



IOWA CHAPTER

What's Happening to the Night Sky?

Generations ago, our ancestors could look at the night sky and see stars in every direction. For those of us living near the urban areas in Iowa, we see very few stars in the night sky.

What has happened is a profusion of street lights, business lights, security lights, and advertising lit up for all to see – all of the night-time hours. LED bulbs have significantly changed the outdoor lighting, along with the range of colors and intensity of the lighting.

Studies have been pointing to a need to reduce the nighttime lighting in order to protect wildlife and humans.

University of Southern California biologists have been studying light-emitting diode (LED) lights for their effects on wildlife. The team, led by Travis Longcore, Assistant Professor of Biological Sciences, determined that blues and whites have the worst effects on wildlife. The blue and white lights caused issues with disorientation and attraction. Yellow, amber, and green have less effects. Flies are sensitive to red lights.

Dr. Thomas Davies of the Environment and Sustainability Institute at the University of Exeter found that predatory spiders and beetles were attracted to grasslands that were lit by LED lights. That same research found that dimming the lights by half and turning off the lights markedly reduced the predatory spiders and beetles.

Animals need lightness and darkness. So do humans. It is part of the circadian rhythm.

In humans, dusk brings about increased levels of melatonin, lower body temperature, increased sleepiness, and hunger abatement. Light at night upsets those physiological changes. In its review of LED lighting issues, the American Medical Association pointed out that these physiological changes can result in reduced sleep time, poor sleep quality, impaired daytime functioning, and obesity.

By creating lightness at night, some animals become more vulnerable to becoming prey.

Nocturnal animals need darkness to be active. When the night sky is lit up, they become confused and disoriented and think they should be less active.



The night lights. NASA Earth Observatory image by Robert Simmon, using Suomi NPP VIIRS data provided courtesy of Chris Elvidge (NOAA National Geophysical Data Center). Suomi NPP is the result of a partnership between NASA, NOAA, and the Department of Defense.

Many birds migrate at night and navigate by the moon and stars. Further, migrating birds are attracted to unnatural lighting which often lead to collisions with buildings.

Night time lighting has also been shown to affect how plants grow. Work by Dr. Johnathan Bennie of the Environment and Sustainability Institute has shown that low intensity amber light inhibits the growth of greater bird's foot trefoil.

All of these studies point to the need to reduce our lighting of the night sky – for wildlife, for plants, and for ourselves.

What can you do?

- Light only what you need only as long as necessary.
- Shield lights so that they shine toward the ground.
- Use the lowest intensity of lights that you can.
- Install a motion detector to turn on lights at night.
- Select warm-white or filtered LED's for outdoor lighting, while minimizing the use of blue-rich lighting.
- Turn off building lights at night.
- If you want to pass a local ordinance restricting outdoor lighting, you can begin with model ordinances offered by the Illuminating Engineering Society and International Dark-Sky Association, found at www.darksky.org/our-work/lighting/public-policy/mlo/
Additionally Ames, Iowa, has an ordinance – Section 29.411 - that addresses outdoor lighting.

There are added advantages of reducing outdoor lighting – it saves money because less electricity is used which means that lower levels of greenhouse gases will be emitted which will help reduce climate change.

Sources

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