



CLEVELAND BAY FIELD RESEARCH

UPDATE #15



The Rivers to Reef to Turtles Project

We all met again at our *primary study* site in Cleveland Bay to sample the environment and turtles for the *Rivers to Reef to Turtles Project* (RRT). This marks the fifteenth and final field trip of the project and the sixth 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 – Upstart Bay (representative of agriculture and legacy mining), Cleveland Bay (urban and industrial), Howick Group of Islands (control site). As we continue to analyse data collected from previous year's one and two, we end our third and final year of sampling in Cleveland Bay. Over the life of the project, the data will be used to determine if environmental pollutants exist and if so, whether exposure can be correlated to turtle health at both the individual and population level. This knowledge will help us to understand if and how pollutants are adversely affecting coastal green turtle populations of the Great Barrier Reef (GBR).



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The Field Trip - 1, 2 and 5 June 2017

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

Contaminant exposure to green turtles at this site will be compared to Upstart Bay and the Howick Group of Islands in an attempt to unravel the mass stranding mystery and identify if contaminants are affecting the health of green turtles.

Upstart Bay is the site of the green turtle mass stranding event of 2012. It’s also the receiving waters of the Burdekin River, one of the biggest contributors of pollutant loads in the Great Barrier Reef.

The research team consisted of volunteers and scientists from all around Australia, including turtle biologists, water quality scientists, government representatives, aquarists, cameramen, local volunteers and WWF-Australia – working together to deliver the objectives of the trip!

With so much to achieve, we started with the briefing on all things boating and safety.

Day 1 started in windy, cold and miserable weather conditions, but the company was a delight as always. We only caught 2 turtles but made great headway collecting the environmental samples. There was an even worse turn in the weather on Day 2 but by Day 5 we were working in some of the best conditions we would hope for. The environmental sampling crew, led by project partners James Cook University (and C2O consultancy) and the Queensland Government’s Department of Science, Innovation and Technology worked studiously from west to east, grabbing water, sediment and seagrass for chemical analysis.

The crew worked hard to find turtles this trip, yet we managed to collect all the data and samples required, leaving sad as it was (for this project) our last adventure in Cleveland Bay.

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47 TURTLES CAUGHT

 0 were adults

 5 sub-adults

 42 juveniles



© STEPHEN MENZIES / REEF HQ AQUARIUM / WWF-AUS



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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 turtle numbers for mark recapture population studies, we also needed to tag, weigh and measure as many turtles as possible.

Other complimentary project data were collected, including turtle photo identification.

Turtle Stats:

- 47 green turtles caught, tagged and measured
- 32 primary (first time) turtles caught
- 14 inter-season recaptures and 1 within-season
- Smallest was 41.0 cm and largest 72.4 cm

Environment Stats:

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

Of the 47 turtles caught there were no adults, 5 sub-adults, and 42 juveniles.

Possibly due to the impacts of Cyclone Debbie (which made landfall 28 March, 2017), there seemed to be less turtles on the abundant seagrass and algal flats in the southern parts of the Bay. The eye infection noted in previous trips was still apparent (8.5% of turtles) but no previously blood-tested turtles were caught or sampled. Seven turtles were caught showing signs of healed fibropapilloma scars and tumours. Combined with observations of a number of turtles' mouths and the environmental sampling, an abundance of seagrass suggests a primarily seagrass diet. Unfortunately, one turtle was found with significant boat strikes and was taken to Reef HQ hospital for further assessment and possible treatment.

Other samples were taken for complementary or other projects including:

- 47 photos were taken of the left side of turtles' heads to add to the new Turtle Photo ID database.

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

Throughout the RRT project, a total of **421 turtles** have been caught since October 2014 in Cleveland Bay. However, because the recapture rate is currently at 9.2% more turtles are required to be able to estimate the population size, survivorship and trajectory. Continuation of a capture-mark-recapture program of approximately another 3-4 years may see this objective being met but requires additional funding.

Highlights from the trip:

- Having Banrock Station Wine join our trip
- Seeing 1 crocodile near the banks of Bedwell Bay
- Working with drones to film our turtle processing on the beach. Thank you Matt!

The field trip was primarily supported by WWF-Australia, Great Barrier Reef Marine Park Authority (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. A big thanks again to Matt from *Your View* for your expertise in drone filming and for Stephen Menzies' expert skippering from Reef HQ.

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, GBRMPA, local Traditional Owners, natural resource management groups and other supporters and volunteers in the local community.

A big shout out to Banrock Station Wines and all the volunteers who have participated in all the RRT field trips. That concludes our field trips for the RRT project, but watch this space as we analyse 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.

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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.

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

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