

Conserve Wildlife Foundation of NJ Mobile Acoustics, Summer Bat Count, Bats in Buildings 2017 Survey Reports

Mobile Acoustics:

This past spring and summer was the first year of our relaunched mobile acoustics project in NJ. Last year in partnership with ENSP CWF developed new mobile acoustic routes following the prescribed NABat guidelines with new acoustic detectors and software.

Mobile acoustic routes were generated and ground truth-ed by a team of volunteers last year. Our team selected the best 16 routes, enlisted volunteers and held a training workshop for the volunteers at the end of May to train them on the new protocol and the new equipment. Mobile acoustic survey routes were plotted through suitable bat habitats (forested, wetland, and riparian areas) along roadways where the driving survey speed is feasible.

Figure 1:

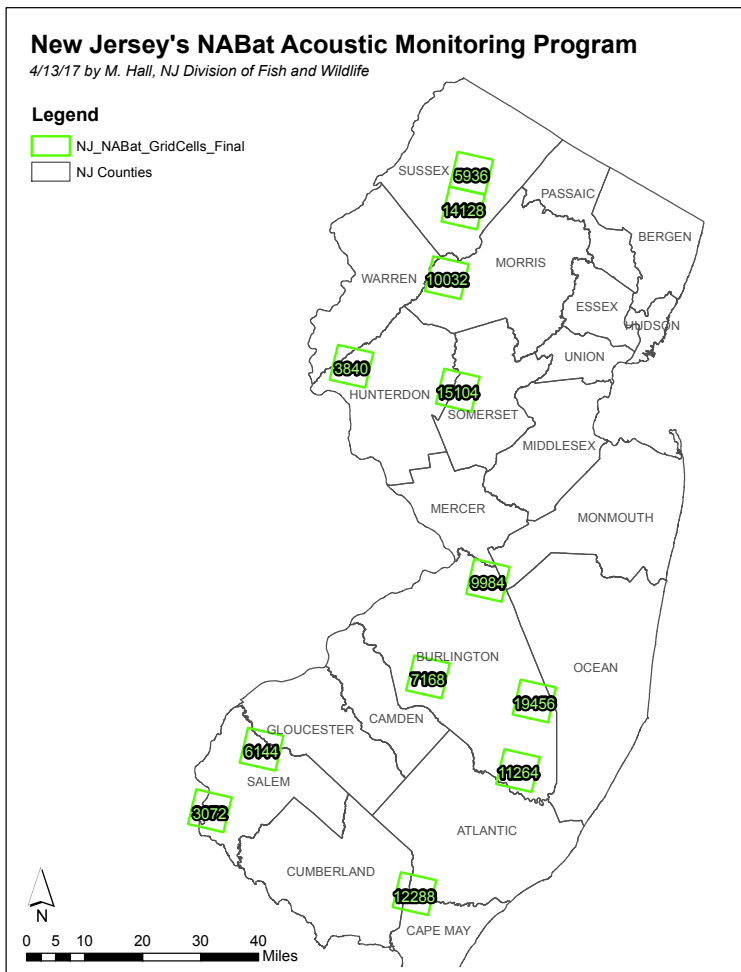


Figure 1: Map of NJ grid cells for mobile routes

Each site was given a 2-week window to conduct 2 surveys during the months of May-August. Once surveys were complete the detector was passed on to the next site. All surveys took place 45 min after sundown, during a dry clear evening with low wind. Surveyors drove at speeds of 10-15 mph and recorded the route the GPS unit provided to them. Since our new detectors have an external microphone, the detector was kept in the vehicle while the microphone is extended out the window to collect the calls.

Photos from the field:



Photo 1: Volunteer Nicole Dion ready to conduct mobile acoustic survey



Photo 2: Volunteer Jerry Jackson ready to conduct mobile acoustic survey with new microphone car mount.

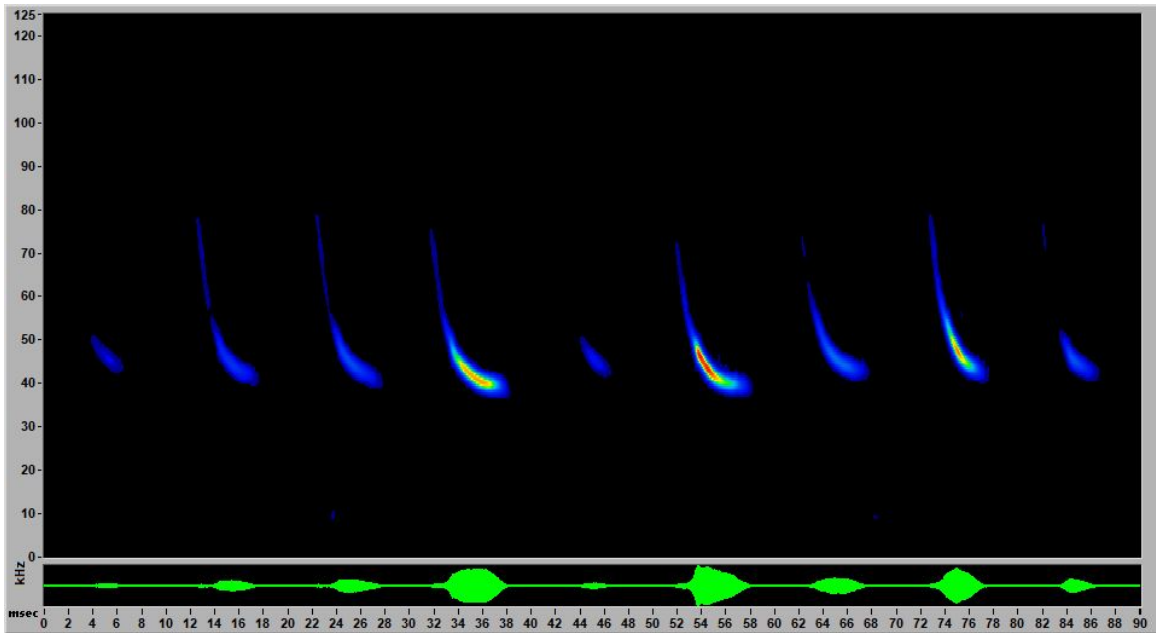


Photo 3: Example of Eastern red bat call with new Sonobat 4.2 software

Results:

Our team of volunteers ran 16 routes across the state in their given 2-week window to conduct 2 surveys during the months of June- August (see attached spreadsheet with schedule). All surveys took place 45 min after sundown, during a dry clear evening with

low wind. Surveyors drove at speeds of 10-15 mph and recorded the route the GPS unit provided to them. All routes were tracked and plotted on Google Earth with corresponding data plotted along track (see attached track maps). At the end of the surveys our team collected all of the data, analyzed the data with Sonobat 4.2. All data was then entered into a large vetting table and used for further analysis of the project as a whole. Finally, these data were run through Myotissoft Transect Pro allowing all calls to be overlaid over our GPS tracked routes and displayed in Google Earth Pro to show a visual of when bat calls were picked up throughout the driving transects (Figures 2 & 3).

Figures 2 & 3:

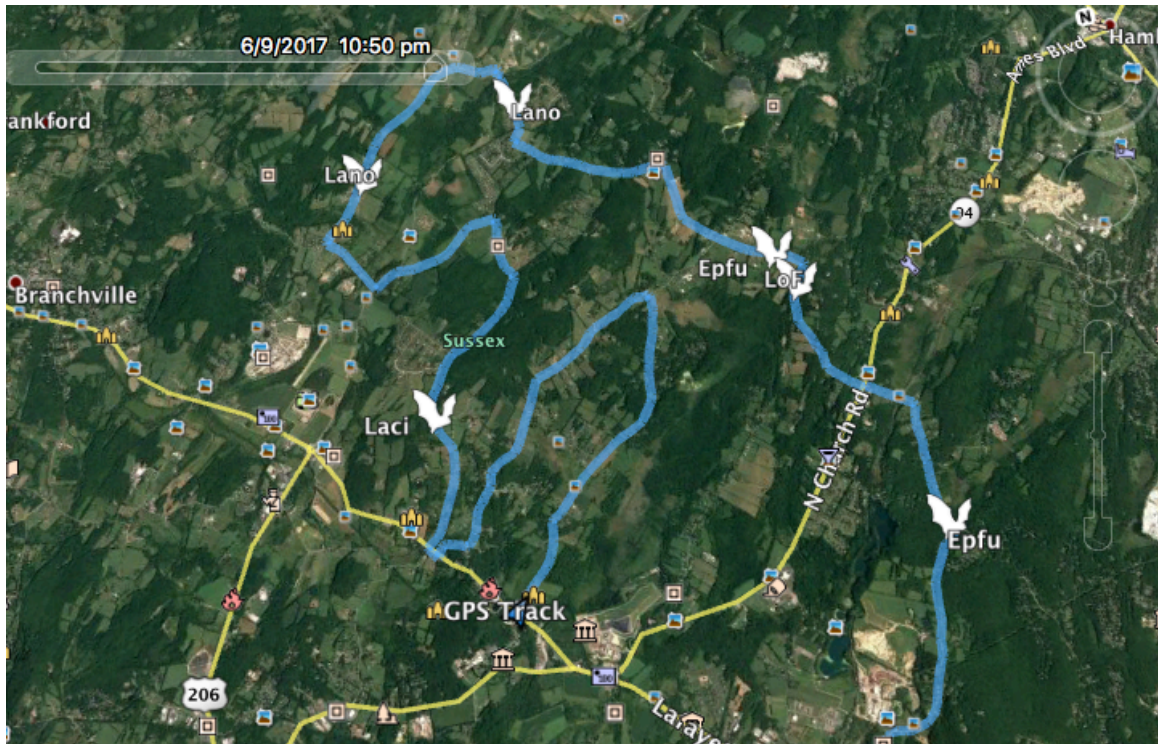


Figure 2: GPS track with bat calls overlaid that were picked up along the transect, shown in Google Earth Pro.

Figure 3:

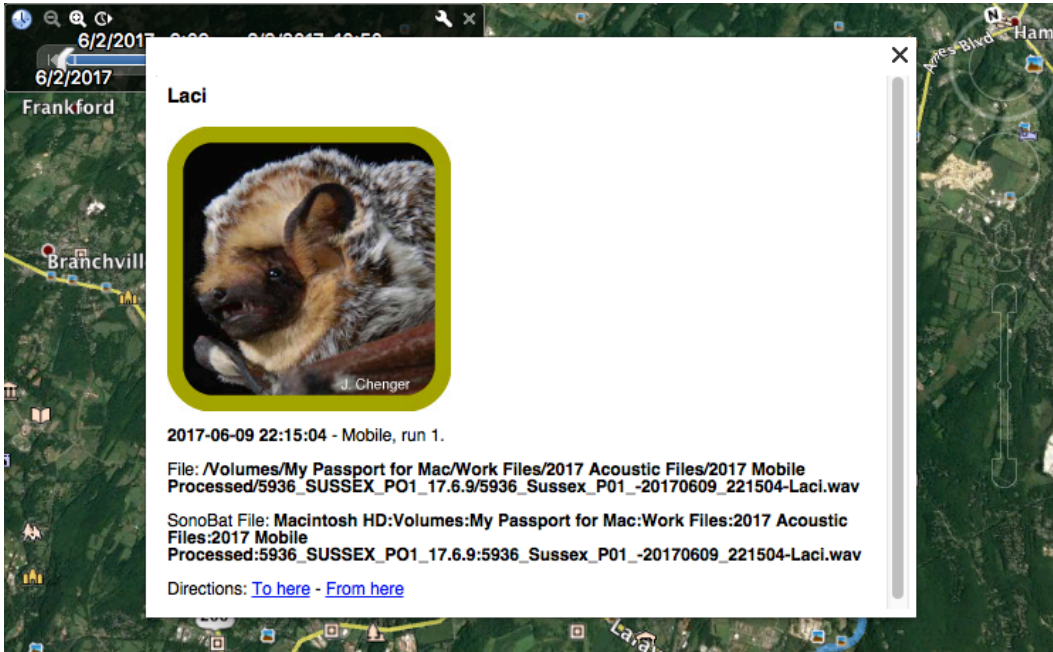


Figure 3: Zoom in of species ID info that is shown on track, in Google Earth Pro.

Figure 4:

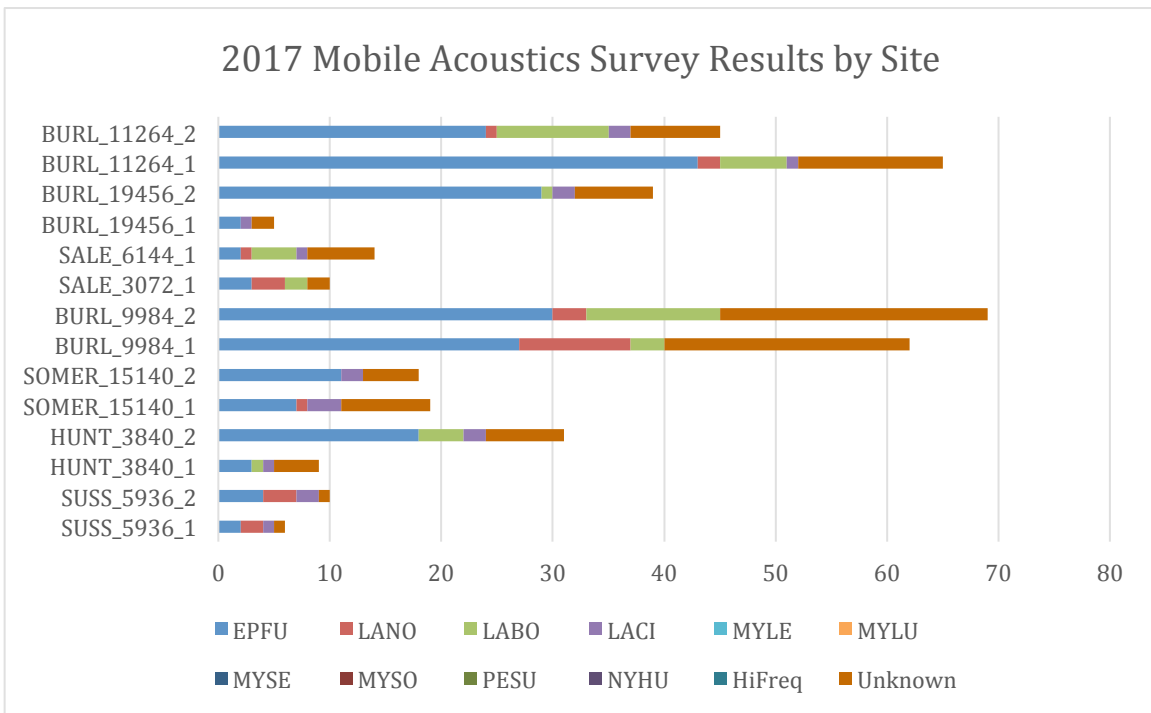


Figure 4: All species recorded by route

Of the 16 prescribed routes, two driving routes did not have a second run completed and two routes did not record GPS tracks. As this was the teams first year piloting these new routes and the new equipment, some issues were bound to come up. 18 surveys were completed covering 207.5 miles and collecting 1660 total quality bat calls.

The SonoBat 4.2 auto identification software labeled 31.3% of these as "unknown" species. No Little Brown Bat (*Myotis lucifugus*), Indiana Bat (*M. sodalis*), Northern Long-eared Bats (*M. septentrionalis*), Tri-colored Bats (*Perimyotis subflavus*) or Eastern Small-footed Bat (*M. leibii*) calls were identified from the data. Each of these small bodied cave-hibernating species have been hit hard by White-nose Syndrome so their populations have declined in NJ by 95-99%.

The most common bats identified across the surveys were Eastern red bats (*Lasiurus borealis*; 9.7%), hoary bats (*Lasiurus cinereus*; 4.4%), silver haired bats (*Lasionycteris noctivagans*; 6.0%), and big brown bats (*Eptesicus fuscus*; 48.7%).

The second round of surveys had an average 78% more bat calls the first surveys – an increase that is mostly credited to recruitment. The overall average bat density for the 18 surveys was 8 bat files per mile.

Figure 5:

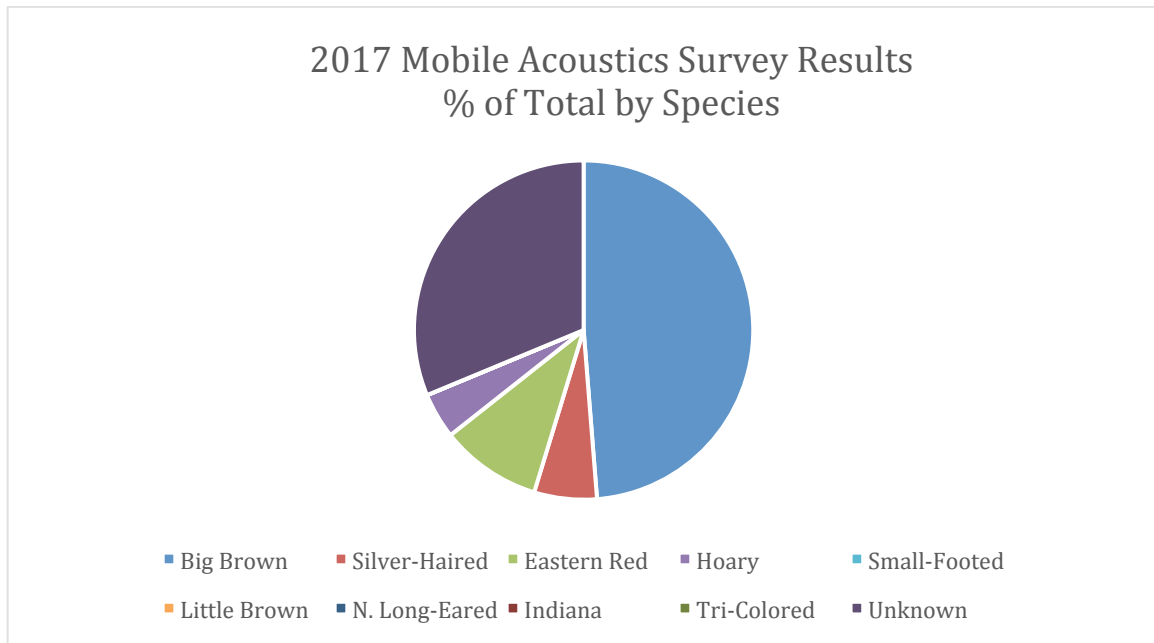


Figure 5: Percent of total species recorded within all routes

Our team will continue this project in 2018.

Summer Bat Count:

For the last few years our team of dedicated volunteers have continued their counts at our summer bat count sites throughout NJ. Additionally, a team of dedicated student volunteers have been going out weekly to set sites of important interest to conduct weekly counts for intensive data on those colonies.

Participation

In 2017 Bat count data reported from 12 roost sites via emergence counts during the maternity season, and volunteers tallied at least 1,300 unique individual bats. Of those 12 counts we have consistent annual tracking data for only 7 of those sites; three of them represent little brown bat colonies (*Myotis lucifugus*) and four represent big brown bat colonies (*Eptesicus fuscus*). Additionally, we monitor 4 known little brown bat colonies weekly for more intensive counts.

County representation was as follows, with the number of sites in parentheses: Hunterdon (1), Mercer (1), Morris (1), Passaic (1), Salem (2), Somerset (2), Sussex (2), Warren (2), Cape May (1).

Trends

Since White-nose Syndrome (WNS) arrived in New Jersey in 2009, the Summer Bat Count program has helped CWF quantify the steep decline in Little Brown Bats and the increase in Big Brown Bat numbers.

With our sample size continuing to be low, it was difficult to establish definitive population trends, especially since some of our colonies exhibit roost switching throughout the summer. Overall from 2016-2017 there was an 11.5% decrease in little brown population numbers (n=3) (Figure 1). At our heavily monitored sites (known little brown maternity colonies) we saw a 20% increase in populations from 2016 to 2017 (n=4) (Figure 2). Big brown bat colonies, show a less than 1% decrease in populations from 2016 - 2017 (n=4) (Figure 3).

Figure 1:

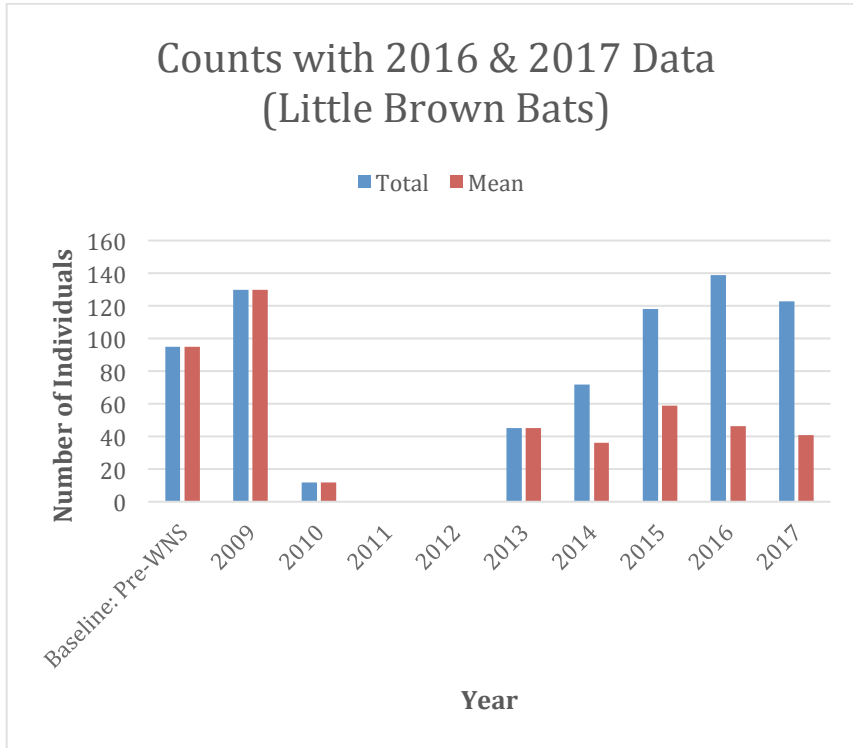


Figure 1: Counts done at 3 sites with consistent data pre WNS and post

Figure 2:

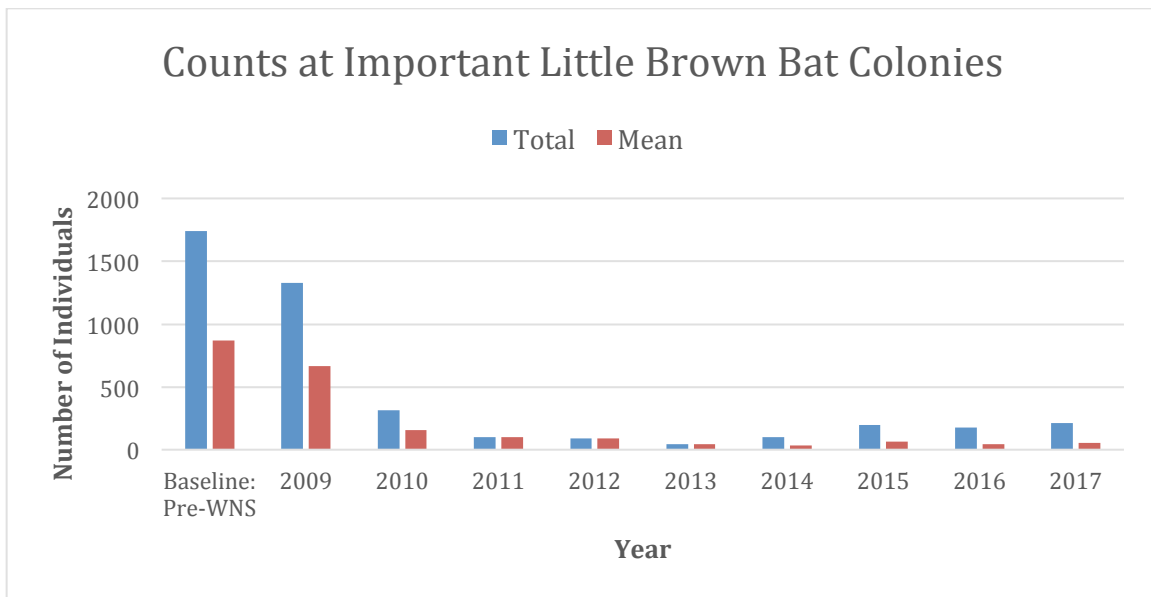


Figure 2: Counts done at 4 important little brown bat sites with consistent data pre WNS and post with weekly monitoring done at these sites

Figure 3:

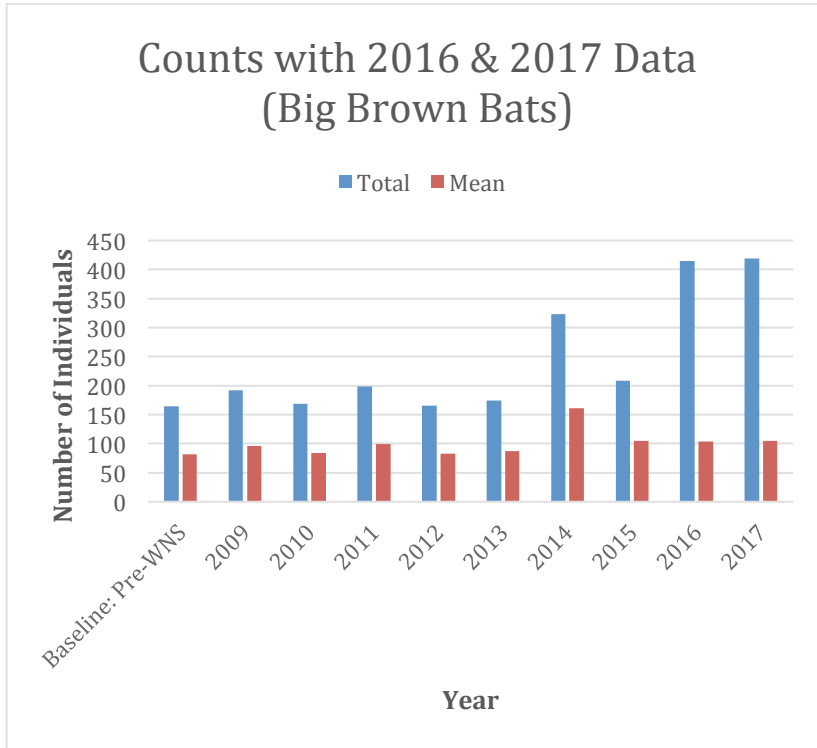


Figure 3: Counts done at 4 sites with consistent data pre WNS and post

In comparison with pre-white nose syndrome numbers, we are still seeing a 95% decline in little brown bat population numbers and about a 10% increase in big brown population numbers.

Bats In Buildings:

Our Bats in Buildings program, originally set up to help homeowners evaluate their bat issues and understand the process for doing a bat exclusion properly, continued this year. Our [Bats in Buildings website](#) gives the New Jersey guidelines and "safe dates" for bat exclusion, lists a number of professional companies who can help, and offers up free bat houses for bats being evicted from homes.

Homeowners and pest controllers are encouraged to report bat roosts, conduct bat counts, and participate in monitoring. We installed at least 8 bat houses at sites where bat eviction was planned.