The Impact of High Light Density on the Migration Patterns of a Barnacle Geese (*Branta leucopsis*) Population

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Abstract

This study investigates the impact of light pollution on the migratory patterns of Barnacle Geese (*Branta leucopsis*) along their route from Germany to Russia. As nocturnal travelers, these birds traditionally navigate using natural light sources such as the moon and stars. However, increasing urbanization and light pollution along their migratory path have been shown to disrupt their navigation. Using GPS data from the FTZ Geese Wadden Sea dataset, we examined the distribution of bird points across varying levels of light pollution along their migratory path. Our analysis revealed a significant relationship between the amount of light and bird frequency, supported by both chi-squared and ANOVA tests. The results indicated that Barnacle Geese significantly prefer areas with lower light pollution over those with higher anthropogenic light, suggesting that their migration is negatively influenced by light pollution. These findings align with previous studies that document the harmful effects of artificial light on migratory birds. This research underscores the need for continued efforts to reduce light pollution and protect migratory birds.