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# UPSTART BAY FIELD RESEARCH

## UPDATE #12



### 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 twelfth field trip of the project and the fifth 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. 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, 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 understand whether exposure to coastal pollutants may be adversely affecting coastal green turtle populations of the Great Barrier Reef (GBR).

## The Field Trip - 23 to 30 October 2016

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, veterinarians, water quality scientists, rangers, government representatives, 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 One started with a lot of promise for a great trip, catching 30 turtles and deploying all the passive samplers. The weather this trip was stunning, the tides near perfect, and a great crew to boot. Project partners from the Great Barrier Reef Marine Park Authority (GBRMPA) and the Queensland Government's Department of Science, Information Technology and Innovation (DSITI) supported by Reef HQ Aquarium, 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 and found another new sand bar teeming with turtles. Every day we worked from daybreak to sunset taking advantage of an amazing weather window. We exceeded our expectations, leaving on the last day with ample samples.

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CLAIRE & PAUL / MOLONGLE CREEK CARAVAN PARK

# 161 TURTLES CAUGHT

 19 were adults

 21 sub-adults

 121 juveniles



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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, microbiome determination and to help build a new biomonitoring tool.

## Turtle Stats:

- 161 green turtles caught, tagged and measured
- 131 primary (first time) turtles caught
- 9 within season recaptures
- 21 inter-season recaptures
- Smallest was 40.0 cm and largest 110.0 cm
- 21 blood and scute samples from recaptured and sub-adult age class turtles were taken for toxicological (metal and organic) and health analysis.

## Environment Stats:

- 2 EDs (empore discs) and PDFMs (polydimethylsiloxane) passive samplers deployed for assessment of organic contaminants
- limited recaptures to date, there seems to be no mixing of turtles between the foraging areas we sampled.

Of the 161 turtles caught 19 were adults (15 females; 4 males), 21 sub-adults, and 121 juveniles. The sex ratios of females to males for adults was approximately 3.7:1.

Although the project partners had previously agreed to limit further crop sampling unless there was an environmental change or discharge event, 24 lavage samples were collected (to help train a new PhD student visiting from Ningaloo Marine Park in Western Australia). The environmental sampling showed there were several species of seagrass in the study site and seagrass was primarily being consumed by the turtles.

Three turtles caught showed varying degrees of the fibropapilloma tumour. Two turtles had predator markings on their shell, and one had fishing line damage around its flipper.

Other samples were taken for complementary or other projects including:

- 149 photos were taken of the left side of turtles' heads to add to the new Turtle Photo ID database.
- 23 blood and cloacal samples were collected to determine sea turtle microbiome and the influence that this has on physiology and health
- 20 samples were taken from sub-adults for cell line analysis

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 4 dugongs including a new calf, 1 hammerhead shark, and lots of sea snakes.
- Seeing a courting pair of turtles!

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 dessert and smoked fish was a real treat. Thanks to Claire and Paul for always housing and taking care of all our needs at Molongle Creek Caravan Park – as this is your last trip with us before you leave on your travels around Australia, know that you've been greatly appreciated and will be sorely missed.

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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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.

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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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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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