

Dark Night Skies: Dealing with Light Pollution

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These days, as human civilization and its electric lights spread across the globe, few places on Earth remain truly dark. For astronomers, trying to collect the faint light of distant objects, this “light pollution” from human activity has become an extremely serious problem. Not all our lights are equally bad. Some light fixtures are worse than others in terms of the glare and wasted light they produce and the number of colors (wavelengths) they block from celestial objects. In this introductory guide, we cite a selection of the resources that describe the slow “fading” of the dark night around the Earth and the efforts of astronomers and environmentalists to educate policy makers and the public about light pollution.

Dedicated Web Sites

The International Dark Sky Association:

<http://www.darksky.org> (The primary organization devoted to the issue of preserving the dark skies and installing good lighting. Their site has lots of educational and informational material, plus help with advocacy efforts.)

Dark Skies Awareness Project:

<http://www.darkskiesawareness.org/> (This is an international site, created during the 2009 International Year of Astronomy, which brings together a wealth of information and educational activities.)

The New England Light Pollution Advisory Group:

<http://nelpag.harvee.org/> (This organization of volunteers provides some basic information on its site and follows efforts to limit light pollution in the Northeastern part of the U.S.) (Note that there are a number of such local groups around the world, with similar web sites and good works; for example, the Sydney Australia Outdoor Lighting Improvement Society: <http://www.solis.org.au/>)

British Astronomical Association Campaign for Dark Skies:

<http://www.britastro.org/dark-skies/> (An organization in Great Britain; its site has information sheets, newsletters, examples, links, etc.)

The McDonald Observatory Dark Skies Initiative:

<http://mcdonaldobservatory.org/darkskies/> (Useful information and a video from the University of Texas’ observatory.)

NeedLess Campaign:

<http://www.need-less.org.uk/> (A fun web site from the United Kingdom, with an intriguing Night Sky Simulator, that shows graphically how bad night seeing is from cities.)

Articles on the Web

Practical Guides from the International Dark-Sky Association:

<http://www.darksky.org/mc/page.do?sitePageId=58823> (see the three guides at the top for a very clear introduction to the key issues and solutions)

Klinkenborg, V. “Our Vanishing Night” in *National Geographic* magazine, Nov. 2008:

<http://ngm.nationalgeographic.com/2008/11/light-pollution/klinkenborg-text>

Lockwood, C. “Heavens Above, Parking Lot Below” (a brief op-ed piece), *The New York Times*, Aug. 30, 2003:

<http://www.nytimes.com/2003/08/30/opinion/30LOCK.html>

Owen, D. “The Dark Side: Making War on Light Pollution” in *The New Yorker*, Aug. 20, 2007:

http://www.newyorker.com/reporting/2007/08/20/070820fa_fact_owen?printable=true

Harder, B. “Light Pollution: Dark Skies, No More” *U.S. News and World Report*, March 2008:

<http://www.usnews.com/science/articles/2008/03/14/turning-out-the-lights.html>

Walker, C. “A Silent Cry for Dark Skies” in the

Astronomical Society of the Pacific’s *Universe in the*

Classroom newsletter, Winter 2008 (Focuses on the effects of excess light on animals, and gives some useful classroom activities and resources):

<http://www.astrosociety.org/education/publications/tnl/74/74.html>

Crawford, D., et al. "Light Pollution" in *Universe in the Classroom*, Fall 1998 (An overview with activities):

<http://www.astrosociety.org/education/publications/tnl/44/lightpoll.html>

Articles on Light Pollution from *Sky & Telescope* Magazine:

<http://www.skyandtelescope.com/resources/darksky>

Books

Mison, Bob *Light Pollution*. 2002, Springer Verlag.

Explain science behind light pollution and suggests objects to observe at different local light levels.

Bogard, Paul *Let There Be Night: Testimony on Behalf of the Dark*. 2008, University of Nevada Press. A series of essays, by scientists, poets, and others, about the problem of light pollution.

Rich, C. & Longcore, T., eds. *Ecological Consequences of Artificial Night Lighting*. 2005, Island Press.

Combines essays by scientists with vignettes from naturalists about how the lack of darkness affects creatures in many habitats.

Articles in Print

Bakich, M. "Can We Win the War Against Light Pollution" in *Astronomy*, Feb. 2009, p. 56. Good overview of the problem and solutions.

Beatty, J. "Saving the Night Sky" in *Sky & Telescope*, May 2010, p. 28. Excellent overview of the work of the International Dark-Sky Association and the efforts to reduce light pollution.

Crawford, D. & Hunter, T. "The Battle Against Light Pollution" in *Sky & Telescope*, July 1990, p. 23. An older review by two pioneers in the movement to deal with the problem.

Crelin, B. "How I Beat Light Pollution in My Hometown" in *Sky & Telescope*, Dec. 2002, p. 40. How an amateur astronomer convinced the town of Branford, CT to pass a law to reduce light pollution.

DiCicco, D. & Beatty, J. "Home Lighting for Amateur Astronomers" in *Sky & Telescope*, Apr. 2002, p. 50.

A nice shopper's guide to outdoor light fixtures.

Flanders, T. "Living with Light Pollution" in *Sky &*

Telescope, Feb. 2009, p. 62. On how amateur astronomers can deal with sky glow and excess light by timing their observations or using new equipment.

Gent, B. "Simple Steps to Save the Night Sky" in *Astronomy*, Feb. 2007, p. 72. Short review of the work of the International Dark-Sky Association and its recommendations.

Levy, D. "Ten Dark-Sky Years" in *Sky & Telescope*, Sep. 1998, p. 32. On the work of the International Dark-Sky Association.

O'Meara, S. "Dark Nights are Safe Nights" in *Sky & Telescope*, Sep. 1998, p. 84. On ways you can help safeguard the night in your community.

Thessin, R. & Crawford, D. "Your Home Lighting Guide" in *Sky & Telescope*, Apr. 2002, p. 40. Good discussion of how to avoid light pollution on an individual basis.

Thessin, R. & Beatty, J. "Bright Lights Big Problems" in *Sky & Telescope*, Dec. 2002, p. 32. New research about and new designs for street lights to help reduce glare and stray light.

Activities for Teachers and Students

Dark Skies Rangers Lessons:

<http://www.darkskiesawareness.org/DarkSkiesRangers/>

(Led by the team at the National Optical Astronomy Observatories, this is a great set of activities for classroom and museum use.)

Globe at Night:

<http://www.globeatnight.org/> (A citizen science project to measure the amount of light pollution, with good instructions and activities for teachers; you can download a PDF teacher activity packet and a family activity packet)

Chuck Bueter's Light Pollution Education Activities (from the Paper Plate Astronomy Site):

<http://analyzer.depaul.edu/paperplate/lights.htm>

Light Pollution Issue of *Universe in the Classroom*:

<http://www.astrosociety.org/education/publications/tnl/74/74.html>

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