



ISSUE NO. 57 Autumn 2020

COMMISSION for DARK SKIES

PROTECT THE NIGHT



NEWSLETTER OF THE BRITISH ASTRONOMICAL ASSOCIATION'S COMMISSION FOR DARK SKIES

www.britastro.org/dark-skies

SUBMIT NOW TO THE ALL-PARTY PARLIAMENTARY DARK SKIES GROUP OF MPs'
CONSULTATION AT <https://appgdarksdies.co.uk/dark-skies-consultation>
DEADLINE SEP 27 SPEED GOVERNMENT ACTION!

Coronavirus lockdowns, clearer skies: a *temporary* benefit?

Simon Birkett is the founder and director of Clean Air in London (cleanair.london), which took over responsibility for the cross-party **Campaign for Clean Air** in London, which he also founded in 2010. He was quoted by **Beth Gardiner** in a recent issue of *National Geographic* as saying "I really do quite enjoy clean air: do you think we could get it, or keep it? There's a chance to really get people to stop, take a deep breath, and reflect on questions like 'How was your asthma during this (lockdown) period?' ". Gardiner wrote "Although a near-halt in normal life and economic activity is no one's idea of a good way to reduce pollution, the brief respite might, in Birkett's view, turn this dark time into "a catalyst, or a tipping point, which could get us to say 'Clean air—there's something special about it.' "

Many people are reporting to the Commission for Dark Skies that the months during which road traffic and industrial pollution, and especially aircraft emissions, have been forcibly lessened by Covid-19 measures have seen some of the best, most transparent night skies they can remember, with light pollution reduced because of the decline in the amount of scattering particulates above. The CfDS has been in touch with the All-Party Parliamentary Group of MPs during the past months, using Zoom rather than face-to-face meetings, and we have made the point, among others, that people may be set thinking about the kind of clean air and starrier skies they have been experiencing. Perhaps Birkett's 'catalyst' will have had some effect when we return to normality – or as some have put it, a 'new normality' where the harm caused by pollution and climate-changing processes will be more strongly dealt with. This would be good news indeed for our heritage of starry skies.

The CERN **CLOUD experiment** (Cosmics Leaving OUtdoor Droplets) investigates the microphysics between galactic cosmic rays and atmospheric aerosols. CLOUD shows that nitric acid and ammonia from vehicles and other sources can condense onto new aerosol particles, accelerating their growth at least 100x faster than previously found. Global ammonia emissions are mostly due to farming; In cities ammonia and nitric acid emissions come largely from vehicles. Since light pollution is caused by the scattering of upward light by such atmospheric pollutants, firmer controls on farming and urban emissions are needed.

physicsworld.com/a/ammonia-emissions-can-drive-urban-smog-formation

Encouraging Star-Quality Lighting

ON THE CAMPAIGN TRAIL

Sadly, **Mike Helanor**, CfDS representative with the Mansfield and Sutton Astronomical Society and a stalwart on our stands at various events, passed away in March, a victim of the Covid-19 epidemic. Mike's unfailing support and enthusiasm for public engagement will be greatly missed.

Seeing cities by night from the ISS – you can help



The ISS sets in the east. Photo: CfDS

www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/PromISSE/Tracking_cities_at_night

The 'NightPod' a motorised tripod developed by the **European Space Agency** and Dutch company **Cosine**, compensates for the motion of the International Space Station by tracking targets on Earth automatically. There is now an impressive library of images of cities at night. The *Cities at Night* citizen science project aims to create a map, similar to Google maps, of the Earth at night using photographs taken by astronauts from the ISS. Quoting the website: "NASA has a database with almost half a million pictures taken by the astronauts on the International Space Station. To organise all this data with the use of computers would need extremely complex algorithms to interpret the photographs. The human eye, however, knows if the camera was pointing at a city or simply at the stars. So we created Cities at Night, a platform with different apps with which anyone can help while enjoying beautiful pictures taken from space."

Finding a better light

Catch **Sriram Murali**'s excellent light pollution video, taking the viewer from the starless skies of the big city to the beautiful starscapes of remote rural locations. This is on the National Geographic's YouTube stream at www.youtube.com/watch?v=TVAB1IT-sWw

More health and light studies

Two more studies conclude that artificial light at night affects human health: breast cancer in menopausal

women and implications of light pollution in Parkinson's disease epidemiology:

onlinelibrary.wiley.com/doi/abs/10.1002/ijc.33016 and

www.nature.com/srep/2013/130306/srep01395/full

CPRE star count 2020

The **CPRE**, the Countryside Charity, with which the CfDS has been collaborating for decades, published its annual national Star Count in June. **Emma Marrington**, a long-term friend of the Commission and holder of its Joy Griffiths Award for meritorious contributions to dark skies, commented:

"We've learned that almost two-thirds of us (61%) couldn't see more than ten stars inside the rectangle of the four brightest stars in Orion, indicating we're experiencing severe light pollution. Worryingly, this was the highest figure we've seen since we started doing our annual counts. But there was a small star of hope – 1% more people than last year (now 3%, up from 2% in 2019) told us that they could see a whopping 30 stars or more in Orion! These lucky folk are benefiting from 'truly dark skies', and getting a great stargazing experience. Are you living with light pollution, or enjoying velvety darkness and star-filled views?"

www.cpre.org.uk/news/star-count-2020-the-results

And even in the Arctic...

Research published recently in the journal *Nature Communications Biology* (Jørgen Berge *et al.*) indicates that light pollution is now impacting fish and zooplankton behaviour during the Arctic night. In one of the least disturbed truly dark environments on the planet, the Polar Night, the moon, stars and aurorae provide important cues to distribution and behaviours, including predator-prey interactions. "With a changing climate and increased human activities in the Arctic, such natural light sources will in many places be masked by the much stronger illumination from artificial light". The study shows that "normal working light from a ship may disrupt fish and zooplankton behaviour down to at least 200 m across an area of >0.125 km² around the ship. Both the quantitative and qualitative nature of the disturbance differed between the examined regions. We conclude that biological surveys in the dark from illuminated ships may introduce biases in biological sampling, bioacoustic surveys, and possibly stock assessments of commercial and non-commercial species".

pubmed.ncbi.nlm.nih.gov/32139805

DARK SKIES AROUND THE WORLD

Recent correspondence to the CfDS has come from Australia, Austria, the Czech Republic, France, Germany, Italy, Ireland, Malta, The Netherlands, Saudi Arabia, Slovenia, Spain, Turkey, the USA.

Spain:

Search 'atlas of light pollution in Spain' to see how amateur astronomer **Joan Manuel Bullón** has been creating a project called *Lost Horizons Versus Dark Skies* (*Horizontes Perdidos Versus Cielos Oscuros*). Light pollution has become a major problem for both professional and amateur astronomy on the Iberian Peninsula (english.elpais.com/elpais/2019/04/18/inenglish/1555577043_858874.html). Bullón has taken photos of obtrusive lighting emitted from many cities in Spain and has illustrated how the misapplication of LED technology, using lighting that is far too bright and of CCT well over 3000K is having worrying effects on both terrestrial and celestial environments and biomass. Captured by fisheye lenses, waste-light halos from streetlights from the biggest Spanish cities are apparent even at a distance of 500 kilometres.

USA/Germany

This newsletter has previously reported work by **Brett Seymoure** of the Living Earth Collaborative at St. Louis' Washington University documenting the many ways that artificial light alters the lives of insects. He concludes that "one million species, including up to 40% of insects, will go extinct within the next several decades. It is urgent that we seek to identify the range of threats that insects face, and understand how best to address them. We strongly believe that artificial light—in combination with habitat loss, chemical pollution, invasive species, and climate change—is driving insect declines." This echoes earlier work in Germany by Professor **Gerhard Eisenbeis** (*Estimate of Total Insect Mortality Near Streetlamps*), who, using national data on lamp types, and insect death counts per lamp type, estimated that total insect mortality due to lighting alone for Germany could be as much as *130 billion* individuals per summer season alone.

China/S.Korea

In 2019 Drs. **Wu Guanglei**, **Jack Ngarambe** and **Gon Kim** published their comparative study on current outdoor lighting policies in China and South Korea: *A Step toward a Sustainable Nighttime Environment*. Among their conclusions are that both countries have relatively robust light pollution control policies, but problems remain to be resolved. Light pollution measures in China are "too simple and lack specificity for a complex issue such as light pollution". Lighting standards for decorative and advertisement lighting are lacking. "The issue of generalization is also seen in light pollution policies in Korea; for example, the lighting limits provided for advertisement lighting in the Korean Light Pollution Prevention Law are intended to control luminance levels emitted by a single signboard instead of the net luminance radiated by all the signboards on a building façade. As such, given that the two countries share a similar socio-economic background, they can learn from each other's specific approaches to tackling light pollution". An exchange of ideas between Korea and China is recommended. The full study is at www.mdpi.com/2071-1050/11/14/3989/htm

Turkey

The CfDS is grateful to the Turkish-based lighting company **Heper** which has ordered 70 copies of '*Blinded by The Light?*' (see information on this publication below).

The CfDS' main handbook '*Blinded by the Light?*', completely re-edited and rewritten, has seen good sales. Prices: **£3.50** direct purchase without postage; **£5.00** (incl. postage) for UK, and £3.50 each extra copy; **£8.00** for 1 copy for EU, and £3.50 each extra copy; **£9.00** for 1 copy, international outside EU, and £3.50 each extra copy.

Contents include: *The Environment Problem, The Disappearing Universe, Environmental Aspects, Lighting and Crime, Light Pollution and Human Health, The Cold Light of Night: LED Lighting, Action that can be taken about Light Nuisance, Monitoring Light Pollution, Bad Lighting – the Problems. Appendices: Lighting Assessment Principles* and a sample letter for complainants about poor-quality lighting.

CfDS Fighting Fund

Fighting fund and Conference donations may be made via Bob Mizon (address below*), payable to 'Commission for Dark Skies'.

Standing orders or transfer payments to the CfDS can be made via your bank to:

Sort code 40-46-37, a/c No. 71479393, a/c name "Commission for Dark Skies". Please notify us on 01202 887084 if you decide to support the CfDS in this way. We urgently need more donors.

CfDS thanks recent donors: Anon, Archant, Gerry Bond, Nigel Buchanan, Bill Cobb, Jeanette Dawson, Matt Dugas, Barry Fitzgerald, David Frydman, Ewan Gilmour, Hugh Hale, Richard Howson, Nigel Jacklin, Geoff Kirby, Leonard Matula, Rob Peeling, Marcus Price, Ian Smith, Alan Snook, Bob Stuckey, Dinah Thompson, Steve Tonkin, Ron Westmaas, Crewkerne AS, Mexborough & Swinton AS, Somerset Levels Stargazers, Hereford AS, Wessex AS. Apologies to any donor inadvertently omitted.

The CfDS is grateful to the British Astronomical Association for its continuing support.
Societies - why not collect for the Commission at your next astronomy meeting?

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The Editorial Team thanks Maddy, Bill and all at BAA headquarters for their hard work.

Queries to the CfDS

Queries and comments to the CfDS can be made via the form on www.britastro.org/dark-skies/enquiries.php
You will be directed to an appropriate member of the CfDS team.

To all astronomical societies

Do you have a dedicated light pollution officer? Most societies don't. Please consider this, as it is important to have a national picture of the extent of light pollution and local trends in night sky visibility. Keep in touch!

www.spacerocksuk.com supports the CfDS.

Meteorites, tektites and impactites: Sikhote-Alin, Canyon Diablo, Barwell, lunar meteorites, Martian meteorites...