

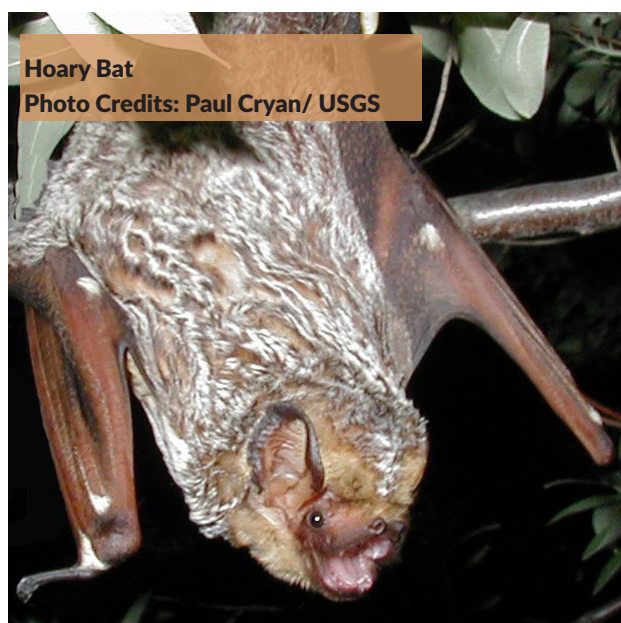
October 2022

# Notes of a Naturalist

A newsletter bringing you the species, landscape, history, and happenings of the Taft-Nicholson Center

## Creatures of the Night

As we approach winter and our days are filled with more hours of darkness, it feels fitting to give tribute to the usually misunderstood creatures that rule the night. We often think of our mostly diurnal lifestyle as the norm, but many animals thrive in the darkness. Our earliest mammalian ancestors were likely nocturnal, a tactic used to avoid the reptilian predators that ruled the day. Over half of all mammal species living today remain night-dwellers. Bats are perhaps the most iconic, and misunderstood, of these.



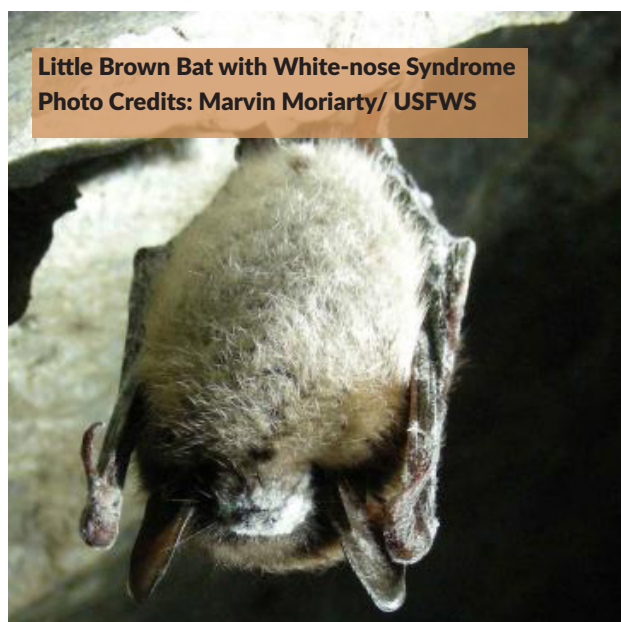
Nearly all bat species are exclusively nocturnal. They are also the only mammals capable of flight. While bird wings are largely comprised of arm bones with shortened and fused hand bones, a bat's wing is essentially a hand with skin stretched between elongated fingers. This allows for significant dexterity and agility in flight and lends to the very appropriate order name "Chiroptera", which translates to "hand wing". The majority of

bats are insectivorous and use echolocation to hunt down their small flying prey. The ultrasonic sounds produced by bats for echolocation can reach over 100,000 Hz, about 80,000 Hz above our hearing range. But their communication with one another involves clicks that are sometimes low enough frequency for human ears to hear.

Chiroptera is the second-largest mammalian order, with over 1,400 species worldwide. According to Montana Fish, Wildlife & Parks, the state is home to fifteen bat species. One of the smallest bats in Montana is the aptly named little brown bat, with a body length of less than four inches. Hoary bats are the largest Montana bat species, measuring five to six inches long with a wingspan of fifteen and a half inches. These two species exemplify the variation in characteristics found in North America's bats. Hoary bats are generally solitary and spend the day roosting in trees. In the winter, they travel long distances that rival the migrations of some bird species, often ending up in Mexico.

Little brown bats roost in large groups, taking up residence in caves and sometimes human-made structures. They form maternal colonies in the summer months and hibernate for the winter, sometimes traveling short distances to find suitable hibernacula at lower elevations. Because they often congregate in caves for the winter, this species is at high risk for White-nose Syndrome. This disease is caused by a fungal species called *Pseudogymnoascus destructans*, also referred to as Pd, that was likely introduced from Europe and has been slowly spreading across the country since its first observation in New York state in 2007. Infected bats will wake up more frequently from their torpor state, causing them to quickly burn through their much-needed fat reserves and eventually die of starvation.

Recent declines in bat populations due to White-nose Syndrome are very concerning. Bats fill an important ecological niche by taking on the night shift. Insectivorous bats will, on average, eat half their body weight in one night; that doubles for a nursing female. On an ideal night, a little brown bat can eat up to 1,000 insects. This pest management service that they provide saves the agricultural industry billions of dollars annually and greatly reduces the need for pesticides. Beyond the economic benefits, bats are key



members of ecosystems and a healthy bat population is a sign of a healthy ecosystem.

members of ecosystems and a healthy bat population is a sign of a healthy ecosystem.

## Disappearing Darkness

Compared to our planet's dramatic geologic past, Earth's day-night patterns have remained largely constant. Many species have evolved to rely on these natural cycles, but the advent of electric bulbs has led to a rapid disappearance of darkness. Now nightscapes are drastically different than they were a century ago, and it's hard to get away from light pollution. Less than a quarter of all Americans are able to see our galaxy streaking across the sky when they step outside on a moonless night. But even in remote locations like Centennial Valley with otherwise dark skies where the Milky Way is visible, there's often still evidence of light pollution in the form of skyglow on the horizon. Light pollution is widespread. It impacts our connection to the night sky and our health, and we are still discovering the various ways it can affect wildlife and ecosystems.

Some well-recorded examples of the risks of light pollution are those faced by migratory songbirds. Though they are otherwise diurnal, most songbird species migrate under the cover of darkness. Nighttime travel reduces the threat of predation and, perhaps most importantly, provides these long-distance flyers with a map, so to speak – the stars. While birds don't use specific stars and constellations to navigate, they are able to determine north or south by the apparent rotation of the stars around the celestial poles. Artificial lights along migration routes can disorient and confuse birds. They can often get trapped by the bright lights in cities where they may collide with buildings. Up to one billion birds are killed in building collisions each year. Many cities have begun efforts to reduce the threats to migratory songbirds by turning off unnecessary lights during peak migration.

## Accepting Applications for our 2023 Art Residency Program!

The Artist-in-Residence Season will on June 15th and ends on October 1st. It is expected that individual residencies will be awarded for between 2-6 weeks. Artists will specify how much time they need for their project.

The deadline to apply is January 31st. Applications and more information can be found on our website. <https://taft-nicholson.utah.edu/artist-in-residence/index.php#apply>

