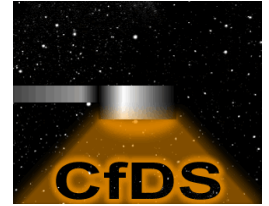




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COMMISSION for DARK SKIES



PROTECT THE NIGHT

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

www.britastro.org/dark-skies

Satellites galore – another threat to dark skies?

Although the CfDS concerns itself with artificial light allowed to travel upwards, it is publicising a new problem for astronomers involving reflected sunlight coming downwards. On 2019 June 14, BAA President **Callum Potter** issued a statement (britastro.org/node/18560) expressing the Association's concern at the launching on 2019 May 23 of sixty satellites of the SpaceX company's **Starlink** 'mesh' or 'constellation', designed to provide eventual worldwide internet coverage. They will orbit at an altitude of about 440 kilometres. **Elon Musk**, SpaceX CEO, plans by the mid-2020s to extend the number of satellites to 12,000. The satellites have reflective solar panels. Many important international space and astronomy organisations* have reacted to the potential threat of Starlink to professional and amateur observational astronomy, and warn of the greatly increased number of orbital objects. For example the **International Dark-Sky Association** has stated that "the number of low Earth orbit satellites...has the potential to fundamentally shift the nature of our experience of the night sky...We therefore urge all parties to take precautionary efforts to protect the unaltered night-time environment before deployment of new, large-scale satellite groups". The **International Astronomical Union** has issued a statement detailing "the problems which large satellite constellations such as Starlink pose for the advance of astronomy." The IAU calls for urgent discussion on ways "to mitigate or eliminate the detrimental impacts on scientific exploration as soon as practical".

The BAA President wrote that "...in the future if unregulated access continues to be allowed, there may be tens of thousands of spacecraft in low Earth orbit. Already astronomers battle with satellite trails across images and disturbance to visual views of the night sky. With the proposed significant increase of satellites in low Earth orbit this may become worse by orders of magnitude at certain times of the night. The problem is particularly acute at high latitudes where the satellites are illuminated all night during the summer. The BAA welcomes the unanimity of the astronomical communities, both professional and amateur, who have highlighted these issues (see links below). The President has written to Elon Musk expressing our grave concerns. We hope that SpaceX and other businesses working on similar projects will look for ways to mitigate impacts on our night sky environment." [Continued on page 2]

Encouraging Star-Quality Lighting

[Continued] Elon Musk has been tweeting in reply to many questions and criticisms. Among his messages we read:

2019 May 26: *"If we need to tweak sat orientation to minimize solar reflection during critical astronomical experiments, that's easily done."*

May 27: *"Sent a note to Starlink team last week specifically regarding albedo reduction. We'll get a better sense of value of this when satellites have raised orbits and arrays are tracking to Sun."*
"Potentially helping billions of economically disadvantaged people is the greater good. That said, we'll make sure Starlink has no material effect on discoveries in astronomy. We care a great deal about science." *"There are already 4900 satellites in orbit, which people notice ~0% of the time. Starlink won't be seen by anyone unless looking very carefully and will have ~0% impact on advancements in astronomy."*

Time will allow us to judge the veracity of these words.

On the subject of potential space debris proliferation, **Stijn Lemmens**, Senior Space Debris Mitigation Analyst at the **European Space Agency** in Darmstadt, has warned that compliance with operational guidelines and norms has not to date always been the case with what he terms 'current actors in spaceflight'; will operators of multi-satellite meshes behave better? SpaceX claims to have advanced systems for space debris avoidance, and states that the Starlink orbiters are *"designed to be capable of fully autonomous collision avoidance – meaning zero humans in the loop."*

*Links:

IAU Media Release: <https://www.iau.org/news/announcements/detail/ann19035/>

IDA Response: <http://www.darksky.org/starlink-response/>

NRAO statement: <https://public.nrao.edu/news/nrao-statement-commsats/>

NRAO and GBO statements: <https://greenbankobservatory.org/joint-nrao-and-gbo-statement/>

LSST statement: <https://www.lsst.org/content/lsst-statement-regarding-increased-deployment-satellite-constellations>

AURA statement: <https://www.aura-astronomy.org/news/aura-statement-on-the-starlink-constellation-of-satellites/>

ESO statement: <https://www.eso.org/public/announcements/ann19029/>

RAS statement: <https://ras.ac.uk/news-and-press/news/ras-statement-starlink-satellite-constellation>

A LONGER VERSION OF THIS ARTICLE HAS BEEN SUBMITTED TO THE JOURNAL OF THE BAA

ON THE CAMPAIGN TRAIL

New to the committee

The CfDS is pleased to welcome to its committee London-based lighting consultant and graphic designer **Kerem Asfuroglu**, who has already contributed a great deal to our new handbook *Blinded by the Light?*.

Welcome also to **Neill Mitchell** (Wessex Astronomical Society) who has taken over the management of our website www.britastro.org/dark-skies from **Catherine Maryon**. Many thanks to Catherine for her enthusiastic work.

More Welsh stars

On April 17 2019 the Town Council of Presteigne (Powys, Wales) met to consider proposals submitted by local resident **Leigh Harling -Bowen** (Transition Presteigne and Marches Astronomy Group) for the establishment of a dark sky zone for Presteigne and its local area. The associated campaign has mounted stands at local events to raise interest and support,

created a Facebook project (www.facebook.com/pages/category/Community/Presteigne-Dark-Skies-389030551943244) and enlisted the collaboration of CfDS members **Dr Nick White**, **Kerem Asfuroglu** and **Bob Mizon** in their approaches to the council and the drafting of a lighting policy. CfDS' **Dr Chris Baddiley** has provided technical advice on lighting types and monitoring. In a submission to the Council Leigh listed the opportunities and benefits: "Reverse and minimise ecological and environmental impact resulting from excessive lighting and sky-glow; improve energy consumption and efficiency, reducing operational costs; improve the quality of lighting and ambience of the local community's night time environment; involve the community and raise awareness of astronomy, ecology, environment, lighting engineering and technology; generate wider awareness of and investment in the town and area; benefit from astro-tourism."

DARK SKIES AROUND THE WORLD

Recent correspondence to the CfDS has come from Austria, Belgium, Croatia, the Czech Republic, France, Germany, Greece, Hong Kong, Hungary, India, Italy, Ireland, South Korea, Malta, The Netherlands, Saudi Arabia, Slovenia, Spain, the USA.

CROATIA:

CfDS supporters **Simon Thomas** and **Callum Holiday** attended the First Croatian Conference on Light Pollution, June 14-16, 2019 on Rab Island in the Adriatic. LED lighting was of course a major subject of discussion, as was the enactment earlier this year of a new lighting law in Croatia (www.darksky.org/croatian-light-pollution-law). Features of the new law include banning of: exterior lighting over 2700K; uplighting; skybeams; architectural lighting that spills beyond buildings; lights over 2200K in ecologically sensitive places. The changes will be carried out over ten years and involve a strong inspection regime. Also, the **International Dark-Sky Association** has recognised the mountainous Petrova Gora-Biljeg area south of Zagreb as Croatia's first IDA Dark Sky Park. Bob Mizon will represent the CfDS at the **Mayo European Dark Sky Symposium** in Ireland on November 3-5.

USA:

The CfDS is grateful to **Storm Dunlop** for drawing its attention to a recent **New Scientist** article showing that exposure to artificial light at night affects the immune responses of birds. A study led by **Meredith Kernbach** at the **University of South Florida** found that light pollution can extend the infectious period of West Nile virus in house sparrows. The sparrows are a known reservoir of West Nile virus, and mosquitoes preferentially feed on some of these birds in light-polluted urban habitats. A group of the birds was kept in natural light conditions and another in artificial light similar to that of street lamps. West Nile virus remained infectious longer in sparrows housed with artificial light at night. The USF researchers conclude that an outbreak of the disease among sparrows is ~40 per cent more likely if the birds are exposed to artificial light. This, in turn, might make it more likely that the virus could be transmitted to humans via mosquitoes that bite both sparrows and humans.

www.newscientist.com/article/2210827-light-pollutions-effects-on-birds-may-help-to-spread-west-nile-virus/#ixzz5xAZPyEHF

The CfDS' main handbook, '**Blinded by the Light?**' has been completely re-edited and rewritten, with eye-catching artwork by new committee member **Kerem Asfuroglu**. It is styled "A handbook for friends of the natural environments of Earth and sky, installers of considerate lighting, campaigners against the misuse of artificial light, and those adversely affected by light pollution". 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; and as appendices, Lighting Assessment Principles and a sample letter for complainants about poor-quality lighting. See the CfDS website from mid-September to order copies and for an online version.

The CfDS' **Joy Griffiths Award** for meritorious efforts towards preserving the night sky goes this year to **Dr Chris Baddiley**, whose work in modelling the effects of lighting upon the environment is used worldwide by lighting professionals. The most recent CfDS Award of Appreciation for outstanding local efforts went to the **Bath Starlit Skies Alliance** (see previous issue of this Newsletter and BAA Journal, July), which continues to promote good lighting practice in its area.

CfDS Fighting Fund

Fighting fund and Conference donations may be made via Bob Mizon (address below*), payable to 'BAA 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, Richard Howson, Nigel Jacklin. Geoff Kirby, Hazel McGee, Rob Peeling, Marcus Price, Ian Smith, Alan Snook, Bob Stuckey, Dinah Thompson, Steve Tonkin, Ron Westmaas, AstroFest, BAA/SPA members at various venues, Cranborne Chase AONB, Crewkerne AS, Hampshire AG, ukastroshow.com, 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?

Support this twice-yearly newsletter - please note subscription rate now £4.00

When your subscription expires, please renew promptly. BAA members can do so via their annual Association subscription form, or send your name and address with £4.00, payable to 'British Astronomical Association', for four issues, to BAA, Burlington House, Piccadilly, London W1J 0DU. Encourage other concerned people in your area/group (including non-BAA members) to subscribe.

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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 enquiry form on www.britastro.org/dark-skies. You will be directed to an appropriate person to deal with your message.

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...