



The Birds and the Bees (and Don't Forget the Trees!) – The Effect of Light Pollution on the Natural World

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In last week's blog post ([“Where have all the stars gone, and how is it affecting you?”](#) by Daniel Grenon), we received an introduction to light pollution: what it is, where it comes from, the dangers it poses to human health, and a few easy ways to minimize it.

This week, I'd like to focus on the effect of light pollution on the rest of nature. I'm talking about the birds, the bees, and of course, the trees.

An estimated 80% of the Earth's population is affected by light pollution (The World Atlas of Artificial Night Sky Brightness), but most of us are lucky enough to be able to go inside, close the blinds, and turn off the lights when it's time to sleep. The plants and animals living outside however, do not have this luxury. Instead, they are forced to live in a state of never-ending daylight, and the effects of this are only just starting to be understood.



Light Pollution and Animals

The natural cycle of night and day sends signals to all living things around the world, telling them when to eat, sleep, mate, and migrate. Any change to this regular pattern of light and darkness as a result of light pollution can cause confusion, disorientation, and even death to animals!

In general, light pollution impacts animals in one or more of the following ways: it attracts them, repels them, or changes night into day.

First, artificial light can draw or **attract** animals to an area. This attraction means that animals are either exposed to potential predators, steered off their natural migration routes, or they can be killed by the light (like a moth to a flame...).

For example, sea turtles coming to shore to lay their eggs, and even recently hatched baby sea turtles, instead of reaching the ocean are veered off track by street lights, and are frequently struck by cars.

Migratory birds can also be drawn off their path and blinded by artificial light. Birds navigate by the stars and their eyes are ten times as sensitive to light than humans. Light pollution can confuse and disorient the birds, causing them to circle around an area of light until they die of starvation or collide with the light source.



Artificial light can also scare or **repel** animals away from an area. Light pollution transforms otherwise suitable habitat into unsuitable habitat, resulting in habitat loss for many species. For example, some species of bats will stay away from well-lit areas to avoid predators. However, other bat species will use lit areas to hunt, because insects are often found in high numbers in these areas. As a result, bats that use well-lit areas will survive while other bat species will decline. Aside, artificial lights at night attract bugs, **including mosquitoes** that primarily come out at dusk.

Lastly, artificial lighting at night can trick some animals into **thinking it's still day time**. This has a strong effect on most mammals across the world, who rely on darkness to survive - to find food, shelter, and mates or other animals who need shelter to hide from predators. The



disruption extends to humans, as animals, our bodies also get confused by artificial lighting, which disrupts our sleeping states and patterns.

Light Pollution and Plants

Plants also have natural cycles, influenced by the regular pattern of light and darkness. Many plants use the length of the day to signal flowering, and to tell them when to go into dormancy for the winter. But light pollution can trick plants into thinking that the days are longer than they actually are, throwing the timing of many of these processes out of whack.

For example, studies have found that trees growing near street lights tend to hold onto their leaves delaying entering into dormancy, longer than trees in natural darkness. This makes trees more susceptible to damage from frost and other winter weather.

The leaves of trees growing near street lights were also found to have more pores than other trees. These leaf pores, called stomatal pores, are used to release water and oxygen produced by the tree into the air, and are an important part of the leaf structure. But having too many pores makes the trees more susceptible to dehydration, and can also allow more harmful pollutants to enter the tree's tissues.

Light pollution can also cause plants to bloom earlier than they would normally. This puts flowers at risk of frost damage. Flowering too early can also mean flowers are out before their pollinators- affecting both the plant and the pollinators.

Even each day, artificial lighting means that trees and plants may continue to photosynthesize and grow without resting and respiring - **and this includes algae!**



So please, on behalf of the birds, bees, bats, and trees, consider making a change. Turn out (or down at least) the lights, so we can all have the dark night we need.

Cap them, install sensors, choose low wattage, only light areas you need and not the entire property and sky, and abide by bylaws.



Sources:

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