

Light Pollution and Cabin Country Wildlife

As we approach the busy season for the Brainerd Lakes area, a not-so metaphorical light is illuminating the north woods as lake homes and cabins are repopulated for the summer. Exterior illumination on cabins, decks, in backyards, and elsewhere are significant contributors to light pollution in northern Minnesota. Artificial lighting is used throughout the night to deter nuisance wildlife and to add a welcoming aesthetic to decor and landscaping. These uses are not intentionally harmful, but as more and more lake homes and cabins utilize artificial exterior illumination throughout the day and night, more wildlife are susceptible to negative effects.

Artificial light at night (ALAN) has been shown to have a variety of impacts on Minnesota's unique and fragile aquatic ecosystems, particularly in the form of outdoor illumination from lake homes, cabins, resorts, and street lights. Wildlife that depend on aquatic environments that are particularly abundant in Minnesota's "cabin country" are collectively being affected by artificial lighting in the form of overall behavioral changes, vision damage, and physiology alterations.

On a larger scale, artificial lighting from street lights, parking lots, and other significant light sources can impact migration habits of migratory birds, and cause disorientation and unnecessary aggregation of birds. Migrating birds become attracted to the light source and the insects that are also attracted to the light. This aggregation behavior can result in disease exchange, competition, and collisions (Adams, et al, 2021).

During the spring and summer nesting seasons of many birds, the nestlings and fledglings are often learning their physical place in the world; this includes learning how to orient direction using light from the moon and stars. Artificial lights near nesting sites can be detrimental to this learning process. Chicks' visual systems are vulnerable when they are young, and the presence of bright LED outdoor lighting on cabins can strain and damage this system, leaving chicks unable to see dimmer lights such as stars at night, thus permanently confusing their sense of direction (Adams, et al, 2021).

Wildlife such as fish, nocturnal pollinators, birds, and others are susceptible to disrupted physiological systems when exposed to ALANs (Injaian, et al, 2021). Animals depend greatly on the patterns of the sun throughout each season to determine when it is time to breed, nest, feed, etc. Just like humans, wildlife have a natural circadian rhythm and their bodies produce melatonin at certain times of the day or night that help regulate sleep cycles. Circadian rhythms, melatonin production, and the production of other hormones are disrupted when artificial lights are present. This constant stimulation of light throughout the entire day prompts the excessive release of a hormone called corticosterone (Injaian, et al, 2021). Corticosterone plays a significant role in an animal's energy and stress regulation. Continued production of this hormone can cause chronic stress in wildlife, which can lead to a host of problems, including decreased immune system responses, reproductive stress, and risk-taking behaviors.

While this is not a comprehensive list of all possible effects of artificial outdoor lights on the birds and other wildlife in Minnesota's cabin country, it is evident that artificial lighting at night is impacting the behaviors and internal systems of wildlife. It is important to consider these effects when adding outdoor lighting to your lake home or cabin. Particularly during spawning and nesting seasons for fish and bird species, try to limit the amount of time that artificial lights are used at night. This can be as simple as unplugging and turning off any unnecessary lights, such as fairy lights, lanterns, or overhead lighting on your deck.

Another easy way to limit your light use without sacrificing visibility on your property is to install motion sensor lights around your lake home or cabin; motion activated lights can spook the nuisance wildlife away while avoiding continual illumination through the night. Not only will your electric bill appreciate this, but the wildlife will also thank you. It is also recommended that if you must use artificial lighting in your outdoor space, switch to a warmer toned light, as opposed to the blue LED bulbs. Remember that every season in Minnesota is full of life, and that life deserves our respect and appreciation!

References

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