

Tourism in Terrestrial and Marine Protected Areas

protecting the night sky

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- Introduction
 - What is light pollution
 - Man is diurnal
 - Light pollution and the environment – fauna, plants, indigenous perspectives



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- Living on earth is exceptional
- Saving the view of the stars – light pollution
- The study of Astronomy
- Better design
- Case study .. **NOTHING IS IMPOSSIBLE**



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What is Light Pollution?



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Man is Diurnal

- An innate fear of the dark – evolutionary fear
- Anxieties
- Night imitating day
- Societal progression - dependency on conditions akin to sunlight- eyes, warmth & comfort



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Man is Diurnal

- Societal progression - law and order, flexible work hours & conditions, leisure activities
- Perceptions – dark v's light



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Light Pollution & the Environment

- Fauna & amphibians
- Plants
- Indigenous perspectives



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**Queen of the
Night .. Cactus ..
2hrs of
flowering in the
dark of night;
insignificant,
spindly by day**



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Emu in the Sky Constellation – Australian Aboriginal Astronomy



Photo credit:
Astrophotography of the
night sky – Christopher J
Picking



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- 2/3 world population live in light polluted conditions



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Spider eggs or is this the way it should be? The Milky Way Photography: David Mallin,



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Looking at the sky ...

The *Paranal* platform; the four main Very Large Telescope (VLT) units can be seen, as well the four auxiliary telescopes. Located in Chile
Credit: ESO/H.H.Heyer.

Siding Spring Observatory featuring 7 of 14 telescopes located on the mountain top – central is *Skymapper* – a state of the art automated wide field survey telescope. Credit: ANU-RSAA



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LIGHT ON LIGHT



ADELAIDE's light pollution encroaching on star trails due to increasing light glow from uncontrolled urban uplift . Photo: Justin Tilbrook

Impacts of lighting on night sky



Star Trails over Siding Spring Observatory – dark night skies = clarity – note other light. Photo: David Mallin

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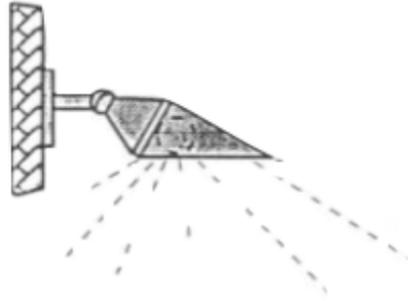
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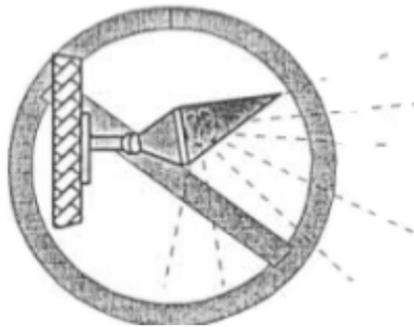
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When finding new light fixtures, make sure to check if they have a hood so the light is directed downwards, not up or forward.



This light is fine. The hood is pointing the light downwards where it is needed.



Images from International Dark Sky Association

This light is NOT GOOD. The light is pointing forwards, where it is not needed.

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- Being dark sky friendly doesn't mean **no light**. It means using the light that you need for a particular task in the most efficient manner.
 - Shield and lower the wattage of all outdoor lighting—both municipal and private.
 - Use only the light you need to get the job done.
 - Use timers, dimmers, and sensors. Shut off the lights when you can.
 - Work with your neighbors and local government to keep the light on the ground and the skies natural.
 - Use light emitting diodes (LED) technology with long wave length light in a red or yellow tint to minimize impact and save energy

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Glary globe-lights at a car park waste light sideways and upwards contributing to skyglow

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“Good lighting” - quality full cut-off road lights reduce glare and facilitate night vision

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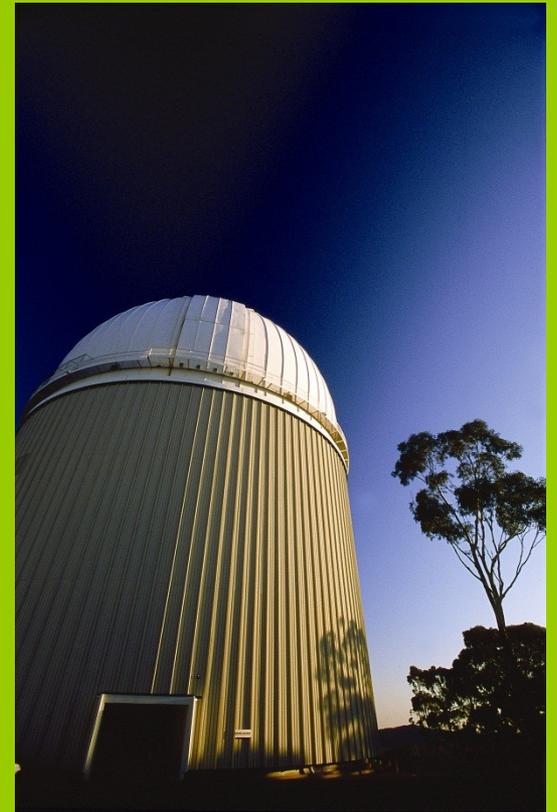
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Reach for the Stars .. protecting our night skies



David Mallin - AAO

Australia's
largest optical
telescope .. the
3.9 metre AAT at
Siding Spring
Observatory,
Coonabarabran



Photography: David Kirkland

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Comet McNaught – over the Warrumbungles, taken at SSO
photography Rob McNaught



The 3.9m AAT telescope
photography: David Kirkland

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A haven to protect .. the magestic Warrumbungles .. A National Heritage Listed national park .. biodiversity & geological values



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Original telescopes in background .. Newer more cost efficient design
in foreground



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