

# Nightscape

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# From the Executive Director



I recently returned from the Czech Republic, where I joined representatives from 19 European countries and dark sky advocates from across the continent at the International Conference on Light Pollution in the city of Brno. With leadership from the Czech Ministry for the Environment, the workshop adopted the Brno appeal to reduce light pollution in Europe.

The appeal, to be presented at a European Council meeting in late 2022, calls upon EU member states to acknowledge light pollution as a growing issue of concern and to use existing legislation and directives to address it. We urge European countries to get behind this initiative and believe it offers a path that any other country can follow.

Anna Pasková, Director of the Department of Environmental Policy and Sustainable Development for the Ministry, spoke at this year's Under One Sky conference. As you will read in this issue, the conference keynote was given by long-time IDA member Lisa Hescong. Her presentation on the need for dark nights and bright days kicked off our third annual global conference. I left the 24-hour conference exhausted and energized. If you missed it, you can review the presentations at the conference website: [conference.darksky.org](https://conference.darksky.org).

We are also honored to recognize the 2022 Dark Sky Awards recipients in this issue. These dedicated individuals and organizations are leaders in advancing dark sky protection and awareness in their communities.

Together, you are the driving force behind the dark sky movement.



For the night,  
**Ruskin Hartley**  
[ruskin@darksky.org](mailto:ruskin@darksky.org)  
Tucson, Arizona, U.S.

## On the cover



### **“Super Moon April 2021: Southwick Wildlife Management Area”**

by John Nardacci  
Massachusetts, U.S.

Trying to shoot the moonrise or -set can be a challenge in Western Massachusetts because of the topography and low elevation. After searching different locations, I tried the wildlife area behind my house—a giant field with plenty of room to shoot at 600mm. As I was headed back to my car, an unexpected shot presented itself: a lone tree with the Moon behind it. I realized a widefield shot would allow for a more creative composition that kept the focus on the Moon. This outing showed me that, even though I may go out with a certain frame in mind, I should always keep an open mind, look for new opportunities, and try new ways of shooting.

Technical details: Single shot | Canon 6D | Sigma 150-600 at 150mm | ISO 1000 | f/8.0 | 1/320

Follow John: [instagram.com/johnnardacci](https://www.instagram.com/johnnardacci)

# From the Editor

My favorite date on the IDA calendar is the Under One Sky conference each November. I enjoy joining so many advocates and supporters of the night and coming together for 24 hours of inspiring talks and workshops. Our 2022 event saw 2,100 people registered from 78 countries—amazing!

During this year's conference, I happened to be visiting beautiful Kraków, Poland and, on one of the conference breaks, I

keynote: the necessary biological balance between night and day (read more in Lisa's article on p. 5). Indeed, dawn and dusk are among the most important times of day for many creatures in the world, who at those times either awaken for nocturnal feeding or begin the gentle descent to sleep.

As I walked back to my apartment, the street lights started to come on and I couldn't help feeling robbed of some of the special magic of dusk. An important reminder that, despite our technological advances, humans are inextricably part of nature and living harmoniously on our planet means operating within natural cycles like night and day.

As well as Lisa's feature article, this issue contains:

- A lovely poem by supporter Julianne McAdam
- The winners of IDA's annual awards
- Meet member Landon Bannister in Tasmania, Australia

- Advocate news and new International Dark Sky Places

Thank you for being part of this community of people who support the cycles of night and day on Earth. I am proud to stand alongside you.



**Megan Eaves**

nightscape@darksky.org  
London, U.K.

went out for a walk around Old Town. It was dusk and the sun dipped low, illuminating the facades of the grand, Renaissance, merchant houses and the spires of the city's splendid, Gothic basilica. A few birds took flight and the sky and buildings seemed to be painted in the same shades of orange, pink, and blue.

It was a beautiful moment to reflect on what architect and biologist Lisa Heschong spoke about in her conference



Kraków at dusk

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## Nightscape

#110 · Published December 2022



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**EDITOR:** Megan Eaves

**COMMUNICATIONS MANAGER:** Lauren Scorzafova

**DESIGN:** Mark Bult

**PRINTER:** Spectrum Printing Company, Tucson, AZ



Printed on recycled paper with 30% post-consumer waste.

# Honor the Night

BY **Juliane McAdam**

It is said that in the time of Galileo  
the Milky Way shone brightly  
enough to cast a shadow.  
Now who can even see the  
broad band of our galaxy  
in the night sky?  
We hide it with bright city lights,  
go inside our houses and flip switches.  
We no longer honor the night sky.

Ancient cultures measured time  
in the moon's phases,  
the days of each cycle counted out;  
they knew when the moon  
would wax and wane.  
But who today is aware whether  
the moon is crescent, full, or gibbous?

We no longer honor the night sky.  
The ancients saw pictures  
in the night sky, each culture telling  
the stories of its creation,  
its heroes and its gods, in the stars.  
Who today can see these celestial forms  
or knows their stories?  
We no longer honor the night sky.

On a retreat with preteen students,  
far enough from city lights to see the cosmos,  
on a night when bright Venus  
cast a shadow, we asked them  
to turn off their flashlights,  
let their eyes adjust,  
trust their steps to the starlight.  
We honored the night sky.



*Juliane McAdam is a California native who grew up in the stark beauty and dark skies of the Mojave Desert. She*

*spent her career in Los Angeles for the last 27 years teaching English and Spanish to middle school students. Now retired and living near Morro Bay on California's beautiful Central Coast, she enjoys walks, kayaking, playing piano, and writing poems to record observations and memories.*



# Day and night, light and life

Architect and lighting researcher **Lisa Heschong** gives a synopsis of her 2022 Under One Sky conference keynote address

One-third of Earth's sphere as seen from the Apollo 11 spacecraft, July 1969.

Credit: NASA

**D**ark nights and bright days are two sides of the same coin. We evolved on a planet with a daily rhythm of dark, starry nights and bright sunny days, with beautiful twilight transitions in between. Our biology reflects this in many profound ways.

The 24-hour rhythm of “dark/light, dark/light” creates a powerful, two-stroke engine that synchronizes the biological rhythms of every organism on the planet. Scientists have identified “clock genes” in every cell in our body and similarly in every other plant and animal studied so far. These clock genes are so ancient that they can even be found in blue-green algae, or cyanobacteria, thought to be one of the oldest life forms on Earth.

Plants and animals keep these intrinsic clocks tuned primarily by sensing vivid differences in patterns of solar radiation, from day to night, dawn to dusk. Solar radiation also varies enormously by season and latitude, providing a key external cue to tune the genetic clocks’ timing to local conditions.

Whether a creature is diurnal or nocturnal, or whether a plant flowers during short or long days, exposure to rhythms of light and dark orchestrates patterns of rest, activity, repair, and reproduction and keeps ecosystems in sync. Sunflowers track the sun during the day, automatically rewinding at night to face the sunrise. Birds know to nest in spring and migrate in fall by

sensing changes in day length. Before birds build nests each spring, their reproductive organs automatically enlarge, and after fledging their chicks, their fat stores increase in preparation for fall migrations.

While it may be easy for humans to see how planetary rhythms dominate the lives of plants and animals, it is often more challenging for us to acknowledge their importance in our own lives.

Over the past 100 years or so, we have dramatically changed our light/dark patterns. In pre-industrial societies, humans typically spent their days outdoors, active in bright daylight, and then retreated indoors at night with

*Continued on page 6*



Birds know to nest in spring and migrate in fall by sensing changes in day length.

Credit: ©2022 Dale Sandford, photo.dsandford.com

*Continued from page 5*

only dim fire or candlelight for illumination. The widespread adoption of 24/7 lifestyles and electric lighting has eroded the difference between day and night. While humans are amazingly adaptable to a vast range of environments, evidence is mounting that pervasive attenuation of our biological rhythms results in long-term disruption to our health.

We once thought of light simply as radiation that enabled us to see. As a species, humans have excellent vision and an impressively wide range of sen-

sitivity to light. Our visual system can function across eight orders of magnitude of illumination, from starlight at 0.001 lux to full sunlight at over 100,000 lux.

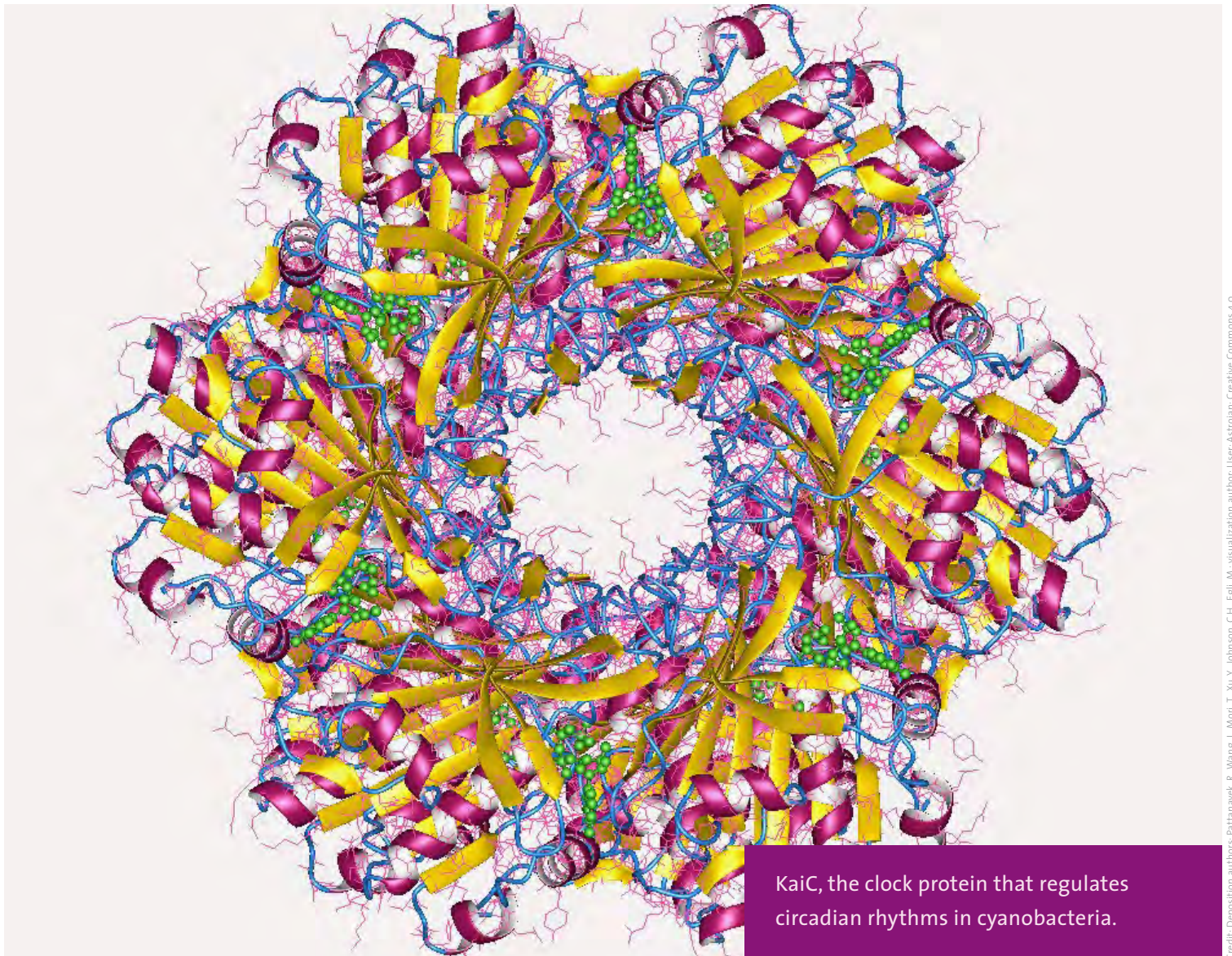
In just the last 20 years, we have learned that our eyes are involved in more than vision. Like our ears enable both hearing and balance, our eyes similarly have at least two functions: vision and circadian<sup>1</sup> stimulus. In addition to the

<sup>1</sup> "Circadian" refers to intrinsic biological cycles that are approximately 24 hours long (from the Latin: circa=about, dia=day).

rods and cones, which provide information to our brain's visual system, there are other types of light-responsive cells in our eyes that feed information to a central timekeeper in the brain. Melatonin is then manufactured in the brain as a master hormone that circulates throughout the body at night (in the absence of daylight), helping to synchronize the daily work cycles of organs, such as the intestines, liver, and kidneys.

Doctors are now realizing that every organ in our body has a circadian rhythm; thus, some medicines and





Credit: Deposition authors: Pattanayek, R., Wang, J., Mori, T., Xu, Y., Johnson, C.H., Egli, M.; visualization author: User: Astrojan; Creative Commons 4.0

cancer treatments are most effective at certain times of day. This knowledge has also revolutionized the field of lighting design, with the understanding that the provision of light in an environment impacts both our vision and overall health.

These non-visual sensors also respond to the full range of dynamic lighting conditions on our planet, as the sun first brightens the sky at dawn through the ample daylight at midday to the diminishing light of dusk, and even the subtle shifts of illumination between moonlit and starlit nights. Interestingly, using feedback loops and

past experience to predict future conditions, the sensitivity of these sensors seems to adjust by the time of day and season. For example, they are supremely sensitive at certain times of the day and more sensitive after long periods of darkness, such as polar night. Thus, daytime exposure to light can inform our response to light at night and vice versa. We all know that a good night's sleep can help improve our performance the next day. Likewise, a very bright day can help improve sleep that night.

Along with all other life forms, humans can greatly benefit from a

restoration of the two-stroke engine of very bright days and very dark nights that drives our biological clocks. This understanding of our biology should be the basis for the future designs of cities and buildings so that their inhabitants can enjoy optimum health.

I hope you will all join me in advocating for both brighter days and darker nights. ★

*Based in Santa Cruz, California, U.S., Lisa Heschong, FIES, is the author of Visual Delight in Architecture: Daylight, Vision and View. Find her work at [www.lheschong.com](http://www.lheschong.com)*







“

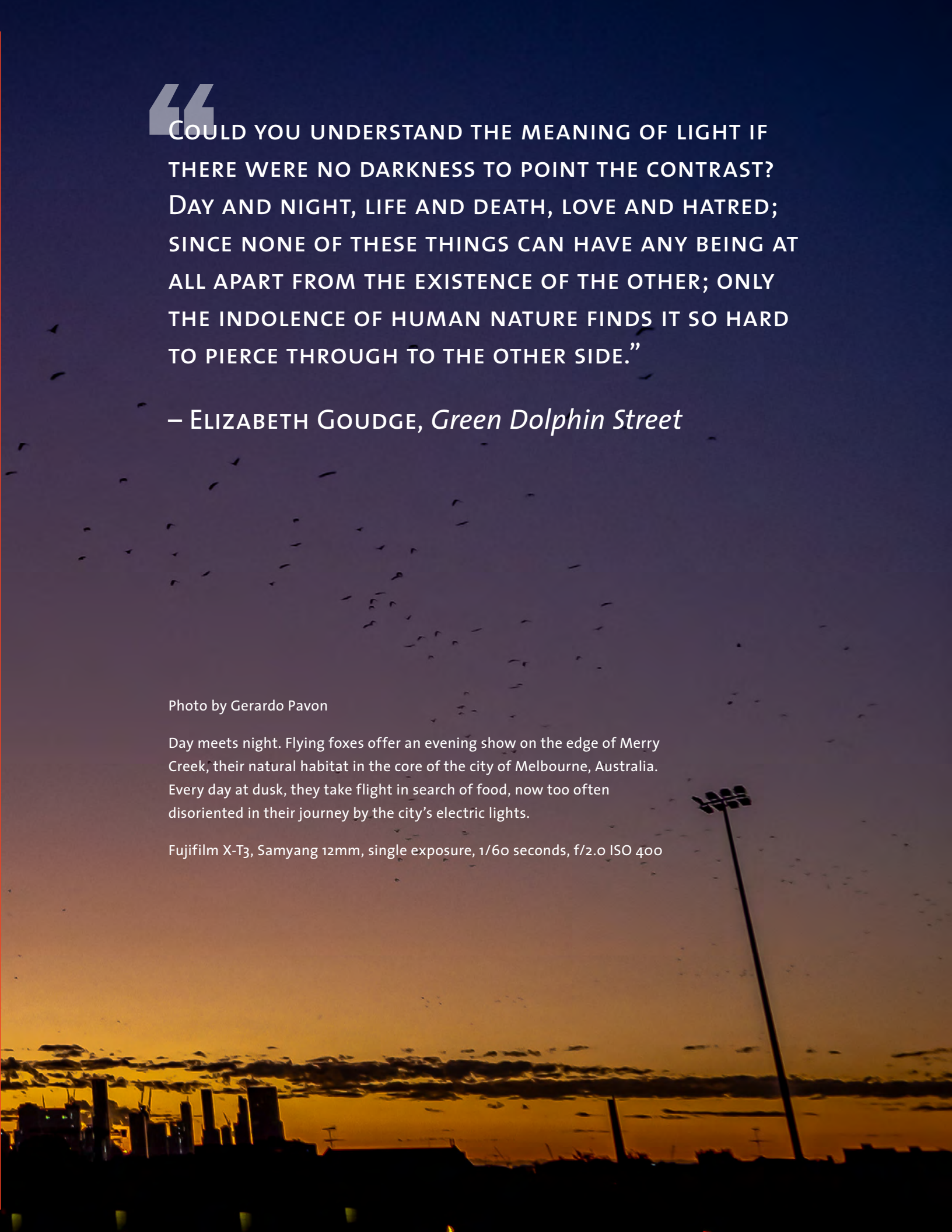
COULD YOU UNDERSTAND THE MEANING OF LIGHT IF THERE WERE NO DARKNESS TO POINT THE CONTRAST? DAY AND NIGHT, LIFE AND DEATH, LOVE AND HATRED; SINCE NONE OF THESE THINGS CAN HAVE ANY BEING AT ALL APART FROM THE EXISTENCE OF THE OTHER; ONLY THE INDOLENCE OF HUMAN NATURE FINDS IT SO HARD TO PIERCE THROUGH TO THE OTHER SIDE.”

– ELIZABETH GOUDGE, *Green Dolphin Street*

Photo by Gerardo Pavon

Day meets night. Flying foxes offer an evening show on the edge of Merry Creek, their natural habitat in the core of the city of Melbourne, Australia. Every day at dusk, they take flight in search of food, now too often disoriented in their journey by the city's electric lights.

Fujifilm X-T3, Samyang 12mm, single exposure, 1/60 seconds, f/2.0 ISO 400



# 2022 Annual Awards

Each year, the International Dark-Sky Association recognizes the incredible achievements of those committed to our mission to preserve the night. Here, we celebrate and congratulate our 2022 award winners. For more on each winner, visit [darksky.org](https://darksky.org). **by Lauren Scorzafava**

## Crawford Hunter Lifetime Achievement Award

*IDA's highest honor, given to individuals who have contributed an extraordinary effort to light pollution abatement.*



## Dr. Kellie Pendoley

**AUSTRALIA**

Dr. Pendoley has been an active and powerful defender of the natural environment for nearly 40 years. Over the last two decades, she has played a pivotal role in measuring and implementing management strategies that protect the natural nighttime environment. She has been involved in countless projects across Australia that address the ecological impact of light pollution.

## The Dr. Arthur Hoag and William T. Robinson Award

*An individual who has been outstanding in educating government and the public about outdoor lighting-control ordinances.*



## Steve Butler

**NEW ZEALAND**

For 30 years, Steve Butler has drawn widespread attention to light pollution issues on the South Island of New Zealand. Throughout his professional and volunteering careers, Steve has excelled with quiet efficiency and tireless energy, and he is widely respected for his deep knowledge of lighting-related legislative matters.

## Galileo Award

*For achievements in research or academic work on light pollution over a multi-year period.*



## Travis Longcore

**U.S.**

For about 20 years, Travis has been one of the most prominent researchers investigating the effects of artificial light. Over that time, he has published many research papers on the ecological effects of light pollution. Travis has also worked on educating governmental organizations, including supporting guidelines for the U.S. National Park Service. His recent work includes tracking light pollution in the Central Idaho Dark Sky Reserve in 2021 and studying the effects of LEDs on terrestrial wildlife.

## Bob Gent Community Leadership Award

*For outstanding achievement at the local level in combating light pollution and fostering support for IDA.*



## Bruce McMath

**U.S.**

Through Bruce's direct action, light pollution in Arkansas, U.S. has achieved broad awareness and rapidly growing public action and government commitment to future mitigation. Bruce also helped lead the effort to certify the Buffalo National River as an International Dark Sky Park. His involvement of almost 20 years in the dark sky movement has been instrumental in getting a nighttime law on the books for the state.



### Lighting Design and Technical Innovation Award

*Individuals or entities that promote quality outdoor lighting.*

**Thorn Lighting Limited**

**U.K.**

### Dark Sky Defender Award

*In recognition of individual efforts to promote and advance IDA's mission and programs.*

**Rayan Khan**

**PAKISTAN**

**Dani Robertson**

**U.K.**

**Bob Meadows**

**U.S.**

**Samyukta Manikumar**

**KENYA**

**Marcelo de Olivera Souza**

**BRAZIL**

### Rising Star Award

*Honors students who demonstrate enthusiasm for and commitment to dark sky conservation or research.*

**Jacob Koglin**

**GERMANY**

**Amireza Goli**

**CANADA**

**Biraj Nainabasti**

**U.S.**

### Nocturnal Habitat Protection Award

*Those who have been instrumental to the conservation of terrestrial and/or aquatic nocturnal habitats.*

**Bryan Boulanger**

**U.S.**

### Dark Sky Place of the Year Award

*A recent exceptional achievement by or for an International Dark Sky Place.*

**Sternenpark Rhön  
International Dark Sky  
Reserve**

**GERMANY**

Sternenpark Rhön International Dark Sky Reserve





## MEET A MEMBER

# Landon Bannister: Dark nights down under

In this issue, we get to know IDA advocate Landon Bannister in Australia, who is a lighting designer and president of Dark Sky Tasmania.



Credit: Courtesy Landon Bannister

## How did you get interested in dark skies?

My background is in lighting sales—I've been doing that for over 20 years. I first heard about the dark sky movement 10 years ago at a video screening of *The City Dark* documentary hosted by the Illuminating Engineering Society's Melbourne [Australia] chapter. I was based in Melbourne and I watched it and was like, "Oh, my God, I can't believe our lighting industry is causing all this

havoc." But the penny didn't really drop until years later when I moved back to my home state of Tasmania. I live 10 minutes out of the main city, Hobart, and had come home on the weekend. It was a Friday night. I took a glass of wine, stood out on my deck and looked up and saw stars. I hadn't seen them for a decade. It was then I realized we need to do something. We founded Dark Sky Tasmania in 2019.

## From your perspective as a lighting salesperson and designer, what are the biological impacts of light at night?

It is important we think of artificial light as a drug, and we need to get the right dose and the right time. Essentially, we advocate for high levels of ambient lighting (sky-like) in daytime environments. And then, of course, in nighttime environments, we want to really tone things right back—remove all the blue wavelength, keep light below horizontal, and put everything on its dimmest setting or turn it off.

## It seems like dark sky lighting is intuitively good lighting, is that right?

Absolutely. One story I like to tell is a tale of two bars. One has really nice, warm, low-level lighting, a lot of people, and the other is a really bright, hideously lit bar with no one standing in it for a reason. At the end of the day, the low-lit bar knows that's what's going to attract people. It's the same if you take that concept outside—making things overly bright isn't going to attract people to that space. No, the way you attract people is not by over-lighting. It's by using really low levels at really warm temperatures. It's like applying the primal connection we have with fire and moonlight and the stars to lighting design.

## What about the natural cycles of night and day? How does that influence lighting design?

We are a diurnal species and have adapted over millions of years to the lighting conditions that nature provides. This hasn't changed in the 140 years since we've had electric lighting. That evolutionary response would take

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“Oh, my God, I can’t believe our lighting industry is causing all this havoc.”

*Continued from page 10*

thousands of years. Physically, all of our responses are still at an evolutionary level: being outside under the sun during the day and being under the light of the moon, the stars, and fire at night.

We’ve had control of fire for millennia, so we have built up biological responses to it. It’s got three really good properties. It’s a really low level of light—very warm, with no blue content.

And it’s also below the horizon, which means the light hits the top of the eye where there are fewer biological receptors and therefore less likely to stimulate a circadian response. So, for more humanized and local lighting design, we should be using lower levels of light and keeping lighting to a more human scale where possible. Those sorts of things can really help. ★

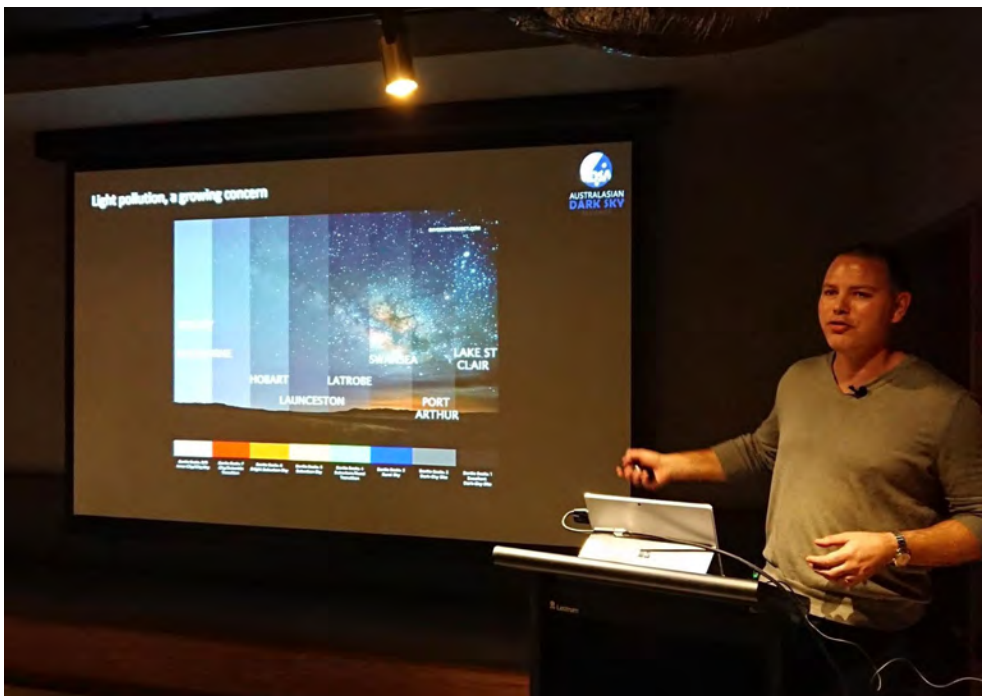
*Read more about Landon at [www.darksky.org/landon-bannister-monthly-star](http://www.darksky.org/landon-bannister-monthly-star)*

Top, right: Landon Bannister running a Dark City Walk in Hobart, Tasmania, 2018.

Bottom, right: Presenting at a technical meeting of the Illuminating Engineering Society Victoria/Tasmania Chapter in Melbourne, 2019.



Credit: Courtesy Landon Bannister



Credit: Courtesy Landon Bannister

# Advocate highlights

News snippets from our network of dark sky advocates around the world.

## A Maui, Hawaii, U.S.

Maui County Council passed a bill that limits the amount of blue light pollution produced by outdoor lighting fixtures. The bill mandates that outdoor lighting restrict blue light, be pointed downward, and be shielded, ensuring no light shines over the ocean.



Dark nights in Misiones, Argentina

Credit: Alejandro Sommer

## B Misiones, Argentina

Thanks to the work of advocate **Alejandro Sommer**, a provincial environmental protection law was approved guaranteeing dark skies as a natural resource and mandating sustainable design for the preservation of the environment and innovative regulation of the use of the artificial light.

## C U.K. & Spain

A new paper by IDA Board of Directors members **Kevin Gaston** and **Alejandro Sánchez de Miguel** reviews the environmental impacts of artificial light at night on people, wildlife, and the night sky. It concludes with a fresh approach to the use of light at night.

[bit.ly/3U4BvRF](https://bit.ly/3U4BvRF)

## D China

**Shanghai** enacted China's first local environmental protection law to include light pollution, and the Tibetan town of **Lenghu** in Qinghai province designated a dark sky preservation area with rules controlling artificial light.

## Newly certified International Dark Sky Parks

### New Parks

- 1 Merritt Reservoir State Recreation Area, Nebraska, U.S.

### New Sanctuaries

- 2 Lost Trail National Wildlife Refuge, Montana, U.S.

### New Urban Night Sky Places

- 3 Parc du Mont-Bellevue, Québec, Canada



Merritt Reservoir State Recreation Area  
Nebraska, U.S.



Credit: Justin Haag



## Give the gift of the dark!

Gift the night to yourself or a loved one by purchasing our customized apparel, mugs, and totes.

[bonfire.com/store/idadarksky](https://bonfire.com/store/idadarksky)



## Become a Dark Sky Defender

Join the **Dark Sky Defenders Society** and leave a legacy with IDA. Make a lasting impression on future generations by naming IDA in your will or estate or by making a life-income gift. We'd love to talk to you about planned giving and options we offer. For more information, please contact Susan Ciarniello at [susan@darksky.org](mailto:susan@darksky.org)



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5049 E. Broadway Blvd, #105  
Tucson AZ 85711  
USA

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LIGHT TO PROTECT THE NIGHT

# Five Lighting Principles for Responsible Outdoor Lighting



INTERNATIONAL  
DARK-SKY ASSOCIATION  
[www.DarkSky.org](http://www.DarkSky.org)



## 1 Useful



### Use light only if it is needed

All light should have a clear purpose. Consider how the use of light will impact the area, including wildlife and their habitats.

## 2 Targeted



### Direct light so it falls only where it is needed

Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.

## 3 Low Level



### Light should be no brighter than necessary

Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.

## 4 Controlled



### Use light only when it is needed

Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.

## 5 Color



### Use warmer color lights where possible

Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.