

Changing vertical substrate colour to reduce seabird collisions caused by artificial light

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The increase in magnitude and extent of artificial light at night is a growing concern for various species and ecosystems. Artificial light affects physiology, behaviour, community interactions and composition, and may directly cause fatalities. Procellariiform seabirds, which include storm-petrels and albatrosses, are particularly vulnerable, and 24 of 56 species attracted to artificial light are designated as threatened by the International Union for the Conservation of Nature. Artificial light on coastlines, ships, and fossil fuel platforms attracts Procellariiformes flying at night, causing strandings and collisions with lit structures that lead to fatalities through impact injuries, exhaustion, dehydration, and predation. To test the effect of lit vertical substrate colour on collisions, we suspended white, black, and beige sheets within a colony of Leach's storm-petrels (*Hydrobates leucorhous*) on Bon Portage Island. Sheets were lit with a white floodlight using a five-minute on/off cycle, and sheet colour was randomly changed every 30 minutes. Petrels were ten times more likely to collide with sheets when lights were on rather than off, and three times more likely to collide with a white than a black sheet. Petrels were also repelled by light, suggesting disorientation rather than attraction. Dark colours on coastal buildings, ships, and fossil fuel platforms could reduce strandings and collisions by seabirds as well as migrating passerines and could have implications for conservation of other taxa such as insects and sea turtles.

Keywords: ornithology, artificial light at night, species-at-risk, seabirds