

Nightscape

IN THIS ISSUE

Capture the Dark

Photo contest winners

2021 Impact Report
& Financials

Advocate highlights

+ more



From the Executive Director

Like many of you, I eagerly anticipated the first images from the James Webb Space Telescope. Released by NASA on July 12 of this year, they did not disappoint.

These stunning images, akin to abstract art, are helping scientists reach back to the beginning of our Universe. Capturing them took scientists a generation, cost at least \$10 billion, and required the telescope to travel 1.5 million kilometers from Earth.



Closer to home, our annual photo contest doesn't require a million-kilometer trek to capture the majesty of the night sky. This year's winners showcase the beauty of the night sky and also its fragility.

There is a long history of photography inspiring the conservation of iconic landscapes, such as California's redwoods or the Grand Canyon. The burgeoning interest in astrophotography — now accessible to anyone with a cell phone and a steady hand — is introducing a new generation to the wonder of a naturally dark landscape. Many of these talented photographers are using their work to move people to action.

Our commitment is to support this growing movement and connect people to what they can do to protect these majestic skies. Your support makes this work possible. Thank you!

Do you have a favorite from this year's winners? Or perhaps a picture you have taken that inspires your work to protect the night from light pollution? I'd love to hear from you.



For the night,
Ruskin Hartley
ruskin@darksky.org
Tucson, Arizona, U.S.

On the cover



Winner Utah Dark Skies



"Awestruck"
by Marcin Zajac
Utah, U.S.

Presented by our sponsor, Visit Utah, a photo taken in one of the most popular destinations to capture dark skies. An awestruck photographer watching the Milky Way from a massive sandstone alcove in a remote part of Utah.

Technical details: Blend | Lens: Tamron 15-30
| Aperture: F2.8 | ISO: 1600 | Shutter speed:
4 mins

From the Editor

Over the past few months, I've been fortunate to spend time in dark places. I had a few weeks in the U.S. stargazing in rural New Mexico, where the skies remain dark enough to see the Milky Way (though light pollution from cities is now encroaching).

I was also fortunate to spend two weeks in Tanzania on a safari. Visiting the remote Usangu Camp in Ruaha National Park, I saw the night sky under Bortle Class 1 conditions — the darkest nights on Earth. It was wonderful to marvel at the dome of stars above East Africa and to see the Southern Hemisphere constellations that aren't visible from my home in England.

Most impactful, though, was experiencing the full wildness of a night unencumbered by human activity and light — a night full of creatures, predators, insects, and sounds. A nighttime safari drive with an infrared camera revealed serval cats, bush babies, and even a leopard, all without disturbing the wildlife by using traditional spotlights.

Spending time at night in a very wild place was both tremendously inspiring and, at times, a little unnerving, especially when sounds outside my tent convinced me a big cat was on the prowl a few feet from my bed! (It turned out to be a munching elephant.) This reminded me that humans are just one species on this planet, and how much is lost when we destroy the night

with too much light and development. That's why your support in helping to protect and rewild the natural night is more important than ever.

In this issue, we celebrate visions of the night by showcasing the winners of our annual photography contest. We also feature images by Ukrainian photographer Pavlo Pakhomenko (below and page 13),



Credit: Pavlo Pakhomenko

who photographed the night sky above war-torn Kharkiv in eastern Ukraine during nights of blackout and curfew. You'll also find IDA's annual impact report on page 14.

As ever, thank you, dear members, for being part of our wonderful dark-sky community.



Megan Eaves
nightscape@darksky.org
London, U.K.

Contents

Capture the Dark Photo Contest Winners 4-11

Advocate highlights 12-13

New International Dark Sky Places 12

2021 Impact Report & Financials 14-15

Nightscape

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IN CELEBRATION of the impact that photography has had on the dark-sky movement, the International Dark-Sky Association hosted the third annual “Capture the Dark Photography Contest” presented by Visit Utah.



Capture the Dark

**2022 Photo Contest
WINNERS**

This year was our biggest competition ever, with 1,180 submissions from photographers around the world. The images were judged by an international panel of talented astrophotographers. We are pleased to feature the winning photographs from each of the contest’s nine categories:

Impact of Light Pollution
Creatures of the Night
Bright Side of Lighting
Connecting to the Dark
International Dark Sky Place

Deep Sky
The Mobile Photographer
Youth
People’s Choice

LIFE
UTAH
ELEVATED



Winner Impact of Light Pollution

Light pollution can have significant impacts on the environment, human health, and our access to the night sky. This category also includes images of terrible lighting, glare bombs, etc.

“Milky Way over the Li River”
by Wang Jin
Guilin, Guangxi, China

Many people climb to the top of the mountain Da Mian Shan to see the First Bay of the Li River, getting a deep impression of the sunrise, a sea of clouds, light, and shadow, but few people know that the Milky Way also rises right here. April should

have been the season of mist and rain on the Li River, but we unexpectedly had a perfect, clear night. The bright lights causing glare and light domes on the opposite side are from Xingping Wharf.

Technical details: Blend | Lens: Viltrox 13mm
| Aperture: F1.4 | ISO: 400 | Shutter speed:
60 sec



Winner

Creatures of the Night

Light pollution doesn't just erase our view of the stars; scientific evidence suggests that artificial light at night has negative and deadly effects on wildlife, including amphibians, birds, insects, and mammals.

"Star Forest"
by Bin Chen
Xishuangbanna, Yunnan, China

Technical details: Stacked | Lens: 35mm |
Aperture: F1.4 | ISO: 4000 | Shutter speed:
30 sec

Twinkle, twinkle little fireflies. Numerous fireflies gathered in the Xishuangbanna Dai Autonomous Prefecture in southwest China's Yunnan Province, creating star-like scenery in the forest.



Winner The Bright Side of Lighting

Light pollution can give artificial lighting a bad reputation, but lighting that follows IDA's Principles for Responsible Outdoor Light can be beautiful, healthy, and functional.

"Nocturne of the Himalayas"
by Haitong Yu
Tibet, China

Namcha Barwa is the highest peak in the eastern section of the Himalaya range. Located in eastern Tibet, it stands at 7,782 meters (25,531 ft) under cold moonlight. The hotel beneath this sacred snow peak used only dim lights for basic visibility so that

we could enjoy the mysterious light of the snowy peak under the full moon.

Technical details: Single exposure | Sony 85mm | F1.4 | ISO:100 | Shutter speed: 6 sec



Winner Connecting to the Dark

Experiencing a natural night provides perspective, inspiration, and leads us to reflect on our humanity and place in the universe.

“Rock climbers under a rising blood moon”
by Chris Olivas
Joshua Tree National Park, California, U.S.

This image was taken of rock climbers utilizing the unique features of Joshua Tree National Park under a brightly lit lunar eclipse. Only in this dark-sky park was the surrounding area dark enough for the moon to be unobscured by light pollution and

clear enough to see right after sunset. This was meticulously planned for the location, timing, and positions of all elements. In order to get both the moon and subjects in focus, using a telephoto lens I focused on each separately and blended them together.

Technical details: Blend | Lens: Tamron 150-600mm | F6.3 | ISO: 51200 | Shutter speed: 1/3 sec



Winner International Dark Sky Place

Over 170 protected lands and municipalities around the world have been certified by IDA as International Dark Sky Places, creating havens for astrophotographers.

“Perseid Meteor and Sprites”

by Stephen Hummel

McDonald Observatory, Texas, U.S.

A bright meteor from the Perseid meteor shower pierced the sky at the same moment a large sprite — an electrical breakdown in the upper atmosphere — occurred over a distant thunderstorm. The image was taken from McDonald

Observatory in West Texas, a core area of the Greater Big Bend International Dark Sky Reserve. The sprite occurred over 400km (250mi) away, over Chihuahua, México. The profile of the Davis Mountains can be seen in the foreground. Dark skies are crucial to observing and researching sprites and other events in the night sky.

Technical details: Single exposure | Lens: 135mm | Aperture: F2 | ISO: 4000 | Shutter speed: 2 sec



Winner Deep Sky

For thousands of years, humans have looked to the night sky and wondered what is out there. Today, we can take photos of deep-space objects from our own backyards, such as nebulae, galaxies, and star clusters.

“Immortal Kombat”
by Shaun Robertston
Melbourne, Australia

NGC 6188, commonly known as “The Dragons of Ara” is found about 4,000 light years away, near the edge of a large molecular cloud unseen at visible wavelengths, in the southern constellation Ara (the Altar). Massive, young stars were

formed in that region only a few million years ago, sculpting the dark shapes and powering the nebular glow with stellar winds and intense, ultraviolet radiation.

Technical details: Telescope/Lens: Skywatcher Esprit 100ED | Mount: Skywatcher EQ6R Pro | Filter(s): Antlia 3nm Ha, Oiii and Sii | Software: Astro Photography Tool for image capture and Adobe Photoshop and Pixinsight for editing | Camera: ZWO 1600GT | Number of frames: 180 | Total exposure (integration) time: 15 hours

Winner

The Mobile Photographer

No big camera? No problem! Shots from any of the above categories taken with a cell phone, tablet, or GoPro. No DSLR, mirrorless cameras, or drone shots.

“Comet NEOWISE”

by Zhaoqi Li
Hebei, China

I used the 10x long lens of the OPPO Find X2 Pro to capture the magnificent Great Comet.

Technical details: Single exposure | OPPO Find X2 Pro | Aperture: F3 | ISO: 3200 | Shutter speed: 32 sec



Winner

Youth

A shot for any of the above categories taken by someone 17 years old or younger.

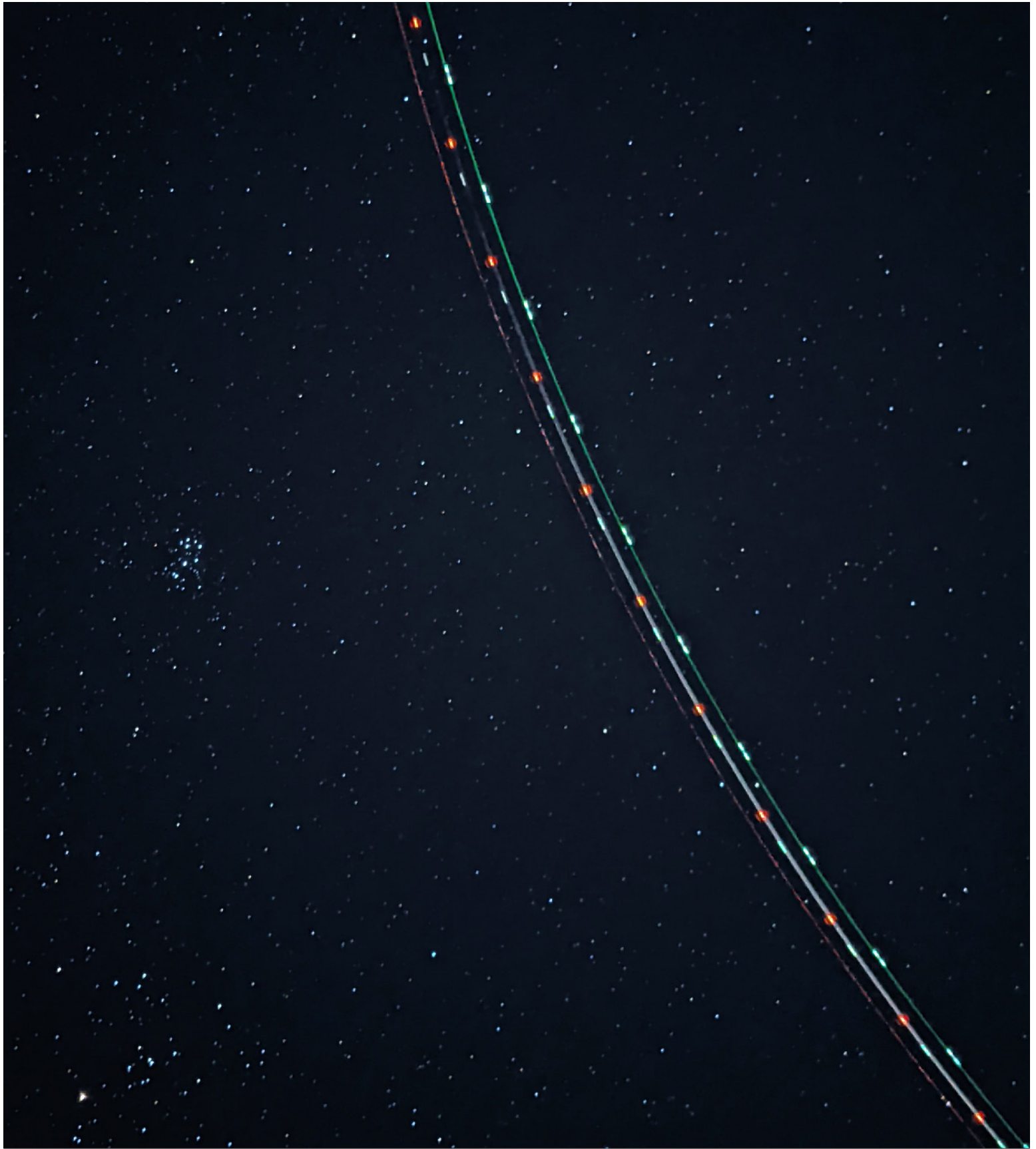
“Stars above the desert”

by Jingyi Ma
Kubuqi Desert, Inner Mongolia, China

I went to the desert of Kubuqi on my vacation last summer. The desert stretches as far as the eye can see and the Milky Way is like a luminous cloud across the sky, which gave me a sense of the vastness of the open world. Green airglow beneath the Milky Way added to the romantic atmosphere.

Technical details: Stacked | Lens: Sony 14mm | Aperture: F1.8 | ISO: 2500 | Shutter speed: 15 sec





Winner People's Choice

Chosen by our community of dark-sky supporters, this photo received the most votes in a public poll.

"Touring through Taurus"
by Shreya Gupta
Nhave, Maharashtra, India

The photograph shows an airplane passing just below the constellation of Taurus, leaving behind a trail from its lights. The airplane, a modern human-made marvel, seems to be giving its passengers a tour of the stars, which are eternal in comparison

and were made by greater, mysterious entities. The picture is a metaphor for curiosity, exploration, and discovery. It connects our little lives to the dark night.

Technical details: Stacked | Google Pixel 4a 4G | Aperture: F1.7 | ISO: 354 | Stack of 15, 16-sec shutter speed photos

Advocate highlights

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

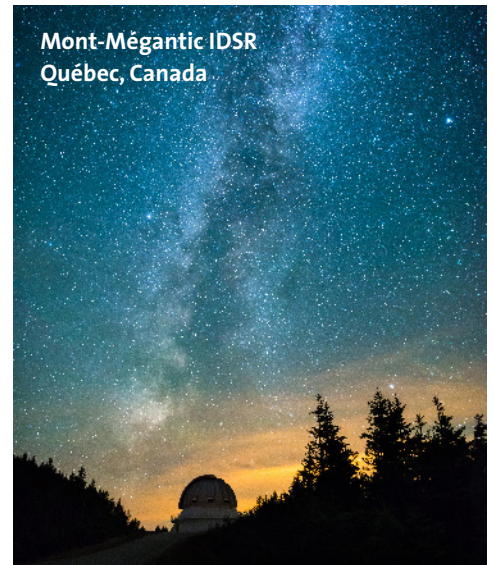
State of the Science report

In June, IDA published the “2022 State of the Science” report by **Dr. John Bar-entine**. It provides an overview of our scientific understanding of how artificial light at night affects the nighttime environment.

darksky.org/science2022

A South Tyrol, Italy

New lighting regulations were put into place in **South Tyrol**, an autonomous province in northern Italy, requiring decorative and shop-window lighting to be turned off overnight and limiting luminance and color temperature.

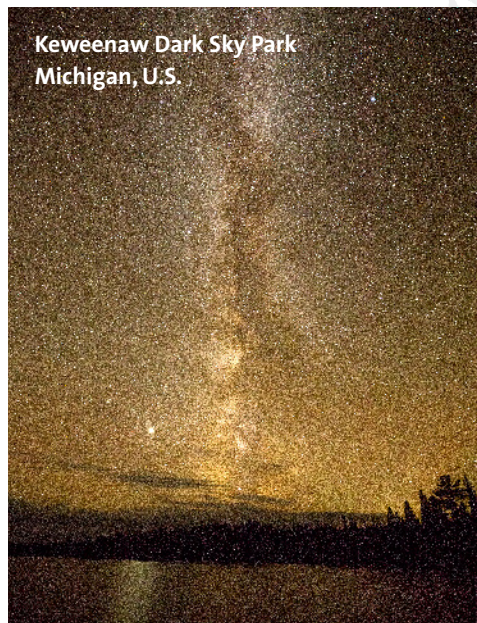


Credit: Rémi Boucher

B Québec, Canada

An economic study conducted at **Mont-Mégantic International Dark Sky Reserve** shows that dark-sky protection efforts are a major driver of tourism and job creation, with benefits of around \$13.8 million per year.

en.cielettoilemontmegantic.org/etudes



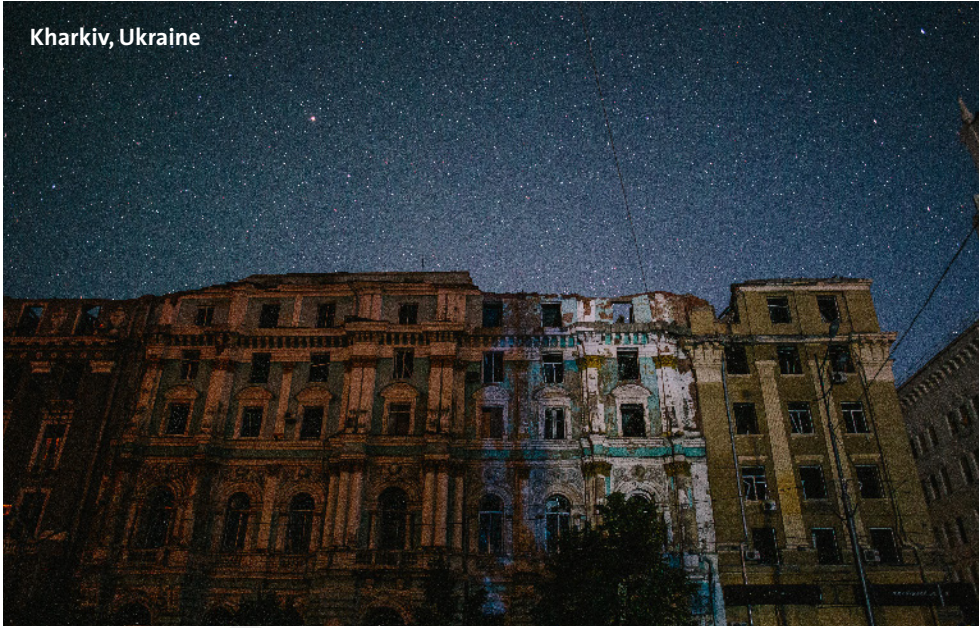
Keweenaw Dark Sky Park
Michigan, U.S.

Newly certified International Dark Sky Park

1 Keweenaw Mountain Lodge,
Michigan, U.S.

Credit: Chris Guibert

Kharkiv, Ukraine



Credit: Pavlo Pakhomenko

Taiwan

The first law toward light pollution control in Taiwan was approved by the **Taiwan Environmental Protection Administration** and went into effect across **Lienchiang County** in the Matsu Islands, an archipelago in the East China Sea.

Ukraine

“In the darkest times, the stars come out.”

Ukrainian photographer and dark-sky enthusiast **Pavlo Pakhomenko** recently managed to photograph the night sky above his hometown, **Kharkiv, Ukraine**. Under the terrible conditions of blackouts and curfews due to the Russian invasion, Pakhomenko found solace photographing the night sky without light pollution. Read his full story and see photos on the IDA website.

darksky.org/dark-skies-over-kharkiv-ukraine/



Capture the dark!

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

bonfire.com/store/idadarksky



Your business can help protect the night!

The International Dark-Sky Association is excited to announce our new **Organizational Membership** for small businesses, non-profits, and member organizations that want to do their part to protect the night. Join us and receive special benefits and insider dark-sky reports. For more information, please contact our Membership Director at susan@darksky.org



2021 Impact Report

President's Message

The next generation of dark-sky advocacy lies before us, many under a hazy cloud of countless artificial lumens. In a single generation, natural darkness has become a lost tale of nights not so long gone. As a child, I experienced countless fireflies and stars in my backyard. Now, my daughters experience ceaseless day-like

which they are trying to protect. Over-lighting puts the health of all living creatures at risk. Night offers a connection to something expansively and collectively larger than oneself. A backdrop for self-discovery and wonderment; this is the power of the night.

I invite you to read "In The Land of Living Skies," a 2022 *Harper's Magazine* article in which Suzannah Showler says:

"The eradication of darkness may seem like a fringe, superficial issue to get worked up about — more of an aesthetic problem than a loadbearing one. We might instead think of darkness as a synecdoche for the basic problem of human imposition on the natural world..."

Light waste remains one of the easiest forms of pollution to solve. We have the tools we need to address this problem now, and by doing so, we can make a significant step forward in the global climate crisis and biodiversity loss. A dark night is retrievable — let's retrieve it before there is no one left to remember how.

Night protectors, keep up the momentum! I am eager to see what a preserved night will once again reveal. Watch for Under One Sky conference

materials, advocate resources, and a website relaunch coming soon.

The night is calling. Let's go meet it,



Diane Knutson

President, International Dark-Sky Association

disturbances all night. As a family, we plan an annual trip to experience a truly natural night (pictured). Yet, many don't have such privilege.

Given the exponential spread of light pollution, the next generation of dark-sky protectors might not have firsthand experience with or direct access to that

Reaching a Global Constituency

Reach

192,927
supporters and members from
61
countries around the world

Conservation

- ★ 120,810 square kilometers of protected land
- ★ 37 new International Dark Sky Place (IDSP) designations; 194 total
- ★ Two new countries added to the program (Austria and Brazil); 22 total

Engagement

- ★ International Dark Sky Places welcomed more than 56 million visitors.
- ★ International Dark Sky Week reached an unprecedented audience of over 5 million people, demonstrating a renewed awareness of light pollution issues.
- ★ The Under One Sky global conference welcomed 800 participants from 61 countries in a 24-hour virtual event.
- ★ The Fixture Seal of Approval program engaged 14 new lighting companies.
- ★ Over 600 entries were submitted to the Capture the Dark photography contest, representing 66 countries.

Empowering Chapters & Advocates

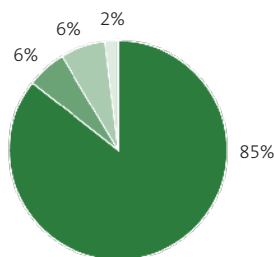
- ★ Led by IDA Chapters and Delegates worldwide, our engagement programs reached more than 5,587,477 people with 1,526 dark-sky events.
- ★ IDA now has advocate representation from 45 countries with advocates on every continent.

Advancing Policy & Science

- ★ IDA Delegates assisted Western Australia's State Government to develop a Dark Sky and Astrotourism Position Statement.
- ★ IDA provided leadership in the Dark and Quiet Skies workshop, which made policy recommendations to the United Nations Office for Outer Space Affairs.
- ★ IDA Washington D.C. is actively engaged with the D.C. Department of Transportation, the Mayor's Street-light Advisory Panel, and the D.C. Council to achieve a dark-sky friendly LED streetlight conversion project.
- ★ Since 1997, IDA Italy's efforts have helped to enact 18 regional and provincial light pollution laws covering almost the entire national territory, with the exception of Sicily and Calabria.
- ★ In January 2021, IDA México made official the changes in the federal environmental law to treat artificial light at night as pollutant.
- ★ IDA Pennsylvania worked with the City of Pittsburgh in implementing its first-ever comprehensive dark-sky ordinance.
- ★ The IDA-supported Artificial Light at Night online database now includes more than 3,500 scientific papers.

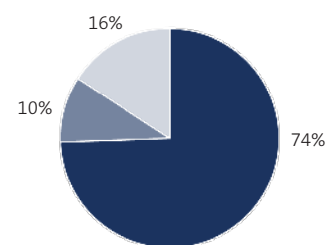
FY2021 Statement of Financial Activity

Fiscal year ending December 31, 2021



REVENUE

Individuals	\$1,162,524
Corporations & Grants	\$79,318
Program Revenue	\$89,332
Other	\$25,023
Total Revenue	\$1,356,197



EXPENSE

Program Services	\$912,941
General Administrative	\$119,169
Fundraising	\$192,980
Total Expense	\$1,225,090

This information is based on Reviewed Consolidated Financial Statements for the year ending December 31, 2021. For more detailed financial information, please visit darksky.org/about/funding

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Thanks to our Brand Partners

The International Dark-Sky Association's Brand Partners are dedicated members of the dark-sky protection community from corporate and business sectors. They support program, outreach, education, and nocturnal conservation efforts. We are grateful for their support in 2021.

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LIGHT TO PROTECT THE NIGHT

Five Lighting Principles for Responsible Outdoor Lighting



INTERNATIONAL
DARK-SKY ASSOCIATION
www.DarkSky.org



Illuminating
ENGINEERING SOCIETY

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.