

OF CURIOSITY AND STARLIGHT

Peter W. Lord

Within weeks of opening Island Astronomy in Bernard, I heard an imploring voice on the phone ask a big question. Anne Welles, a teacher from Southwest Harbor's Pemetic Elementary School, was having difficulty filling a hole in their curriculum. She knew her students were eager to learn astronomy, but the staff needed to know the material first. Might we be able to hold classes for the teachers, then help them develop a grade-by-grade curriculum for their students? I thought I was dreaming.

That was the beginning of the nonprofit Island Astronomy Institute, which has since provided dozens of programs to five elementary schools, one college, and two universities. With an active board and volunteers, the Institute has delivered more than 100 public lectures across Mount Desert Island and beyond. This spring, College of the Atlantic's new "Philosophy of Astronomy" course challenged students to place their experience of a fixed earth against Galileo's evidence for a moving planet—some felt the earth shift

under their feet. The Institute's programs reflect a mission to encourage people of all ages to see life on this island from new perspectives. Seemingly insignificant issues like outside lighting are transformed when we see the earth floating in space like an island in the Gulf of Maine.

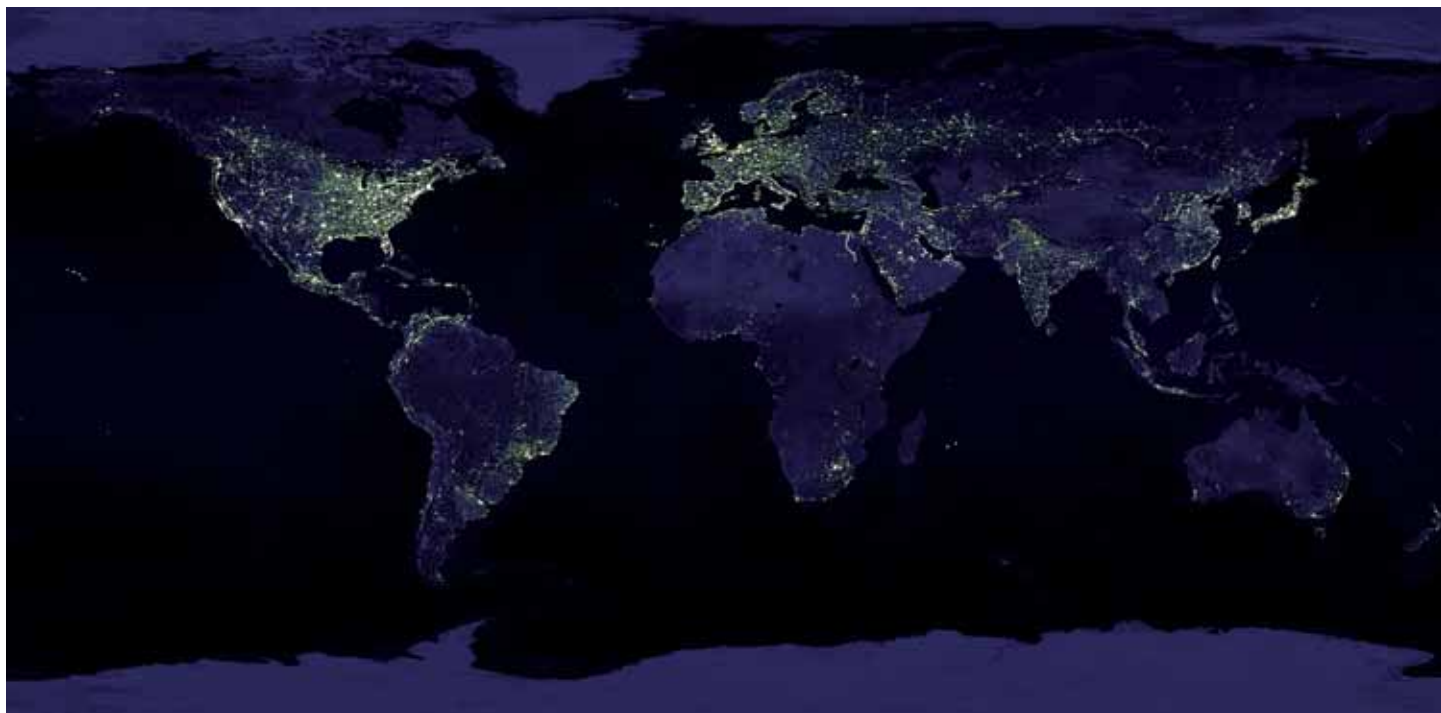
Seen from outer space, Earth's night side has been dark for billions of years. Today much of Earth's surface is glowing. Light, mostly from fossil fuels, is shining into space. The eastern half of the United States is now heavily illuminated.

Light shining up into space creates a glow called light pollution, which obscures starlight that has traveled millions of years to reach us. In the skies over New York and Boston the universe has dwindled to a tiny handful of stars. We have replaced the primordial spectacle of the universe with the bright lights of progress. In planetariums, children are known to burst into applause at their first look at "the stars." Across the entire eastern seaboard the majestic Milky Way has been lost to a generation.

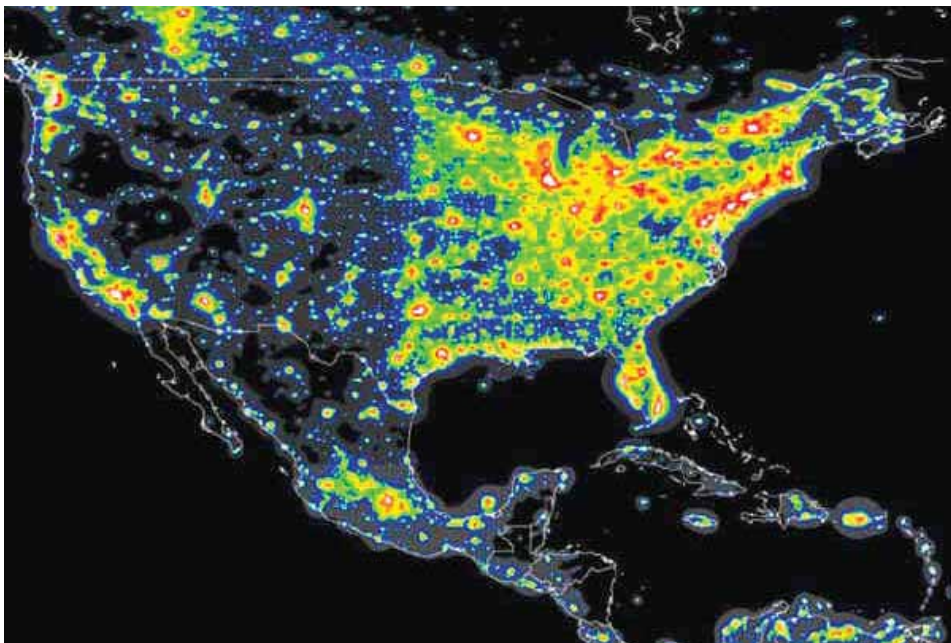
Here in Maine we retain the last of New England's naturally dark skies. As the loss continues, Mount Desert Island and Acadia National Park are becoming increasingly isolated. Spots of light pollution are already glowing along Route 1, east of Ellsworth.

In 2001 dark skies or "nightsapes" were first recognized as natural resources by the National Park Service's General Management Plan. In Acadia, all new park construction is now required to protect the park's "nightsapes." The new Sand Beach Entrance Station, built in 2002, demonstrates how effective the new rule is. The old glaring halo of light is gone. Today light is thoughtfully directed down to the ground where it is needed.

Alarming, the current administration has proposed revisions to the 2001 General Management Plan, explicitly removing the mandate to protect our dark skies. This would be a tragic mistake. Starlight is a resource for wonder and inspiration. It has fallen to this generation to protect or lose a visible measure of our planet's astronomical



This composite image from the U.S. Air Force's Defense Meteorological Satellites Program (DMSP) documents a changed planet. Image by Craig Mayhew and Robert Simmon, NASA Goddard Space Flight Center.



Heavy levels of light pollution in the skies over North America calculated from DMSP data. Image by P. Cinzano, F. Falchi (University of Padova), C.D. Elvidge (NOAA National Geophysical Data Center, Boulder); copyright Royal Astronomical Society. Reproduced from the "Monthly Notices" of the RAS by permission of Blackwell Science.

heritage. The Island Astronomy Institute advocates patient, consistent demonstration of the economic benefits of protecting our starlit skies. The International Dark Sky Association conservatively estimates that the United States sends \$1.5 billion in electricity directly into space each year.

The Institute works with volunteers to measure the darkness of MDI's night skies. COA's Geographic Information Systems Lab is eager to transform our collected data into simple light pollution maps. This fall Chad Moore, project manager for the National Park Service Night Sky Team, will be at Acadia to generate a high fidelity map of the night sky from Cadillac Summit. Chad has developed a robotic camera system that the NPS uses to establish resource maps of the nightscapes over our national parks. With funding, the Institute has the opportunity to work with Chad to develop our own NPS sky-monitoring system next year. Acquiring this system would permit us to measure, promote, and protect the dark skies of each community, with maps revealing their own unique issues.

At the end of this past school year, I shared a special image with Anne Wells and her 3rd grade class. It was a bittersweet moment—the last slide of the last presentation funded by our first grant. As we paused in wonder at the galaxies strewn across the universe, one student asked, "Are there other people out there?" It was one of those big questions the universe inspires. In that quiet voice I heard the echo of Anne's first question to me, "how will we fill the hole, if we lose this island of curiosity and starlight?"

Night Sky Programs are given by park rangers at Sand Beach on Tuesday nights throughout August, starting at 9:00 p.m. Visitors can learn about all of Acadia's programs at the Hulls Cove Visitor Center or at www.nps.gov/acad. The Island Astronomy Institute's summer lecture series and public events are posted in local papers and on its website www.islandastro.org.

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THE PRINCIPLES OF DARK SKY LIGHTING

- * Full cutoff light fixtures direct all their light below a horizontal line; shielded lights do not cause glare and are more appealing at night.
- * Dark sky designs are economical to install and consume less power.
- * Municipalities dedicated to fully implementing International Dark Sky Association principles can receive recognition as dark sky communities.
- * Traditional security lights create shadows and glare; they do not reduce crime better than dark sky designs. The lighting industry now offers dark sky security lighting to replace the old "wall packs" that glare at us from the sides of buildings.
- * Light crossing property lines, is called light trespass.
- * Loss of natural darkness breaks the 24-hour cycle of light and dark as old as the planet. There is growing evidence that this can adversely affect the health of humans as well as the breeding and migratory patterns of animals.
- * Light pollution costs the United States over \$1.5 billion dollars every year.