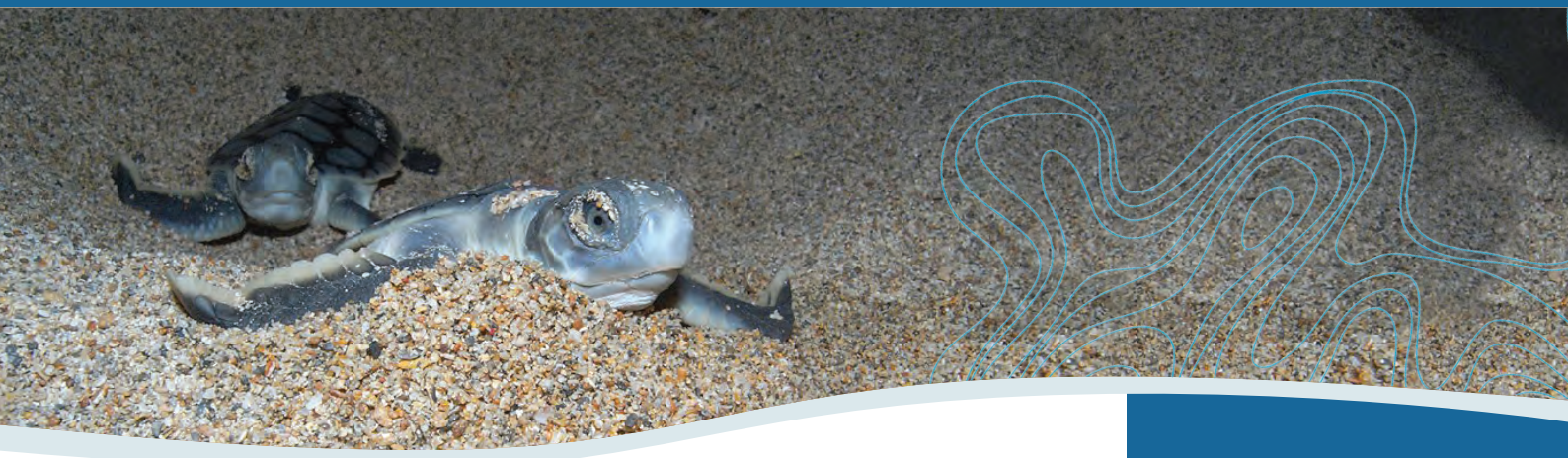

Protecting marine turtle hatchlings from nearshore light pollution

The challenge

Marine turtles face a constant battle for survival, and all are considered threatened. Australia is home to six of the seven species found around the globe.

Light pollution is a major threat. Artificial light on land disorientates hatchlings as they emerge after dark from their sandy nests, leaving them unable to find the ocean and vulnerable to predators.

Less understood is the effect of artificial light from ports, oil rigs, and ships at sea on hatchling dispersal. Following animals in the ocean at night is difficult, especially when they are smaller than the palm of your hand. Empirical evidence was required to support management action of this potential threat and is critical to the future of marine turtles.

The approach

In a world-first experiment at Ningaloo Reef, AIMS scientists and collaborators adopted fish tracking technology to pioneer a method to track swimming hatchlings. The team used tiny acoustic transmitters attached to the underside of the turtle, connected remotely to a network of underwater receivers, to follow their dispersal during their first hours in the ocean.

This allowed scientists to compare the swimming behaviour of green and flatback turtle hatchlings as they left shore in both natural settings and with artificial light on water. The results unequivocally demonstrated on-water artificial light attracted the hatchlings, confusing them and causing them to linger. This changed behaviour increased their likelihood of being eaten by predators in near-shore areas and exhausted their energy reserves, likely reducing survival.

The impact

This AIMS-led research provided clear empirical evidence of the influence of artificial light at sea on turtle hatchling dispersal which can affect survival.

This evidence shaped management actions specific to marine turtles and artificial lights at sea in the 2020 *'National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds'.*

Implementation of these guidelines is considered a key action for promoting the recovery of marine turtle populations.

AIMS collaborated with the WA Department of Biodiversity, Conservation and Attractions, the University of Western Australia and Pendoley Environmental. (Image: Suzanne Long)

PIONEERING METHOD
TO TRACK TURTLE HATCHLINGS

Up to 88% HATCHLINGS
ATTRACTED TO ARTIFICIAL LIGHT

LONGER TIME
CLOSE TO SHORE
GREEN TURTLES ↑ 23%
FLATBACK TURTLES ↑ 150%

EVIDENCE
LED TO MANAGEMENT ACTION