

## Section F THE DARK NIGHT SKY

*See separate Map Atlas for map references*

### F.1 Introduction

Many consider the dark night sky and its contents a natural resource. Star-gazing is a connection to humanity's earliest curiosity about our place in the universe. Finding the Big Dipper, Orion, and the Milky Way is one of childhood's wonders. A survey conducted by the National Park Service indicated that 94 percent of park visitors surveyed agreed that "a dark night sky is important to that park's purpose and visitor experience." Guilford residents may value a dark night sky as well. Because all living things evolved with a dark night, the importance of the darkness of the night to the healthy functioning of the inhabitants of the natural world is now the subject of scientific investigation. In Guilford we are far enough away from the glow of city lights so that the natural beauty of the night sky still enriches our lives.

In 2003, the Legislature considered a bill establishing the dark night sky as a natural resource of the State of Connecticut, joining air, land, and water as the official natural resources of the State. Although the bill has not yet made it into law, it is expected to be introduced again in 2005.

### F.2 Concern: Light Pollution

Under ideal conditions, about 2,500 stars are still visible in the night sky in the United States. But only ten percent of Americans today can actually see the majority of these stars from where they live.<sup>1</sup> Whereas the Milky Way used to be a familiar sight in the suburban sky, only ten percent of the stars in the Milky Way are still visible. Even fewer can be seen from urban areas.<sup>2</sup>

The proliferation of artificial outdoor light use, particularly light projecting into the night sky, has developed into a relatively new area of environmental degradation: light pollution. Light pollution is the scattering of light into the sky or on locations where it is not wanted or needed. It is caused by unshielded lights, spotlights, and ornamental lights that are directed toward the sky or at wide angles rather than straight down.

There are three categories of light pollution:

- sky glow (caused by the scattering of artificial light in the atmosphere)
- glare (excessive illumination that causes eye discomfort)
- light trespass (the poor control of outdoor lighting which crosses property lines)

In addition to diminishing the dark night sky as a natural resource for amateur and professional astronomers, light pollution harms aspects of the natural world. Many species of migratory birds depend on constellations to guide them during their migrations, and when birds use artificial light from built structures as a guide, high death tolls can result.<sup>3</sup> It has been demonstrated that foraging, reproduction, circadian rhythms, and hormone levels may be adversely impacted by excessive artificial light in the natural environment. The effects of light pollution on animals inhabiting lakes and coastal waters - areas unshielded and openly exposed to light - are currently under study.<sup>4</sup>

Residential consumption of electricity for lighting has increased 40 percent since 1970. The United States generates so much upward-shining light that the nation's borders and major metropolitan areas appear visible on satellite images taken at night.<sup>5</sup> *Appendix F-1* shows a dramatic look at the Greater New York City Metropolitan area at night. The brightness of the developed Guilford coastline contrasts with the relative darkness of the less-developed areas to the north in this image.

States and municipalities have begun to react with legislation aimed to curb light pollution. In 2003 the Connecticut Legislature passed a bill requiring the State to reduce road glare and light pollution from private area floodlighting located within the State Right-of-Way.<sup>6</sup> In 2004 the State approved the Light

Pollution Controls amendment to the State Building Code, as a Connecticut amendment to the 2003 International Energy Conservation Code. The amendment requires full cutoff luminaries for all exterior lighting of new buildings and renovations, excluding one and two family dwellings.

---

### F.3 Summary

Much of Guilford is still relatively dark at night, and this darkness is a resource to be protected. Light pollution and light trespass seriously impact the natural beauty of the night sky, may harm and disrupt instinctive nocturnal patterns of fauna and flora, and waste energy. Correcting outdoor lighting problems can save money and electricity, improve public safety, and increase visibility, while reducing air pollution and greenhouse gas emissions.

---

### References

- Bower, J. March-April 2000. *"The Dark Side of Night."* Audubon
- Chaney, W. June 2002. *"Does Night Lighting Harm Trees?"* Purdue University Forestry & Natural Resources, FRN-FAQ-17
- Connecticut General Assembly, Public Act 03-210, An Act Requiring Reduction in Hazardous Road Glare and Light Pollution from Private Area Floodlighting Located Within the State Right-of-Way
- International Dark-Sky Association website: [www.darksky.org](http://www.darksky.org)
- Nadis, S. Oct. 31, 2002. *"Biologists Join Drive to Turn Down the Lights."* Nature, Vol.419
- Town of Tolland, Connecticut. Zoning Regulations, Section 170-137. Outdoor Lighting Regulation

---

### Appendix

F-1 New York Metropolitan Area at Night

---

### Maps - none

---

### Endnotes

- 1 Bower, 2000
- 2 Reese, 2000
- 3 Bower, *ibid.*
- 4 Nadis 2002.
- 5 Ploetz 2002.
- 6 Connecticut General Assembly 2003.