



# Newsletter 13 – January 2012

RASNZ DarkSkies Group



## Welcome

Welcome to the thirteenth newsletter of the DarkSkies Group of the Royal Astronomical Society of New Zealand.

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2012 is here already, and what a year it will be. The Third International Starlight Conference will be held in Tekapo during June this year, and an application to the International Dark-Sky Association for the registration of an International Dark Sky Reserve in the Aoraki National Park - Mackenzie Basin area will be under consideration by the IDA Board.

The Transit of Venus event at Gisborne and the RASNZ 2012 AGM and Conference in Carterton, also in June, will make the middle of the year an exciting and busy time.

As well there will be the normal range of opportunities for us all to raise awareness of the issues surrounding protection of the night sky.

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## Looking back at 2011

The past year has seen a range of events .....

### IESANZ Lighting Awards and 2011 RASNZ Dark Sky Award – ‘Olympic Park Pathway Lighting’ Advanced Lighting Technologies Ltd

We would like to thank David Britten from the Auckland Astronomical Society for judging the 2011 RASNZ Dark Sky Award. This design also won the Illumination Engineering Society Lighting Award of Excellence.

David writes – A pleasing number of good entries were submitted for the RASNZ Dark Sky Award this year. This year the award was given to LDP Ltd, for their ‘Olympic Park Pathway Lighting’ project in New Lynn, Auckland. This is an outstanding design that provides a safe and inviting walkway, following CPTED (Crime Prevention Through Environmental Design) principles. The project combines all the elements desired from a dark sky friendly design into a cohesive vision sensitive to the park environment. The LED lighting produces minimal light pollution and no sky glow, employing stand alone off grid solar power with a fully automatic off peak dimming system using an astronomical clock and daylight sensing. The LDP designers were, John McKenney, Mike Grunsell and Adriana D’Arruda. <http://www.adlt.co.nz/iesanz-lighting-awards>



LDP Ltd undertook a feasibility study for Waitakere City Council (now Auckland Council) in 2009, considering options to light a pedestrian traffic route through Olympic Park as one element of a route linking residential areas to New Lynn town centre, including the New Lynn rail-bus interchange. The study examined a variety of luminaires, lamps technologies, power supply alternatives and sustainability elements.

This resulted in a decision by the council to proceed with an off-grid solar-powered lighting installation using LED luminaires. The brief also required that the lighting should minimise any potential off-site environmental effects and that sustainability should be considered in the selection of equipment. The installation comprises a total of 24 solar-powered luminaires.

In addition, it was agreed that the project would include a pilot study of another form of alternatively powered lighting – 2 wind and solar powered luminaires.

## Energy effectiveness

In terms of impact on the national grid, the result is zero. In other words, the energy effectiveness is optimal. The directional nature of the LED lamps means that for this application, we were able to use a lower system wattage than would have been required for an equivalent lighting result using metal halide lamps. The off-peak automatic dimming systems save approximately 30 per cent of the system energy that would otherwise be required. These savings help in minimising the size of the photovoltaic panels and storage batteries.

## Conclusions

The increase in usage of the pathway in the evenings is testament to the success of the system. The lighting provides a pleasant ambience and good visibility along the pathway and a few metres either side, encouraging use through safety.

**From: New Zealand Local Government Magazine**  
<http://www.localgovernmentmag.co.nz/News/LatestNews/tabid/387/articleType/ArticleView/articleId/2375/Quality-lighting-ndash-off-the-grid.aspx>

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## Sky Quality Survey in Mackenzie Basin

A survey of the quality of the sky over the Mackenzie Basin has been underway since the middle of 2011. This measures the “darkness” of the sky and results will become part of the Starlight reserve application to the IDA, (see later article)

Fraser Gunn from the Mt John Observatory and Earth and Sky Limited has been using the two Sky Quality Meters purchased by the RASNZ Dark Skies Group.

Readings are published on his web site: <http://www.frasergunn.co.nz/01Dec2011SQM.pdf> Fraser’s work shows that the skies above the Mackenzie are indeed dark. Have a look at the rest of his work.

2011 cont.

**Submissions** were prepared for:

- Tenure review proposal to freehold lands in the Lake Pukaki to Tekapo river area.
- Wellington Draft Annual Plan
- The Auckland 30 Year Plan
- Christchurch Draft Central City Plan
- Royal Society of New Zealand - MfE Consultation on Environmental Reporting
- Marlborough District Council - Whatamango Bay

**Letters or emails** have also been sent to:

- Victoria University - Searchlights over Wellington for Rugby World Cup
- White Lights of Hope organisers - searchlights over Christchurch
- WHK Ltd for bad lighting at new office building
- Advice for new lighting at Blenheim Subdivision
- 3 articles for Urban Leader (MfE Urban Design Protocol)
- 8 Canterbury schools regarding school environmental film competition opportunity around light pollution and Starlight reserves
- DOC researchers related to ecosystem impacts from Light Pollution
- Exmoor National Park - World's Second IDSRerve
- Invercargill City - LED lighting Trials

#### **Presentations**

And a very special thanks to Haritina Mogosanu for presenting on behalf of our group at the RASNZ Conference in Napier.

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#### **Aoraki Mackenzie Starlight Reserve**

An application to the International Dark-Sky Association to register the Aoraki Mackenzie Basin area of the South Island as an International Dark Skies Reserve is nearly complete. The Starlight Reserve Working Party has put a lot of work into developing a dossier of information and support from central and local government agencies and from community members and organisations.

The proposed starlight reserve includes most of the northern part of the Mackenzie Basin including Twizel, Tekapo, Lakes Pukaki and Tekapo, and all of the Aoraki National Park.

It will be a number of months before a decision is received from the IDA assessment team.

#### **About the IDSPlaces Program**

IDA established the International Dark Sky Places conservation program in 2001 to recognize excellent stewardship of the night sky. Designations are based on stringent outdoor lighting standards and innovative community outreach. Since the program began, two communities have received International Dark Sky Reserve designations, Mont Megantic in Canada and Exmoor National Park.

<http://www.darksky.org/IDSPlaces>

#### **Exmoor International Dark Sky Reserve**

TUCSON, AZ - The International Dark-Sky Association awarded the United Kingdom's Exmoor National Park the designation of International Dark Sky Reserve on 08 October at the 11th European Symposium for the Protection of the Night Sky.

Located on the southwest coast of England in Somerset and Devon Counties, Exmoor enjoys the darkest skies in the nation yet offers relatively easy access from urban hubs.

The Exmoor National Park Authority (ENPA) has been incorporating dark sky protection into its planning policy since 2005. Dark sky awareness bloomed in 2009 with a variety of programs on astronomy and conservation held during UNESCO's International Year of Astronomy. Local communities have been invited to get involved and offer feedback. Many residents, including business owners, are passionate advocates for the designation.

Many who have settled within the park's boundary associate Exmoor's dark nights with a high quality of life. A joint study by the Campaign to Protect Rural England and the ENPA shows tranquility to be a highly valued asset of country living. An unpolluted night sky contributes significantly to this atmosphere.

Exmoor's bid to become an internationally recognized Dark Sky Reserve has received wide support from agencies across the UK. Numerous letters supporting their application tell of the rarity and inspirational beauty of ENP's night sky in addition to how important it is keep the park free from light pollution for future generations.

The park hopes its designation and astronomy programs will be a popular draw for tourists.

Dr. Nigel Stone, Chief Executive of Exmoor National Park said: "We are delighted that the importance of dark skies, one of Exmoor National Park's special qualities has received this international recognition and we would like to thank all those who have helped in achieving this International Dark Sky Reserve award. We look forward to welcoming many more visitors in the future to enjoy the starlit skies at night as well as the spectacular scenery Exmoor has to offer during the day."

The IDSRerve designation extends protection over a vast area. A buffer system of tiered lighting requirements surrounds a core area of astronomical significance. This elaborate designation requires widespread cooperation from multiple parties.

In Exmoor, the 31 square miles (81 square kilometers) of core zone were chosen to minimize human habitation but to maximize open land access and points of interest. The mostly moorlike land of the core area includes bronze age burial mounds, a site of Special Scientific Interest at Dunkery Horner Wood National Nature Reserve, the deserted medieval settlement of Hoccombe Combe, and a recreational building that will be used for astronomy events.

In the buffer areas, the ENPA continues to work with park residents and management of Somerset and Devon Counties, with strong support from the national Campaign to Protect Rural England.

A lighting management plan that extends throughout the park

encourages use of low-wattage, shielded fixtures for residences, businesses, and public streetlighting. An extensive sky quality monitoring program will provide valuable data on effective lighting practices. The only other IDSRerve designation in the world was granted to Mont Megantic in Quebec, Canada, in 2007.

From: International Dark-Sky Association PRESS RELEASE  
13 October 2011

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### Starlight Conference

The New Zealand International Starlight conference will take place at Lake Tekapo, New Zealand on Monday 11 to Wednesday 13 June 2012. This is during the week before the 2012 RASNZ conference at Carterton on the 15 to 17 June 2012, and after the transit of Venus.

The Starlight conference will be the third in a series, following meetings in La Palma in April 2007 and on Fuerteventura in March 2009.

The conference will be a multidisciplinary meeting, and contributions will be welcome that not only include scientific and technical aspects of starlight, but also on themes which are educational, cultural, environmental, aesthetic, legal or political. It is hoped to include astro-tourism, Maori astronomy and public outreach through star-gazing. The relationship between stars and the ecology of the nocturnal biosphere will also be discussed.

A growing list of overseas and New Zealand invited speakers have agreed to speak at the conference.

Early registration is encouraged with a discount of the fees before March <http://starlight2012.org/>

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### Globe At Night

Are you a fan of Citizen Science? Do you enjoy participating in projects that help researchers and possibly the environment?

GLOBE at Night is one such program! By taking naked-eye observations of the night sky in your area, you can help a world-wide effort to track the effects of light pollution. Here's all the info you need in order to participate in GLOBE at Night during 2012.

### For starters, what is GLOBE at Night?

The GLOBE at Night program is an international citizen-science campaign designed to raise public awareness of the impact of light pollution on our night skies. GLOBE at Night aims to raise awareness by inviting citizen-scientists to measure their night sky brightness and submit their observations to a website from a computer or smart phone.

Light pollution not only threatens our "right to starlight", but also affects energy consumption, wildlife and health. For the past six years, the GLOBE at Night campaign has been involving people in 115 countries.

Participating in GLOBE at Night requires only five easy steps:

- 1) Find your latitude and longitude.
- 2) Find Orion, Leo or Crux by going outside more than an hour after sunset (about 8-10pm local time).
- 3) Match your nighttime sky to one of the provided magnitude charts.
- 4) Report your observation.
- 5) Compare your observation to thousands around the world.

You can also use the new web application data submission process. The GLOBE at Night website is easy to use, comprehensive and holds an abundance of background information. The database is usable for comparisons with a variety of other databases, like how light pollution affects the foraging habits of bats.

If you'd like to learn more about GLOBE at Night, visit: <http://www.globeatnight.org/>

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### Who would have thought... Sharks Seeking Out Birds?

Oil-rig lights often disorient migrating birds, making them crash into the rigs or fall into the water from exhaustion, said Christine Sheppard, bird-collisions campaign manager for the American Bird Conservancy.

More birds are killed each year by colliding with rigs than were killed by the 2010 Gulf oil spill, for example. It's possible, she said, that "the sharks may actually be learning there are places where there are birds available to them."

Marcus Drymon, of Dauphin Island Sea Lab, has been studying fish off the Alabama coast since 2006 and whose results will be published in a future study, said more research on bird-eating sharks is needed.

"It could just be that tiger sharks in this area have learned to take advantage of this prey resource," he said.

<http://news.nationalgeographic.com/news/2012/01/120113-sharks-songbirds-gulf-of-mexico-animals-fish-science/#>

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The Future of Dark Sky Compliance

WARP9 LED exceeds Illuminating Engineering Society and International Dark Sky Association full cutoff requirements for applications where light pollution or light trespass may be a concern. WARP9 LED's unique optical system and smooth flat glass lens produces full cutoff with zero light above 90° contributing to the enjoyment of celestial visibility at night for future generations.

WARP9 LED with the IDA Fixture Seal of Approval™ meets full cutoff regulations in any jurisdiction. Furthermore, the WARP9 LED can generate LEED accredited points in the areas of Light Pollution Reduction and Energy Efficiency.

Logos for Illuminating Engineering Society and IDA (International Dark-Sky Association) are visible.

New Zealand Company Spectratech Lighting Ltd stock IDA approved luminaires. <http://www.spectratech.co.nz/>

**Burglars afraid of the dark?** Crime falls when Bristol street lights are turned off *This is Bristol - UK, 25 November 2011*

Police in the Bristol area have made a startling discovery - burglars are scared of the dark. Crime has gone down in some areas to the north of the city since street lights have been turned off during the night, because thieves apparently need the light to carry out their crimes.

Parish councillors in Oldland agreed to the switch-off earlier this year which has already saved council taxpayers an estimated £16,000 in electricity bills. Councillor Ron Hardie, who represents Cadbury Heath, said: "The police have told us they have not seen any notable increase in crime. "In fact, in some areas, there has been a reduction of 20 per cent. "I understand from the police that burglars don't like it when it's dark. "They like to be able to see their escape route and they like to 'case' a premises before they strike. "They would attract too much attention if they were using torches."

Police figures show that in Frampton Cotterell, the crime rate has gone down by 50 per cent, in Thornbury by 28 per cent and Bradley Stoke, 17 per cent, compared with a year ago...

<http://www.thisisbristol.co.uk/Burglars-afraid-dark-Crime-falls-Bristol-street/story-13952633-detail/story.html>

**Urban light pollution and its impact on nocturnal activity**

Researchers in Germany have discovered that urban light pollution not only limits the visibility of stars, but also plays havoc with nocturnal animals that depend on a compass-like pattern of polarised light to function. Soon to be published in the Journal of Geophysical Research, their study warns that screening of the celestial compass could decrease the evolutionary fitness of a number of nocturnal creatures like spiders, moths, beetles and crickets. This has the potential to disturb food webs and impact whole ecosystems.

<http://www.physorg.com/news/2011-11-urban-pollution-impact-nocturnal.html>

**Celestial Compass Obscured by Urban Light Pollution for Some Nocturnal Animals**

ScienceDaily (Oct. 27, 2011) — Urban light pollution has been shown to reduce the visibility of not only the stars, but also of an important navigational signal for some nocturnal animals. During clear moonlit nights, a compass-like pattern of polarized light that is invisible to the human eye stretches across the sky. The nighttime skyglow over major cities renders this celestial compass unobservable over large areas, according to a new study written by a group of physicists and ecologists at Freie Universität Berlin and the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB). <http://www.sciencedaily.com/releases/2011/10/111027112513.htm>

**Light Links**

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**White light at night isn't bright**

Israeli study sheds light on nocturnal over-illumination, which limits production of a key brain compound and obscures the stars, too.

[http://www.mfa.gov.il/MFA/InnovativeIsrael/White\\_light\\_at\\_night\\_Nov\\_2011.htm](http://www.mfa.gov.il/MFA/InnovativeIsrael/White_light_at_night_Nov_2011.htm)

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**Phasing-Out Inefficient Lighting to Combat Climate Change**

Durban — The South African government, host of the United Nations Climate Change Conference in Durban (COP17), has formally announced a comprehensive phase-out policy for inefficient lighting, linked to a global initiative from the UN Environment Programme (UNEP) with the support of the Global Environment Facility (GEF) to tackle climate change through the transition to energy efficient lighting.

<http://allafrica.com/stories/201112071668.html>

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**Video: Light Pollution Feature - School of Media and Design**

<http://vimeo.com/33285104>

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**Video: Spectacular Video of Earth from Orbit**

<http://blogs.agu.org/martianchronicles/2011/09/20/spectacular-video-of-earth-from-orbit/>

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**Lighting governance for protected areas and beyond – Identifying the urgent need for sustainable management of artificial light at night**

<http://www.earthzine.org/2010/12/20/lighting-governance-for-protected-areas-and-beyond-%E2%80%93-identifying-the-urgent-need-for-sustainable-management-of-artificial-light-at-night/>

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**Phone app to check light Pollution**

I am keen to hear if this works, so please let me know!

<http://www.windowsphone.com/en-GB/apps/de831cf4-ed75-47ce-911d-1c9ba24cefd1>

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That's all for now. Have a great 2012.

Please contact me if you have any questions or contributions.

Thanks for your help and interest.

Clear and Dark Skies.

Best regards,

Steve Butler

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<http://rasnz.org.nz/darkskies/>



**Royal Astronomical Society of New Zealand**  
**Signatory to the New Zealand Urban Design Protocol**  
**Supporter of the International Dark-Sky Association**

