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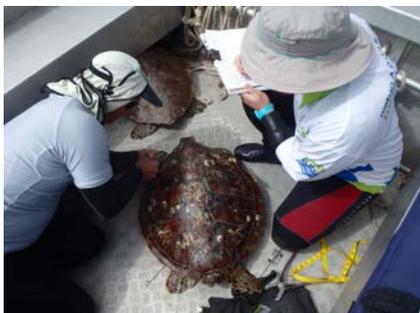
# UPSTART BAY FIELD RESEARCH

## UPDATE #14

### The Rivers to Reef to Turtles Project

We all met again at our *primary study site* in Upstart Bay to sample the environment and turtles for the *Rivers to Reef to Turtles Project (RRT)*. This marks the fourteenth field trip of the project and the sixth sampling event at Upstart 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 Upstart 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 to 8 May 2017

Study site #2 – the 'study' site in Upstart Bay.

Contaminant exposure to green turtles at this site will be compared to Cleveland 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 full sunshine and great weather conditions, catching 18 adult turtles and making great headway collecting the environmental samples. The weather made a turn for the worse on Day 3 and held until Day 7, but we had such an enthusiastic crew. The environmental sampling crew, led by project partners from the Great Barrier Reef Marine Park Authority (GBRMPA), worked from one side of the bay to the other, grabbing water, sediment and seagrass for chemical analysis.

The turtle crew worked all four surveyed foraging sites searching for turtles around the clock, from high to low to high tides. It was tough going, not just because of the few challenging weather days but navigating the debris (from Cyclone Debbie). Yet we managed to collect all the data and samples required, sad to leave as it was (for this project) our last adventure in Upstart Bay.

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# 82 TURTLES CAUGHT

 27 were adults

 7 sub-adults

 48 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 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:

- 82 green turtles caught, tagged and measured
- 66 primary (first time) turtles caught
- 16 inter-season recaptures
- Smallest was 39.8 cm and largest 114.3 cm
- 2 blood and scute samples from recaptured turtles were taken for toxicological (metal and organic) and health analyses.

## 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 82 turtles caught 27 were adults (26 females; 1 males), 7 sub-adults, and 48 juveniles.

Whether because of 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. At Rocky Ponds, the long algal epiphytes growing on the strands of seagrass was more abundant than noticed before, with a distinct silty plume discharged from the Rocky Ponds Creek. The eye infection noted in previous trips was still apparent (35% of turtles) and more samples were taken of the turtles' eyes for further diagnosis. Only two crop samples were taken of the recaptured (and previously blood tested) turtles, but combined with observations of a number of turtles' mouths and the environmental sampling, an abundance of seagrass suggests a primarily seagrass diet.



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Other samples were taken for complementary or other projects including:

- 82 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 **767 turtles** have been caught since October 2014 in Upstart Bay. However, because the recapture rate is currently at 9.4% 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 2 years may see this objective being met but requires additional funding.

## Highlights from the trip:

- Seeing 2 dugongs, 1 leopard shark, and a sea snake
- Working with drones for the first time filming our work on the water. Thank you Matt!

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. A big thanks to Jim and Jan Jeynes from local Wunjunga turtle community enthusiasts and representatives of Queens Beach Action Group – your pikelets, dinner and jam drops are always a hit! Thanks to Matt from Your View for your expertise in drone filming which everyone will get to view shortly – watch this space.

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 and final field research trip will be conducted in Cleveland Bay, 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.

## Loyal supporters

WWF's supporters make an invaluable contribution to our conservation work. We couldn't do without their loyalty, generosity and personal involvement. We will expand the ways in which supporters can connect with WWF, giving them a greater choice of programs from which they can choose to protect our planet's future.

## Transforming business

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



### Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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