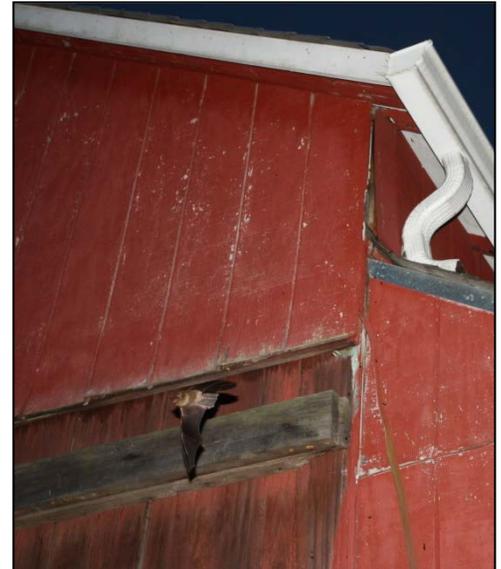




## 2013 Summer Bat Count Results

**BACKGROUND:** Since 2003, NJ's Summer Bat Count has enlisted volunteers across the state to monitor bat populations at known summer roost sites, including attics, barns, bat houses, churches, and other structures where bats congregate and raise their young. This volunteer project was created by the Conserve Wildlife Foundation and the state's Endangered and Nongame Species Program (ENSP) to gain a better understanding of how NJ's bats are distributed across the state, what conditions they select for roosting, and how populations may be changing over time.

Since White-nose Syndrome (WNS) hit NJ in January 2009, information from the Summer Bat Count is helping biologists to measure the impact of this devastating disease. As of 2013, WNS has spread to at least 23 US states from Maine to Missouri and also into 5 Canadian provinces. An estimated 6 million bats have died.



### **2013 SUMMARY:**

#### **Participation**

Bat count data were reported from 41 roost sites, tallying at least 2,631 unique bats. Of those, full data sets of 2-4 counts covering both the pre-volant period (before pups can fly) and post-volant period (mothers plus pups) came from 15 sites. General observations were reported from 18 additional sites but could not be quantified into the data set. County representation was as follows, with the number of sites per each in parentheses: Bergen (6), Burlington (2), Camden (2), Cape May (2), Essex (1), Gloucester (1), Hunterdon (9), Mercer (5), Morris (8), Ocean (2), Passaic (2), Salem (1), Somerset (5), Sussex (7), Warren (6). Twenty-eight new roosts were reported to us in 2013, most of them related to eviction planning (see "Bats in Buildings" section below).

#### **Trends**

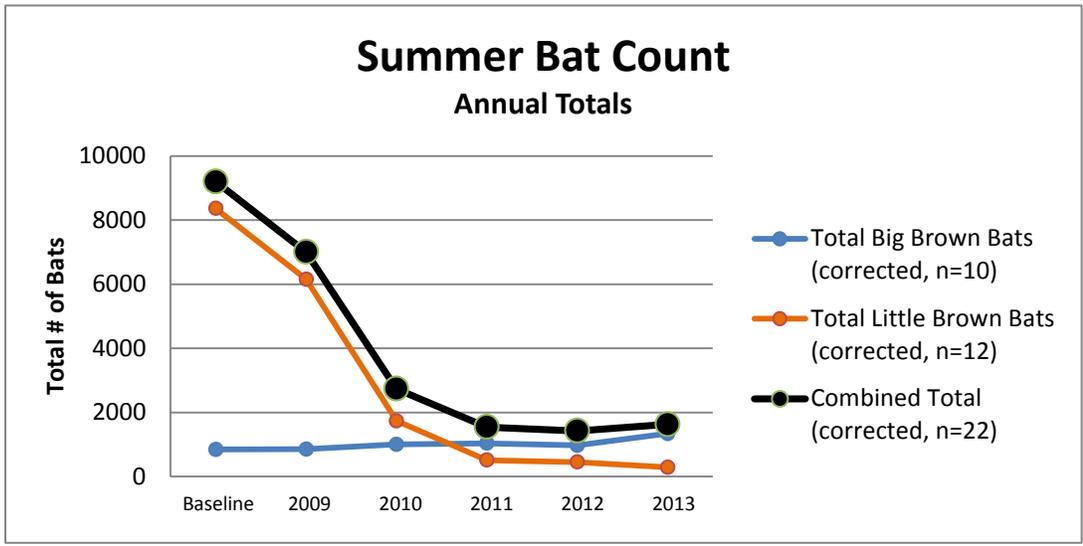
We had adequate data to compare baseline bat counts (pre-White-nose Syndrome; 2008 or earlier) with 2013 bat counts at 19 roost sites. Of those 19 sites, we have confirmed 7 of them as little brown bat colonies and 9 of them as big brown bat colonies. ***The average percent change in little brown bat colony size since pre-WNS is -86.7% (n=7). The average percent change in big brown bat colony size is +68.8% (n=9).*** These figures reflect the severe vulnerability of little brown bats to the White-nose Syndrome fungus (recently reclassified as *Pseudogymnoascus destructans*) versus the surprising and fortunate resistance of big brown bats to the disease.

Altogether, the average percent change in bat colony size for these 19 sites is -6.8%. This figure is deceiving, unfortunately, because it suggests almost no net change has occurred since the baseline. It does not reflect the ***grave decline in actual bat numbers.***

Why not? Because little brown bats (*Myotis lucifugus*) and big brown bats (*Eptesicus fuscus*) - the two main "house bat" species - have different colony size standards. Little browns can form massive colonies of hundreds or even thousands of bats, whereas big brown bat colonies seldom reach or exceed a couple hundred individuals. When calculating an average percent change in colony size for the two species combined, a little brown bat colony that drops from 350 bats to 13 (a 96.3% drop) is countered, unfairly, by a big brown bat colony that grows from 26 bats to 61 (a 134.6% gain). Using these actual examples, the average percent change in colony size is +115%, while 302 bats (80.3% of the original combined total) were actually lost.

Trying to measure the real impact to the bat population is troublesome in that we receive data from a shifting list of sites and homeowners each year. Some drop out over time for various reasons, some provide partial information,

and many new sites are added each year but lack historical data. We welcome any and all data, but have only received *complete data sets every year* (baseline to present) from just 5 roosts. We have nearly complete data sets from 22 sites, though, and with some simple trend-based projections to fill in gaps and standardize the annual sample size, we are able to display the approximate number of bats present at these roosts each year since the baseline (Figures 2 and 3).



< Figure 2. Line chart showing annual Summer Bat Count totals, from baseline (pre-WNS) to present, corrected for sample size (n=22).

Figure 3. Table of annual Summer Bat Count totals illustrated in Figure 2.

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	Baseline	2009	2010	2011	2012	2013	% Change in # Bats
Total Big Brown Bats	839	850	998	1,034	971	1,339	59.6%
Total Little Brown Bats	8,361	6,153	1,734	508	451	286	-95.4%
Combined Total	9,200	7,003	2,731	1,542	1,423	1,625	-82.3%

### Reproduction

The Summer Bat Count asks that emergence counts be done between May 15-June 21, when only mother bats are exiting at dusk to forage, and again from July 6-31, when bat pups are old enough to fly and exit the roost as well. The difference gives us an indication of how many young bats were successfully reared at a given roost during that summer.

Reproduction data from Summer 2013 was complicated by a heat wave in mid-July (roughly July 14-20) when day-time temperatures exceeded 90°F across most of NJ. The hot spell corresponded with volancy (pups flying), which gave colonies the option of dispersing to cooler roosts. Bats did in fact abandon many roosts, limiting late-season and reproductive data. Comparisons were possible at 15 sites, where the *average increase in colony size after volancy was 70.3%*. Of these, the confirmed *big brown bat colonies increased by 88.6% (n=10)*. We were concerned that the cool, wet springtime weather could have taken a toll on reproductive success, but figures were consistent with the previous four years of data (ave ~80% increase in colony size after volancy).

### Bat House Efforts

Since White-nose Syndrome, there has been tremendous interest in bat houses from the public and from service groups like the Boy Scouts and Girl Scouts of America. Until 2011, we undertook random bat house building and installation projects as opportunities arose, largely for education. But the return on our investment seemed low in terms of bat occupancy, so in 2012 we chose to re-direct our use of bat houses toward places where we believed they would be most valuable. These sites included: 1) existing roosts (giving colonies room to grow); and 2) buildings where bat evictions were being conducted (offering alternative roosts for displaced bats).

Most of our bat houses now come from partnerships with Eagle Scouts and other service groups. Under a model that's now tried and true, the Scouts fundraise for materials and prepare the lumber into kits, build the bat houses at



Figure 4. A batch of bat houses, built and donated by Eagle Scout Mitchell Fechter (back row center) and fellow scouts from Troop #87.

educational workshops, and donate the finished products to us at the Conserve Wildlife Foundation. The bat houses are virtually free to us, so we can in turn offer them for free where they are needed. Win-win-win!

We've given or installed at least 45 bat houses for expansion and eviction purposes so far. Thirty of those bat houses were installed at eviction sites, ideally before the evictions took place. We plan to monitor as many of these bat houses as possible in order to track their success and evaluate this new effort. We know that at least 3 of the bat houses have already begun to be used by bats. One of them - a large "rocket box" style bat house - sheltered a colony of 26 endangered Indiana bats this summer!

### "Bats in Buildings"

The main inspiration for our new approach to bat houses was in realizing just how many bat evictions happen across NJ every year. Through outreach to the pest control community, we found about a dozen companies who do a combined 300+ bat eviction jobs per year. There are certainly many smaller companies, handymen, and do-it-yourselfers blocking off bat roosts, too, often times without much understanding of bat behavior or biology. Clearly, this is an area where a little education can go a long way toward protecting bats.

With small grants from the NJ Endangered & Nongame Species Program (ENSP) and Conservation Resources Inc, we dug into



Figure 5. Doris Murphy (Mercer Co.) stands next to her new bat house. The one on her garage is brimming with bats, so the new roost will give them room to grow.

the eviction issue. The NJ Pest Management Association gave us an audience in 2012 to update 500 pest controllers on the new state guidelines for bat eviction. These guidelines include the most effective, bat-friendly methods and "safe dates" for dealing with bat problems in the home. We created a database of

professional bat excluders across NJ based on adherence to the guidelines. This list is posted to a new ["Bats in Buildings"](#) subpage on our website along with the guidelines for bat eviction. We continue to improve this webpage as a resource for homeowners and pest controllers alike.

We have advertised the free bat house offer among pest control companies, who in turn pass along the offer to their customers or refer them to us for more information. The response has been quite positive - we've been going through bat houses almost as fast as we get them in!

The "Bats in Buildings" effort is also helping to document more roosts for monitoring programs like the Summer Bat Count, White-nose Syndrome screening, and band-and-recapture projects. Homeowners and pest controllers are encouraged to report bat roosts, conduct bat counts, and participate in monitoring. Twenty-eight new roosts were reported this year.

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**THANK YOU** to all of our Summer Bat Count volunteers and partners! If you know of a summer bat roost and would like to participate next year, please contact us at [Info@ConserveWildlifeNJ.org](mailto:Info@ConserveWildlifeNJ.org).

For the most up-to-date information on White-nose Syndrome, please visit [whitenosesyndrome.org](http://whitenosesyndrome.org).