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UPSTART BAY FIELD RESEARCH

UPDATE #8

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 eighth field trip of the project and the third 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 the data collected from the first year's non-targeted 'screening phase', we begin year two and archiving samples for future analysis. 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).

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The Field Trip – 6 to 14 October 2015

Study site #2 – the ‘study’ site at the southern end of Cleveland Bay.

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

The research team consisted of volunteers and scientists from all over Queensland including turtle biologists, 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 was extremely promising with minimal field staff but managing to catch more than 20 turtles in just one afternoon, and deploying many passive samplers. Unfortunately we were challenged with windy weather and cloud cover from Day Two onwards but we kept team spirits high and achieved what we set out to do. Project partners from the Great Barrier Reef Marine Park Authority (GBRMPA) guided by scientists from TropWATER, astutely deployed passive samplers (which accumulate a range of environmental pollutants) and worked from one side of the bay to the next, grabbing water, sediment and seagrass for chemical analysis.

We worked all four surveyed foraging sites and found a new sand bar teeming with turtles. On the days with brilliant tides, we work from the distant shores of Cape Upstart until little daylight was left.

On the shorter days, we provided presentations to the local Home Hill High School as they also watched us in action from the Volunteer Marine Rescue (VMR) fleet, and night time talks with the local community and the Molongle Creek Boat Club.

Given the weather conditions and after seven days in the field, we drove away happy with our collected samples.

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118 TURTLES CAUGHT



19 were adults



19 sub-adults



80 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:

- 118 green turtles caught, tagged and measured
- 110 primary (first time) turtles caught
- 1 within season recaptures
- 7 inter-season recaptures
- Smallest was 42.4cm and largest 114.6cm
- 37 blood and scute turtle samples from recaptured and sub adult age class was taken for toxicological (metal and organic) and health analysis.

Environment Stats:

- 3 DGT (diffusive gradients in thin-film) passive samplers deployed, for assessment of metal contamination
- 3 EDs (empore discs) and PDFMs (polydimethylsiloxane) passive samplers deployed for assessment of organic contaminants
- 3 different foraging areas sampled for water, sediment and seagrass w5ith 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 118 turtles caught 19 were adults (13 females; 5 males; 1 indeterminate), 19 sub-adults, and 80 juveniles. The sex ratios of females to males for adults was approximately 2.6:1 .

With a number of lavage samples collected to date, the project partners agreed to limit further crop sampling unless there was an environmental change or discharge event. Nevertheless, the environmental sampling showed there were several species of seagrass in the study sites.



Two turtles caught were emaciated; three with fibropapilloma, one with healed fibropapilloma scars and one new recruit. Four turtles showed signs of boat strike and one with a fishing hook and line piercing its flipper.

Other samples were taken for complementary or other projects including:

- 113 photos of turtles' left side of head were taken 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 archiving and future analysis/comparison to the other study sites as part of the RRT project.

Highlights from the trip:

- Having Home Hill High School, VMR, Project Catalyst farmer Joe Linton and Molongle Creek Boat Club join us to hear about our work
- What ... no spam this trip but ham, salami and dip!
- Some special visitors filming our work and some more new volunteer faces mastering the art of turtle wrangling.

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 help and pikelets, dessert and yummy drinks are always appreciated. Thanks to Claire and Paul for always housing and taking care of all our needs at Molongle Creek Caravan Park – your bright smiling faces always make our trip that much more special.

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, the Queensland Government, Great Barrier Reef Marine Park Authority, local Traditional Owner 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”



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