PENNSYLVANIA PROTOCOL FOR ASSESSING POTENTIAL HIBERNACULA[1]

Overview

This protocol was developed in accordance with a Memorandum of Agreement between the U.S. Fish and Wildlife Service Pennsylvania Field Office (USFWS-PAFO), Office of Surface Mining Reclamation and Enforcement Pittsburgh Field Division, and the Pennsylvania Department of Environmental Protection Bureau of Abandoned Mine Land Reclamation for activities associated with abandoned mine projects authorized under Title IV of the Surface Mining Control and Reclamation Act of 1977. Appendix A outlines a protocol to determine presence or probable absence of bat species at potential hibernacula (*e.g.*, caves, mines); it does not provide sufficient data to determine population size or structure, and is not intended to infer absence at known hibernacula. Following these guidelines will standardize procedures for bat surveys at caves and mine portals in Pennsylvania. Although the capture of an endangered or threatened bat confirms its presence, failure to catch an endangered or threatened species does not absolutely confirm its absence. *Note*: Surveyors must be a qualified bat surveyor and obtain a valid permit from the Pennsylvania Game Commission (PGC) before proceeding with surveys.

Assessing Suitability of Caves and/or Abandoned Mines for Bat Surveys

In general, a cave and/or mine opening can be dismissed from bat surveys under the following circumstances:

- A gas meter detects low oxygen or harmful gases being emitted.
- There is only one horizontal opening less than 6 inches in diameter and no or very little airflow is detected. Airflow is best detected with a changing barometric pressure.
- The opening is a vertical shaft less than 1 foot in diameter.
- The passage continues less than 50 feet and terminates with a solid wall prohibiting deeper bat access (this assumes the passage is safe enough to enter and has been thoroughly inspected).
- The mine is prone to flooding, collapsed shut and completely sealed, or otherwise inaccessible to bats.
- It is a “new” opening, which has occurred recently (less than 1 year old) due to subsidence.

Additional notes: Bats can access mines via old open buildings (e.g., fan house). Foliage and other vegetation in front of mine openings do not stop use by bats. They can navigate through foliage. Collapsed entrances with multiple crevices between boulders are accessible to bats and should be surveyed. Collapses completely sealed with fine soil are inaccessible to bats.

Survey Dates, Times, and Weather Criteria

- Surveys will be conducted between September 15 and October 31.
- Surveys will be conducted a minimum of one night per week for 6 weeks. Each night of sampling should be separated by at least one week of the survey window if weather conditions allow it. However, multiple nights of sampling per week can be accepted if

[1] Note, additional survey effort may be necessary in cases where the survey is not being conducted solely to determine if abandoned mine openings can be closed. Please contact USFWS-PAFO and PGC.

forecasted weather conditions require it and the modification is approved by the USFWS-PAFO and PGC. Please note the following exceptions:

  - If the survey is being conducted solely for projects covered by the Memorandum of Agreement described in the OVERVIEW above, surveys may be suspended if a federally or State listed species is captured (see Appendix B, *Survey Results and Remedial Actions*).
  - If the survey is being conducted for projects not covered by the Memorandum of Agreement described in the OVERVIEW above, the capture of an Indiana bat and/or northern long-eared bat during a survey requires that the project proponent complete three additional nights of sampling per week for three consecutive weeks (9 additional nights) in order to determine the relative significance of the hibernaculum. If the survey season ends prior to the completion of the required additional sampling, then sampling must be completed the following year.

- Surveys (using one of the Detection Methods outlined below) will be implemented at each cave and/or mine opening and will start ½ hour before sunset and continue for a minimum of 5 hours. A minimum of 30 hours of sampling effort should take place for a survey to be approved.
- If captures increase during the survey or 6 or more bats (of any species) are captured during the last hour of monitoring, the survey effort must continue until activity declines and fewer than 6 bats are captured per hour.
- During each survey period, weather must provide for:
  - Temperatures ≥50ºF (10ºC) for first 2 hours of survey and ≥40ºF (4.4ºC) for the duration of the survey;
  - Precipitation (including rain and/or fog) not lasting for more than 30 minutes and not continuing intermittently during the survey period;
  - At least 3 hours free of high wind (based on best professional judgement).
- Any noise and the shining of lights deter bat use and will be kept to a minimum within 50 meters of opening. Processing of bats should occur > 50 meters from opening. Smoking, use of radios, campfires, running vehicles, punk sticks, citronella candles and other disturbances will not be permitted within 100 meters of site during surveys.

- Before conducting surveys, local residents and/or law enforcement agencies should be informed of the scheduled nighttime activities.

Survey Methods[2]

All mine openings that are potentially inter-connected should be surveyed on the same night. In cases where one team of surveyors cannot feasibly survey all entrances in one night, a modified method could also be used. This method should only be used in situations where the entrances are known to be interconnected. In this modified method, half of the interconnected entrances are surveyed on the first night, and the other half of the entrances are completely blocked using bird-exclusion netting, plastic sheets or other impervious material. On the second night, survey

[2] *No equipment, litter, or other debris will be left unattended at site that could result in the capture or entanglement of any animals. Any equipment stored at site between survey sessions will be clearly labeled with contact information.*

efforts are reversed. Any materials used to block the entrances must be removed each night immediately after conducting the survey. No entrances should be left blocked over-night. Plastics or other materials used to block the entrances should be removed each night immediately after conducting the survey. Entrances that are not connected (*e.g.*, as determined by existing mine maps) do not have to be surveyed simultaneously.

Detection Method 1: *Harp Trap w/Bat Detector*. Deployment of harp traps is the preferred detection method and will be used in all cases except where it is too dangerous to approach cave and/or mine openings (see Detection Method 2 below). Place harp traps in front of openings and block surrounding space with plastic sheeting or bird netting. Traps should be tended every 30 minutes. If a second trap is used at the same opening it should be placed perpendicular to the opening and first trap. In addition to harp traps, an ultrasonic bat detector should be used to monitor bat activity to assess the general effectiveness of the harp trap placement. Detectors should be pointed toward cave and/or mine openings, approximately 1.5 to 4.5 meters from the entrance, to detect bats entering and exiting the opening. Bat passes should be monitored and tallied on an hourly basis throughout the entire survey period (≥ 5 hours).

Detection Method 2: *Visual Survey w/Bat Detector*. Detection Method 1 is the preferred method and will be used in all cases except where it is too dangerous to approach cave and/or mine openings. In these situations, night vision/infrared/thermal-imaging recording devices can be used to monitor and record bat activity in conjunction with an ultrasonic bat detector. Bat activity can be quantified by counting bat passes from recorded imaging. In addition to visual assessments, an ultrasonic bat detector should be used to monitor bat activity. Detectors should be pointed toward cave and/or mine openings, as close as safely possible from the entrance, to detect bats entering and exiting the opening. Bat passes should be monitored and tallied on an hourly basis throughout the entire survey period (≥ 5 hours).

Reporting

Reporting format will be: start and end time for each 1-hour interval and bat passes for that hour. Reports should include an executive summary, Phase I Habitat Assessment (see Sample Data Sheet in Appendix H in the USFWS *RANGE-WIDE INDIANA BAT SURVEY GUIDELINES*; available here: http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html), maps illustrating cave and/or mine opening locations, and the PGC *Contractor Bat Reporting Spreadsheet* (available here: http://www.pgc.pa.gov/Wildlife/WildlifeSpecies/Bats/Pages/default.aspx) with all applicable fields entered. Reports should be submitted to the following:

Pennsylvania Game Commission
Bureau of Wildlife Management
ATTN: Greg Turner
2001 Elmerton Avenue
Harrisburg, PA 17710
grturner@pa.gov

Pennsylvania Game Commission
Bureau of Habitat Management
ATTN: Tracey Librandi Mumma
2001 Elmerton Avenue
Harrisburg, PA 17710
tlibrandi@pa.gov

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Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, PA 16801