Study: Light Pollution Continues to Dim Stars

研究：光污染继续使恒星变暗

A new study has found that light pollution is making the night sky brighter and the stars dimmer.

一项新的研究发现，光污染使夜空更亮，星星更暗。

The study examined data from more than 50,000 citizen star watchers across the world. It found that man-made, or artificial, lighting is making the night sky about 10 percent brighter each year.

该研究调查了来自全球 50,000 多名公民明星观察者的数据。研究发现，人造照明每年使夜空的亮度增加 10% 左右。

Data for the study was collected from 2011 to 2022. The research findings recently appeared in the publication Science.

该研究的数据收集于 2011 年至 2022 年。研究结果最近发表在《科学》杂志上。

The result was a much faster rate of change than scientists had estimated in the past.

结果是变化速度比科学家过去估计的要快得多。

"We are losing, year by year, the possibility to see the stars," said Fabio Falchi. He is a physicist at the University of Santiago de Compostela in Spain. He was not involved in the study.

“我们正在逐年失去看到星星的可能性，”法比奥·法尔奇说。他是西班牙圣地亚哥德孔波斯特拉大学的物理学家。他没有参与这项研究。

"If you can still see the dimmest stars, you are in a very dark place," Falchi said. "But if you see only the brightest ones, you are in a very light-polluted place."

“如果你仍然能看到最暗的星星，那你就处在一个非常黑暗的地方，”法尔奇说。“但如果你只看到最亮的那些，那你就处在一个光污染非常严重的地方。”

As cities expand and put up more lights, a "skyglow" is created in the sky. Skyglow is a term scientists use to describe light that becomes more intense.

随着城市的扩张和更多的灯光，天空中出现了“天光”。天光是科学家用来描述变得更强烈的光的术语。

Christopher Kyba is a physicist at the German Research Centre for Geosciences in Potsdam. He was a co-writer of the study. He told The Associated Press that the 10 percent change was "a lot bigger" than he had expected.

Christopher Kyba 是位于波茨坦的德国地球科学研究中心的物理学家。他是该研究的合著者。他告诉美联社，10% 的变化比他预期的“大很多”。

The research team gave an example to explain the result. If a child is born where 250 stars can be seen on a clear night, by the time that child turns 18, only 100 stars will be seen.

研究团队举例说明了结果。如果一个孩子出生在一个晴朗的夜晚可以看到 250 颗星星的地方，那么到他 18 岁时，只能看到 100 颗星星。

"This is real pollution, affecting people and wildlife," Kyba said. He urged policymakers to do more to reduce light pollution. Some communities have set limits.

“这是真正的污染，影响着人类和野生动物，”凯巴说。他敦促政策制定者采取更多措施减少光污染。一些社区设定了限制。

Past studies involving artificial lighting used satellite images of the Earth at night. They had estimated the yearly increase in sky brightness to be about 2 percent a year.

过去涉及人工照明的研究使用了地球夜间的卫星图像。他们估计天空亮度每年增加约 2%。

But the satellites used are not able to identify light with wavelengths toward the blue end of the spectrum – including light given off by energy-effective LED bulbs.

但所使用的卫星无法识别波长接近光谱蓝端的光——包括节能 LED灯泡发出的光。

The researchers noted that more than half the new outdoor lights put in across the United States during the past 10 years have been LED lights.

研究人员指出，在过去 10 年中，美国各地安装的新户外灯中有一半以上是 LED 灯。

The satellites are also better at finding light that gets spread upward – like a spotlight – than light that spreads out from side to side, Kyba said.

Kyba 说，卫星也更善于发现向上传播的光——就像聚光灯——而不是左右传播的光。

Skyglow affects human circadian rhythms as well as other forms of life, said Georgetown University biologist Emily Williams. She was not part of the study.

Georgetown 大学生物学家 Emily Williams 说， Skyglow 会影响人类的昼夜节律以及其他形式的生命。她没有参与这项研究。

"Migratory songbirds normally use starlight to orient where they are in the sky at night," Williams said. "And when sea turtle babies hatch, they use light to orient toward the ocean – light pollution is a huge deal for them."

“迁徙的鸣禽通常在夜间使用星光来确定它们在天空中的位置，”威廉姆斯说。“当海龟宝宝孵化时，它们会利用光来定位海洋——光污染对它们来说是个大问题。”

Falchi, the physicist at the University of Santiago de Compostela, said part of what is being lost is a universal human experience. "The night sky has been, for all the generations before ours, a source of inspiration for art, science, literature," he added.

圣地亚哥德孔波斯特拉大学的物理学家法尔奇说，正在失去的部分是一种普遍的人类经验。“对于我们之前的几代人来说，夜空一直是艺术、科学和文学的灵感来源，”他补充道。