

Skyglow over key wildlife areas

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Light pollution affects the skies over most of the world's key wildlife areas, new research shows.

The study, by the University of Exeter and Birdlife International, focussed on "skyglow—light scattered and reflected into the atmosphere that can extend to great distances.

Researchers found less than a third of the world's Key Biodiversity Areas (KBAs) have completely pristine night skies, and more than half lie entirely under artificially bright skies.

Night-time light has been shown to have wide-ranging effects on individual species and entire ecosystems.

"These results are troubling because we know many species can respond even to [small changes](#) in night-time light," said lead author Dr. Jo Garrett, of the University of Exeter.

"Night-time lighting is known to affect microbes, plants and many [groups of animals](#) such crustaceans, insects, fish, amphibians, reptiles, birds and mammals.

"It has an enormous range of effects, including causing trees to produce leaves earlier in the season and birds to sing earlier in the day, changing the proportion of predators in animal communities, and changing the cycling of carbon in ecosystems. Some effects can occur at very low light levels."

KBAs are places identified by the KBA Partnership as being important for preserving global biodiversity, and the new study uses a recent atlas of skyglow to see how KBAs are affected.

"Pristine" skies were defined as those with artificial [light](#) no more than 1% above the natural level.

At 8% or more above natural conditions, [light pollution](#) extends from the horizon to the zenith (straight upwards) and the entire sky can be considered polluted.

The findings showed:

- 29.5% of KBAs had completely pristine night-time skies.
- 51.5% contained no area with pristine night skies.
- 21% were entirely under night skies polluted to the zenith.
- 51.9% of KBAs were completely free of skies polluted to the zenith
- 46% of KBAs in the Middle East were entirely under skies polluted to the zenith. The next-highest figures were Europe (34%) and the Caribbean (32%).

"Unsurprisingly, the likelihood of skyglow tends to increase in areas with higher GDP, and in areas with higher human population density," said senior author Professor Kevin Gaston.

"This suggests that the proportion of KBAs experiencing [skyglow](#) will increase in parallel with the development of economies.

"Skyglow could be reduced by limiting outdoor lighting to levels and places where it is needed, which would also result in considerable cost savings and lower energy use."

The paper, published in the journal *Animal Conservation*, is entitled: "Skyglow extends into the world's Key Biodiversity Areas."

More information: J. K. Garrett et al, Skyglow extends into the world's Key Biodiversity Areas, *Animal Conservation* (2019). [DOI: 10.1111/acv.12480](https://doi.org/10.1111/acv.12480)

Provided by University of Exeter

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