

Abstract

This bachelor's thesis provides information about the significant and growing issue of light pollution and its direct and indirect effects on bats. The indirect effects include cumulative influence of nighttime light on the circadian system and its potential health implications. For bats, natural light of dawn and dusk is crucial for synchronizing their biological clocks. And exposure to light at unnatural times causes phase shifts in their circadian rhythm. The direct effects of light pollution include for example its role as a spacial barrier for light-sensitive species. Conversely, for light-tolerant bats, nighttime lighting can represent a food source due to higher insect concentrations near public lights. Bats' response to light is closely linked to their ecological and behavioral traits, such as flight speed, hunting strategies, or echolocation type (HDC/LDC). Secondly, it is also influenced by light intensity and spectrum or the availability of tree cover. Based on the spectral sensitivity of opsins and results from behavioral studies, it can be concluded that long-wavelength light in the red part of the spectrum has the least impact on bats, as their sensitivity decreases in this part of the spectrum. For certain bat species with pseudogenized SWS₁ opsin, blue light, in addition to red light, does not represent a direct barrier either.