project bulletin

Australian Government
Great Barrier Reef Marine Park Authority

A project initiated under the Climate Change Action Plan

Raine Island

Adaptive management to conserve marine turtles

Summary

Raine Island is an important green turtle rookery. Green turtles are threatened and climate change is likely to place further stress on this species. Potential actions to reduce current threats to the population were explored through collaboration between the Great Barrier Reef Marine Park Authority (GBRMPA), Queensland Parks and Wildlife Service (QPWS) and Traditional Owners. Installation of fencing on Raine Island was identified as a cost effective high priority management action. Fencing was trialled at specific areas known to be treacherous for nesting marine turtles. The nesting season following installation saw significant reductions in turtle fatalities on previous seasons.

Background

Raine Island is the largest and oldest known green turtle rookery in the world (over 1000 years old). In a high nesting season up to 14,500 turtles have been recorded nesting on the island in a single night. In their search for space to nest in these crowded conditions, turtles regularly enter the elevated interior of the island, often returning along a different route and in the process encountering hazards such as small cliffs. Such cliffs have so far resulted in hundreds, possibly thousands of mature adult nesting green turtles dying during mid to high density nesting seasons. In many instances, the returning turtles wander over small cliffs and roll down them onto their backs. Once flipped, the turtles are unable to right themselves and remain, trapped, eventually dying. The northern green turtle population is already under pressure from a number of anthropogenic factors (including climate change) so retaining as many mature females as possible in the population is vital. Through extensive research and collaboration between the GBRMPA, QPWS and the Wuthathi people (Traditional Owners of Raine Island), an adaptation plan was developed. This plan identified a range of practical management actions that can support Raine Island as a refugia for green turtle nesting. Of these actions, one of the most cost effective and high priority involved installation of fencing to prevent the turtles from accessing areas of potentially hazardous terrain where they would be endanger of 'flipping'.

Objectives

Through this project, the GBRMPA and the QPWS (in consultation with Traditional Owners) sought to trial the installation of strategically placed fencing on Raine Island in order to restrict nesting turtles to areas of safe terrain. Making nesting grounds safer reduces unnecessary fatalities of mature female turtles. Reproductive females sustain populations so actions that limit threats to these animals are vital for the long term future of this population of threatened species.

Raine Island is a popular green turtle nesting site, with thousands of turtles visiting in a single night during the nesting season.

Project name: Adaptation plans for islands

Project number: Various

Outcome: B1

Year: 2008 - 2012

Bulletin type: Final

Actions

As part of this trial, QPWS undertook an initial assessment to identify target areas on Raine Island where high turtle death rates had previously been recorded. Following this, 100 metres of modified aluminium pool fencing was installed in areas around the eastern end of Raine Island in November 2011. In order to avoid creating a further hazard, the fencing panels were reduced in height to 50 cm to minimize their impact on seabirds, and the spacing of the vertical bars was increased to 30 cm to minimize the possibility of trapping a turtle by the head. Three sections of fencing were installed along the top of small cliffs, ensuring that existing natural ramps at the ends of these three sections remained open to allow safe transit of turtles from the interior of the island back to the beach.

Green turtle hatchling on Raine Island.

Outcomes

A survey undertaken on the day prior to installation of the fencing recorded approximately 60 upturned carcasses at the base of cliffs at selected fencing sites. On the days immediately following fence installation, a survey of turtle tracks showed that the fences were successfully diverting turtles away from the cliffs and towards the safe exit ramps. Subsequent surveys by QPWS in December 2011 and February 2012 confirmed that while the 2011/2012 nesting season was comparable to the previous year in terms of usage of the island interior and nesting turtle numbers (5000 to 10000 tally counts), the number of nesting turtle deaths were minimal. Only two turtle carcasses (discovered at different times in the season) were recorded in the 2011/2012 season with both located in areas previously known for their high turtle mortality rate. The success of the fences will continue to be monitored in future nesting seasons.

Aerial photograph of Raine Island

Raine Island's nesting green turtles produce an average of 8000 eggs over the course of their lifetime. Thus, the reduction of turtle deaths from 60 in previous years to two in the 2011/2012 nesting season means not only that 58 mature females are still alive as a result of this action but that each turtle can return in the future for up to 10 seasons, laying on average 800 eggs each. This means the potential for thousands more hatchlings to be added to the population, providing future security for the northern Great Barrier Reef green turtle in a changing climate.

The modified aluminium pool fencing (seen below) is proving effective at reducing nesting marine turtle fatalities on Raine Island.

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