

# TROPIC NEWS

DEPARTMENT OF PLANNING AND NATURAL RESOURCES

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## Light Pollution: Efforts to Bring Back the Night Sky

Light pollution is something that few of us give much thought to. Astronomers have championed the call for limits to our night sky pollution because it impinges on their ability to study celestial bodies. Three-fourths of Americans grow up never having seen the Milky Way. But light pollution is about more than astronomy. It is wreaking havoc in certain natural systems- from sea turtle nesting to migrating birds and sycamore trees in urban parks. There are some who suggest that human health is affected by lack of darkness. And because light pollution is really a symptom of waste, we are also paying a price for it in resource depletion and all of the impacts associated with generating the electricity to power it.

Light pollution has been brought to our attention primarily by astronomers who are increasingly unable to view the night sky. Many of our most important research observatories built over the past century are severely compromised today.

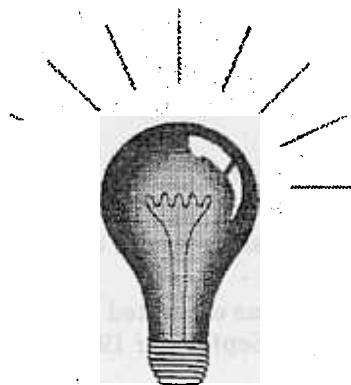
According to astronomers, about 2,500 individual stars should be visible to the human eye in an unpolluted sky. In a typical suburb with moderate illumination, only 200 to 300 stars are visible. And in cities we can usually see only a few dozen. The reason for this is that the light pollution competes with the light from the stars, thus obscuring them.

*Light pollution* is the upward and outward distribution of light, either directly from fixtures or from reflection off the ground or other surfaces.

*Glare* is direct light shining from a fixture (luminaire) that makes it difficult to see or causes discomfort - it is especially a problem for motorists. *Light trespass* describes the shinning of light onto neighboring properties when that light is intrusive or objectionable. *Sky glow* refers to the composite illumination coming from towns, cities and other developed areas - it is the yellowish glow you see in the sky when you look from a relatively dark area toward a nearby town or city.

The ecological impacts of light pollution have been studied extensively in a few situations, yet hardly at all in others. The most extensive re-

Four species of sea turtles nest along these coasts, all of which are either endangered or threatened: the loggerhead, green, leatherback and hawksbill turtles. Adult turtles may abandon



their nesting efforts if too much light is present. Disoriented hatchlings may wander away from the sea to their deaths from cars and predators.

The impact of light pollution on migrating birds has also been examined in some detail.

Small migrating songbirds, especially warblers, are apparently the most affected by light pollution, probably due to their pattern of migrating at night at low altitude. Illuminated structures often trap nocturnal migrants. Light pollution reflecting off low clouds may contribute to the disorientation. In addition to death and injury from flying into illuminated structures, the daily cycles of some birds are being altered by light pollution.

Insects are also affected by outdoor lighting. Lepidopterists (scientists who study moths and butterflies) have long blamed outdoor lighting for declines in several species of North American moths. It is unknown whether the lights interrupt mating, kill individuals directly, or have other effects. It appears that populations of some insects are affected more than others.

Plants can also be affected by light pollution, though little research has been done on this issue. It is well known that certain frequencies and intensities of light regulate the development and flowering of plants, a process referred to as photoperiod response.

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## Quote

"Everybody needs beauty as well as bread, places to play in and places to pray in, where nature may heal and cheer and give strength to body and soul"

While few people other than astronomers have given much thought to light pollution, it is a problem with an easy solution. Remember, light pollution equals waste. Eliminating waste saves money.

Any way you look at it, controlling light pollution is a winner. The building owner or occupants get better lighting, generally at lower operating costs. By reducing electricity use (through lowering light levels and directing that light where it is needed) fossil fuels are saved and the pollution associated with generating that electricity is eliminated. Finally remember that light pollution is a lot different from PCB pollution in our rivers or CFC pollution in the upper atmosphere. Once lights are turned off or properly directed, the light pollution ends - there are no residuals that we have to clean up.

By solving our light pollution problem, more of us may be able to appreciate the night sky. We need to work to ensure clear skies and a clean environment.

Information for this article was excerpted from Environmental Building News. September 1998. Volume 7. Number 8.

## WEATHER

From now on we will provide you with the rain and temperature information from the month prior to the current issue of Tropic News. This way we don't have to wait until the end of the month to include the weather information. As a consequence, this issue has no weather. Look for it in January.

**Note:** We apologize for the lateness of this issue and following issues. Due to unforeseen reasons we are unable to mail out issues at our monthly intervals. We anticipate regular mailings within 60 days.

## GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

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## Minimizing Light Pollution:

### A Checklist for Action

**Avoid outdoor lighting.** Avoid outdoor lighting where it isn't needed - but don't sacrifice night-time safety or the perception of safety. With facilities where vandalism is a problem, it has been shown that eliminating all lighting between 11p.m. and 5 a.m actually reduces vandalism.

**Use timers.** Where acceptable, use timers to turn outdoor lights off during those hours when they are not needed (e.g., in parking lots after stores close and employees have left).

**Use motion-detector controls.** For security applications, especially around residential buildings, specify motion-sensing controls so that lights will turn on when somebody walks by. Infared sensors are recommended over ultrasonic sensors for outdoor lighting. Rapid-start lamps (typically fluorescent or incandescent) are required where motion-sensing controls are used.

**Turn off interior lighting at night.** Design interior lighting in commercial buildings to switch off automatically when spaces are not occupied or after work hours. Consider occupancy sensors for residential buildings if lights are commonly left on by mistake. Curtains work well to reduce light trespass.

**Avoid uplighting.** Where ever possible, avoid uplighting of trees and architectural facades. Lighting buildings from above, however, can be an important component of security lighting because it improves visibility on the streets and sidewalks.



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