



Environmental Management Light Pollution Guidelines for Marine Turtles, Seabirds and Migratory Shorebirds

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INTRODUCTION

The Environmental Protection and Biodiversity Act (1999) provides protection to listed threatened and migratory wildlife in Australia.

There are 7 species of marine turtle, 35 species of seabirds and 37 species of migratory shorebirds listed under this Act which are managed by the Commonwealth Migratory Species Unit.

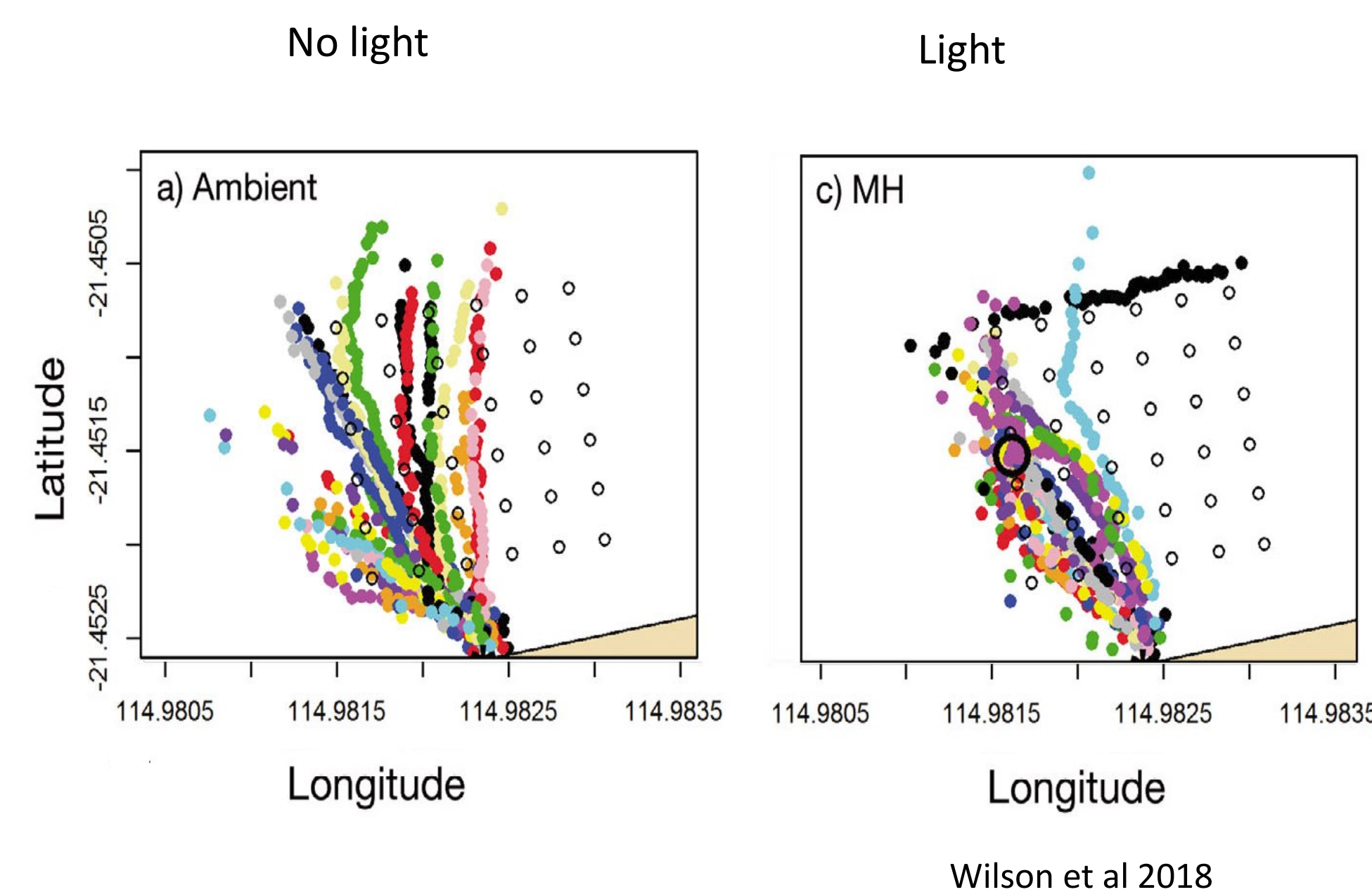
Light pollution has a major impact on wildlife and particularly marine turtles, seabirds and migratory shorebirds.

While many resource industries across Australia recognise and address lighting as an environmental risk factor in construction and operation of facilities, there are many urban, suburban, commercial centres and facilities that do not recognise nor address the potential impact of light from their activities.

OBJECTIVES

The Light Pollution Guidelines provide information to end users on:

- The light types most disruptive to marine turtles, seabirds and migratory shorebirds species (SBRs)
- How artificial light impacts these species through a detailed literature review
- How to conduct a formal and systematic environmental risk assessment of lighting impacts
- Recognizing when a project has the potential to have a significant impact on the SBRs that will trigger a referral to the Commonwealth under the EPBC Act
- How light impacts can be minimized via project specific lighting design, planning and management
- Methods for monitoring the biological impacts of light on the SBRs
- Instruments and methods used to measure and monitor light on a landscape scale
- How to conduct compliance audits against engineering designs and regulatory approval conditions
- Understanding the difference between photometry and radiometry and the implications of this to light pollution measurement and modeling



IMPACTS OF LIGHT POLLUTION

Marine Turtles

- Deter or disorient nesting adults
- Disorient hatchlings during sea finding
- Most attracted to white and short wavelength light
- Attracts hatchlings back out of the water towards onshore lights
- Cause slower rates of hatchling dispersal offshore

Migratory Shorebirds

- Increased chance of collision, injury and death from disorientation and additional flight times
- Bleaches their visual pigments causing blindness and disorientation
- Most attracted to white light
- Increased exposure to predation
- Flashing lights can flush birds from an area

Sea birds

- Primarily impacts on shearwaters
- Cause confusion and grounding
- Death through collision with infrastructure
- Increase vulnerability of adults when return to nest
- Most attracted to white light and gas flares



OBJECTIVES

Phase 1: Consultations and Subject Matter Elicitation:

- All lighting types were identified and classified as urban/suburban, aviation, maritime, industrial, defence or natural habitat/conservation reserves
- Representatives from each light usage class were interviewed about their industry/activity and specific details on:
 - light types, number and management;
 - awareness of SBRs in their area and environmental impacts of their lights, plans for LED usage;
 - corporate attitude to environmental protection; and
 - anticipated use or value of the guidelines and specific information they wanted to see in the document

Phase 2: Drafting the Guidelines

SUMMARY

- There is documented evidence of substantial light impacts on marine turtle hatchlings and shearwater fledglings in Australia
- Currently there is little or no recognition of light as a pollutant in the environmental legislation in Australia
- Regional industries such as oil and gas, mining and ports routinely manage light impacts on EPBC listed species near their operations
- In contrast the much greater sources of urban/suburban/commercial and street lighting managed by regional councils is rarely if ever referred under the EPBC Act for assessment and represents a major gap in state and federal regulation.
- The Light Pollution Guidelines set the standard for best practice in managing artificial light in proximity to sensitive marine turtle, seabird and migratory shorebird species and their habitats