

# Ningaloo Outlook

## a BHP-CSIRO Research Partnership

Ningaloo reef is valued for its exceptional biological diversity with the Ningaloo Coast declared a UNESCO World Heritage Area in 2011 for its Outstanding Universal Value. It's also an area where pressures associated with human use are increasing, but our understanding of this spectacular marine ecosystem is incomplete. To better understand Ningaloo's deep and shallow reef systems, and its shark and turtle populations, BHP Billiton and CSIRO have formed a five year marine research partnership, *Ningaloo Outlook*. During the project our scientists will set out to answer some key scientific questions.

Ningaloo Reef is the largest fringing coral reef in Australia, extending over 300 km. The reef is home to a range of marine life with the shallow lagoons and deeper offshore waters creating a diverse array of habitats. The reef also has many regular marine visitors including whale sharks, turtles, dugongs and whales, which attract visitors from all over the world.



Shallow reef system at Ningaloo Reef

### What will the partnership deliver?

The Ningaloo Outlook research partnership is investing five million dollars (AUD\$5m) over five years into the development of new knowledge about the Ningaloo Coast World Heritage Area. Our scientists will deliver the following outcomes:

- Assessments of the status of the ecological values of the reef.
- New knowledge and better understanding of the ecology of Ningaloo reef to inform conservation and management.
- Community engagement to build capacity and understanding within the local community.
- Training opportunities for the next generation of scientists to become world-class researchers.
- Creating science knowledge transfer opportunities through an Annual Symposium and meeting with the people who are responsible for managing the Ningaloo Marine Park and World Heritage Area.

CSIRO is one of the nation's premier scientific research organisations and has the world class expertise needed to deliver the Ningaloo Outlook's research program.

## Who will use the research outputs?

Science generated from the Ningaloo Outlook research partnership will inform future management of the Ningaloo reef area through the generation of knowledge, monitoring techniques and input into key environmental baselines.

Key users of this information include government departments responsible for managing and monitoring the Ningaloo reef area and industries (e.g. resource extraction activities, fisheries, tourism) operating in the vicinity of the Ningaloo reef.

## Research themes

Research on the reef is grouped into three distinct themes, shallow water; deep water and tagging of turtles and sharks. Activities commenced in 2015 and will run until 2020.

### Deep reefs

The deep reefs of Ningaloo support diverse and abundant filter-feeding communities, which include organisms such as sponges and soft corals, but little is known about their composition and the ecological processes that are essential to their long-term sustainability.

A combination of CSIRO's in-house Autonomous Underwater Vehicle (AUV), swath-mapping and towed video techniques are being used to locate and describe deep reef habitats, and to assess the year-to-year variability in the abundance and taxonomic composition of the biota that inhabit them.

### Shallow reefs

The shallow reefs of Ningaloo make up one of the longest and most pristine fringing reefs in the world and include over 200 coral and 500 fish species. These reefs provide food and shelter to turtles and sharks and provide physical protection from waves and storms to over 200km of coastline.

This research will provide the data on abundances, and the processes that sustain the species present. This data will generate knowledge needed for the management of these important ecological values.

Seventy sites were surveyed in 2015 using a combination of diver-based survey techniques to assess the relative abundance and diversity of fishes, sharks and corals.



Satellite tagged green turtle ready for release at Ningaloo

## Tagging turtles and sharks

Ningaloo provides important habitat and relatively undisturbed nesting areas for several marine turtle species and is world renowned for its annual aggregation of whale sharks. Research has also uncovered that this area boasts some of the highest abundances of reef sharks recorded in the world.

Turtle tagging activities have so far focussed on green turtles (*Chelonia mydas*), the most abundant species nesting along the beaches of the Northwest Cape. Ningaloo reef is also thought to provide vital foraging grounds to this species. Volunteers from the Cape Conservation Group have helped the turtle tagging project, with eight green turtles tagged with satellite transmitters in the first year of the partnership. The movements of these gentle giants are being tracked so the team can gather knowledge on where these animals travel to and the marine habitats they spend their time in. View their movements at [http://www.seaturtle.org/tracking/index.shtml?project\\_id=1101](http://www.seaturtle.org/tracking/index.shtml?project_id=1101)

Three whale sharks have also been satellite tagged during 2015. Amazingly, one of the whale sharks (given the name 'Dean') travelled more than 2,700 km in just 42 days!

## Training our future scientists

A key element of the Ningaloo Outlook partnership is to provide training opportunities for future scientists. Our three PhD scholars, Anna Cresswell, Jessica Stubbs and Joe Turner are based at the University of Western Australia, with co-supervision from CSIRO scientists.

## Like to know more and keep-up-to-date?

Visit our webpages:

<https://research.csiro.au/ningaloo/>

Or email:

- CSIRO Team: [Ningaloo.outlook@csiro.au](mailto:Ningaloo.outlook@csiro.au)
- BHP Billiton: [Claire.Hall@bhpbilliton.com](mailto:Claire.Hall@bhpbilliton.com)