

## Life on Earth Needs the Natural Rhythm of Light and Dark



For billions of years, life has evolved with Earth's predictable rhythm of light and dark controlled by the length of the day. In fact, it's encoded in the DNA of all plants and animals. Unfortunately, humans have radically disrupted this cycle by lighting up the night.

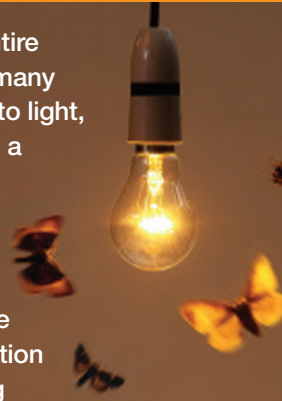
It used to be that when the sun went down, celestial sources like the moon, stars, planets and Milky Way lit the sky. Life learned to operate under the glow of the night sky. For many animals, a natural night sky signals when to eat, sleep, hunt, migrate and even when to reproduce. It is estimated that half of all life on earth start their "daily" activities at sundown.

*"Near cities, cloudy skies are now hundreds, or even thousands of times brighter than they were 200 years ago. We are only beginning to learn what a drastic effect this has had on nocturnal ecology."*

— Christopher Kyba, light pollution research scientist

## Ecosystems: Everything is Connected

Light pollution can affect entire ecosystems. For example, many insects are naturally drawn to light, but artificial light can create a fatal attraction. Declining insect populations negatively impact all species that rely on insects for food or pollination. Some predators exploit this attraction to their advantage, affecting food webs in unanticipated ways.



## About IDA

The International Dark Sky Association, a 501(c)(3) nonprofit organization based in Tucson, Ariz., is dedicated to preserving the natural nighttime environment by educating policymakers and the public about night sky conservation and promoting eco-friendly outdoor lighting.

### Our Mission

To preserve and protect the nighttime environment and our heritage of dark skies through environmentally responsible outdoor lighting.

### Our Goals

- Advocate for the protection of the night sky
- Educate the public and policymakers about night sky conservation
- Promote environmentally responsible outdoor lighting
- Empower the public with tools and resources to help bring back the night



International Dark-Sky Association  
3223 N. First Avenue  
Tucson, AZ 85719 USA  
darksky.org +1-520-293-3198

## Light Pollution Can Harm Wildlife



# Artificial Lights Disrupt the World's Ecosystems

Plants and animals depend on Earth's daily cycle of light and dark to govern life-sustaining behaviors such as reproduction, nourishment, sleep and protection from predators. Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures, including amphibians, birds, mammals, invertebrates and plants.

## Coral

More than 130 different species of coral on the Great Barrier Reef spawn new life by moonlight. Bright urban lights can mask the moon's phases, throwing the corals' biological clocks out of sync.



## Sea Turtles

Sea turtles live in the ocean but hatch at night on the beach. Hatchlings find the sea by detecting the bright horizon over the ocean. Artificial lights draw them away from the ocean. In Florida alone, millions of hatchlings die this way every year.



## Frogs and Toads

Glare from artificial lights can impact wetland habitats that are home to amphibians, such as frogs and toads, whose nighttime croaking is part of the breeding ritual. Artificial lights disrupt this nocturnal activity, interfering with reproduction, which reduces populations.



## Birds

Birds that migrate or hunt at night navigate by moonlight and starlight. Artificial lights can cause them to wander off course towards dangerous nighttime landscapes of cities. Every year millions of birds die colliding with needlessly illuminated buildings and towers.



## Solutions

- Use only fully shielded, dark sky friendly fixtures for all outdoor lighting, so lights shine down, not up.
- Use only the right amount of light needed. Too much light is wasteful, harms wildlife and creates glare.
- Install timers and dimmer switches and turn off lights when not in use. If you must have security lighting, use motion sensors.
- Turn off lights in office buildings and homes when not in use.
- Use only lighting with a color temperature of 3000K and below. This means that there is less blue (cool) light that is more harmful to many animal species.
- Work with your neighbors and local governments to ensure outdoor lighting isn't harming the wildlife in your area.

## Other Wildlife Harmed by Light Pollution

We are only just beginning to understand the negative effects of artificial light at night on wildlife. Every year new research adds even more wildlife to the list of animals affected by too much light, including:

- |                     |                       |             |
|---------------------|-----------------------|-------------|
| • Hummingbirds      | • Monarch butterflies | • Bats      |
| • Wallabies         | • Atlantic salmon     | • Owls      |
| • "Little" penguins | • Zooplankton         | • Mice      |
| • Zebrafish         | • European perch      | • Insects   |
| • Sweat bees        | • Songbirds           | • Geckos    |
| • Seabirds          | • Peahens             | • Fireflies |



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