for the Kings Mountain Archdale Tract (project) in Cleveland County, North Carolina, approximately 30 miles west of Charlotte, North Carolina (Figure 1). The project area is approximately 131.5 acres and includes two parcels (PIN 2583445453 and 2583129880). This assessment addresses plant and animal species protected under the Endangered Species Act of 1973, as amended (ESA), as well as North Carolina state-listed species protected under Endangered and Threatened Wildlife and Wildlife Species of Special Concern of the State of North Carolina (North Carolina General Statutes 113-331). A desktop review in combination with field observations was used to determine the potential for listed plants and wildlife to occur in the project area.

1.1   Location

The project area borders the north side of Interstate 85 (I-85) and the south side South Battleground Avenue (Figure 2). The project is located approximately 4.5 miles southwest of downtown Kings Mountain, North Carolina, and is located on the U.S. Geological Survey (USGS) Grover, North Carolina, 7.5-minute quadrangle (see Figure 2).

1.2   Project Area Description

The project area is currently part of a mine facility permitted by the North Carolina Division of Energy, Mineral, and Land Resources. Based on historical aerial photographs, the project area began active mining operations in the mid-1990s (Google Earth Pro 2023). Prior to mining activities, the project area contained agricultural land and undeveloped woods. Active mining operations ceased around 2013, and much of the area has naturally revegetated (Figure 3). The project area is bordered by woodlands, agricultural fields, and a solar field to the north and west (Figure 4). There is industrial development to the southwest, and I-85 lies to the southeast.

Figure 1. Project vicinity map.
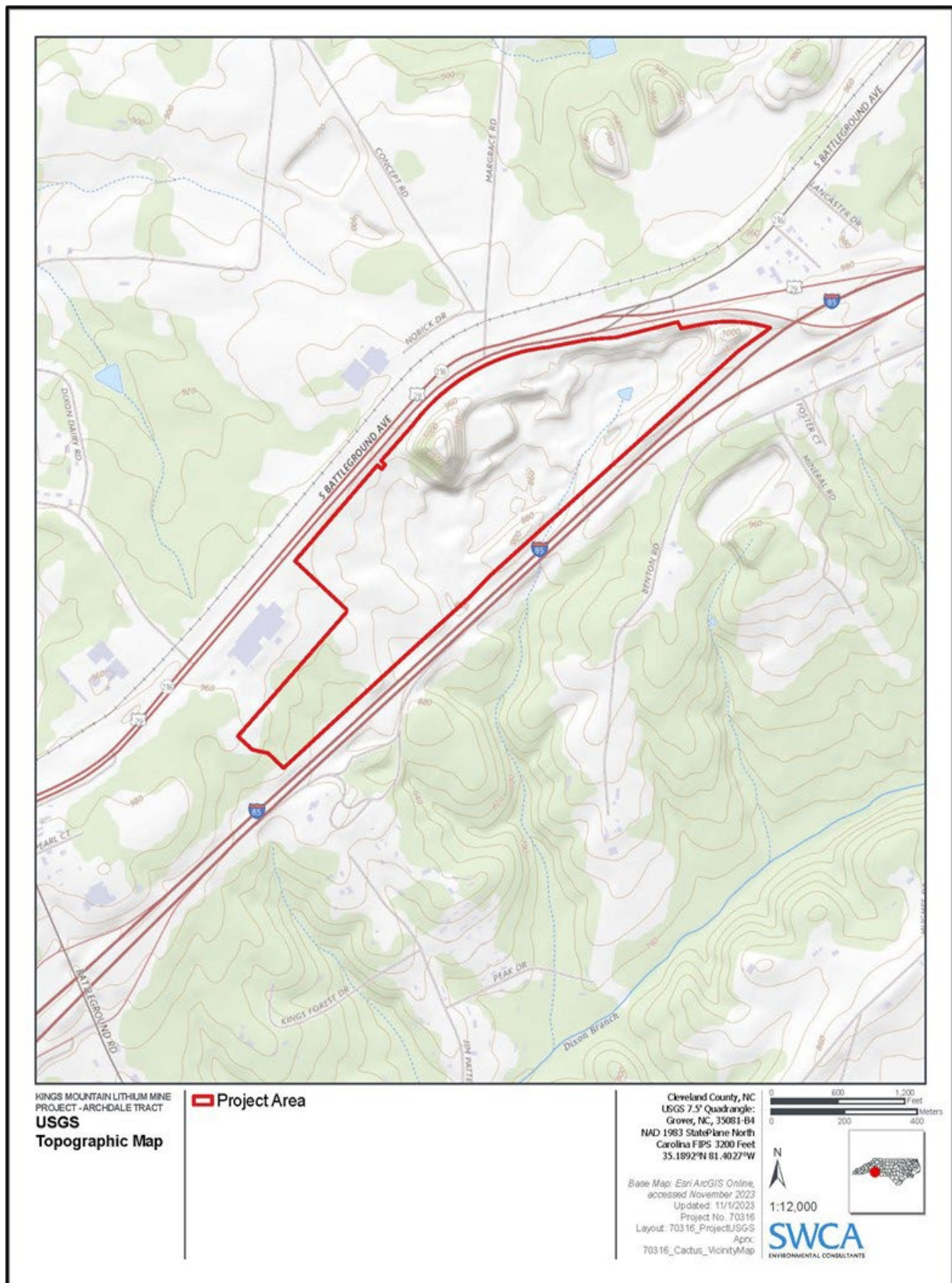
Figure 2. Topographic map.
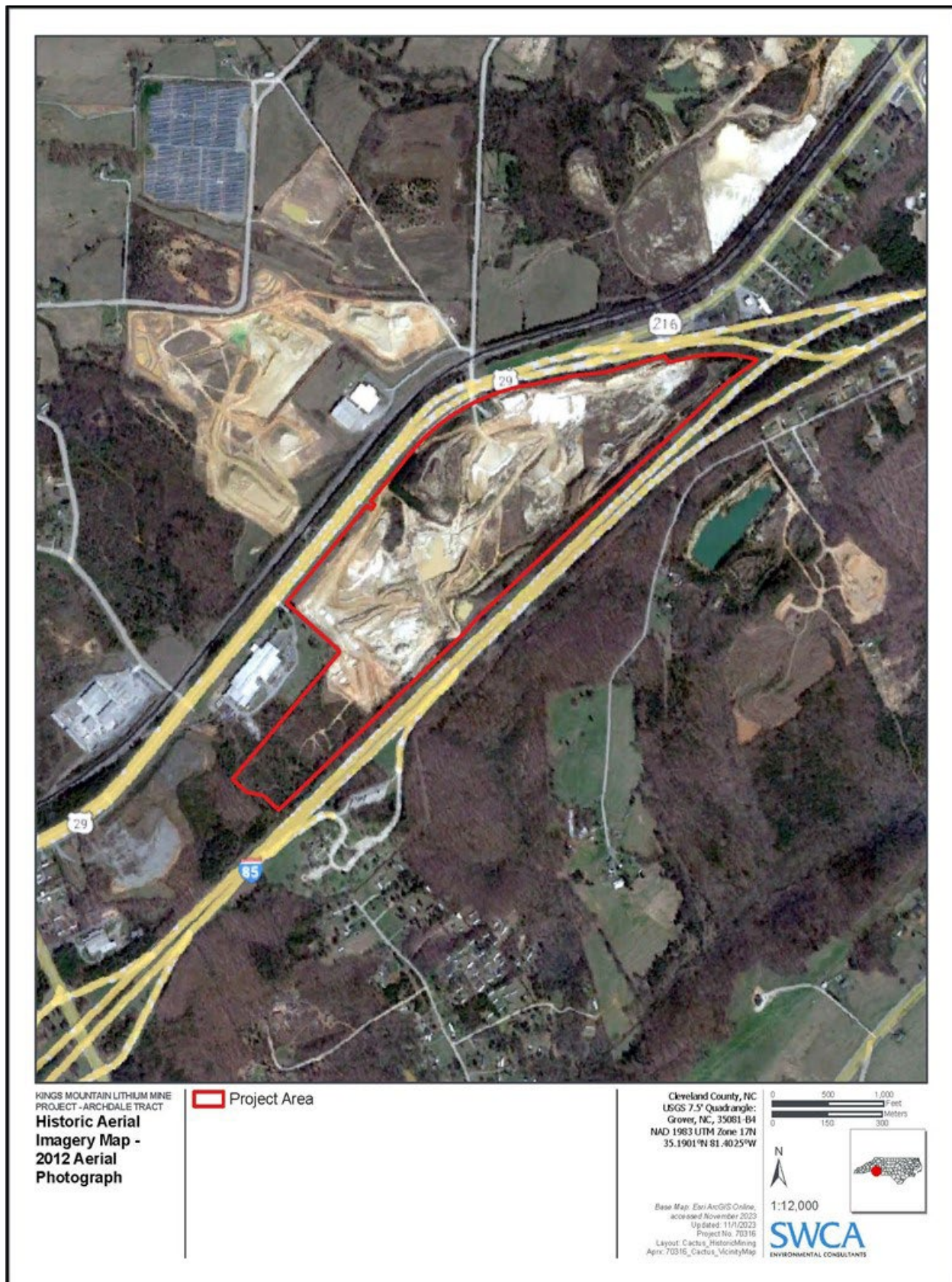
Figure 3. Aerial imagery of historic mining in the project area during 2012.
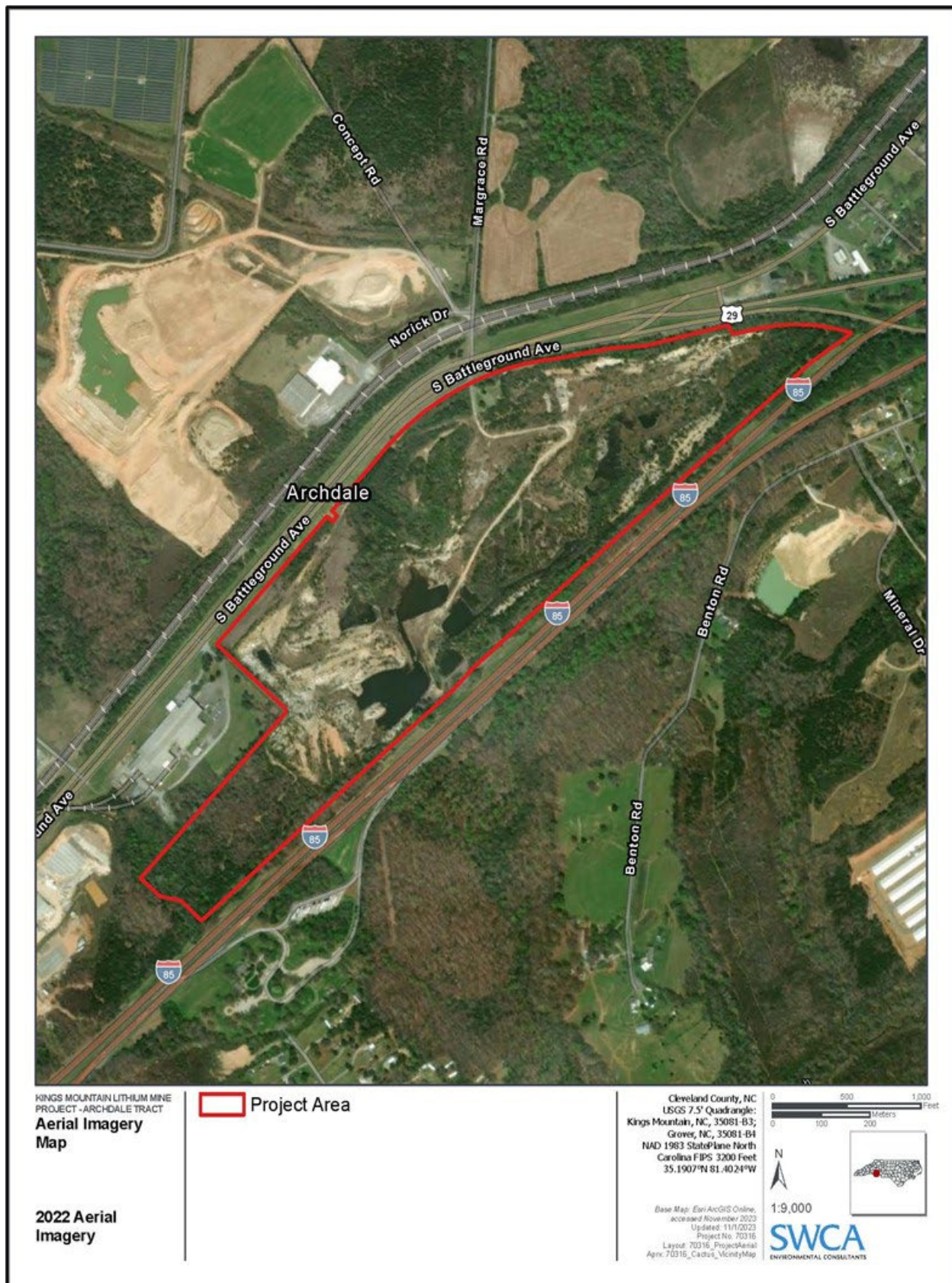
Figure 4. Aerial imagery of current conditions in the project area.

2   METHODS

SWCA methodology consisted of a desktop analysis of available literature and databases and field surveys. The following categories were used to define the potential for protected species to occur based on these study methods.

- **Very low**: The project area is outside the known range of the species, or the project area is within the species' range but there is no suitable habitat or the species is historical.

- **Low:** The project area is within the known range of the species, but there is limited suitable habitat or the species has not been observed in the vicinity.

- **Moderate:** The species' known range includes the project area, and suitable habitat is present.

- **High:** There are known species occurrences within the project area.

2.1   Desktop Analysis

A preliminary desktop analysis was completed for the project prior to field surveys by using a combination of existing information obtained from available public sources, consisting of reports, published literature, online databases, and geographic information system (GIS) data. The following publicly available data sources were used to complete a desktop analysis.

- USGS National Land Cover Database (USGS 2019)

- Natural Resources Conservation Service (NRCS) Web Soil Survey maps (NRCS 2023)

- U.S. Fish and Wildlife Service (USFWS) list of threatened and endangered species within the project area and county (USFWS 2023a, 2023b)

- North Carolina Natural Heritage Program (NCNHP) data and planning tools (NCNHP 2022a, 2022b, 2023a, 2023b)

- North Carolina Wildlife Resources Commission (NCWRC) state-listed species information

- Historical aerial imagery (Google Earth Pro 2023)

These sources were used to characterize the resources in the project area and determine what listed species may occur.

2.2   Field Surveys

Field surveys were completed in September and October 2023 and included a habitat assessment for federally listed and state-listed species. Habitat surveys included meandering walks throughout the project area concurrent with wetland delineations. Dominant plant species and general vegetation communities were documented. Presence/absence surveys for certain species did not occur due to the timings outside of seasonal requirements.

The field evaluations included determining the likely presence or absence of wetlands and other jurisdictional waters in accordance with methods in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Army Corps of Engineers [USACE] 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (USACE 2012). Wetlands were identified by positive indicators of hydrology, hydrophytic vegetation, and hydric soils (SWCA 2023). Data collected were used to approximate the wetland

boundary and were recorded on USACE Eastern Mountains and Piedmont wetland determination data forms. Wetland boundaries were recorded using GPS units capable of submeter accuracy and were flagged. Observations from wetland delineations were used when determining suitable habitat for aquatic species.

3   RESULTS

3.1   Habitat

Factors such as elevation, soil type, and vegetation cover are considered when determining a species' potential to occur. The project area is located within the Kings Creek (Hydrologic Unit Code [HUC] 0305010509) watershed of the Broad River Basin. Elevation in the project area ranges from approximately 850 to 1,050 feet above mean sea level (see Figure 2) (USGS 2023). The project area generally drains toward lower elevations to the south. However, the general topography of the project area has been substantially altered due to mining.

Figure 5 depicts the soil unit types mapped within the project area (NRCS 2023). The mapped soils do not reflect the mine activities that have occurred since the mid-1990s. The soils are primarily mapped as Hulett gravely sandy loam, 2 to 8 percent slopes (26.2% of project area), Madison gravelly sandy clay loam, 2 to 8 percent slopes, moderately eroded (21.1% of project area); and Madison-Bethlehem complex, 8 to 15 percent slopes, very stony, moderately eroded (20.0% of project area). All of the soil types within the project area are classified as well drained and are not listed as hydric (NRCS 2023).

Most of the deeper pits associated with the historic mining have filled with water, and some wetlands have developed in these pits. During the wetland delineation, one wetland complex (7.63 acres total) and six waterbodies (9.42 acres total) were identified. The waterbodies are all man-made ponds or mining pits filled with water (Figure 6). As detailed in the delineation report, the wetlands and waterbodies are all non-jurisdictional (SWCA 2023).

The landscape has been significantly altered in the project area due to historic mining, which ceased operation approximately 10 years ago in 2013. Land cover maps (USGS 2019) indicate that the project area consists primarily of hay/pasture (49.2%) and barren land (15.5%) with smaller portions of herbaceous, forest, shrub/scrub, development, and open water (e.g., ponds, lakes, mining pits) (Figure 7). Review of the current aerial imagery and SWCA's in-field assessment suggests the hay/pasture category is the barren and early successional shrubby/herbaceous land found in the historic mining areas rather than actual hay/pasture. SWCA observed that natural regeneration of herbaceous, shrubby, and forest habitat has occurred over waste rock piles and other areas historically disturbed by mining (Google Earth Pro 2023). These habitats are all generally in a dense, successional stage of growth, with most trees being less than 10 years old with average widths of 5 to 8 inches diameter breast height. Vegetation communities found in these habitats are discussed below.

Map Unit Symbol	Map Unit Name
ApB	Appling sandy loam, 1 to 6 percent slopes
HhB	Hulett gravelly sandy loam, 2 to 8 percent slopes
HtC	Hulett gravelly sandy loam, 8 to 15 percent slopes, stony
MaB2	Madison gravelly sandy clay loam, 2 to 8 percent slopes, moderately eroded
MbB2	Madison-Bethlehem complex, 2 to 8 percent slopes, stony, moderately eroded
McC2	Madison-Bethlehem complex, 8 to 15 percent slopes, very stony, moderately eroded
UdC	Udorthents, loamy, 0 to 15 percent slopes

KINGS MOUNTAIN LITHIUM MINE
PROJECT - ARCHDALE TRACT
NRCS Soil Map

☐ Project Boundary
☐ Soil Map Unit Boundary

Cleveland County, NC
USGS 7.5' Quadrangle:
Grover, NC, 35081-B4
NAD 1983 StatePlane North
Carolina FIPS 3200 Feet
35.1883°N 81.403°W

Base Map: ESRI ArcGIS Online,
Accessed November 2023
Updated: 11/1/2023
Project No. 70316
Layout: Wetland2023 Survey_Soils
Aprx: 70316_Cactus_VicinityMap

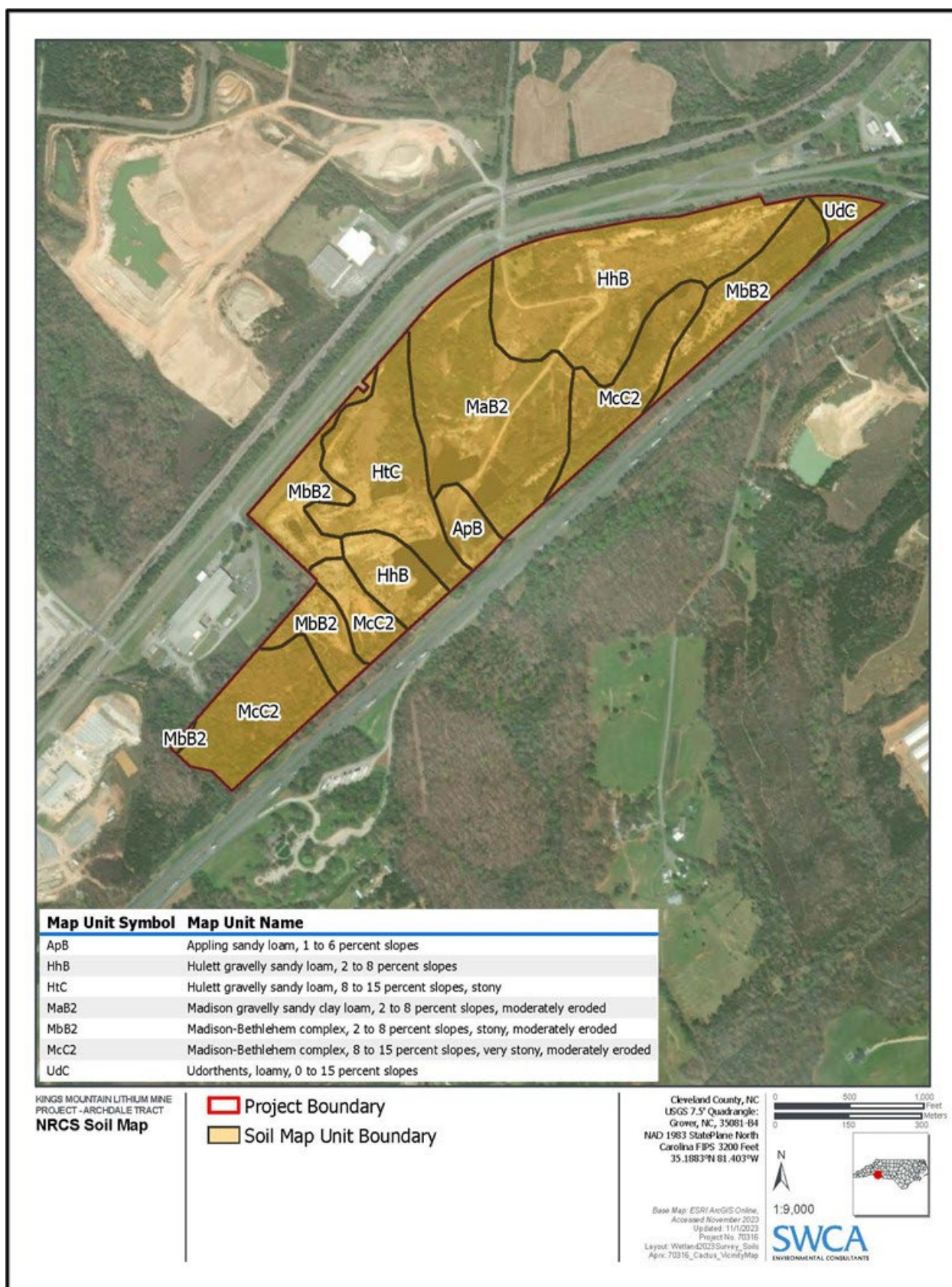1:9,000

SWCA
ENVIRONMENTAL CONSULTANTS

Figure 5. NRCS mapped soil types within the project area.
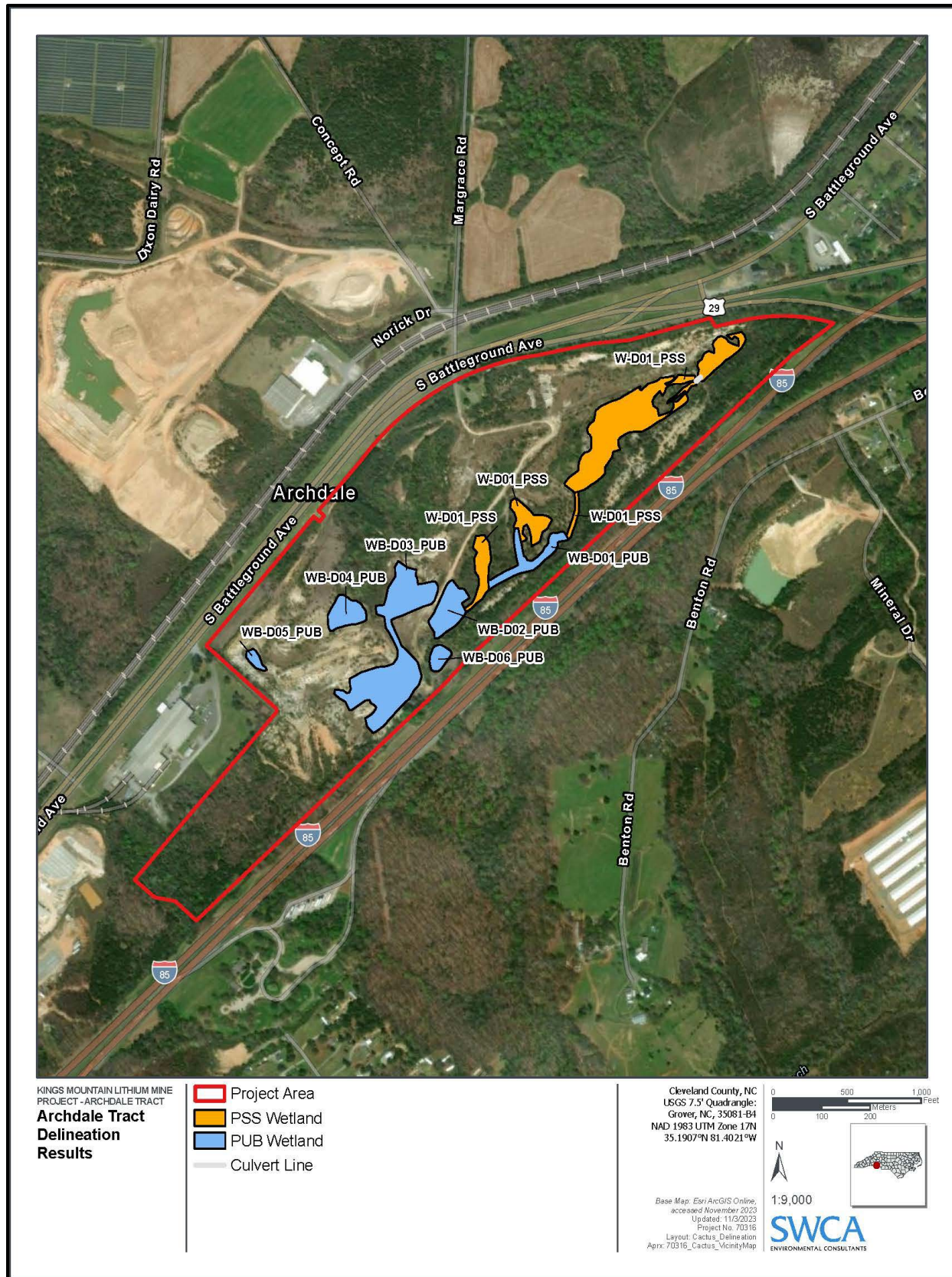
Figure 6. SWCA delineated water resources in the project area.
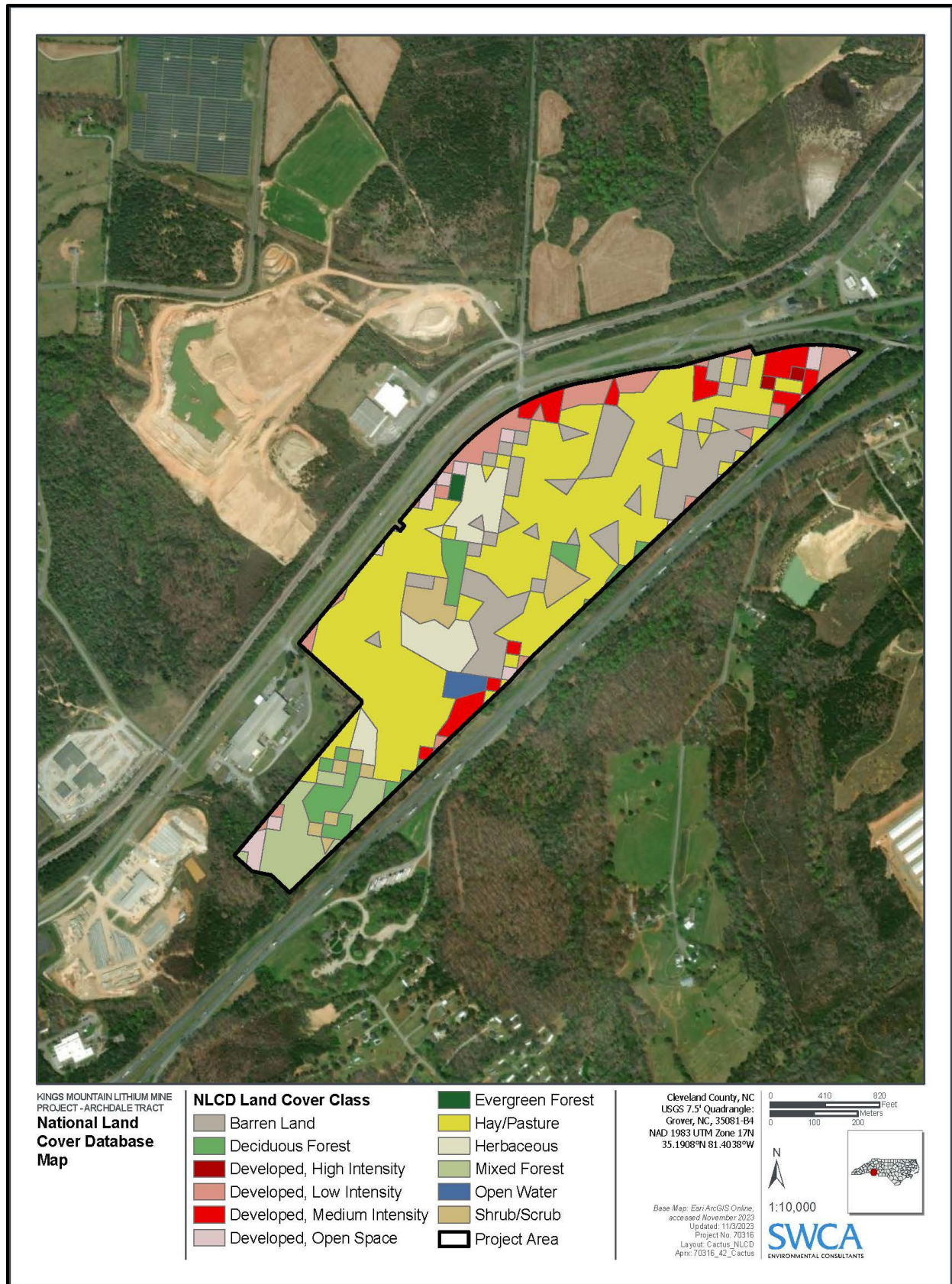
Figure 7. National Land Cover Dataset map.

3.1.1   Forested Upland

The forested upland communities (i.e., deciduous, mixed, and evergreen forest) make up a moderate amount of the project area. Most of the forests are from natural recruitment after historical mining activities ended. The oldest forest stands occupy approximately 15 acres of the project area in the southwestern portion. This forested land is regenerating from a clear cut around 2005 and has remained relatively undisturbed during the historic mining activities. A few areas between the project boundary and the surrounding roads contain mature trees along the edges. Lastly, a few large stands of mature pine trees and deciduous trees are present in the north-central portion along the mining spoils and its adjacent hillside. The remaining forested areas are generally 10 years old or less.

3.1.1.1   DECIDUOUS

There is very little mature deciduous forest in the project area. A small area of mature deciduous forest is located along the western slope of the mining spoil pile. Most deciduous forests are successional forests regenerating on historic mined lands and are generally characterized by relatively dense, younger trees with a developed understory of smaller trees, shrubs, and some herbaceous plants. Dominant canopy tree species are American sweetgum (*Liquidambar styraciflua*), tulip tree (*Liriodendron tulipifera*), red maple (*Acer rubrum*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and persimmon (*Diospyros virginiana*). Understory species observed in the mature deciduous forest are black cherry (*Prunus serotina*), American holly (*Ilex opaca*), eastern red cedar (*Juniperus virginiana*), greenbrier (*Smilax* spp.), and blackberry (*Rubus* spp.). These understory species generally fill in the gaps between trees, with the blackberry and greenbrier species occupying areas with greater sunlight access.

3.1.1.2   EVERGREEN

The evergreen forest community is dominated by stands of loblolly pine (*Pinus taeda*), with Virginia pine (*Pinus virginiana*) and shortleaf pine (*Pinus echinata*) occurring less commonly. Other than a few patchy sections of mature pine trees along the roads and the mining spoil pile, most are successional pine forests regenerating in the historic mining areas. The pine forests generally contain densely spaced trees with a moderate amount of understory vegetation, primarily the dominant successional deciduous species discussed above.

3.1.1.3   MIXED

The mixed forest community is the most common forest type and includes a combination of the dominant deciduous and evergreen trees and shrubs mentioned in the previous sections. These are mostly successional mixed forests regenerating throughout the historic mining areas.

3.1.2   Herbaceous Upland

The herbaceous upland and edge communities consist of areas dominated by non-woody vegetation. These communities are common within the recently disturbed or cleared areas and along edge habitats (e.g., forest edges, roadsides). Dominant herbaceous species are common native and non-native species that prefer disturbed areas including broom-sedge (*Andropogon virginicus*), goldenrod (*Solidago* spp.), dog fennel (*Eupatorium capillifolium*), clover (*Trifolium* spp.), American pokeweed (*Phytolacca americana*), American burnweed (*Erechtites hieraciifolius*), Chinese bushclover (*Lespedeza cuneata*), and southern crabgrass (*Digitaria ciliaris*). Numerous portions of the project area are dominated by invasive, non-native kudzu (*Pueraria montana*) and wisteria (*Wisteria* spp.), especially along the mine highwalls.

3.1.3   Shrub-Scrub

The shrub-scrub upland community is dominated by blackberry, Chinese privet (*Ligustrum sinense*), winged sumac (*Rhus copallinum*), and sweetgum. This community is found throughout recently disturbed areas in the project area in an early stage of succession. Shrub-scrub areas are generally dense and have plant heights up to approximately 15 feet. Blackberry thickets are common understory species in many of the taller shrub-scrub areas.

3.1.4   Wetlands

Based on SWCA field delineations in September 2023, approximately 7.6 acres of isolated (non-jurisdictional) shrub-scrub (PSS) wetlands are present in the project area (SWCA 2023). Additionally, six distinct isolated (non-jurisdictional) palustrine unconsolidated bottom (PUB) aquatic features (e.g., historic mine ponds and runoff channels) totaling 9.42 acres were delineated within the project area.

The shrub-scrub wetland communities consist of a prevalence of hydrophytic woody vegetation less than 20 feet tall. The shrub-scrub strata are dominated by Brookside alder (*Alnus serrulata*), silky willow (*Salix sericea*), and groundsel bush (*Baccharis halimifolia*). Based on delineations, approximately 7.6 acres of palustrine shrub-scrub wetlands are present in the project area (SWCA 2023). The wetland is one large, connected complex wholly contained within the historic mining pits.

3.2   Federally Listed Species

Species are designated by the USFWS as threatened, endangered, proposed, candidate, or under review under the ESA. Federally listed threatened and endangered species are protected from "take." Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS Information for Planning and Consultation resource list (Appendix A) identified tricolored bat (*Perimyotis subflavus*), monarch butterfly (*Danaus plexippus*), and dwarf-flowered heartleaf (*Hexastylis naniflora*) as having potential to occur in the project area or vicinity (Table 1) (USFWS 2023a, 2023b). In addition, the desktop review identified little brown bat (*Myotis lucifugus*) as potentially occurring in the area. Under the ESA, the USFWS can also propose and designated critical habitats for threatened or endangered species. There are no USFWS-designated critical habitats for federally listed species within the project area (USFWS 2023a).

Table 1. USFWS Federally Listed Species with Potential to Occur within the Project Area

Common Name (Scientific Name)	Listed Status	Habitat	Potential to Occur within Project Area
Tricolored bat (*Perimyotis subflavus*)	Proposed endangered	During the spring, summer, and fall (i.e., non-hibernating seasons), it primarily roosts among live and dead leaf clusters of live or recently dead deciduous hardwood trees. During winter, it hibernates in caves, culverts, and abandoned water wells. Forages both in treetops and closer to ground.	Moderate; forested habitat present; detected during SWCA's 2022 bat acoustic surveys at the main site approximately 2 miles east of the Archdale Tract.
Little brown bat (*Myotis lucifugus*)	Under review	Roosts include trees, buildings, wood piles, and under rocks. Forages around water sources and forest edges.	Moderate; forested habitat present; however, was not detected during 2022 bat acoustic surveys at the main site approximately 2 miles east of the Archdale Tract.

Common Name (Scientific Name)	Listed Status	Habitat	Potential to Occur within Project Area
Monarch butterfly (*Danaus plexippus*)	Candidate	Prairies, meadows, grasslands, and roadsides with milkweed (*Asclepias* spp.) and flowering plants.	Low; limited suitable habitat. .
Dwarf-flowered heartleaf (*Hexastylis naniflora*)	Threatened	Acidic soils along bluffs and adjacent slopes, boggy areas next to streams and creek heads, and along slopes of nearby hillsides and ravines. Endemic to upper Piedmont of North Carolina and South Carolina.	Low; limited suitable habitat.

Source: USFWS (2023a, 2023b)

3.2.1 Tricolored Bat

Tricolored bats (*Perimyotis subflavus*) are on the decline from white-nose syndrome in North Carolina. Whereas they used to be common from the mountains to the coastal plain, they are now common only in patches and uncommon everywhere else. Some tricolored bats may migrate long distances, but most retreat to caves and mines to mate (mid-August to mid-October) and then hibernate for winter (mid-October to spring) (USFWS 2021). In the spring and summer, tricolored bats can be found in a variety of habitats, from woodlands to small towns and farms, though usually not in heavily populated areas. They may roost in trees or sometimes in old buildings, culverts, or tunnels. Tricolored bats roost in foliage of live trees and may form small maternity colonies during the pup-rearing season (May 1– July 31) (North Carolina Bat Working Group 2013). The smallest bat in North America, the tricolored bat flies slowly in the evening to forage over openings, water, and farm fields.

Due to its decline from white-nose syndrome, tricolored bats are considered "rare or uncommon" in North Carolina. Tricolored bats have not been previously documented in Cleveland County; however, variable survey efforts are likely to contribute to lacking records (LeGrand and Gatens et al. 2023; NCNHP 2022b). In September 2022, the USFWS proposed to list the tricolored bat as an endangered species in response to observed population declines resulting primarily from white-nose syndrome (*Federal Register* 87:56381). A final decision regarding the listing status of the species is expected in the fall of 2023.

While the project area is a recently closed mine with large levels of historic disturbance, there remain small areas with mature trees and enough successional trees have regenerated to provide suitable habitat in areas for the tricolored bat. Acoustic bat surveys have not yet occurred at the Archdale Tract but were conducted in 2022 at the main site approximately 2 miles east of the project area (SWCA 2022). During those surveys, the tricolored bat was detected. Overall, since there is suitable habitat and it has been detected in the vicinity, this species has the potential to occur within the project area.

3.2.2 Little Brown Bat

The little brown bat (*Myotis lucifugus*) has a widespread range in North America from Alaska–Canada boreal forests south through most of the contiguous United States and into central Mexico (USFWS 2023c). In the winter (October to mid-March), little brown bats primarily hibernate in caves and cave-like structures (NatureServe 2023a). In spring and summer, they can be found in trees, artificial structures, and bat houses, as well as under rocks and in piles of wood. Foraging habitat includes areas with streams and other bodies of water, particularly in woodlands near water. In September and October these bats swarm and mate near their winter hibernating sites. This species was once abundant but has declined, particularly in eastern North America, due to white-nose syndrome. The USFWS is currently reviewing the status of the little brown bat as a result of these described threats.

While the project area is a recently closed mine with large levels of historic disturbance, there remain small areas with mature trees and enough successional trees have regenerated to provide suitable habitat in areas for the tricolored bat. The little brown bat was not detected during the acoustic bat surveys conducted at the main site approximately 2 miles east of the project area (SWCA 2022).

3.2.3 Dwarf-Flowered Heartleaf

The federally threatened dwarf-flowered heartleaf is a perennial woodland herb generally found in acidic soils along bluffs and adjacent slopes, in boggy areas next to streams and headwaters, and along the slopes of nearby hillsides and ravines. This plant is usually associated with mountain laurel (*Kalmia latifolia*) or American pawpaw (*Asimina triloba*) (LeGrand and Sorrie et al. 2023). The flowering period is March 1 through May 31.

The sloped portions of the project area are generally all in response to the historic mining and are not suitable habitat for this species due to intense historic disturbance that removed most vegetation and surface soils. Additionally, no mountain laurel or American pawpaw were observed in sloped forested areas. The relatively undisturbed 15 acres of forest in the southwestern most portion of the project area is mostly flat, dry upland forests and is also not suitable habitat. Overall, this species is not expected to occur due to a lack of suitable habitat and substantial historical mining disturbance.

3.2.4 Monarch Butterfly

The monarch butterfly is a candidate for listing across most of the United States and is known to occur within North Carolina during migration from its overwintering habitat in Mexico. The USFWS is anticipated to determine whether the monarch butterfly should be listed under the ESA in 2024. Monarch breeding habitat includes agricultural fields; pastureland; prairie remnants; and urban and suburban residential gardens, trees, and roadsides. This species is highly dependent on the presence of milkweed (*Asclepias* spp.) for breeding and a diversity of flowering nectar plants for foraging (Monarch Joint Venture 2022; USFWS 2020, 2023d). Unsuitable habitat includes areas such as grasslands dominated by invasive grass species, or woody thickets too dense to support herbaceous flowering vegetation.

The project area generally lacks the preferred monarch butterfly habitat. The herbaceous vegetation communities are fairly barren and restricted to recently disturbed areas consisting of native and non-native weedy species. Other herbaceous areas are intermixed with successional woody vegetation and shrubby species mentioned above.

3.3 State-Listed Species

3.3.1 Regulatory Background

In North Carolina, endangered, threatened, and special concern fauna (referred to as "state-listed" in this report) are protected by the NCWRC under the North Carolina Endangered Species Act of 1987; flora are protected by the North Carolina Plant Conservation Program under the North Carolina Plant Protection and Conservation Act of 1979. The Acts also state that they do not limit the rights of a landowner in the lawful management of his/her land. Generally, state-listed plants are protected from collection, selling, and poaching on private property without permission from the property owner and a permit from the North Carolina Department of Agriculture and Consumer Services. Overall, state-listed plants and animals receive little protection on private land.

State endangered species are those determined by the NCWRC to be in jeopardy without human intervention. State threatened species are likely to become endangered species within the foreseeable future throughout all or a significant portion of their range. State special concern species are determined by the NCWRC to require monitoring but may be taken under adopted regulations. Significantly rare designations indicate rarity and need for population monitoring and conservation action. *Significantly rare* is a non-regulatory NCNHP designation, and such species are not legally protected but have been included in the assessment below.

3.3.2   Species List

The list of state-listed species for Cleveland County was reviewed to assess whether the species have potential to occur in the project area (Table 2) (NCNHP 2022a, 2022b, 2023a, 2023b). Five species are considered historical in the county, which, according to NCNHP, are either extirpated species that have not been found in recent surveys or species that have not been surveyed recently enough to be determined to be present but for which there is still some expectation that the species may be rediscovered. Occurrences are regarded as historical after 20 to 40 years depending on the species and the amount of habitat alteration in the area. A county status of "historical" in Table 2 should not be regarded as a definitive statement that the species is gone from the county, but rather, indicates that its continued existence is uncertain.

According to occurrence records provided by NCNHP (2023a), no state-listed threatened, endangered, or special concern plant or animal species have been identified within the project area (Appendix B). One state-listed species, the yellowfin shiner (*Notropis lutipinnis*), has been observed within 1 mile of the project area; however, no streams are present within the project area to support this species.

Table 2. State-Listed Species for Cleveland County and Their Potential to Occur

Common Name	Scientific Name	State Listing Status	County Record Status	Potential to Occur
Birds				
Bald eagle	*Haliaeetus leucocephalus*	Threatened	Current	Low; limited suitable habitat due to lack of rivers and large lakes.
Loggerhead shrike	*Lanius ludovicianus*	Special Concern	Current	Low; lack of open lands.
Barn owl	*Tyto alba*	Special Concern	Current	Low; lack of open lands.
Mammals				
Northern long-eared bat	*Myotis septentrionalis*	Threatened	Current	Very low; not identified during 2022 bat acoustic surveys. Project is located outside of 2023 revised range boundary.
Little brown bat	*Myotis lucifugus*	Significantly Rare	Current	Moderate; potential suitable habitat; however, not detected during 2022 bat acoustic surveys at the nearby main site with better habitat.
Tricolored bat	*Perimyotis subflavus*	Endangered	N/A	Moderate; detected 2 miles away by SWCA acoustic surveys in 2022.
Reptiles				
Timber rattlesnake	*Crotalus horridus*	Special Concern	Current	Moderate; forested and rocky habitats are present.
Carolina pygmy rattlesnake	*Sistrurus miliarius miliarius*	Special Concern	Historical	Low; lack of suitable habitat.
Crustaceans				

Common Name	Scientific Name	State Listing Status	County Record Status	Potential to Occur
Carolina foothills crayfish	*Cambarus johni*	Significantly Rare	Current	Very low; no streams present.
Broad River stream crayfish	*Cambarus lenati*	Significantly Rare	Current	Very low; no streams present.
Broad River spiny crayfish	*Cambarus spicatus*	Special Concern	Current	Very low; no streams present.
Fish				
Carolina quillback	*Carpiodes* sp. cf. *cyprinus*	Significantly Rare	Current	Very low; no streams present.
Seagreen darter	*Etheostoma thalassinum*	Significantly Rare	Current	Very low; no streams present.
Yellowfin shiner	*Notropis lutipinnis*	Special Concern	Historical	Very low; no streams present. Last documented occurrence within 1 mile was in 1980.
Plants				
American bittersweet	*Celastrus scandens*	Endangered	Current	Low; limited suitable habitat.
Smooth sunflower	*Helianthus laevigatus*	Special Concern – Vulnerable	Historical	Low; limited suitable habitat.
Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened	Current	Low; limited suitable habitat; soils and sloped areas are heavily disturbed.
Rough blazing-star	*Liatris aspera*	Special Concern – Vulnerable	Historical	Low; limited suitable habitat; soils are heavily disturbed and listed as acidic.
Dwarf chinquapin oak	*Quercus prinoides*	Endangered	Historical	Very low; lack of suitable rocky slope habitat.
Pursh's wild petunia	*Ruellia purshiana*	Special Concern – Vulnerable	Current	Very low; lack suitable habitat; acidic soils in project area; very rare in the southwestern Piedmont.

Sources: NCNHP (2022a, 2022b, 2023a, 2023b)

3.3.2.1   BALD EAGLE

The bald eagle (*Haliaeetus leucocephalus*) is one of the largest raptors in North America and was listed under the ESA until 2007. The eagle is still federally protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The bald eagle prefers habitat near lakes, large rivers, and shorelines of sounds and bays (NCWRC 2023a). It perches and nests in tall, isolated trees. Nests can be up to 8 feet wide and 20 feet deep. Pairs often return to the same nest each year and layer new nest material over the old.

The bald eagle has a low potential to nest in the project area or vicinity. According to the NCWRC (personal communication, Clint Barden, Biologist, NCWRC, with Simon King, SWCA Environmental Consultants, July 29, 2022), the closest nesting pair was documented in 2021 at Moss Lake approximately 6.5 miles northwest of the project area. According to the eBird database, there are no records within the project area and a low (0%–10%) frequency of reporting in the Kings Mountain area (eBird 2023). There is a low probability of bald eagles to forage at water-filled mining pits in the project area as they likely do not possess food sources similar to natural waterbodies. Bald eagles could occasionally fly over, but no eagles were observed during the 2023 biological surveys. Overall, the bald eagle has a low potential to occur.

3.3.2.2 LOGGERHEAD SHRIKE

The loggerhead shrike (*Lanius ludovicianus*) is a songbird that inhabits large open areas with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns (Cornell Lab of Ornithology 2019). They frequent agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses, and cemeteries. Loggerhead shrikes are often seen along mowed roadsides with access to fence lines and utility poles, which they use for viewing prey when foraging. Populations are declining, likely due to changes in agricultural practices and the use of certain pesticides (NCWRC 2020).

The NCWRC (2020) states that this species can be "locally fairly common" in Cleveland County, likely due to the high amount of agricultural land in the county, where this species has open fields and fences to support its behavior. However, according to the eBird database, there are no records within the project area and a low (0%–2%) frequency of reporting in the Kings Mountain area (eBird 2023). While the project area contains trees and shrubs, it lacks fields or rights-of-way with open habitat for foraging and utility poles for perching. No loggerhead shrikes were observed during the 2023 biological surveys. Overall, this species has a low potential to occur.

3.3.2.3 BARN OWL

Barn owls (*Tyto alba*) generally occur in open rural areas with farmland and where there are barns or abandoned buildings for nesting (Cornell Lab of Ornithology 2019; NCWRC 2023b). They also nest in woodland areas or within city limits where there are good open areas for foraging, although this is less typical. This species likely occurs in parts of Cleveland County considering the high amounts of agricultural land. The recent population decline is attributed to habitat loss due to changes from agriculture and open land to urban developed land.

According to the eBird database, there are no records within the project area and a low (0%–2%) frequency of reporting in the Kings Mountain area (eBird 2023). The project area lacks structures for potential nesting and large open areas for hunting. The project area is mainly successional habitats, and the open areas that do exist are mainly disturbed areas associated with the mine. No barn owls were observed during 2023 biological surveys; however, this species is mostly active at night. Overall, the barn owl has a low potential to occur.

3.3.2.4 NORTHERN LONG-EARED BAT

As the project area is outside of the 2023 revised range boundary for the northern long-eared bat (*Myotis septentrionalis*), this species is not expected to occur (USFWS 2023e). Additionally, it was not detected during the 2022 SWCA acoustic surveys at the nearby main site where more suitable habitat was present.

3.3.2.5 LITTLE BROWN BAT

See Section 3.2.2.

3.3.2.6 TRICOLORED BAT

See Section 3.2.1.

3.3.2.7   TIMBER RATTLESNAKE

The timber rattlesnake (*Crotalus horridus*) is a large venomous snake that feeds on rodents and birds. Most timber rattlesnakes rely on their camouflage for protection and are reluctant to rattle or bite (NC Partners in Amphibian and Reptile Conservation 2022). In North Carolina, this snake is most common in the mountains and the Coastal Plain. Their populations are declining due to agriculture and development. In the Piedmont where the project area is located, timber rattlesnakes are often found in wooded rocky hillsides or in mature hardwood forests with many downed logs and a layer of leaves and humus (Palmer and Braswell 1995). However, they can also be found in young forests with predominantly leaf litter, as well as wetlands and shrubby habitat. This species is difficult to observe in the field due to its secretive nature, strong camouflage abilities, and generalized habitat.

Based on habitat suitability, there is a moderate potential for this snake to occur in the project area due to a variety of habitats being present (e.g., forests, wetlands). However, the project area has been severely disturbed due to mining and generally lacks the exposed rock outcroppings with surrounding mature forests the snake prefers. No timber rattlesnakes were observed during the 2023 biological surveys that included a diversity of habitats such as forests, mining spoil piles, and wetlands. However, species-specific presence/absence surveys were not conducted because the secretive nature of the species makes the snake difficult to detect, likely leading to inconclusive results. Overall, the timber rattlesnake has a moderate potential to occur due to potential suitable habitat in the project area.

3.3.2.8   CAROLINA PYGMY RATTLESNAKE

The Carolina pygmy rattlesnake (*Sistrurus miliarius miliarius*) is the smallest species of rattlesnake in the United States. In North Carolina, this snake is found in pine flatwoods, pine/oak sandhills, and other pine/oak forests in the southeastern Coastal Plain and Sandhills (NC Partners in Amphibian and Reptile Conservation 2022). The Carolina pygmy rattlesnake is very rare in the Piedmont but has been observed on dry, rocky locations in the Crowders Mountain/Kings Mountain area.

The project area generally lacks the dry, rocky habitat that this species is known to use in the Piedmont. According to NCNHP, there are historic (1990s) observations at the nearby Crowders Mountain State Park (~5 miles east of project area), but the preferred dry rocky habitat with steep slopes in higher elevations are very limited in the project area. No Carolina pygmy rattlesnakes were observed during the 2023 biological surveys; however, no species-specific surveys were conducted due to a lack of suitable habitat and the secretive nature of the species. Overall, the Carolina pygmy rattlesnake has a low potential to occur due to poor habitat and substantial historical disturbance to most of the project area.

3.3.2.9   CAROLINA FOOTHILLS CRAYFISH

The Carolina foothills crayfish (*Cambarus johni*) in known only from headwater streams in the Yadkin-Pee Dee, Catawba, and Broad River Basins of the Blue Ridge Foothills and Upper Piedmont Plateau (NCWRC 2023c). Streams are typically 3 to 4 meters wide with sandy substrates, beneath undercut banks, and in leaf packs and root wads. Threat and trends have not been assessed, but the species' wide range is indicative of a secure status for a state endemic species (NatureServe 2023b).

The project area lacks streams and therefore contains no suitable habitat for this species; it is therefore not expected to occur.

3.3.2.10   BROAD RIVER STREAM CRAYFISH

The Broad River stream crayfish (*Cambarus lenati*) occurs in small to medium streams in the Broad River drainage. This species is found only in the headwaters of the First Broad River subdrainage, which is in the northern portion of the river basin (NCNHP 2003; NCWRC 2023d). It is not known to occur in the Kings Creek subdrainage. The project area lacks streams and therefore contains no suitable habitat for this species; it is therefore not expected to occur.

3.3.2.11   BROAD RIVER SPINY CRAYFISH

The Broad River spiny crayfish (*Cambarus spicatus*) occurs in small to medium streams with debris in the channel and along margins (NCWRC 2023e). It is known to occur in the First Broad River and North Pacolet subdrainages of the Broad River drainage, which are west of the project area (NCNHP 2003; NCWRC 2023e). It is not known to occur in the Kings Creek subdrainage. The project area lacks streams and contains no suitable habitat for this species; it is therefore not expected to occur.

3.3.2.12   CAROLINA QUILLBACK

The Carolina quillback (*Carpiodes cyprinus*) is restricted to the Broad, Catawba, and Yadkin River Basins. This species is found in warm, low- to moderate-gradient reaches of most major rivers, including upper portions of associated reservoirs (South Carolina Department of Natural Resources [SCDNR] 2015a). The project area lacks streams and contains no suitable habitat for this species; it is therefore not expected to occur.

3.3.2.13   SEAGREEN DARTER

The seagreen darter (*Etheostoma thalassinum*) is endemic to North Carolina and South Carolina and is restricted to the Broad and Catawba River Basins. This species is found in rock, rubble, or gravel riffles in large creeks and rivers with moderate to swift currents (SCDNR 2015b). The project area lacks streams and contains no suitable habitat for this species; it is therefore not expected to occur.

3.3.2.14   AMERICAN BITTERSWEET

American bittersweet (*Celastrus scandens*) is a high-climbing or sprawling woody vine reaching 30 feet. Habitat includes woodlands, stream banks, rocky hillsides, thickets, fence rows, and roadsides. In North Carolina, the species is typically only found on moist slopes with rich soils over mafic rocks in mesic and rich cove forests. Mafic rocks are igneous rocks with a high content of magnesium, iron, and often calcium that typically weather into deeper, higher-pH (less acidic) soils that can be rich and productive (U.S. Forest Service 2022). It generally does not grow along forested borders where the invasive Asiatic bittersweet (*Celastrus orbiculatus*) grows. The native American bittersweet is being replaced in the northeastern United States by the more aggressive Asiatic bittersweet, which has escaped from cultivation (University of Texas 2022). The flowering period is May through June, but this plant can be identified by its showy scarlet fruit in the fall. According to the NRCS web soil survey (NRCS 2023), the soils within the project area range from 5.3–6.2 pH, which are all acidic. Additionally, most surface soils have been excavated or significantly disturbed during previous mining activities. Based on this information, paired with the high level of historic disturbance, successional forest habitats, and dry slopes, the American bittersweet has a low potential to occur.

3.3.2.15   SMOOTH SUNFLOWER

Smooth sunflower (*Helianthus laevigatus*) occurs locally in Maryland, West Virginia, Virginia, western North Carolina, and northern South Carolina. Although smooth sunflower has a somewhat restricted range, it is abundant in glades, barrens, and along roadsides within that range, especially in Virginia (NatureServe 2023c). In North Carolina and South Carolina, all occurrences are in disturbed areas on slate-derived soils. The principal threats to this species are fire suppression, succession to woody species, and invasion by exotic plant species. Other threats include development, herbicide use, and mowing during the flowering and growing seasons. This sunflower has a potential to occur in suitable habitat along woodland edges and within existing rights-of-way. This plant grows up to 7 feet tall and flowers from August through November.

The project area contains some herbaceous vegetation communities, but these are generally restricted to recently heavily disturbed areas consisting of native and non-native weedy species, successional woody vegetation, and shrubs. Overall, the habitat is poor, and the smooth sunflower has a low potential to occur.

3.3.2.16   DWARF-FLOWERED HEARTLEAF

See Section 3.2.3.

3.3.2.17   ROUGH BLAZING-STAR

Rough blazing-star (*Liatris aspera*) is found in dry soil of prairies and plains, openings in rocky woodlands, and along power lines and roadsides through these habitats. This species prefers basic soils with high pH (LeGrand and Sorrie et al. 2023). This flower is rare in the southwestern Piedmont. It is found in dry and often rocky places in the southwestern part of the state (LeGrand and Sorrie et al. 2023). All recorded occurrences in Cleveland County are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to determine their presence. Rough blazing-star has lavender flowers from August through September and fruits starting in early October.

The project area contains acidic soils with a low pH (NRCS 2023), which are unlikely to support this species. Additionally, most surface soils have been excavated or significantly disturbed during previous mining activities. The project area also lacks prairies and rocky woodlands with openings. Therefore, rough blazing-star has a low potential to occur.

3.3.2.18   DWARF CHINQUAPIN OAK

The dwarf chinquapin oak (*Quercus prinoides*) is a deciduous shrub, typically 5 to 6 feet tall (LeGrand and Sorrie et al. 2023). It grows in dry or mesic edge or opening habitat in acidic soils. Most records are from dry acidic slopes with openings or other early successional vegetation, often with rocky areas. This species is very rare and strongly declining in the Piedmont. Declines are likely due to fire suppression. All recorded occurrences in the county are from the 1950s, and this species has not been found in recent surveys (NCNHP 2003). Therefore, it is considered historic in Cleveland County. The project area lacks rocky slopes other than the waste rock piles, and the potential for dwarf chinquapin oak to occur in these areas is very low. Additionally, while the NRCS (2023) describes the project area as having relatively acidic soils (5.3–6.2 pH), most of the surface soils have been excavated or severely disturbed due to mining. No species-specific surveys were conducted due to lack of suitable habitat and this species' historical status. Overall, the dwarf chinquapin oak has a very low potential to occur.

3.3.2.19   PURSH'S WILD PETUNIA

Pursh's wild petunia (*Ruellia purshiana*) is a perennial herb restricted to dry to somewhat mesic, high-pH soil in partly shaded conditions (LeGrand and Sorrie et al. 2023). It favors glades and barrens, woodland borders, open woods, and other similar sites. In the Piedmont, this species blooms in May. The project area contains some woodland borders, but most forests are dense successional forests that are not suitable. Additionally, soils within the project area are not high pH soils, but are described as acidic, ranging from 5.3–6.2 pH; however, they have been disturbed due to historic mining activities (NRCS 2023). Overall, this species has a very low potential to occur.

4   SUMMARY AND CONCLUSIONS

No federally listed species have been identified within the project area. There is a moderate potential for the little brown bat and tricolored bat to occur in the project area based on the forested and shrubby habitat with surrounding aquatic features. There is no suitable habitat for the monarch butterfly or the dwarf-flowered heartleaf, as most soils and vegetation in the project area were substantially disturbed or removed during mining activities that only recently ceased. Regenerating vegetation is currently in a dense, successional phase that does provide suitable habitat.

Timber rattlesnake is the only state-listed species that has a moderate potential to occur based on suitable habitat. Surveys were not conducted for timber rattlesnake due to the lack of predictive survey areas within the project area (e.g., rock outcrops) and the secretive nature of the species. However, biological surveys were conducted throughout a diversity of habitats (e.g., forests, floodplains) in the project area during the species' active period in 2023, and no timber rattlesnakes were observed. All other state-listed species have a low or very low potential to occur, primarily due to lack of suitable habitat.

Tricolored bat, a habitat generalist, was detected during acoustic surveys conducted by SWCA in 2022 at the main site approximately 2 miles east of the project area. This bat is not currently state-listed or federally listed, but the USFWS has proposed listing this species as endangered under the ESA. Development within the project area would impact forested habitat used by this species and other bats during the summer season. Recommended management practices that may be beneficial to all bat species include minimizing forest clearing, avoiding impacts to large and intact contiguous forested blocks, and avoiding impacts to water quality by limiting stream/wetland impacts and implementing erosion and sediment controls along waterways. Additionally, revegetating with native grassland species using a pollinator mix could promote prey diversity and abundance, which would also benefit other wildlife, such as monarch butterflies.

The USFWS has not yet provided any guidance for tricolored bat. Should the tricolored bat become listed as endangered, consultation with the USFWS is recommended to determine suitable measures, such as habitat conservation or enhancement, to address any potential adverse effects. The tricolored bat is expected to be present in the project area from April through October. As a forest-dwelling species, there is risk of direct mortality if occupied roost trees are removed during a time when they are occupied. Because the species is a habitat generalist that typically roosts in foliage of living trees, it is difficult to determine specific roost trees. Avoiding the removal of forested habitat from April through October is likely to minimize the potential for direct mortality, and habitat modification at a small scale is unlikely to result in harm to individuals.

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APPENDIX A

U.S. Fish and Wildlife Service Information for Planning and Consultation Resource List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Cleveland County, North Carolina

Local office

Asheville Ecological Services Field Office

📞 (828) 258-3939
📠 (828) 258-5330

160 Zillicoa Street
Asheville, NC 28801-1082

Endangered species

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Dwarf-flowered Heartleaf Hexastylis naniflora Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2458	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.
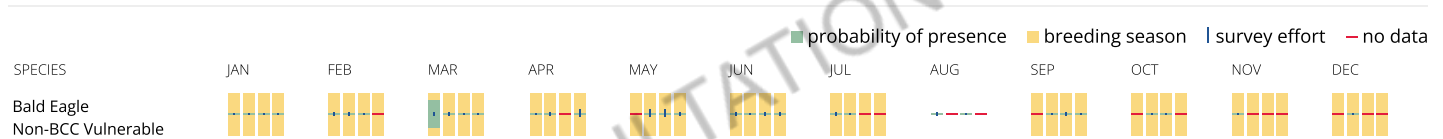
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bald Eagle Non-BCC Vulnerable												

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network (AKN)](). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets]() and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act]() requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator (RAIL) Tool]().

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern (BCC)]() and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network (AKN)](). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets]() and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act]() requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator (RAIL) Tool]().

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act]() should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act]() of 1918.
2. The [Bald and Golden Eagle Protection Act]() of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/ documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern]() (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area,

visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.
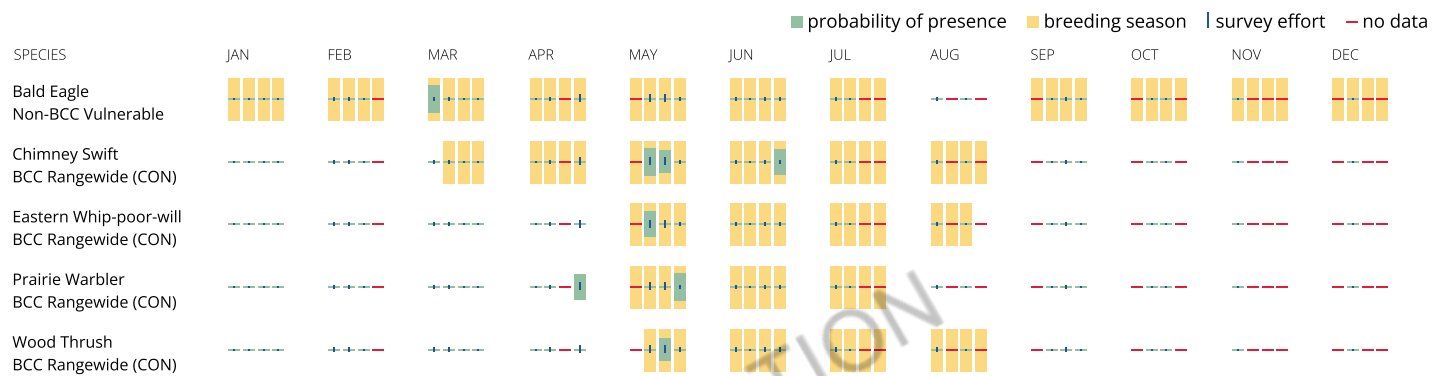
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
    [R4SBC](#)
    [R5UBH](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX B

North Carolina Natural Heritage Program Resource Report

**NC DEPARTMENT OF
NATURAL AND CULTURAL RESOURCES**

NCNHDE-23849

November 1, 2023

Simon King
SWCA Environmental Consultants
20 E Thomas Rd
Phoenix, AZ 85012
RE: Archdale Site

Dear Simon King:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Land and Water Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact the NCNHP at natural.heritage@dncr.nc.gov.

Sincerely,
NC Natural Heritage Program

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Archdale Site
November 1, 2023
NCNHDE-23849

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Freshwater Fish	42729	Notropis lutipinnis	Yellowfin Shiner	1980-09-03	H	3-Medium	---	Special Concern	G4Q	S2

No Natural Areas are Documented Within a One-mile Radius of the Project Area

No Managed Areas are Documented Within a One-mile Radius of the Project Area

Definitions and an explanation of status designations and codes can be found at https://ncnhde.natureserve.org/help. Data query generated on November 1, 2023; source: NCNHP, Fall (October) 2023. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-23849: Archdale Site
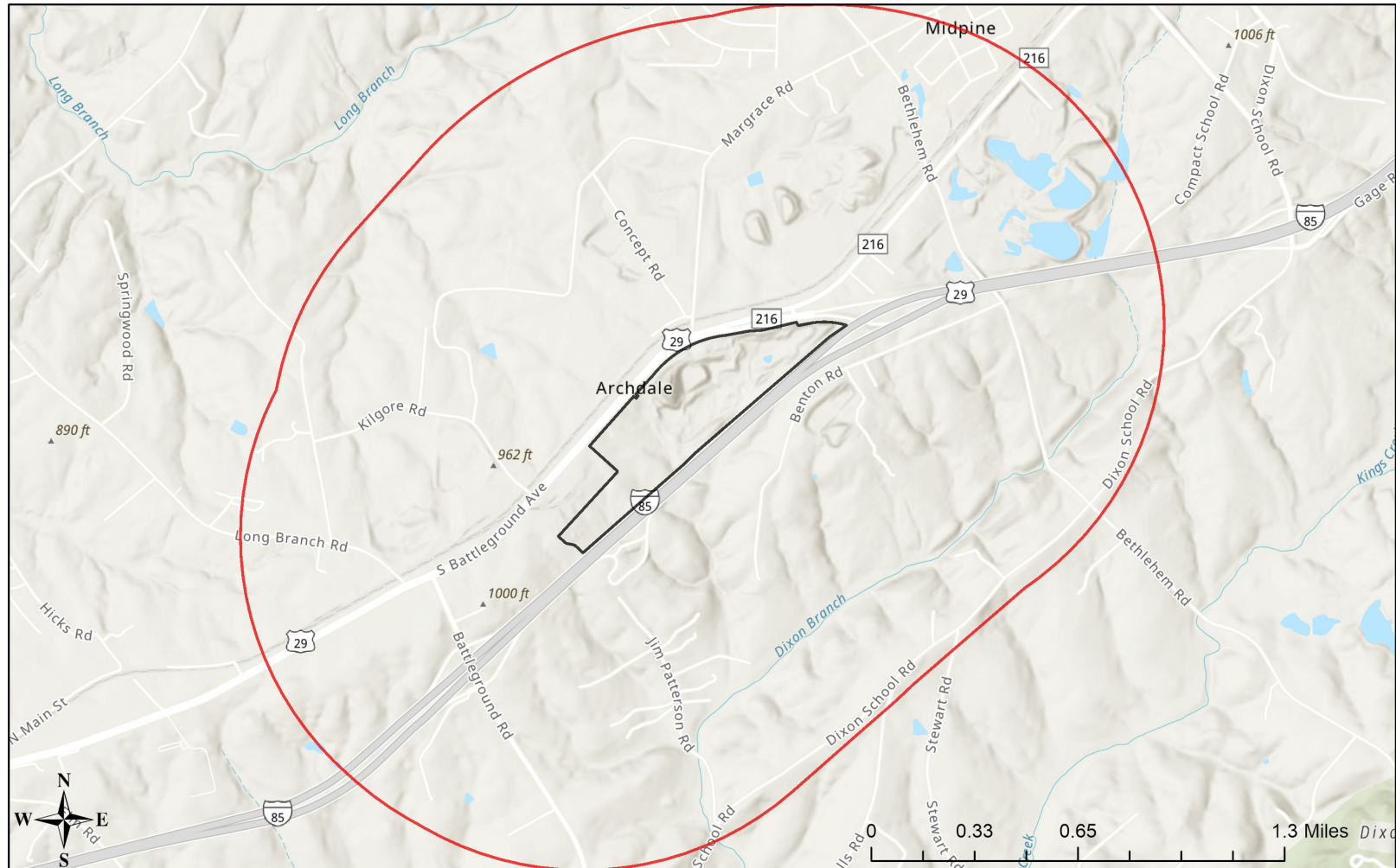
November 1, 2023

▭ Buffered Project Boundary

▭ Project Boundary

APPENDIX D-2   U.S. FISH AND WILDLIFE SERVICE IPAC RESOURCE LIST – ARCHDALE

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Cleveland County, North Carolina

Local office

Asheville Ecological Services Field Office

  📞 (828) 258-3939
  📠 (828) 258-5330

160 Zillicoa Street, Suite B

Asheville, NC 28801-1082

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. <u>NOAA Fisheries,</u> also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	**Proposed Endangered**

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	**Candidate**

Flowering Plants

NAME	STATUS
Dwarf-flowered Heartleaf Hexastylis naniflora Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2458	**Threatened**

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read

"Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.
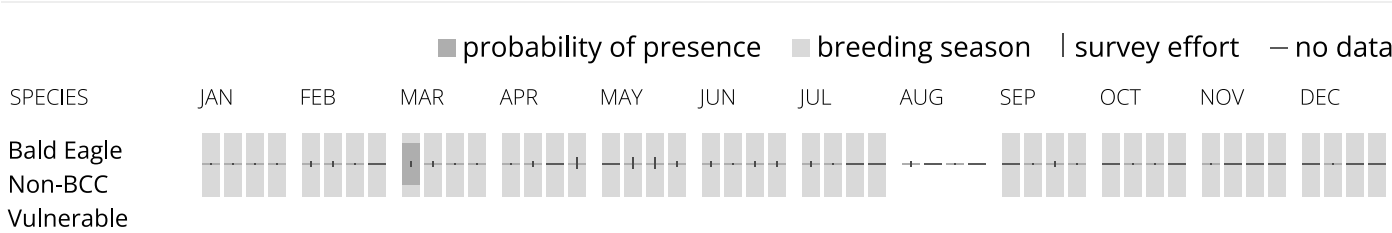
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (─)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME   BREEDING SEASON

Bald Eagle Haliaeetus leucocephalus   Breeds Sep 1 to Jul 31
  This is not a Bird of Conservation Concern (BCC) in this area, but
  warrants attention because of the Eagle Act or for potential
  susceptibilities in offshore areas from certain types of
  development or activities.

Chimney Swift Chaetura pelagica   Breeds Mar 15 to Aug 25
  This is a Bird of Conservation Concern (BCC) throughout its
  range in the continental USA and Alaska.

Chuck-will's-widow Antrostomus carolinensis   Breeds May 10 to Jul 10
  This is a Bird of Conservation Concern (BCC) only in particular
  Bird Conservation Regions (BCRs) in the continental USA

Eastern Whip-poor-will Antrostomus vociferus   Breeds May 1 to Aug 20
  This is a Bird of Conservation Concern (BCC) throughout its
  range in the continental USA and Alaska.

Grasshopper Sparrow Ammodramus savannarum   Breeds Jun 1 to Aug 20
perpallidus
  This is a Bird of Conservation Concern (BCC) only in particular
  Bird Conservation Regions (BCRs) in the continental USA
  https://ecos.fws.gov/ecp/species/8329

Prairie Warbler Setophaga discolor   Breeds May 1 to Jul 31
  This is a Bird of Conservation Concern (BCC) throughout its
  range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina   Breeds May 10 to Aug 31
  This is a Bird of Conservation Concern (BCC) throughout its
  range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to
be present in your project area. This information can be used to tailor and schedule your
project activities to avoid or minimize impacts to birds. Please make sure you read
"Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled
"Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to
interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▢)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (−)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▮ probability of presence   ▯ breeding season | survey effort   − no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bald Eagle Non-BCC Vulnerable												
Chimney Swift BCC Rangewide (CON)												
Chuck-will's- widow BCC - BCR												
Eastern Whip- poor-will BCC Rangewide (CON)												
Grasshopper Sparrow BCC - BCR												
Prairie Warbler BCC Rangewide (CON)												
Wood Thrush BCC Rangewide (CON)												

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
    R4SBC
    R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.