

Varying Artificial Skyglow Affects Precious Animals

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Have you ever seen a truly clear and dark sky? The night sky is nothing like it used to be in the days of our ancestors. Looking up at night has never been so unremarkable. Today, especially in urban areas, the stars are extremely difficult to see due to light pollution. An article that discusses light pollution states, "as artificial light has spread across, cities roads and through industry, unadulterated night skies have become something of a rarity."¹ There are only a few spots on the planet where a truly dark sky can be seen and chances are that it is nowhere near your backyard.

Skyglow is not only harming our visibility of a clear night sky but is also having an adverse effect on the environment, researchers find. In a study conducted by a group of collaborators including Christopher C. M. Kyba and Kai Pong Tong, the questions surrounding skyglow and its effect on the environment were answered. There were few previous comprehensive studies conducted on artificial skyglow, which peaked the researchers' interest in further studying the effects of skyglow using a plethora of data collected by civilians.

Using data from Sky Quality Meters, easy to use light meters, from 44 sites around the world, the study found patterns in skyglow that had previously gone unnoticed due to a lack of such comprehensive data. It was discovered that the night sky radiance, or brightness, was measured to be considerably higher than the expected natural brightness. In addition to this, cloudy skies were observed to be brighter than clear skies at almost all locations in which Sky

¹ Physics Arxiv Blog. Light Pollution: A Crucial Test of Humanity's Problem Solving Skills. July 14, 2020. <https://astronomy.com/news/2020/07/light-pollution-a-crucial-test-of-humanitys-problem-solving-skills>

Quality Meter data was taken. This is because the artificial light reflects off of the clouds and back to the Earth, making the ground brighter than it would be from natural moonlight on a clear night. It was found that the relationship between overcast and clear skies and brightness levels was curved due to sites in which the light from a nearby city could be observed. Additionally, areas with considerable skyglow tend to decrease in radiance as the night progresses.²

All in all, we can see the effects that skyglow has on brightness variations of the night sky. Being only one of the millions of creatures on this planet, we are not the only ones who are affected by the skyglow. Other life forms are not accustomed to the variations in brightness levels in the night. One article states, "Many species migrate by night and are perilously dazzled by artificial illumination, for reasons we don't yet completely understand," Metcalfe wrote. "Lights on skyscrapers, airports, and stadiums draw birds into urban areas, where they smack into walls and windows or each other, or flap around and eventually perish from exhaustion-related complications."³ The artificial light that humans are putting out is disrupting things such as migration and hunting for animals. They are becoming confused in the changing night.

It is necessary for us to be more conscious of the artificial light that we are emitting. At the very least, we need to better understand the effects of all of our lights to better help the species around us. Studies like the one conducted by Tyba, Kong and their collaborators are crucial to helping curb and better understand the negative effects of artificial lights and skyglow.

²Kyba, Christopher & Tong, Kai & Bennie, Jonathan & Birriel, Ignacio & Birriel, Jennifer & Cool, Andrew & Danielsen, Arne & Davies, Thomas & Outer, Peter & Edwards, William & Ehlert, Rainer & Falchi, Fabio & Giacomelli, Andrea & Giubbilini, Francesco & Haaima, Marty & Hesse, Claudia & Heygster, Georg & Hölker, Franz & Gaston, Kevin. (2015). Worldwide variations in artificial skyglow. Scientific Reports. 5. 10.1038/srep12180.

³ Rao, Joe. Light Pollution is a Big Problem, But You Can Help. 2018.

<https://www.google.com/amp/s/www.space.com/amp/39787-light-pollution-problem-you-can-help.html>

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