Cathance River Preserve Bat Study

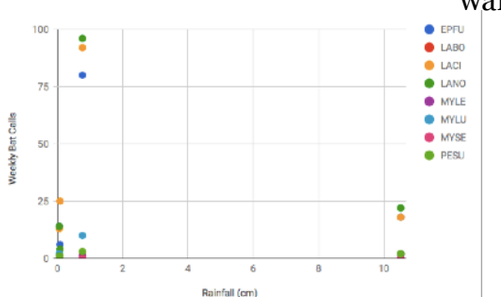
By Holden Brannan and Jacob Sargent

The Indiana bat **(*Myotis sodalis*; MYSO)**

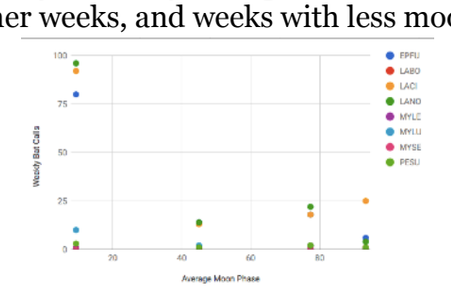
The Northern long-eared bat **(*M. septentrionalis*; MYSE)**

Silver-haired bats **(*Lasionycteris noctivagans*; LANO)**

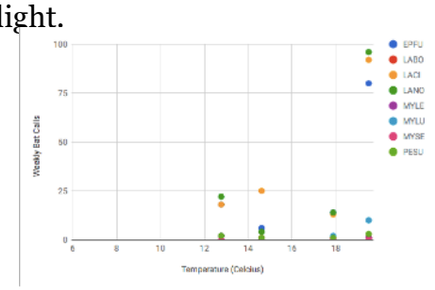
Purpose: To further understand the types of species at the Cathance River Preserve, and to identify which abiotic factors affect these bats.
Hypothesis: The number of bat species at the Cathance Preserve has decreased over the past years. The most prominent species will be the Big Brown Bat. The stage of the moon won't affect the number of bat calls there are, but air temperature and weekly rainfall will. More rain will make the number of calls dissipate and warmer temperature will bring in more bat calls.
Procedure:
1. Scout area, find places that would be suitable for placing SM4 detectors. Suitable areas include open land, and spaces with water where abiotic factors can be tested.
2. Set up Wildlife Acoustics SM4 Bat Detectors in the 3 chosen locations on a tree or pole. (Vernal pool, Field near ecology center, Opening in woods Near River)
3. Set up microphones in direction of open areas.
4. Determine abiotic factors- air temperature, weekly precipitation, and moon phase in environment that may affect the bats.
5. Take photos of SM4 detectors set up and environment around it. GPS will identify the coordinates of each SM4 detector.
6. Activate SM4 detectors (turn on, microphone direction, etc.)
7. Find moon stage for each night and record its weekly average of each phase on spreadsheet
8. Collect data of bat calls in each selected location every week by taking out the SD card and recording data of what types of bats have been actively calling in the area.
10. Change the batteries of the barometers every 3 weeks if needed.
11. Repeat steps 1-5 when putting barometers in new chosen locations every 2-3 weeks. (Barnes Leap, Opening along path at the back of the Ecology Center.)
Conclusions:
-Overall, 66% of the bat species either increased or stayed the same.
-6 of the 9 bat species recorded increased from previous years.
-Species that increased include the Big Brown Bat, the Hoary Bat, the Silver Haired Bat, the Eastern small Footed Bat, the Little Brown Bat, and the Tricolored Bat.
-3 of the 9 species decreased from previous years.
-The bat species that decreased include the Eastern red Bat, the Northern Long eared bat, and the Indiana Bat.
-The predictions were neither right nor wrong because there wasn't a big enough data sample collected to definitely draw any strong conclusions. Nevertheless, there were more bat calls during dryer weeks, warmer weeks, and weeks with less moonlight.



Average Weekly rainfall And bat calls of 8 species



Average Weekly Moon Phase and Bat Calls of 8 species where 0% is new and 100% is full



Average weekly Temperature and Bat calls of 8 Species

Eastern small-footed bat **(*Myotis leibii*; MYLE)**

Big Brown bats **(*Eptesicus fuscus*; EPFU)**

Hoary bats **(*Lasiurus cinereus*; LACI)**

Tri-colored bats **(*Pipistrellus subflavus*; PESU)**

Little Brown Bat **(*Myotis lucifugus*; MYLU)**

Red bats **(*Lasiurus borealis*; LABO)**

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