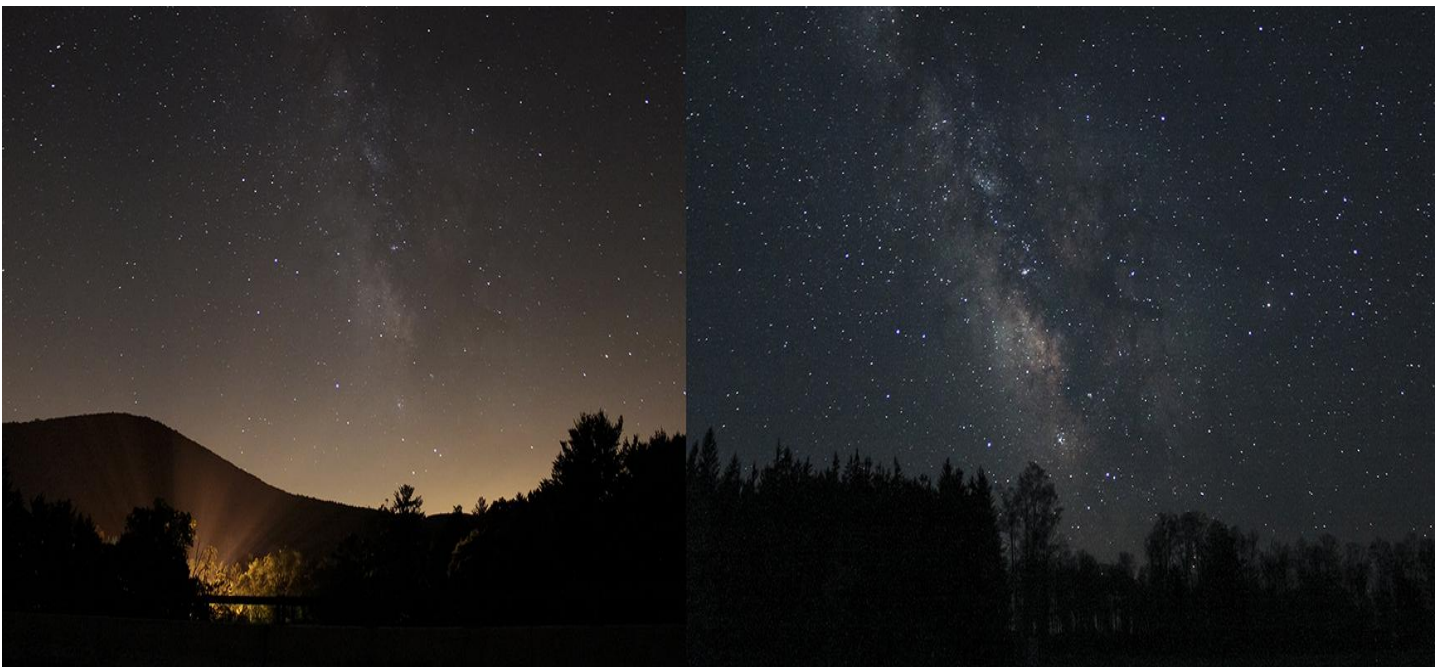


Friendly Night Lighting For People and Wildlife

Ancram Conservation Advisory Council November 2018

A few years ago, Scott Tully, a nature and landscape astrophotographer, contacted the CAC chair to talk about the light pollution in our town. Tully's "love for astronomy and photographing the star filled sky over beautiful landscapes [led him] to Columbia County and [our] amazing conservation areas." He was disappointed to see that Ancram no longer had the dark skies that had been bringing him here and wrote, "Excessive light at night is not just a problem that affects our star filled night sky.... [L]ighting up the night has negative and deadly effects on all wildlife. Amphibians, birds, mammals, insects and plants rely on the day/night cycle and the darkness of night is crucial for their survival." Tully hopes that we will take measures to bring back the dark skies that once made Ancram a special town.

The photos below were taken by Mr. Tully. The light pollution photo on the left was taken in Cornwall, Connecticut and the dark sky photo was from Cherry Springs State Park in Pennsylvania.



The following paper contains information on light pollution and what we can and should do about it.

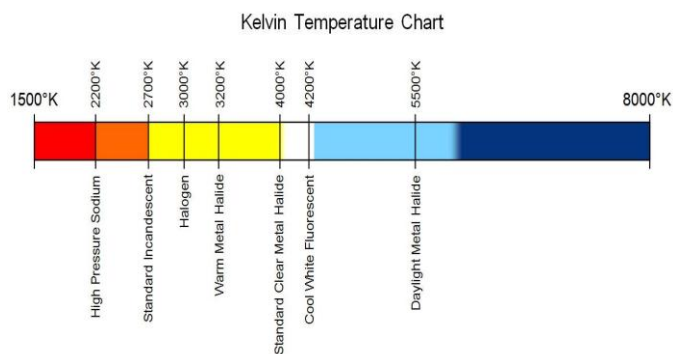
More and more people are using night lighting for streets, parking areas and around homes, barns, and other buildings. Is there enough light? Is it bright enough? Will it keep away intruders and undesirable wildlife? How much will it cost?

As a result, we keep adding lights to our community. We tend to believe that more and brighter light will do a better job of deterring intruders and wildlife at night – and yet the research does not support this idea.

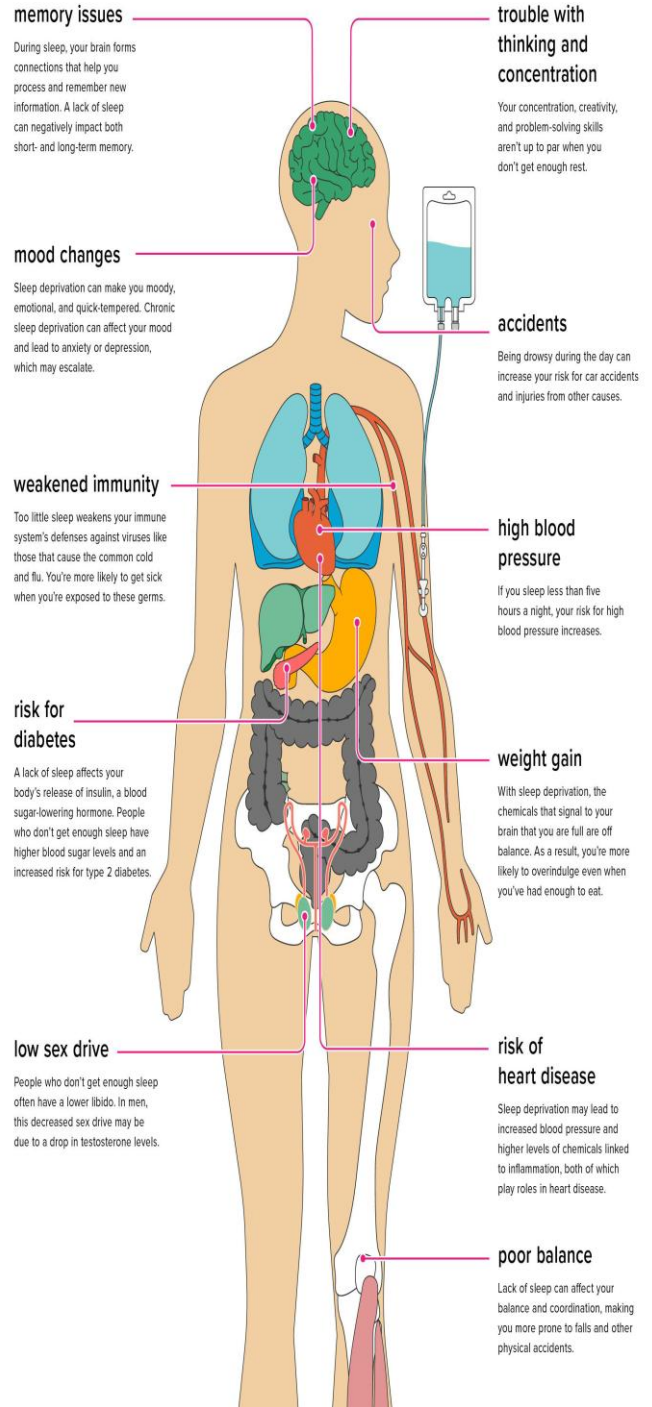
More and brighter night light has negative impacts on human and livestock health and on wildlife. Bright night lighting can, surprisingly, actually make it harder for us to see our way along roads and walkways at night. Increasing light levels also take away from our experience of seeing the night sky in all of its star-filled glory. And, the more lighting we install and run, the more it costs us, and the more energy it uses.

Increased and Inappropriate Night Lighting Disrupts Sleep and Sickens Humans

The bluer and brighter the light, the stronger the impact as this cooler color spectra is consistent with daylight which activates hormone production that keeps us awake. This can be disruptive to humans and wildlife. LED lights are produced at different degrees of cool and warm color spectra. It is very important, when selecting LED lights, for your home especially, to seek a warm color that is consistent with incandescent light.



Effects of Sleep Disturbance on Humans



Source: <https://www.healthline.com/>.

Increased and Inappropriate Night Lighting Disrupts Natural Life Cycles and Sickens Wildlife

Research finds that artificial light at night has negative and deadly effects on wildlife and plants – all of which depend on the natural alternating daylight/dark night rhythm for growth,

development, feeding, reproduction, hibernation, migration and other normal behaviors.



Photo source: <https://www.nationalgeographic.com/>.

Increased and Inappropriate Night Lighting Wastes Money and Energy

Night lighting has vastly increased across the US and the world. Lighting that emits too much light or shines when and where it's not needed is wasteful. Wasting energy has major economic and environmental consequences. The International Dark Skies Association estimates that at least 30 percent of all outdoor lighting in the US alone is wasted. That adds up to a cost of \$3.3 billion and the release of 21 million tons of carbon dioxide per year!

US Night Lighting from 1950s Projected to 2025

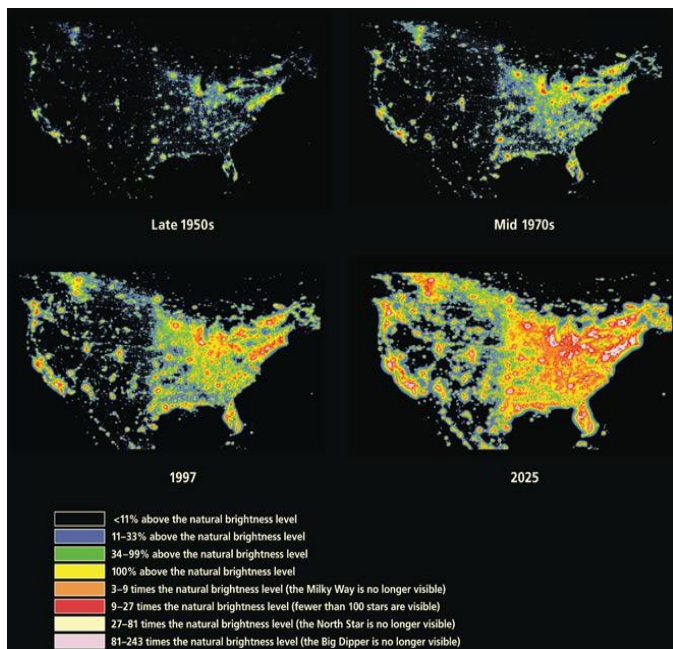


Photo source: Gavin Heffernan and Harun Mehmedinović, <https://www.mnn.com/>.

Increased and Inappropriate Night Lighting Does Not Necessarily Deter Crime

A 2015 study published in the *Journal of Epidemiology and Community Health* found that streetlights don't prevent accidents or crime but do cost a lot of money. In a Chicago study, increased night lighting was actually correlated with higher crime rates because the increased lighting made it easier for criminals to operate.

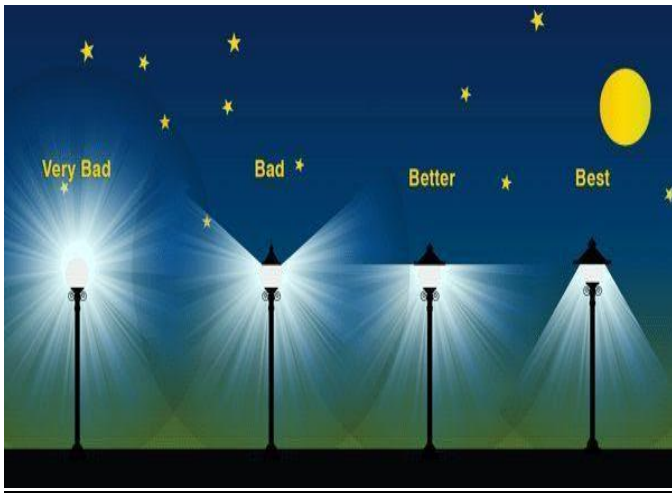
Nonetheless....



Source: <http://www.darkskyvcy.com/>.

What We Can Do to Keep Night Lighting Friendly

- Use the very minimum night light needed.
- Only light the exact space and in the amount required.
- Choose energy efficient lights with warm color and low (3000K or lower) color temperature spectra.
- Turn lights off when not in use.
- Look for products with adaptive controls like dimmers, timers, and motion sensors.
- Consult an up-to-date lighting expert for any installation of multiple night lights.
- Use fully shielded lights that point only downwards. Do not use accent lights that point up (see 'Best' illustration below).



Source: <https://solutions.borderstates.com/light-pollution-101-what-is-light-trespass/>.

In Conclusion

With increased development comes increased light pollution. But it need not happen this way. Please remember:

Our neighbors, our crops, our livestock, and all wild plants and animals will be subjected to any night lighting that we install. With a little homework beforehand, we can select friendly night lighting that minimizes the negative impacts.

The following is a photo taken by Scott Tully at one of our precious conservation areas. Note the light pollution that so alarmed Mr. Tully.



Resources and References

You can see more of Scott Tully's photographs at: <https://www.flickr.com/photos/stully/> and <https://www.flickr.com/people/stully/>.

–*Artificial Light at Night (ALAN) Research Literature Database* (<http://alandb.darksky.org>).

–*International Dark Sky Association* (www.darksky.org).

–*Lighting Research Center* (www.lrc.rpi.edu).

–*The End of Night: Searching for Natural Darkness in an Age of Artificial Light*. Bogard, P. 2013. Back Bay Books, New York, NY.

–*Blue light has a dark side*. 2018 (2012). Harvard Health Letter. Harvard Medical School.

–*Human and Environmental Effects of Light Emitting Diode (LED) Community Lighting*. 2016. Report of the American Medical Association Council on Science and Public Health.

–*The effect of reduced street lighting on road casualties and crime in England and Wales: Controlled interrupted time series analysis*. 2015. Steinbach R, Perkins C, Tompson L, et al. *J Epidemiol Community Health* 69:1118-1124.

–*Chicago Alley Lighting Project Final Report*. 2000.

Research and Analysis Unit, Illinois Criminal Justice Information Authority.