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# CLEVELAND BAY FIELD RESEARCH

## UPDATE #13



### The Rivers to Reef to Turtles Project

We all met again at our *comparison study* site in Cleveland Bay to sample the environment and turtles for the *Rivers to Reef to Turtles Project (RRT)*. This marks the thirteenth field trip of the project and the fifth sampling event at Cleveland Bay to detect differences between pre- and post- wet seasons.

The first step in the RRT project is to characterise and quantify the environmental (water, sediment and seagrass) and bio-accumulated contaminant exposure of green turtle populations in the study sites. As we continue to analyse data collected from previous year's one and two, we begin our third and final year of sampling. Over the life of the project, data will be used to determine if environmental pollutants exist and if so, whether exposure can be correlated to turtle health at both individual and population level. This knowledge will help us understand whether exposure to coastal pollutants may be adversely affecting coastal green turtle populations of the Great Barrier Reef (GBR).

## The Field Trip - 3 to 8 November 2016

Study site #3 – the ‘comparison’ site in Cleveland Bay.

Contaminant exposure to green turtles at this site will be compared to sites within Upstart Bay, where the mass turtle stranding event occurred in 2012.

The research team consisted of volunteers and scientists from nearby Townsville including turtle biologists, water quality scientists, government representatives, and local volunteers - working together to deliver the objectives of the trip!

This trip was a condensed version of other trips because of limited turtle recaptures for population modelling. All efforts were on environmental samples with just a handful of turtle samples.

Day One started with project partner Carol Honchin from the Great Barrier Reef Marine Park Authority (GBRMPA) and Dr Ian Bell from the Queensland Government’s Threatened Species Unit, collecting water and deploying passive samplers. Day Two and Three, boats worked from one side of the bay to the other, grabbing water, sediment and seagrass for chemical analysis.

The turtle crew worked in Bedwell Bay to maximise the capture of a ‘bingo’ (a previously sampled turtle). Choosing this field trip days out from being on the water, meant we could take advantage of an amazing weather window. Compared to the field trip earlier in the year catching only 49 turtles in seven days, we exceeded our expectations, leaving on the last day with ample samples.



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# 32 TURTLES CAUGHT

 5 were adults

 9 sub-adults

 18 juveniles

## The Science:

This trip's focus was to detect pollutant changes in type and concentrations between pre- and post- wet season environmental samples and recaptured turtles.

To increase the chance of recapturing turtles previously sampled, we also needed to tag, weigh, measure and take blood and scute samples from as many sub-adult turtles as possible.

Other complimentary project data were collected, including turtle photo identification, and help in building a new biomonitoring tool.

## Turtle Stats:

- 32 green turtles caught, tagged and measured
- 26 primary (first time) turtles caught
- 0 within season recaptures
- 6 inter-season recaptures
- Smallest was 43.7cm and largest 92.7cm
- 10 blood and scute samples from recaptured and sub-adult age class turtles were taken for toxicological (metal and organic) and health analysis. Two of these are 'bingo' turtles, ones we have taken samples from before.

## Environment Stats:

- deployed, for assessment of metal contamination
- 2 EDs (empore discs) and PDFMs (polydimethylsiloxane) passive samplers deployed for assessment of organic contaminants
- 3 different foraging areas sampled for water, sediment and seagrass with multiple grab sub-samples collected.

With limited recaptures to date, there seems to be no mixing of turtles between the foraging areas we sampled.

Of the 32 turtles caught, five were adults (4 females; 1 males), nine sub-adults, and 18 juveniles. The sex ratios of females to males for adults was approximately 4:1.

Although the project partners had previously agreed to limit further crop sampling unless there was an environmental change or discharge event, 10 lavage samples were collected to look for potential dietary shift.



The environmental sampling showed there were several species of seagrass in the study site and seagrass was primarily being consumed by the turtles.

One turtle was found with severe fishing line entanglement which had amputated its left front flipper. The fishing hook was still imbedded and the fishing line was still threaded down its throat. The trailing fishing line had also cut through its hind flipper. The turtle was taken to Reef HQ Aquarium Turtle Hospital for assessment.

Other samples were taken for complementary or other projects including:

- 32 photos were taken of the left side of turtles' heads to add to the new Turtle Photo ID database.
- 10 samples were collected to develop cell lines and a future biomonitoring tool.

The remaining samples and data collected will be taken back to our RRT collaborative partners for further analysis/comparison to the other study sites as part of the RRT project.

## Highlights from the trip:

- Seeing one dugong
- Training more and more volunteers in the art of turtle catching!

The field trip was primarily supported by WWF-Australia, GBRMPA, and the Queensland Government's Department of Environment and Heritage Protection (EHP). A big thanks to Dr Ian Bell for all the logistical support and role as principal investigator for the trip – without the assistance of government departments and their support - this trip could not have occurred. Also thanks to Dr Glen Holmes for his assistance with the environmental data collection, and Adam Finlay for his help and boat charter.

WWF-Australia and its partners are leading this pioneering research to protect the Great Barrier Reef and the turtles that call it home. Collaborative project partners of the RRT project include the National Research Centre for Environmental Toxicology at the University of Queensland, the Centre for Tropical Water & Aquatic Research at James Cook University, Vet-MARTI School of Veterinary Science at the University of Queensland, Griffith University, the Queensland Government, Great Barrier Reef Marine Park Authority, local Traditional Owners and natural resource management groups and other supporters and volunteers in the local community.

The next field research trip will be catching the first flush (if we get enough rain) conducted in Upstart and Cleveland Bays, as we continue to sample our way to unravelling how much a turtle can take...

Until then, I'm signing off – Chris Hof.



***“Rivers to Reef to Turtles investigation is made possible with the help of Banrock Station wines”***



# Why we make a difference

## Reaching new audiences

We will create new ways to inspire and motivate a new generation of Australians and truly realise our collective power to make a difference to the world in which we live.

## High Impact Initiatives

Over the next 5 years, we will accelerate our on-ground conservation and advocacy work, focusing on new priority areas where we have the greatest impact and influence.

## Building a strong network

We will draw strength from WWF's 50 years of rich history, knowledge and experience, harnessing our network of people around the world.

## Walking the talk

We will continue to commit to reducing our overall environmental footprint, with an ambitious vision to reduce energy consumption by 30% and emissions from travel by 50% by 2015.

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Through building influential relationships with business and industry, we will continue to create solutions to address the major threats to our natural environments.

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