

Preserving the Dark: Advocating Against Light Pollution at the American Medical Association

Mario Motta, MD

Editor's Introduction

The problem of *light pollution* (of the expanding bubbles of light from human activities that encroach on the work of both professional and amateur astronomers) continues to bedevil the scientific community. Luckily, astronomers are not the only ones who are adversely affected by unneeded and excessive light. With the cost of energy growing, with the medical effects of light excess becoming clearer, and with greater attention being paid to preserving the natural environment, we are finding allies in many places. Here is the story of how one active and articulate amateur astronomer, who also happens to be an influential medical doctor, took the issue to the largest professional organization of doctors in the U.S.

On June 15, 2009, the American Medical Association (AMA), which encompasses all 50 state medical societies and over 120 specialty organizations, voted unanimously to support light pollution abatement measures. How it came about makes a good story, and shows that some well directed effort within an influential organization can lead to progress in dealing with a societal need.

I have been a lifelong amateur astronomer, and a long time advocate of efforts to control light pollution, being a founding member of the New England Light Pollution Advisory Group (NELPAG) and having served on the Council of the American Association of Variable Star Observers. In the process, I have helped file state



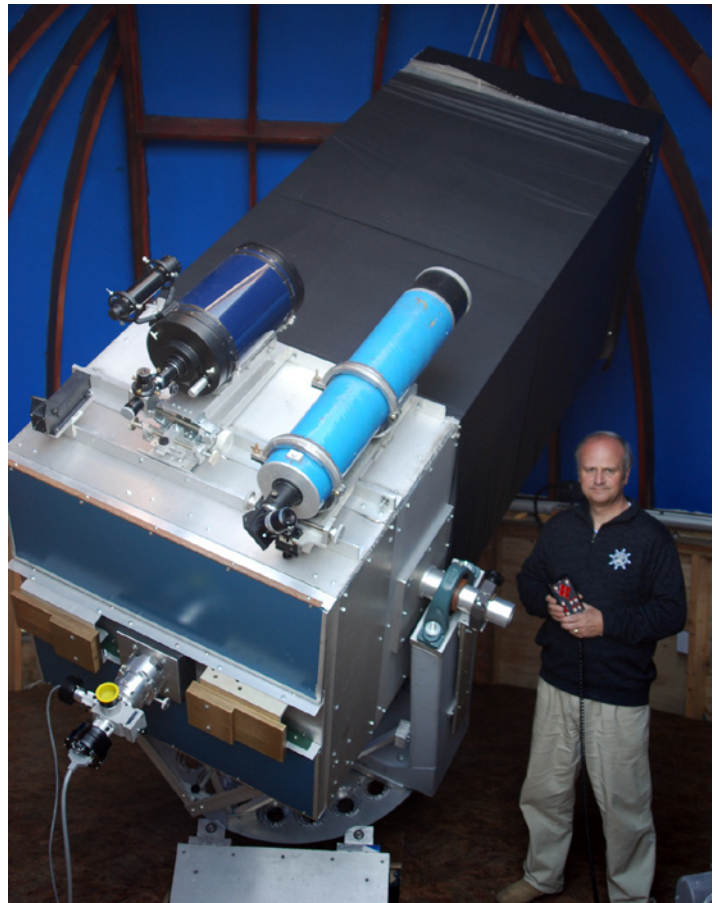
U.S. at Night: A Montage of Satellite Images (NASA)

legislation to preserve dark night skies, and worked for passage of a number of city and town ordinances with some success.

Since I have a homebuilt 32-inch telescope northeast of Boston in Gloucester, Massachusetts, I have significant motivation to abate the relentless march of sky glow. When I had the honor of being elected President of the Massachusetts Medical Society (MMS), I realized that I had a unique opportunity to advance this issue far more effectively. The position allowed me great access to the Massachusetts State House and to national politicians with an interest in energy matters. Then, I was nominated for and ran for a position on the American Medical Association's Council of Science and Public Health (CSPH), and was elected in 2008. The mission statement of the CSPH is to study and advise the AMA on scientific issues that relate to public health.

Light pollution can be defined as light that falls onto areas where it is not needed or wanted. The purpose of a light is to shine where we need illumination, such as a roadway intersection, or a walkway. However, if an unshielded light fixture sends light sideways or upwards, that light beam becomes light pollution. It can cause glare for drivers, partially blinding them and thus lead to unsafe roads. (A condition that gets worse with aging eyes). Misdirected light can shine into bedrooms at night, requiring shades for sleep. It can shine upward, causing skyglow and blocking out the otherwise beautiful night sky. And all this unnecessary light means wasted energy, wasted tax dollars, and excess CO₂ production. Light pollution is the reason many urban youngsters have never seen the Milky Way or appreciated the beauty of a dark night sky.

From past experience, I knew quite well that much of the dogma from the lighting industry is based on simply outmoded designs that are not people friendly and actually quite energy wasteful. It has always shocked me that so few studies involving the effects of current bad lighting have ever been done — on how lighting affects our ability to see at night, or regarding the public health effects of excess pollution from wasted energy. A well researched resolution that invoked such medical safety issues therefore seemed a natural thing to submit to the AMA, and I happened to be at the right place and the right time. To get a resolution of this type passed takes some planning, and strategy, but I knew from past experience that presented properly, with good supporting data, the arguments would sway



The author's 32-inch home-made telescope; the inspiration for his activities keeping light pollution under control.

the rest of the delegates.

The AMA is constructed along very democratic lines these days. There are 540 delegates elected from all 50 states and from over 120 specialties, and any delegate can submit a resolution, have it debated in the hope of it becoming AMA policy (and fuel for national debate). However, a resolution gets momentum if supported by representative groups within the AMA, and if the supporting data is strong enough to speak for itself. In this case, it helped that I, the author, was on the CSPH, lending further credibility.

To prepare for this, I therefore first researched the best medical journal articles on the effects of glare on night visibility and especially on the aging eye. I also searched for supporting articles on energy waste, and the amount of excess pollutants we produce by the electricity wasted by up lighting and glare lighting. The lighting industry, I am sad to say, has done essentially nothing on this issue. Once I collected this background information, I submitted it to the Annual Meeting of the Massachusetts Medical Society, where a measure



Main Street in Gloucester, Massachusetts. Note all the glare and how the street lighting lights up buildings, leaving the pavements dark. (Photo by M. Motta.)

based on these medical effects of bad lighting passed quite easily, thus becoming policy of the MMS.

With that done, I next submitted the resolution to the New England AMA delegation, obtaining full support from all six New England states. It did not hurt that four out of six New England states have already adopted light pollution abatement laws. Armed with this very good backing, having ready a good set of supporting data, and being a voice on the CSPH, I felt the setting was good to offer a resolution for full AMA support.

I submitted the resolution with 6 states supporting, and 33 references from published articles. I then “lobbied” progressive AMA members who I felt would be receptive to a resolution that, at first, might seem out of place at the AMA. The need was to convince members this was in fact a legitimate issue for AMA discussion (which I of course fully believe!). I was pleasantly surprised that once the list of resolutions was distributed the month before the June 2009 annual AMA meeting, I received quite a few messages of support from delegates. I even had a local Illinois community (Barrington Hills) send me a note stating that they had heard of the resolution, and being a “Dark Sky supporting” community, asked if they could attend and lend support.

The first step in passing an AMA resolution is to go before a ‘reference’ committee, where the proposal is thoroughly debated by any and all delegates to develop the best policy possible. The light pollution resolution was assigned quite naturally to reference committee “D”, dealing with Public Health. First I was given an opportunity to present my arguments, which boiled down to: 1. Energy savings, 2. Glare abatement, especially for older drivers (and attendant safety issues), and 3. Environmental concerns (global warming, effects on wildlife and fauna). Next the floor was opened



Image of street lights in Salem, Mass that cause bad glare, and do not light up the streets. (Photo by M. Motta)

to debate. Much to my delight, there were quite a few who got up to speak, and all of the testimony was favorable to the resolution. I was able to get permission for two community members (non-AMA members) from Barrington Hills to speak on the subject. (Barrington Hills has declared its town a dark sky haven). They also were quite persuasive and helpful.

The reference committees then spend the evening going over testimony and produce a summary document on testimony received, with a committee recommendation for action for the house of delegates as a whole. The report that Reference Committee D produced on my resolution is shown in the accompanying box.

Based on that report, the entire House of Delegates (540 people) of the AMA, representing physicians from the entire country, voted unanimously in favor of the resolution. I am therefore quite happy to report that the AMA now has the following official policy (outlined in the final resolves below) and that all light pollution activists may quote these in the ongoing legisla-

“Resolution 516 asks our American Medical Association to: (1) advocate that all future outdoor lighting be of energy efficient designs to reduce waste of energy and production of greenhouse gases that result from this wasted energy use; (2) support light pollution reduction efforts and glare reduction efforts at both the national and state levels; and (3) support efforts to ensure all future streetlights be of a fully shielded design or similar non-glare design to improve the safety of our roadways for all, but especially vision impaired and older drivers.

Your Reference Committee heard unanimous testimony in support of this resolution. Excessive light pollution comprises an inefficient use of energy and is a public health hazard for drivers, as well as an environmental disruption for several species. In addition, it was acknowledged that several states have light pollution measures currently enacted and that national legislation on this issue is pending. Your reference committee recognizes the important environmental and public health implications of this resolution.”

tive battles to enact laws in their local communities:

RESOLVED That our AMA advocate that all future outdoor lighting be of energy efficient designs to reduce waste of energy and production of greenhouse gasses that result from this wasted energy use, and be it further

RESOLVED That our AMA develop and enact a policy that supports light pollution reduction efforts and glare reduction efforts at both the national and state levels; and be it further

RESOLVED That our AMA support that all future streetlights will be of a fully shielded design or similar non-glare design to improve the safety of our roadways for all, but especially vision impaired and older drivers.

One may ask why the AMA had decided to support light pollution legislation. Among the reasons were the three key health issues we raised. First, that bad lighting, with glare, is a public health hazard, especially the older you become. Light glare scattering in the eye causes loss of contrast and leads to unsafe driving conditions, much like solar glare on a dirty windshield. Secondly, the AMA recognized that making more light than we need is a waste of energy production, leading to more greenhouse gas in our atmosphere. Finally, research shows that many species (including humans) need darkness to survive and thrive. These were the health and safety reasons that the AMA came out so strongly in support of the legislation. It fits in very well with the basic mission of the AMA, that of improving public health. I hope that this statement is used widely, and helps in local and state efforts at light pollution reduction.

About the Author

Mario Motta, MD, is a cardiologist in practice at Salem Hospital, north of Boston, in a group practice of North Shore cardiovascular associates. This year, he was elected to the presidency of the Massachusetts Medical Society, representing 22,000 physicians, and publisher of the *New England Journal of Medicine*. Dr. Motta is also a long-time amateur astronomer, and has built many home-



made telescopes. His latest is a 32 inch "relay" design telescope, all parts hand made, including the optics, placed in his 20 foot dome in his home in Gloucester, MA. He is also a past president of the Amateur Telescope Makers of Boston, and a past member of the Council of the AAVSO. He is a proud recipient of the ASP's 2003 Las Cumbres Observatory Award for public outreach by an amateur, and the Walter Scott Houston Award from the Astronomical League.

Resources for Further Information:

The International Dark-Sky Association (the primary organization working to abate light pollution):
<http://www.darksky.org/>

The New England Light Pollution Advisory Group:
<http://www.cfa.harvard.edu/nelpag/nelpag.html>

Globe at Night (a project for citizen-science measurements of local light pollution):
<http://www.globe.gov/GaN/>

The British Astronomical Association's Campaign for Dark Skies:
<http://www.britastro.org/dark-skies/>

The Light Pollution Issue of the ASP's *Universe in the Classroom* Newsletter:
<http://www.astrosociety.org/education/publications/tnl/44/lightpoll.html>

Sky & Telescope Magazine Dark Sky Articles and Resources:
<http://www.skyandtelescope.com/resources/darksky> ♦

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