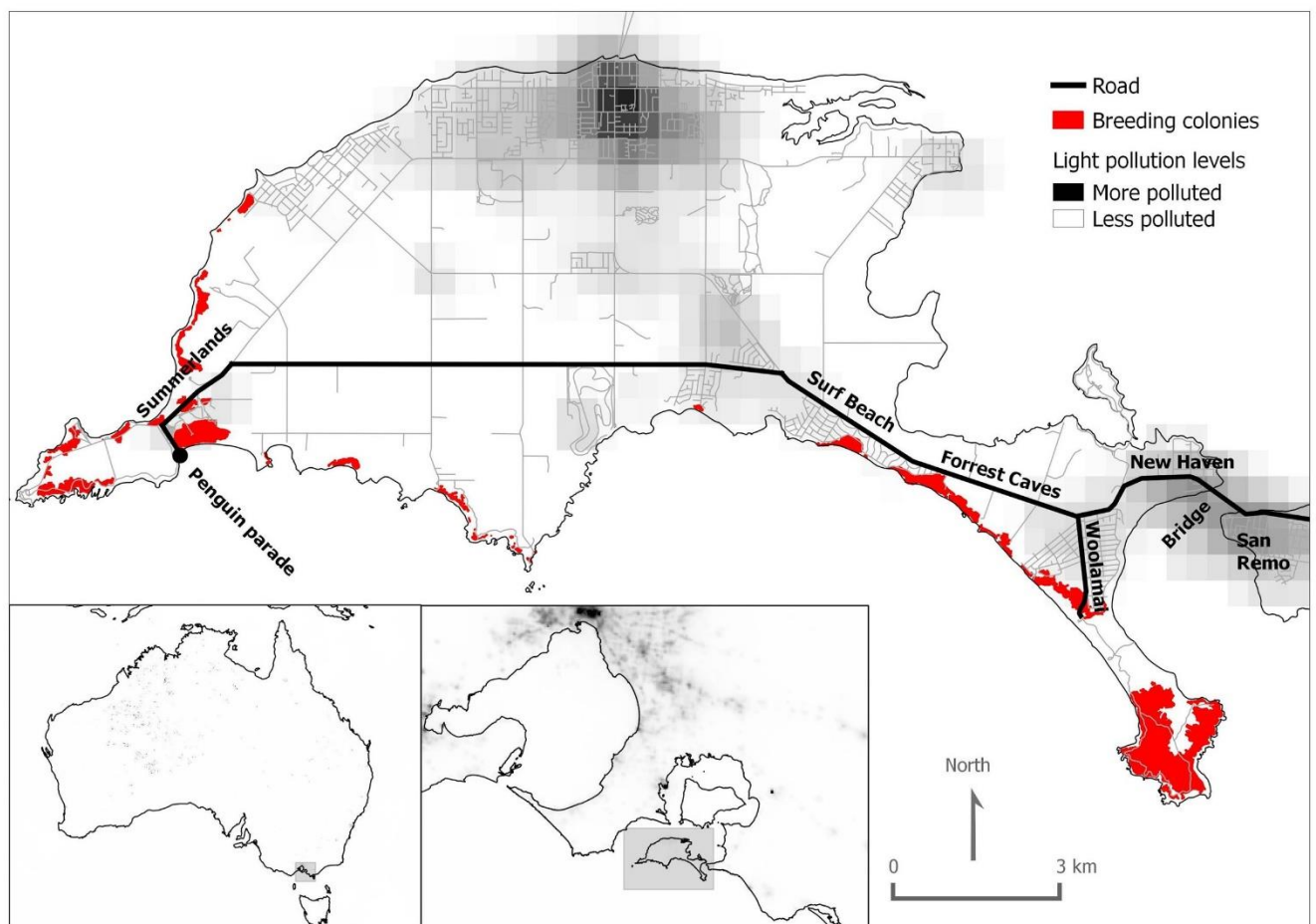


## The European Union funded project on effects of artificial lights on penguins and shearwaters finalised

This three-year \$320k fully funded by the European Union project has made an enormous contribution to our understanding of the effects of artificial lights on penguins and shearwaters. It has resulted in five scientific papers with strong management recommendations.

While light pollution is a growing concern worldwide, we have been proactive to identify, quantify and suggest ways to minimise the negative effect of artificial lights on our penguins and shearwaters. This information could be the precursor to create a dark reserve to keep the natural night sky light conditions within the Nature Parks (see picture below) to preserve clear night skies for scientific, natural, educational, cultural, heritage and/or public enjoyment.



Light pollution levels at Phillip Island. Light pollution levels are low at Summerlands and Cape Woolamai, making them good candidates to preserve the quality of the night sky and its associated values at Phillip Island. Night time light data from NOAA National Geophysical

Data Center (available at [http://ngdc.noaa.gov/eog/viirs/download\\_monthly.html](http://ngdc.noaa.gov/eog/viirs/download_monthly.html)).

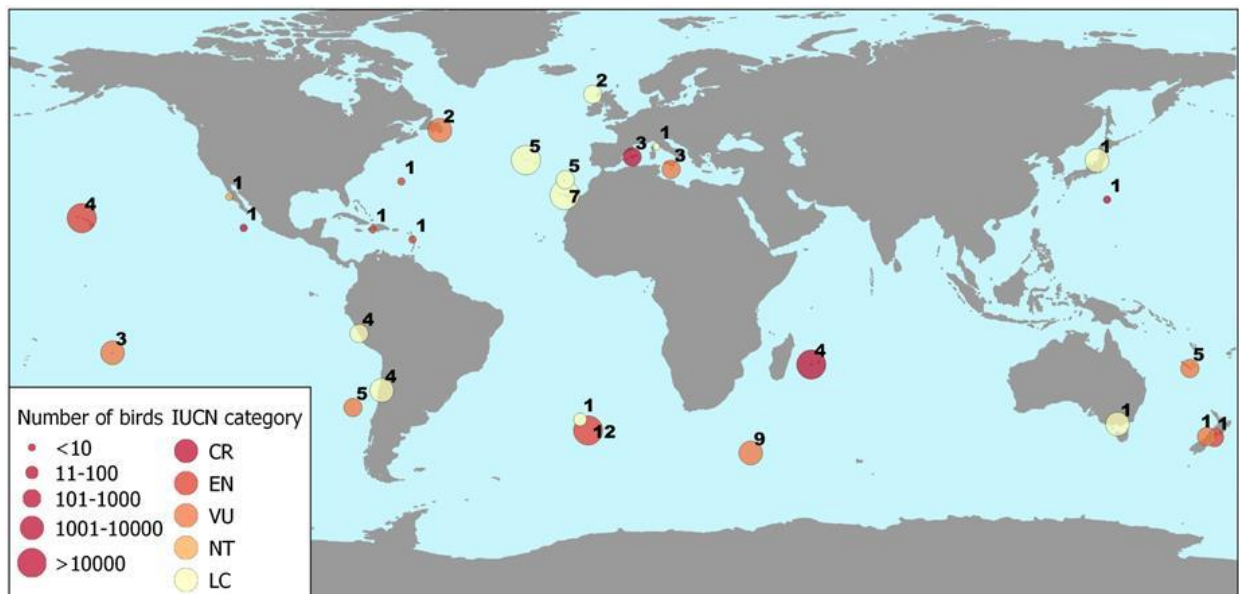
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### A global review of seabird mortality caused by land-based artificial lights

Lead by our postdoc Dr Airam Rodriguez, a review of seabird mortality worldwide caused by light pollution was conducted, including our shearwaters from Phillip Island.

This collaborative work reviewed the current state of knowledge of light pollution attraction, identify information gaps and propose measures to curb the problem. We proposed preventative measures to avoid or mitigate seabirds, in particular shearwater fatal attraction to artificial lights. Some of these measures have already been shared with the local shire, which is adopting it for planning permits on applications adjacent to shearwater colonies. The work has firmly put Nature Parks as part of the solution of this worldwide problem of light pollution affecting wildlife.

Rodríguez, A., N. D. Holmes, P. G. Ryan, K.-J. Wilson, L. Faulquier, Y. Murillo, A. F. Raine, J. Penniman, V. Neves, B. Rodríguez, J. J. Negro, A. Chiaradia, P. Dann, T. Anderson, B. Metzger, M. Shirai, L. Deppe, J. Wheeler, P. Hodum, C. Gouveia, V. Carmo, G. P. Carreira, L. Delgado-Alburquerque, C. Guerra-Correa, F.-X. Couzi, M. Travers and M. Le Corre (2017). "A global review of seabird mortality caused by land-based artificial lights." **Conservation Biology**: doi:10.1111/cobi.12900.



Locations where attraction of seabird fledglings to lights has been reported around the globe.

Numbers indicate the number of species affected. Circle size represents the number of

grounded birds, while colour pattern represents the IUCN category of the most endangered species at each location (CR: critically endangered, EN: endangered, VU: vulnerable, NT: near threatened, LC: least concern).

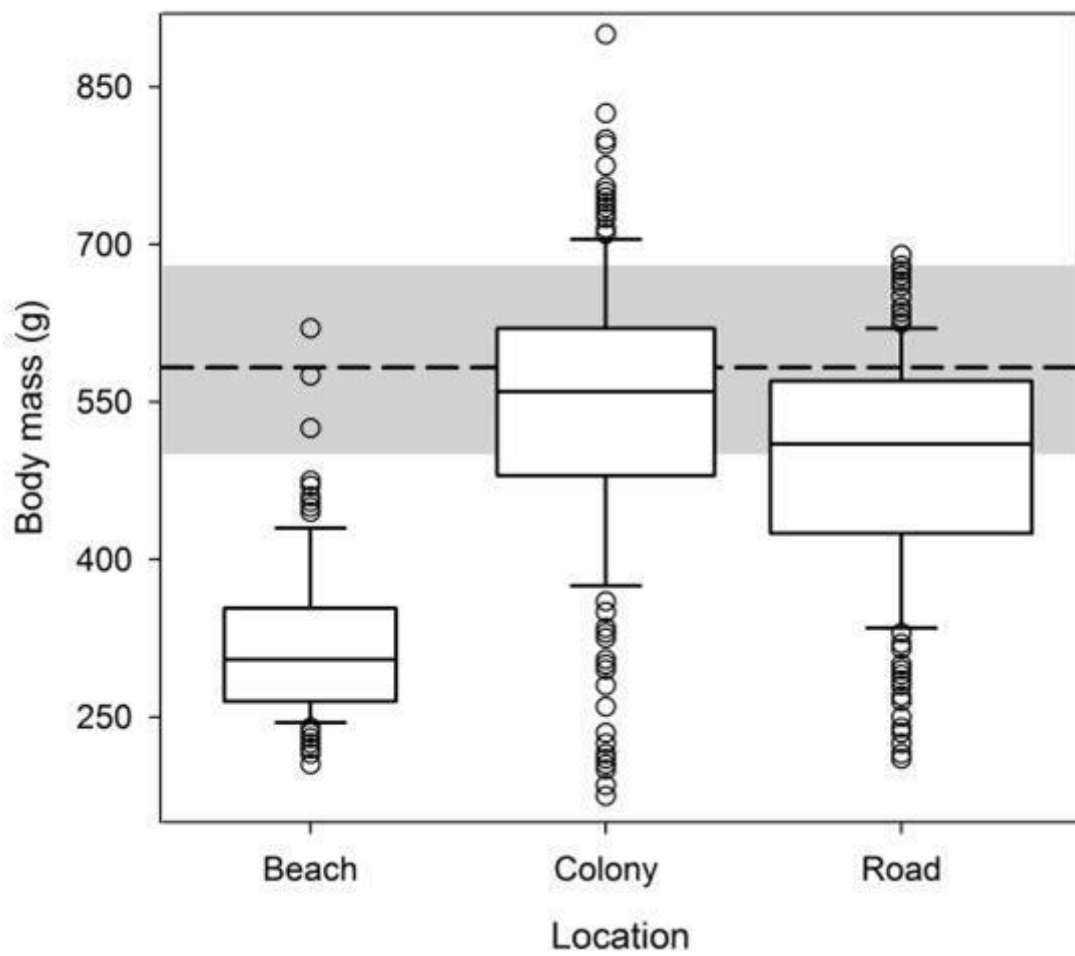
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### **Light pollution and seabird fledglings: Targeting efforts in rescue programs**

A crucial question on our shearwater conservation effort is on which birds should we target on our rescue programs. We evaluated the plumage and body condition of short-tailed shearwater fledglings captured at a) colonies just before departure in comparison to b) fledglings washed up on beaches and to c) fledglings attracted by artificial light along roads. Beach washed birds were underweight and in poor condition. Birds rescued on roads had lower body weights and condition indices than fledglings captured at the colony but with higher probabilities of survival than beach-washed birds.

We recommended that management and conservation efforts should be directed to protect shearwaters on the colonies, rescue programmes reducing light-induced mortality while rescuing water logged shearwaters as a last resource.

Rodríguez, A., J. Moffett, A. Revoltós, P. Wasiak, R. R. McIntosh, D. R. Sutherland, L. Renwick, P. Dann and A. Chiaradia (2017). "Light pollution and seabird fledglings: Targeting efforts in rescue programs." *The Journal of Wildlife Management*: DOI: 10.1002/jwmg.21237.



Beach-washed birds were too light and weak, passing the point-of-no-return to be rehabilitated

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