



DATE: April 27, 2023
SUBJECT: Surveys of Summer Bat Roosts
TO: Cooperators in the Pennsylvania Appalachian Bat Count (ABC)
FROM: Amber Nolder, ABC Coordinator

Thank you for your participation in the Appalachian Bat Count! You play a valuable role in assessing the status of Pennsylvania's bats. As you likely know, white-nose syndrome (WNS) has taken a heavy toll on hibernating bat populations. The little brown bat, a once common species, suffered such high levels of mortality that it is now endangered in Pennsylvania and under review by the U.S. Fish and Wildlife Service to determine whether it will be listed as federally endangered. This species, along with the big brown bat, are the species you are most likely to find in human structures and artificial roosts like bat boxes. Your contribution of data on summer bat colonies helps the Game Commission monitor population trends of these important mammals.

Although little brown bats are not "out of the woods" yet, some surviving populations appear to be growing. The graph at the end of this letter shows the highest number of bats counted at each of our five largest little brown bat maternity colonies over the past five years. Although numbers fluctuate from year to year, which may be due to observer error, survey timing, or other factors, the overall trend is toward higher numbers of bats at these maternity sites. This trend, along with increasing winter counts at nearby hibernation sites, is a hopeful sign of resilient remnant populations. However, we must remain vigilant in our monitoring and conservation efforts, as bats continue to face WNS infection as well as many other threats. For current information on WNS, check the U.S. Fish and Wildlife Service website at: <https://www.whitenosesyndrome.org/>.

Our priorities for the Appalachian Bat Count program this summer include a continuing focus on verifying or determining bat species at known roosts and locating new roosts of surviving little brown bat populations. We have a limited supply of aluminum shell boxes that we can provide to ABC volunteers, with priority given to active little brown bat colonies. If you need a bat box for a colony that you monitor, please contact the Game Commission directly. In addition, the Game Commission and the Department of Conservation of Natural Resources (DCNR) are partnering to install artificial bat roosts on state lands as part of a Habitat Conservation Plan (HCP). These roosts are being entered into our Appalachian Bat database and will be monitored on a regular basis.

Speaking of the database, we are now in the third year of using our online data entry portal. With a Keystone ID, a login credential used for multiple online services from the Commonwealth of Pennsylvania, you can gain access to the Appalachian Bat database to view your bat colony site(s), enter count data, and see results of your previous counts. Approximately half of our active surveyors have used Keystone ID to access the database. The data entry process has been greatly improved, thanks to your participation! We encourage use of the online data entry portal for submitting count data, but we understand that this method is not for everyone. If you choose to return completed paper survey forms by mail, we will continue to send printed ABC forms to you.

If you have not yet used the Appalachian Bat data portal and would like to give it a try, please see the attached instruction sheet for information on gaining access and entering your survey results. Call or email Amber Nolder (contact information below) if you have questions about the online data entry process, or if you notice any missing or incorrect information on your survey form. You may write corrections directly on your survey form if you are returning it by mail. Once you begin entering data via the online portal, future communications regarding the Appalachian Bat Count will be sent via email, so we recommend that you contact us to make sure we have the correct email address.

More information about bats, including bat box plans and research reports, as well as the full protocol and data forms for the Appalachian Bat Count, can be found on the Game Commission website, <http://www.pgc.pa.gov> (search “Appalachian Bat”). If you have a new site to register, please complete the Site and Landowner Data Form found in the protocol packet.

Here are some reminders for conducting your counts:

- Surveys should be conducted on nights with good weather (temperature above 60°F, little/no rain or wind).
- Conduct at least one survey between **May 15 – June 15** and at least one survey between **July 4 – July 20 (preferred), July 31** at the latest). This will enable us to get an estimate of colony size before and after pups are flying and before colonies begin to disperse.
- COVID-19 related restrictions for bat roost surveys have been removed, but please continue to limit disturbance of the colony at dusk or prior to an emergence count. Keep noise to a minimum and wait until bats have emerged before shining lights on or into the roost. Wait at least 10 minutes after bats have stopped emerging to approach and inspect the roost for remaining bats.

If you are unable to use the online data entry portal, please return completed survey forms using the included envelope and mail to:

ATTN: Appalachian Bat Count
Bureau of Wildlife Management
PA Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

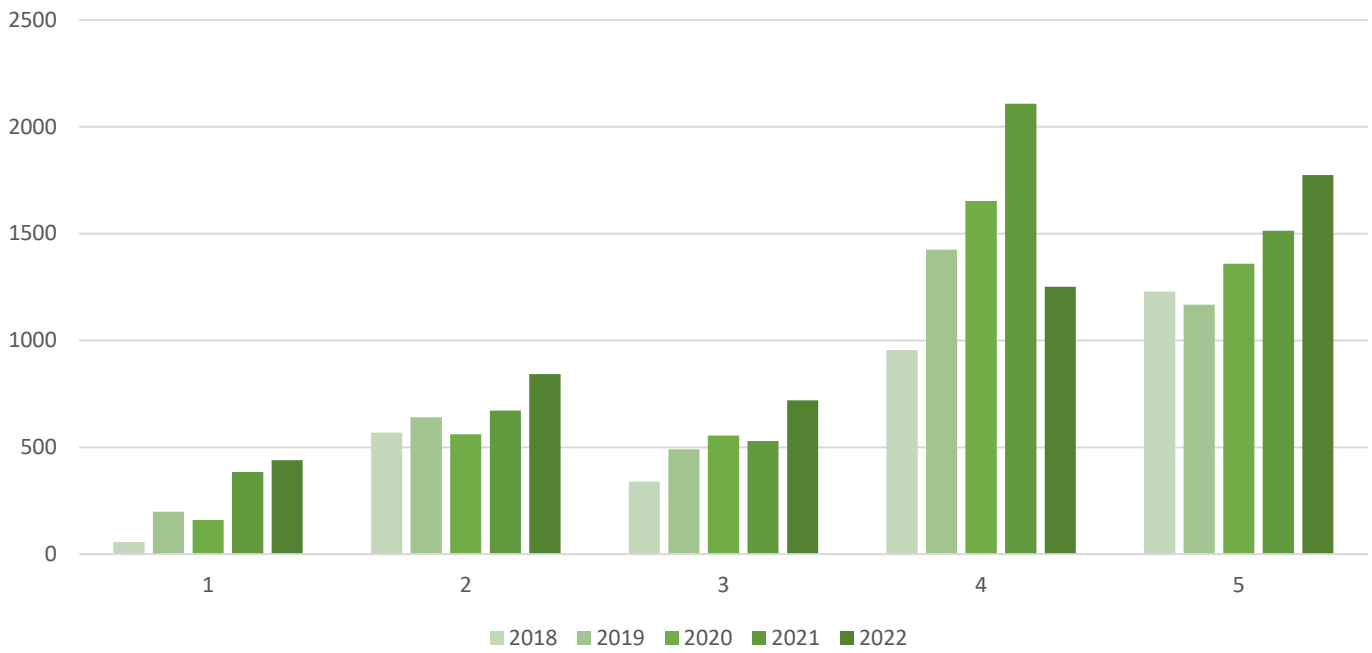
Please submit all survey data by **August 31, 2023**. Thanks again for being a friend to the bats and volunteering with this project! We appreciate your dedication to this effort. Collection of data on such a large number of bat colonies would not be possible without you!

If you need to contact us with any questions or comments, we can be reached at:

Phone: (717) 787-4250, Extension 73410

Email: batcomments@pa.gov

High Counts of PA's Five Largest Little Brown Bat Summer Colonies



Commonwealth of Pennsylvania
Pennsylvania Game Commission



Appalachian Bat Count

Summer Bat Roost Registration Forms

Please Use to Register New Bat Roosts

For Previously Registered Roosts Use

Database Printout to Record Changes.



Thank you for your participation.

Pennsylvania Appalachian Bat Count

Summer Maternity Roost Monitoring - Emergence Counts

INTRODUCTION

The methods used in this survey will be used to: Identify and evaluate the approximate size of bat maternity roosts by conducting general emergence counts; evaluate emergence variances between bat pup pre-volant and post-volant counts using more extensive count surveys at some locations; compare the number of reproductive versus non-reproductive females and evaluate their general health by capturing animals; and provide opportunities for collecting biological samples at maternity roosts as needed by WNS researchers.

The Goals of the survey are to: Gather base line information on summer colonies; evaluate the impact of WNS on summer colonies; and correlate long term trends with the spread of WNS.

This survey is primarily geared toward little brown bats (*Myotis lucifugus*) and big brown bats (*Eptesicus fuscus*), the two species most often found using buildings and bat boxes during the summer. While both of these species have been impacted by WNS in the northeast US, little brown bats declines have been much more severe.

COMMITMENT LEVEL

Protocols will vary depending on the surveyor's commitment and expertise. It is hoped that surveyors will commit to conducting surveys over the next several years or longer once you find out how enjoyable bat counting is. The initial commitment is a volunteer or researcher who locates at least one roost and conducts a minimum of one emergence count of that site a year. Locating and conducting a base line emergence count is one of the most important aspects of this study. You may be contacted by researchers to use your site in a more extensive study. Once you have participated with an initial commitment and learn how much fun counting bats is, you may want to increase your effort. Listed below are different levels that can be used in this study.

LEVEL 1- Find and conduct at least one emergence count of a roost **between May 15th and August 1st**. Additional roosts can also be located and additional counts conducted. Base line information on many roosts is extremely valuable. If conducting one count try to conduct in **mid-July** (late lactation for females) when the colony should be most stable.

LEVEL 2- Find and conduct at least one (preferably 2) or more emergence counts of a roost before most pups begin flying (pre-volant).

Pre-Volant: Conduct between Last Week in May and 3rd Week in June.

And at least one (preferably 2) or more emergence counts after most pups begin flying (post-volant). Again, target mid-July.

Post-Volant: Conduct between July 4th and July 20th (July 31st the latest).

LEVEL 3- conduct at least one emergence count of a roost at least every 2 weeks (preferably every week) starting the:

Last Week of May through July 31

Researchers use Level 3's high commitment because some roosts begin to disperse soon after pups begin flying. Maternity roosts can be very dynamic and it is often difficult to pick out the best dates for sampling the pre-volant and post-volant periods. For intensive research purposes, it is also recommended that you conduct at least 2 or more counts on consecutive evenings to obtain error parameters.

Pre-volant				2 Week Peak Volant Period	Post-volant				
4	3	2	1	0	0	1	2	3	4
Survey						Survey			

General guidance for conducting emergence surveys for states planning to initiate emergence surveys.

From VA north the 2-week peak Volant period is the ~ last week of June and 1st week of July.

Weeks 1, 2, and 3 are preferred weeks for emergence counts.

Another aspect of this study involves researchers with the appropriate state and federal permits. You may be contacted for permission to use your site in these studies. Proposed work includes netting during the pre-volant period to capture females and evaluate reproductive condition, gathering weight data, banding, and collecting samples for lab studies such as skin and blood samples.

Continued...

Pennsylvania Appalachian Bat Count Summer Maternity Roost Monitoring - Emergence Counts

PROTOCOL

Finding colonies of bats: Country churches and other old structures provide the best opportunities for finding bat roosts. The largest colonies are usually located along major rivers or other large bodies of water and other colonies can be found most everywhere near forests and water. Buildings such as old houses, country churches, and barns are likely candidates. Usually you can just ask some local people about buildings with bats. Generally bat roosts are locally known. If you're lucky, someone will know of artificial roosts created just for bats. The bat species will usually be little brown (*Myotis lucifugus*) and big brown (*Eptesicus fuscus*) bats where females congregate in spring through summer to give birth and rear their young.

Data Forms- The information you collect will be maintained in a database used to research WNS. A database provides uniform formatting and storage of your data so it can be compared with other surveys. This requires the use of standardized reporting forms. Please use them.

1. Surveyor Information Data Form: This is used to register you within the program. Please print legibly so that your contact information is entered correctly. You only need to complete this form once, unless changes are needed.
2. Site and Landowner Data Form: It's important to make contact with the landowners and get their approval. Location information is important. Please record the state and county. If you have a GPS unit, please record the latitude, longitude and datum the unit is set on. If you do not know the datum, write unknown. If you have no access to a GPS, please copy a map with the site circled and return with the form so a general location can be recorded. Otherwise, provide general directions from a town, major road intersection, or other recognizable feature on a map. Record the species using the roost if known, otherwise circle unknown. The last portion of the form collects the landowner's contact information. You only need to complete this form once unless addresses, or other information changes.
3. Emergence Count Data Form: Use this form for recording the actual bat count. Be sure to indicate the site name and you as the surveyor. Record the date, sky and wind codes (codes are on bottom of form), start temperature, start & end time, total bats counted and technique used, which will usually be visual. Please make a note of other surveyors in comments. Also note any unusual observations. The form page has space for 2 counts. If you conduct more than 2, please copy more forms.

The Survey- It's best to do some scouting beforehand to determine where bats are exiting. You may find that you need help in covering all the exits (front and back of a structure). Please try to survey when starting temperatures are above 60°F and wind and sky codes are 3 or less. Bring a thermometer, paper and pencil and the emergence form. Arrive ½ hour before sunset. Locate where the bats are exiting the structure and count them as they exit. Some may re-enter, especially when there are pups inside. Try to keep track of this. If you find that you have a mega-colony that numbers in the thousands, you may need to tally them by the 10's as they exit. Position both yourself and helpers for easy viewing of bats exiting. It is best to be in position to have the bats silhouetted against the sky for easier viewing. When more than one surveyor is needed, it's a good idea to turn the count into an evening social, with dinner or an ice cream parlor visit afterwards. Please remember to ask permission of the landowner and enjoy the experience.

Roosting Estimate- If time does not permit an emergence count and the roosting bats can be counted, a roost estimate may be recorded in comments. This is most useful for surveying multiple bat boxes (artificial roosts) where a light can be shined up into the bat box and roosting bats counted. This can also be used if you have access to an attic with roosting bats. **Record the total bats for the count, record "other" in technique and note roost estimate and counting method in comments.** This type of count is generally a minimal estimate since many bats may not be seen but it does record a roost.

Upon the completion of any re-survey, landowner and surveyor information should be checked and updated if necessary. Thank you again for participating in this important survey of your wildlife resource.

Return Survey Data by **AUGUST 31** to: ATTN: Amber Nolder, Bureau of Wildlife Management, PA Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797

Little Browns



Note the small nose and short, uniformly dark brown fur on the back.

Big Browns



Note the larger nose and long, silky fur of big brown bats.



Guano comparison: Little brown (left) vs. Big brown (right)

Pennsylvania Appalachian Bat Count
Summer Maternity Roost Monitoring-SITE and LANDOWNER Data Form

Please complete for a new site or landowner

Sitename or Number: _____ **Date Found:** _____ **County:** _____

LAT: _____ **LON:** _____ **DATUM :** _____
(or send a map)

Lat/Lon Precision: GPS – From Map – County Resolution – Not Mapped – Other (specify) _____ aaaaaa
(Ugrgevl- “GPS” if GPS unit used; “From Map” if plotted from map; “County Resolution” if coordinates are only County specific)

Roost Structure is: barn – church – occupied house – unoccupied house – utility building – bat box – bat condo – bridge – tree –
cave – mine – unknown – other structure (describe): _____

Primary Species within Roost: _____ or Unknown
(list only 1 if known., and make comments on others)

COMMENTS (include directions to site, where bats are exiting, how many surveyors needed at site, other species roosting,
landowner’s plans for the bat colony, history of site regarding bats, etc. attach more sheets if needed):

LANDOWNER INFORMATION (CONFIDENTIAL):

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____

EMAIL: _____

RESPONSIBLE SURVEYOR NAME: _____

Pennsylvania Appalachian Bat Count
Summer Maternity Roost Monitoring-**SURVEYOR INFORMATION** Data Form

Please complete for new surveyor

SURVEYOR INFORMATION (CONFIDENTIAL):

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____

EMAIL: _____

SURVEYOR TYPE (check what best describes you):

Landowner -You are surveying a roost on your own property (use this even if also surveying other sites you do not own).

Volunteer -You are surveying as a volunteer and have limited expertise in both bat identification and ecology.

Student -You are a student studying bats with a basic expertise in both bat identification and ecology.

Researcher -You are actively involved in bat research on an academic and/or professional level.

COMMENTS: (Bat experience etc.)

Pennsylvania Appalachian Bat Count
 Summer Maternity Roost Monitoring-**EMERGENCE COUNT** Data Form

SITE NAME or No.: _____ **SURVEYOR:** _____
 (a SITE/LANDOWNER data form needs to be completed at least once) (Lead Surveyor who is responsible for reporting and has completed a SURVEYOR Info data form)

DATE	SKY CODE NO	WIND CODE NO	START TEMP °F	START TIME (24 hr)	END TIME (24 hr)	TOTAL BATS COUNTED	TECHNIQUE USED Emergence count/visual; flashlight/daytime; video; visual and video; other - comments

Other Surveyors:	
Other COMMENTS: Note breakdown of total by species, emerged/in box, adult/pup, structure (if applicable)	

SITE NAME or No.: _____ **SURVEYOR:** _____
 (a SITE/LANDOWNER data form needs to be completed at least once) (Lead Surveyor who is responsible for reporting and has completed a SURVEYOR Info data form)

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Other Surveyors:	
Other COMMENTS: Note breakdown of total by species, emerged/in box, adult/pup, structure (if applicable)	

SKY		WIND		
<u>CODE</u>	DESCRIPTION	<u>CODE</u>	DESCRIPTION	~Speed
1	Clear-Clear to a few clouds	1	Calm-Leaves Still	0 MPH
2	Partly Cloudy-Clouds but variable sky conditions	2	Slight Breeze-Leaves slightly Rustling	1-7 MPH
3	Cloudy-Mostly cloudy or overcast	3	Gentle Breeze-Leaves and twigs in motion	8-12 MPH
4	Drizzle-Light intermittent rain	4	Mod. Breeze-Small branches begin to move	13-18 MPH
5	Showers-Steady soaking rain	5	Windy-Small Trees or more in canopy sway	19-24+ MPH
6	Thunderstorms-Rain with thunderstorms	6	Not Recorded-	Not Recorded
7	Not Recorded-Not Recorded			

Sky and wind codes of 1 – 3 are best. Code of 4 is marginal. Avoid surveying if code is higher than 4.