The Dark Side of the Artificial Lights: Effects on the Canarian Seabirds

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During the last six decades, humans have globally transformed the natural nightscapes by the use of artificial night lighting. The resulting light pollution is responsible for mortality among many seabird species which show nocturnal activity on their breeding grounds. On Tenerife, the largest island of the Canary archipelago, near 10,000 birds from nine species were found grounded during a 9-year period, the majority being Cory's Shearwaters Calonectris diomedea (93.4%), Bulwer's Petrels Bulweria bulwerii (3.4%) and Macaronesian Shearwaters Puffinus baroli (1.5%) (Fig. 1). For these species, the majority of grounded birds were fledglings (96%, 58% and 90%, respectively) falling to the ground while leaving their nesting colony to the sea for the first time. As this phenomenon is rather predictable (fledging seasons), rescue campaigns are organized every year by the local government, NGOs and public, to help birds to reach the ocean. Thanks to efforts involving civil cooperation, 95% of grounded birds have been spared a sure death by collision with vehicles, predation by cats, dogs, or starvation, and they have been returned to the wild. However, this percentage is overestimated as people tend to rescue live fledglings.

A majority of information on the attraction of petrels to artificial lights comes from the Cory’s shearwater, the most abundant and largest of the Canarian petrels. Thus, it is known that moon cycle influences the number of affected birds (the lower numbers during full moon nights), and it has been estimated that 45-61% of the fledglings produced annually on Tenerife is affected by lights. In addition, two key factors influencing the mortality of fledglings during attraction to lights are date of grounding and down thickness in the plumage. The later the date and the thicker the down, the higher the chances to be fatally affected by lights.

Despite increases in human population size and light pollution during the last 20 years (Fig. 2 and 3), the number of rescued fledglings of Cory’s Shearwater and Bulwer’s Petrel increased and remained stable, respectively, whereas numbers of rescued Macaronesian Shearwaters sharply declined (Fig. 1), suggesting a worrying decline of the breeding population of the latter.

Light-induced mortality rates are of concern, and to minimize the impact of artificial lights on petrels we recommend several conservation actions: continuing rescue campaigns, alteration of light signatures and reduction of light emissions during the fledging peaks. Furthermore, a monitoring program for petrel populations should be implemented, as well as further studies to assess the fate of released fledglings and continued research to address why petrels are attracted to lights.

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