

Light pollution in the night sky

**Birds I View
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Weaponizing light in the Outer Battery to harass, intimidate and bully neighbors.

It may seem unusual to think of the light that we produce as pollution – that is - something deleterious that we release in the natural environment. A quick overview of the ecology, evolution and nature of things will clarify this concern.

All life on earth evolved in a natural cycle of light/dark or day/night. That started to change about a million years ago, when our hominid ancestors began using fire. Much of the early use fire involved protection from predators at night.

Night lighting was and is of great benefit for our survival and safety. The use of produced light increased gradually over time. Once technology kicked in, however, that gradual use of

night lighting began increasing at astronomical rates. It was not much more than a century ago in 1880 when Thomas Edison invented the incandescent light bulb.

During the past 50 years, our night lighting has been increasing by 6% each year. This illumination is not without consequences and is not environmentally sustainable. The light that we produce has color wavelengths and intensities that do not occur in natural sunlight. It impacts the our physiology and behaviour and that of other animals.

Much of the increase in nocturnal lighting is created by LED (light-emitting diodes) lights that are extremely bright and have a major color concentration in blue wavelengths. Blue lighting is the most physiologically disruptive and the most luring color to animals active at night.

Exposure to bright, especially blue, light at night suppresses the secretion of melatonin (a sleep-associated hormone). Such suppression delays and disrupts sleep.

Consequences for nocturnal animals

Paradoxically animals that are active at night are also highly attracted to and disoriented by human lighting. Some of these interactions are obvious. Insects are attracted to streetlights that in turn attract bats that feed on the insects. Owls are often struck by cars at night when they pursue rodents scurrying across roadways illuminated by vehicular light. Many hundreds of gulls roost at night in the brilliantly illuminated Oceanex Depot in St. John's Harbour.

Dead birds strewn around lighthouses provided some initial examples of the mass mortalities of migrating birds associated with nocturnal lighting. The brilliant illumination associated with gas flares at offshore and onshore hydrocarbon production sites attract and kill many thousands of birds each year especially during autumn migration periods.

For example, in September 2017, between 5,000 and 10,000 passerines were killed and burned when they were attracted to a gas flare at a hydrocarbon processing plant in St. John, New Brunswick (<https://www.cbc.ca/news/canada/new-brunswick/7-500-songbirds-killed-at-canaport-gas-plant-in-saint-john-1.1857615>). The dead birds included warblers, thrushes, finches and vireos.

Thousands of Leach's Storm-Petrels are attracted to flares and lighting on offshore hydrocarbon platforms and at coastal sites and are killed each year during autumn migration in September and October. Millions of storm-petrels have disappeared during the past 40 years

coincident with the introduction of brilliant lighting and flares on the Grand Banks where the storm-petrels forage at night.

Mitigating light pollution

Luminous attractants can be modified and shut off to reduce the risks to birds. For example, pulsed beams at lighthouse attract and disorient many fewer birds than do steady rotating beams

Much of the light pollution problem can be eliminated effectively by simply reducing the extraneous light that has no functional benefit, wastes energy, costs money and increases hydrocarbon emissions. Lights not being used purposefully can be shut off. Lights like streetlights that have intermittent use can be regulated by on-demand systems. Skyward light can be shielded and directed downward where it is needed.

Flares can be converted to nonluminous systems and shut down during fall migration periods. The wavelength outputs and intensities of LEDs can be modified to reduce their attractant and disruptive qualities. Recommendations for these mitigations have been in place for decades but not attended to by corporate oil or government regulatory agencies.

Look around your community and your property for glaring lights that emit skyward and seaward dispersal. Do whatever you can to eliminate, shutoff or reduce these.

Weaponizing light

Intense light can disrupt sleep. In the extreme, sleep deprivation is one of the most common and widespread forms of human torture.

The well-publicized and debated issue of light intimidation by a property-owning “non-resident” of the Outer Battery on Signal Hill raises other concerns about the misuses of light. The brilliant LEDs that are directed at neighbors’ houses also create a brilliant source of coast light that could attract seabirds near the entrance of St. John’s Harbour. The light is so intense that it appears to have disrupted breeding herring gulls that previously nested in the illuminated.

Inexplicably, Mayor Breen claims that his hands are tied and that the city cannot do anything to prevent this clear bullying and assault on nearby residents. While the mayor re-enacts the Pontius Pilate scenario apparently with a clean conscience, his appalling lack of leadership in casing harassed citizens to whims of a bully appears to be a dereliction of responsibility. Not many years ago, it took us a while to recognize and devise ways to cope with

bullying in the school yard. Unfortunately, it does appear that such proactive preventative perspectives do not extend beyond the school yard gates.

Birds I View columns are available at <http://play.psych.mun.ca/~mont/outreach.html>.

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