

## Darker Skies for Brighter Futures

Caleb Clarkson

The stars have always been important for both humans and animals. For humans, we are able to see shapes in the millions of stars, and pick out complex constellations. For each of these constellations, there are many different stories across cultures concerning what it might mean, or what we might learn from it. For example, citizens of ancient Greece believed that each constellation was placed there by the gods to serve as moral guides. Those stories, trickling down from parent to child, helped maintain Grecian values of right and wrong. The constellations, their origin stories, and the messages they hold vary from one culture to the next; for some, the stars were placed by a divine hand, and for others, they might have been shot out by Pecos Bill.

The stars in the sky have had some other practical uses for humans. For the sea-faring Phoenicians, Vikings, and Polynesian navigators, the stars acted as a map and guide while sailing. For other cultures, tracking the stars was important in agriculture for timing when to plant and when to harvest. By observing how and when the stars moved, seasons were defined and calendars were made.

But humans aren't the only creatures who use the stars. Animals around the world rely on the stars in the night sky. Several species have been observed using the stars to navigate, including moths, dung beetles, and seals! Migrating songbirds, like the Indigo Bunting, use stars to navigate while flying. By looking at the stars, indigo buntings can determine direction.

To learn more about this phenomenon, researchers placed Indigo Buntings in a planetarium that simulated the skies rotating around Betelgeuse instead of the traditional north star, Polaris. After a time, the buntings would move towards Betelgeuse as if it were north. This led the researchers to believe that the bunting's astronomical navigation skills were learned over time and that the buntings observed the movement of the stars.

Animals across the earth rely on the stars for safe navigation, but each year it gets more and more difficult due to light pollution. Light pollution is the human-caused change in outdoor ambient light. Artificial lighting sources, such as street lights, fill the sky with excess light that wouldn't normally be there. The extra light makes stars harder to see, and in urban and suburban areas constellations are nearly invisible.

Light pollution can confuse many species that rely on light for navigation. Every year, light pollution disorients millions of migrating birds and lures them toward large cities, where they inevitably collide with buildings. Similarly, newly hatched sea turtles crawl towards the brightest light around them, normally the bright ocean horizon, however, many get turned around and crawl toward a bright street lamp or other artificial light source instead, leading to their premature deaths.

Fortunately, there has been some success in movements to reduce light pollution during these critical times. "Lights Out" programs across the country have been able to reduce the density of birds attracted to cities, and education programs along the coast have helped reduce sea turtle hatchling disorientation.

Changes by individuals and communities can greatly reduce the amount of ambient light entering the sky, too! You can help by turning off non-essential lights at night and ensuring that streetlights and other large lights have proper shielding to prevent extra, unnecessary light from entering the sky. By taking

these steps, and being conscientious of artificial light, you can help reduce light pollution, and create a night sky that helps conserve animals in Texas and around the world.

A sky brimming with stars is a treasure to keep and protect, and we all (animals and humans alike) ought to have a night sky that we can look to for guidance without disorientation or confusion. The stars that shine over us today twinkled above your grandparents and your grandparents' grandparents! They've guided millions and millions of animals over millions and millions of years! When we protect the night sky, we protect a long legacy of stargazers, whether it be a soaring songbird, a sandy terrapin, or children learning their constellations for the first time.

Photo by Mike Williams

Caption: Indigo Buntings are one of the many animals that use the stars to navigate.