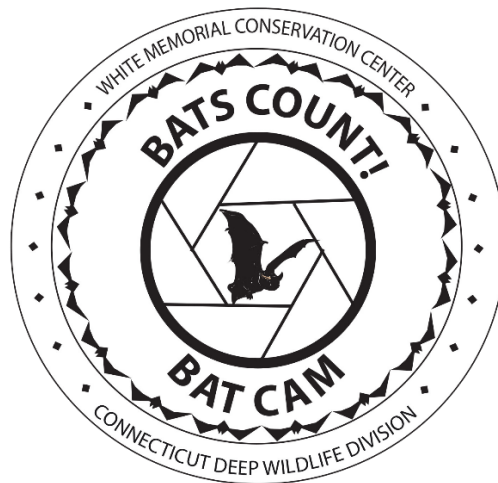# Bats Count! Bat Cam

User's Guide

2023 Edition

Introduction

Through a joint commitment to bat conservation in Connecticut and beyond, CT DEEP Wildlife Division and The White Memorial Foundation and Conservation Center (WMCC) have partnered to provide a new and exciting opportunity for all. **Bats Count!** begins with launching a live stream of big brown bats.

WMCC is a privately-owned wildlife refuge in northwest Connecticut and conserves 4000-acres. The Green Barn hosts a Big Brown Bat *(Eptesicus fuscus)* maternity roost with approximately 300 individuals. WMCC is open 24 hours so visitors can view the bats emerging from the Green Barn at dusk and as they return throughout the night. The webcams introduce a new and exciting element for the public to experience by providing them with the chance to observe the bats throughout the day and as they take flight each evening whether they are at the Green Barn or not.

Bats Count! Bat Cam provides a high resolution and dynamic live stream of a big brown bat maternity colony in Litchfield, CT. The stream features four Pan-Tilt-Zoom cameras strategically placed to capture bat activity throughout the day, providing opportunities for the public to appreciate these cryptic and often misunderstood animals. Paired with environmental dataloggers, these cameras will also provide a unique opportunity to identify relationships between timing of life history events and colony behavior relative to the environment, and how this may change under shifting climate conditions. We can more closely characterize fine scale demographic patterns and may more readily detect impacts on local Big Brown Bat populations. The widespread access to these data will provide educational resources that can be adapted for a variety of courses and age levels.

Big Brown Bats (*Eptesicus fuscus*)

The big brown bat is the most common species of bat in Connecticut following dramatic declines of other previously common species, such as the little brown bat, due to white-nose syndrome. Although big brown bats are considered common, they are listed as a species of Greatest Conservation Need in Connecticut's Wildlife Action Plan and remain a focus of monitoring and conservation planning. To learn more about the big brown bat and Connecticut's other bat species please visit CT DEEP's big brown bat fact sheet.

The Green Barn

The Green Barn is an English bank barn with an attached wagon shed. The foundation consists of load-bearing Masonry and the framing is hand-hewn post and beam. Materials include brick, cut stone, vertical siding, and asphalt shingles. Historically, the barn was used for dairy agriculture and was built before 1859.
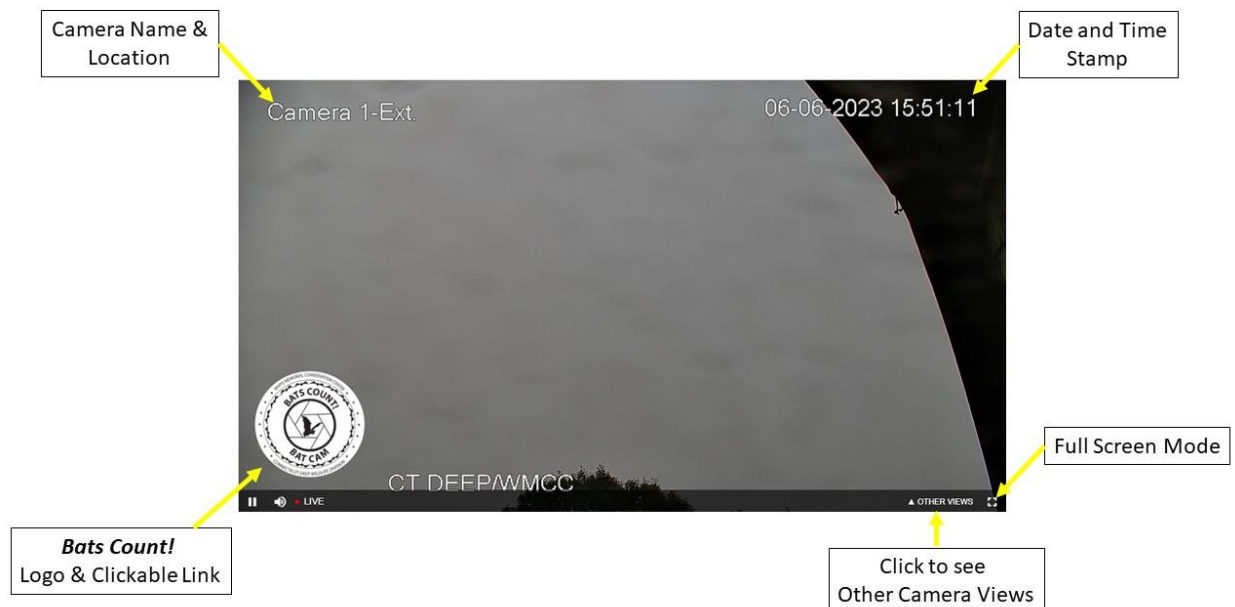
The Cameras

A total of four cameras have been installed, one on the exterior and three inside the barn. Each camera provides a unique vantage point for observing the bats. The exterior camera is oriented to view the bats as they exit and enter the barn each night. The interior cameras will be positioned regularly to view roosting locations and behaviors throughout the day and night. The cameras tolerate extreme temperatures and environmental conditions. They record clear color images in ultra-low light conditions and a balanced light scene in dark environments.

How to view the live stream

The live stream can be viewed at CT DEEP and WMCC's websites. We plan to conduct Facebook Live events and evaluating other social media options.

The upper left-hand corner of the live stream denotes the name and location of each camera. The upper right-hand corner is the date and time stamps, this will be important when contributing data to the project. The bottom right-hand corner is a feature for viewing the live stream in full screen mode. To the left and next to that feature is the Other Camera Views, by clicking it a series of other views can be selected by clicking on each. The **Bats Count!** logo is a clickable link that directs viewers to other important information about the project including the data forms that you fill out to contribute your observations.

How to Collect Bat Emergence Count Data

Monitoring the activity of bat maternity colonies provides important information to the CT DEEP and WMCC about how bats are doing throughout Connecticut during their summer breeding season. Once you realize how fun it is to count bats, we hope that you will continue to participate again.

The datasheet can be filled in here: https://forms.gle/YHCzuMaRQwYn8BEYA

Datasheets

Please fill out the datasheet provided for each survey that you conduct. Remember that zeros are important to record. Bat colonies are very dynamic and activity patterns will change with temperature and other factors. In addition to counting bats, please fill out the entire datasheet so that your volunteer hours can be counted toward meeting additional grant opportunities.

Please be sure to collect the following data:

1. **The Date** you observed the bat emergence.
2. **Start Time:** the time you started watching using the timestamp on the live stream.
3. **End Time:** the time you stopped watching using the timestamp on the live stream.
4. **Exit Count:** the number of bats you counted exiting the barn.
5. **Re-enter Count:** the number of bats you counted entering the barn.
6. **Temperature**
7. **Cloud cover:** Was the sky clear, partly cloudy, or mostly cloudy/overcast?
8. **Special observations:** please include any additional information that you observed that you think could be helpful.

Emergence Counts

Achieving the most accurate count requires that you start your count ½ hour before sunset (Appendices) and to have the Bat Emergence Count Datasheet open. Watch carefully because the bats will exit fast. It may be difficult but try not to count any individual twice! Some bats re-enter the roost, especially when there are pups inside, so do your best to not double count. Record the total number of bats counted on the datasheet. You will receive a confirmation email that your data was recorded in the database.

Thank you for your efforts and interest in bat conservation!

Appendices.

Calendar of sunset times for Litchfield, CT USA (EST)

June 2023

Litchfield, Connecticut, USA (EST)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Sunrise: 5:21 AM Sunset: 8:20 PM	2 Sunrise: 5:20 AM Sunset: 8:21 PM	3 Sunrise: 5:20 AM Sunset: 8:22 PM
4 Sunrise: 5:20 AM Sunset: 8:22 PM	5 Sunrise: 5:19 AM Sunset: 8:23 PM	6 Sunrise: 5:19 AM Sunset: 8:24 PM	7 Sunrise: 5:19 AM Sunset: 8:24 PM	8 Sunrise: 5:18 AM Sunset: 8:25 PM	9 Sunrise: 5:18 AM Sunset: 8:26 PM	10 Sunrise: 5:18 AM Sunset: 8:26 PM
11 Sunrise: 5:18 AM Sunset: 8:27 PM	12 Sunrise: 5:18 AM Sunset: 8:27 PM	13 Sunrise: 5:18 AM Sunset: 8:28 PM	14 Sunrise: 5:17 AM Sunset: 8:28 PM	15 Sunrise: 5:17 AM Sunset: 8:29 PM	16 Sunrise: 5:17 AM Sunset: 8:29 PM	17 Sunrise: 5:18 AM Sunset: 8:30 PM
18 Sunrise: 5:18 AM Sunset: 8:30 PM	19 Sunrise: 5:18 AM Sunset: 8:30 PM	20 Sunrise: 5:18 AM Sunset: 8:31 PM	21 Sunrise: 5:18 AM Sunset: 8:31 PM	22 Sunrise: 5:18 AM Sunset: 8:31 PM	23 Sunrise: 5:19 AM Sunset: 8:31 PM	24 Sunrise: 5:19 AM Sunset: 8:31 PM
25 Sunrise: 5:19 AM Sunset: 8:31 PM	26 Sunrise: 5:19 AM Sunset: 8:32 PM	27 Sunrise: 5:20 AM Sunset: 8:32 PM	28 Sunrise: 5:20 AM Sunset: 8:32 PM	29 Sunrise: 5:21 AM Sunset: 8:32 PM	30 Sunrise: 5:21 AM Sunset: 8:32 PM	

July 2023

Litchfield, Connecticut, USA (EST)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	**Saturday**
						1 Sunrise: 5:22 AM Sunset: 8:31 PM
2 Sunrise: 5:22 AM Sunset: 8:31 PM	3 Sunrise: 5:23 AM Sunset: 8:31 PM	4 Sunrise: 5:23 AM Sunset: 8:31 PM	5 Sunrise: 5:24 AM Sunset: 8:31 PM	6 Sunrise: 5:24 AM Sunset: 8:31 PM	7 Sunrise: 5:25 AM Sunset: 8:30 PM	8 Sunrise: 5:26 AM Sunset: 8:30 PM
9 Sunrise: 5:26 AM Sunset: 8:30 PM	10 Sunrise: 5:27 AM Sunset: 8:29 PM	11 Sunrise: 5:28 AM Sunset: 8:29 PM	12 Sunrise: 5:28 AM Sunset: 8:28 PM	13 Sunrise: 5:29 AM Sunset: 8:28 PM	14 Sunrise: 5:30 AM Sunset: 8:27 PM	15 Sunrise: 5:31 AM Sunset: 8:27 PM
16 Sunrise: 5:32 AM Sunset: 8:26 PM	17 Sunrise: 5:32 AM Sunset: 8:25 PM	18 Sunrise: 5:33 AM Sunset: 8:25 PM	19 Sunrise: 5:34 AM Sunset: 8:24 PM	20 Sunrise: 5:35 AM Sunset: 8:23 PM	21 Sunrise: 5:36 AM Sunset: 8:22 PM	22 Sunrise: 5:37 AM Sunset: 8:22 PM
23 Sunrise: 5:38 AM Sunset: 8:21 PM	24 Sunrise: 5:39 AM Sunset: 8:20 PM	25 Sunrise: 5:40 AM Sunset: 8:19 PM	26 Sunrise: 5:40 AM Sunset: 8:18 PM	27 Sunrise: 5:41 AM Sunset: 8:17 PM	28 Sunrise: 5:42 AM Sunset: 8:16 PM	29 Sunrise: 5:43 AM Sunset: 8:15 PM
30 Sunrise: 5:44 AM Sunset: 8:14 PM	31 Sunrise: 5:45 AM Sunset: 8:13 PM					

August 2023

Litchfield, Connecticut, USA (EST)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 Sunrise: 5:46 AM Sunset: 8:12 PM	2 Sunrise: 5:47 AM Sunset: 8:11 PM	3 Sunrise: 5:48 AM Sunset: 8:10 PM	4 Sunrise: 5:49 AM Sunset: 8:09 PM	5 Sunrise: 5:50 AM Sunset: 8:07 PM
6 Sunrise: 5:51 AM Sunset: 8:06 PM	7 Sunrise: 5:52 AM Sunset: 8:05 PM	8 Sunrise: 5:53 AM Sunset: 8:04 PM	9 Sunrise: 5:54 AM Sunset: 8:02 PM	10 Sunrise: 5:55 AM Sunset: 8:01 PM	11 Sunrise: 5:56 AM Sunset: 8:00 PM	12 Sunrise: 5:57 AM Sunset: 7:58 PM
13 Sunrise: 5:58 AM Sunset: 7:57 PM	14 Sunrise: 5:59 AM Sunset: 7:56 PM	15 Sunrise: 6:00 AM Sunset: 7:54 PM	16 Sunrise: 6:02 AM Sunset: 7:53 PM	17 Sunrise: 6:03 AM Sunset: 7:51 PM	18 Sunrise: 6:04 AM Sunset: 7:50 PM	19 Sunrise: 6:05 AM Sunset: 7:49 PM
20 Sunrise: 6:06 AM Sunset: 7:47 PM	21 Sunrise: 6:07 AM Sunset: 7:46 PM	22 Sunrise: 6:08 AM Sunset: 7:44 PM	23 Sunrise: 6:09 AM Sunset: 7:42 PM	24 Sunrise: 6:10 AM Sunset: 7:41 PM	25 Sunrise: 6:11 AM Sunset: 7:39 PM	26 Sunrise: 6:12 AM Sunset: 7:38 PM
27 Sunrise: 6:13 AM Sunset: 7:36 PM	28 Sunrise: 6:14 AM Sunset: 7:35 PM	29 Sunrise: 6:15 AM Sunset: 7:33 PM	30 Sunrise: 6:16 AM Sunset: 7:31 PM	31 Sunrise: 6:17 AM Sunset: 7:30 PM		

September 2023

Litchfield, Connecticut, USA (EST)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Sunrise: 6:18 AM Sunset: 7:28 PM	2 Sunrise: 6:19 AM Sunset: 7:26 PM
3 Sunrise: 6:20 AM Sunset: 7:25 PM	4 Sunrise: 6:21 AM Sunset: 7:23 PM	5 Sunrise: 6:22 AM Sunset: 7:21 PM	6 Sunrise: 6:23 AM Sunset: 7:20 PM	7 Sunrise: 6:24 AM Sunset: 7:18 PM	8 Sunrise: 6:25 AM Sunset: 7:16 PM	9 Sunrise: 6:26 AM Sunset: 7:15 PM
10 Sunrise: 6:27 AM Sunset: 7:13 PM	11 Sunrise: 6:28 AM Sunset: 7:11 PM	12 Sunrise: 6:29 AM Sunset: 7:09 PM	13 Sunrise: 6:30 AM Sunset: 7:08 PM	14 Sunrise: 6:31 AM Sunset: 7:06 PM	15 Sunrise: 6:32 AM Sunset: 7:04 PM	16 Sunrise: 6:33 AM Sunset: 7:02 PM
17 Sunrise: 6:34 AM Sunset: 7:01 PM	18 Sunrise: 6:35 AM Sunset: 6:59 PM	19 Sunrise: 6:36 AM Sunset: 6:57 PM	20 Sunrise: 6:37 AM Sunset: 6:55 PM	21 Sunrise: 6:38 AM Sunset: 6:54 PM	22 Sunrise: 6:39 AM Sunset: 6:52 PM	23 Sunrise: 6:41 AM Sunset: 6:50 PM
24 Sunrise: 6:42 AM Sunset: 6:49 PM	25 Sunrise: 6:43 AM Sunset: 6:47 PM	26 Sunrise: 6:44 AM Sunset: 6:45 PM	27 Sunrise: 6:45 AM Sunset: 6:43 PM	28 Sunrise: 6:46 AM Sunset: 6:42 PM	29 Sunrise: 6:47 AM Sunset: 6:40 PM	30 Sunrise: 6:48 AM Sunset: 6:38 PM

October 2023

Litchfield, Connecticut, USA (EST)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Sunrise: 6:49 AM Sunset: 6:36 PM	2 Sunrise: 6:50 AM Sunset: 6:35 PM	3 Sunrise: 6:51 AM Sunset: 6:33 PM	4 Sunrise: 6:52 AM Sunset: 6:31 PM	5 Sunrise: 6:53 AM Sunset: 6:30 PM	6 Sunrise: 6:54 AM Sunset: 6:28 PM	7 Sunrise: 6:55 AM Sunset: 6:26 PM
8 Sunrise: 6:56 AM Sunset: 6:25 PM	9 Sunrise: 6:58 AM Sunset: 6:23 PM	10 Sunrise: 6:59 AM Sunset: 6:21 PM	11 Sunrise: 7:00 AM Sunset: 6:20 PM	12 Sunrise: 7:01 AM Sunset: 6:18 PM	13 Sunrise: 7:02 AM Sunset: 6:16 PM	14 Sunrise: 7:03 AM Sunset: 6:15 PM
15 Sunrise: 7:04 AM Sunset: 6:13 PM	16 Sunrise: 7:05 AM Sunset: 6:12 PM	17 Sunrise: 7:06 AM Sunset: 6:10 PM	18 Sunrise: 7:08 AM Sunset: 6:09 PM	19 Sunrise: 7:09 AM Sunset: 6:07 PM	20 Sunrise: 7:10 AM Sunset: 6:05 PM	21 Sunrise: 7:11 AM Sunset: 6:04 PM
22 Sunrise: 7:12 AM Sunset: 6:02 PM	23 Sunrise: 7:13 AM Sunset: 6:01 PM	24 Sunrise: 7:15 AM Sunset: 6:00 PM	25 Sunrise: 7:16 AM Sunset: 5:58 PM	26 Sunrise: 7:17 AM Sunset: 5:57 PM	27 Sunrise: 7:18 AM Sunset: 5:55 PM	28 Sunrise: 7:19 AM Sunset: 5:54 PM
29 Sunrise: 7:21 AM Sunset: 5:53 PM	30 Sunrise: 7:22 AM Sunset: 5:51 PM	31 Sunrise: 7:23 AM Sunset: 5:50 PM				