

Cumberland Piedmont Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure 9

Reporting—Version 2.0

Please cite this as:

Cumberland Piedmont Network. 2023. Reporting—Version 2.0. Cumberland Piedmont Network Standard Operating Procedure NPS/CUPN/SOP—9. Cumberland Piedmont Network, Mammoth Cave, Kentucky.

Summary

This standard operating procedure (SOP) provides information on the reports which will be produced from the cave-roosting bat monitoring protocol in selected Cumberland Piedmont Network parks. Reports generated by this monitoring project will consist of three major types: (1) Trip Reports, (2) Resource Briefs, and (3) Trend Reports. Trip reports will be written to briefly summarize sampling trips for park staff. The data set will be published annually to ensure data integrity, security, availability, and transparency. Annual resource briefs will be generated to provide park management with information describing results from annual sampling. A trend report will be completed after the third cycle of data collection and at least every three cycles thereafter and will be used to detect or document trends or lack of trends. The following reports will not be generated on a regular or fixed schedule: (1) Baseline Status Report and (2) Protocol Evaluation. The baseline status report will be done once, after one complete cycle of data collection, and will provide the baseline for comparison for later analyses. A protocol evaluation will be completed after the second cycle of data collection and may be repeated as necessary. The purpose of the evaluation is to determine whether protocol objectives, standards or methods require modification. The schedule and format for each report type, as well as reporting responsibilities, are discussed below.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #
December 2015	Steven Thomas	Minor edits following external peer review.	External peer review comments.	1.1
June 2021	Steven Thomas	Trend reports will be completed every three cycles, and provided schedule for first trend reports.	Update SOP after release of IMD guidance memo on Data Analysis and Reporting Requirements on 23 April 2018.	2.0

Recommended Reporting Schedule and Format

Efficient reporting on monitoring results is critical for assisting park resource managers in management decisions. Timely production of appropriate reports is the responsibility of the project leader and the CUPN program manager. Three kinds of reports will be generated regularly: unpublished trip reports that are sent to park staff within two weeks of sampling, annual resource briefs that will be published in the first half of the following fiscal year, and trend reports that will be published at least once every three cycles of data collection. Two types of reports will not be generated on a regular or fixed schedule: a baseline status report and protocol evaluations.

Trip Reports

Brief follow-up trip reports will be written to summarize sampling trips for park staff and will include important observations such as signs of human disturbance in/at caves. These reports will be completed within two weeks after each sampling trip. However, because sampling at Mammoth Cave National Park (MACA) occurs throughout the summer, a single trip report for that park will be completed within two weeks after the end of the sampling season. Unless otherwise requested by the park, trip reports are sent directly to the park resources management primary contact. An example of a recent trip report is shown in Figure 1.

Cumberland Piedmont Network (CUPN) Trip Report

Cave Bats Monitoring

Park: Russell Cave National Monument (RUCA)

Permit#: RUCA-2018-SCI-001

Trip Dates: June 17-21, 2018

Trip Purpose: To conduct summer bat population monitoring outside entrances to scheduled caves.

Field Team: Steven Thomas (NPS-CUPN), Hali S. (CUPN intern), and Chaz W. (MACA SCA intern).

Trip Report:

June 17 and 18, 2018

Steve and Hali conducted nightly bat emergence counts outside the following two entrances using three methods at each entrance: 1) night vision goggles, 2) a HD night vision video camera with two external infrared illuminators, and 3) a thermal infrared video camera.

- Picnic Entrance to Russell Cave—Picnic Entrance No. 6
- Picnic Entrance to Russell Cave—Canoe Entrance

After the counts we experimented with equipment setup at the Main Entrance for the upcoming counts.

June 19 and 20, 2018

Steve, Hali and Chaz conducted nightly bat emergence counts outside the following three entrances using three methods at each entrance: 1) night vision goggles, 2) a HD night vision video camera with multiple external infrared illuminators, and 3) a thermal infrared video camera.

- Main Entrance to Russell Cave—Shelter Entrance
- Main Entrance to Russell Cave—Stream Entrance
- Main Entrance to Russell Cave—Pig Entrance

Notes:

Bat emergence count data will be analyzed and results reported in late 2018.

On the morning of June 19, 2018, the XXXXXXXXX had 20 big brown bats (10 adults, 10 juveniles) roosting in it.

Mary Shew (NPS) and RUCA staff provided logistical assistance and park radios. We very much appreciate the use of park housing.

Figure 1. Example of a trip report.

Resource Brief

Resource briefs will be generated to provide park managers and other stakeholders with information describing results from annual sampling, including any unusual results or findings. These routine

updates will be produced separately for each park after the preceding fiscal year's monitoring efforts and subsequent data processing/analyses are completed.

Baseline Status Report

The baseline status report will be done once, after one complete cycle of data collection, and will provide the baseline for comparison for later analyses. This analysis consists of documenting spatial or temporal variation and may also include summary or simple statistics of protocol measures and variability to establish definitions/benchmarks of comparison. At a minimum, this report will include summer bat monitoring data from 2014–2017 and winter bat monitoring data from 2014–2019.

Protocol Evaluation Report

A protocol evaluation will be completed after the second cycle (or 10 years of protocol implementation) of data collection and may be repeated as necessary. The purpose of the evaluation is to determine whether protocol objectives, standards or methods require modification. This may involve power analyses or simulations to determine if data collected are adequate to meet the objectives of the protocol. The evaluation will focus on the current sampling design and a subset of metrics that cover the range of variability in the data set. The emphasis will be on a limited analysis to enhance understanding about what the data will be able to tell us, not on a comprehensive investigation. This evaluation will be started no later than immediately after the 2023 field season.

Trend Report

The trend analysis report will be completed no less frequently than once per three cycles (or 12 years of protocol implementation) of data collection. Exploratory analyses will be conducted to detect or document trends (or lack of trends), address questions defined in the protocol objectives, or address emergent ecological or management questions. The emphasis should be using vital signs monitoring data in either a theoretical or applied manner to increase the relevance and utility of monitoring data. This report will be developed first for summer bats panel 1 (i.e., caves monitored annually) no later than immediately after the 2025 field season, second for winter bats after the 2026 field season, and finally for summer bats panels 2–5 (i.e., rotating panels) after the 2027 field season.

Review Procedure

Annual resource briefs and other formal reports on cave bats monitoring are prepared by the project leader and coauthors, as necessary. The next step is internal review by CUPN staff, which will usually consist of the CUPN program manager (who serves as the peer review manager) and at least two of the CUPN scientists. The draft report is then submitted for technical editing, prior to any external peer review or management review (by appropriate park staff). After all reviewer questions are satisfactorily addressed, the document is returned to the editing team for final format editing. Finally, the approved report is submitted for publication.

The trip reports will be informal (unpublished) communications. The baseline status report, protocol evaluation, and trend analysis reports will be published in the Natural Resource Reports series (<https://www.nps.gov/im/publication-series.htm>) following the appropriate level of peer review. These reports as well as the resource briefs will be posted to the National Park Service's (NPS) Integrated Resource Management Applications (IRMA) Data Store.

Identifying Stakeholders

The primary stakeholders in our cave bats monitoring efforts are the NPS management staff at CUPN parks. Potential stakeholders include state and federal wildlife agencies, universities, nongovernmental organizations, and the general public. Natural resource personnel conducting (or considering conducting) monitoring of cave-roosting bats should also be interested in project results.

Distributing Reports

Trip reports will be sent to appropriate resources management staff and superintendents at sampled parks, as detailed in CUPN's list of natural resource management contacts and superintendents, keeping in mind that some superintendents do not wish to be included in such communications. Following publication, digital copies (or hyperlinks) of all other reports will be forwarded to appropriate natural resource staff and superintendents at sampled parks as listed in CUPN's list of natural resource management contacts and superintendents. Additionally, copies of each report will be archived according to current NPS guidelines and a hardcopy will be kept on file in the project leader's office at Mammoth Cave National Park in Mammoth Cave, Kentucky. Reports generated will be available to all interested parties upon request.

All data collected by the Cumberland Piedmont Network is, of course, public property and is subject to requests under the Freedom of Information Act. Reports containing non-sensitive data will be disseminated through the CUPN website and IRMA.