

Turtle Trials and Tribulations

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JCU Turtle Health Research is a group of academics, post-graduate students and volunteers who share a passion for the health and wellbeing of turtles in the tropics.

Our mission is to understand and conserve sea turtles and fresh water turtles for future generations with specific focus on health and disease processes. Below are some of the highlights from the past year.

Green sea turtles (*Chelonia mydas*) are long lived and have high site fidelity, which makes them good sentinels for environmental health. We have investigated antimicrobial resistance in bacteria from green turtle eyes and intestinal tract and found that a high proportion of these bacteria were multidrug resistant. This has spurred further investigations into alternatives for treatment of such infections in the form of bacteriophage therapy.

New techniques such as high-throughput sequencing analysis has allowed us to investigate the gut microbiomes of healthy green turtles and stranded turtles before and after rehabilitation. This information is starting to lift the veil on what constitutes a healthy green turtle and how dietary and environmental shifts affects gut bacterial communities.

In order to investigate impacts of micro-plastics on green turtles we established an extraction protocol to allow for the multifarious diet of these animals to separate micro-plastic from both organic and inorganic matter in the chyme.

To improve understanding of patho-physiologic processes occurring in green turtles stranded along the east coast of Australia, we retrospectively examined the hematologic and bio-



Green turtle hatchling. Photo courtesy Matt Curnock

chemical blood parameters of green turtles admitted to rehabilitation facilities between 2002 and 2016. Although reference intervals have been established for several populations of green turtles, the current published reference intervals do not appear to be prognostically useful and further work is required to identify reliable prognostic biomarkers for green turtles.

Sequencing of Chelonid Alphaherpesvirus 5 (ChHV5) strains obtained from turtles afflicted with fibropapillomatosis allowed us to carry out a phylogenetic analysis of ChHV5 from Australian waters. The study identified three clusters reflecting geographical collection sites on the east coast of Australia.

Continued page 5

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Continued from Previous Page

An investigation into a mortality event of Johnstone River snapping turtles (*Elseya irwini*) in Far North Qld returned pure culture of *Aeromonas hydrophila* from spleen and kidney swabs. *A. hydrophila* is ubiquitous in the environment but can turn pathogenic. Unusually high water temperatures may have contributed to this mortality event.

A serological survey of reptiles associated with freshwater in north Queensland revealed evidence to past exposure to ranavirus-like antigens in part of the populations of several locations sampled. Adult turtles could be employed as sentinels for monitoring presence and spread of ranavirus along freshwater streams in northern Australia.



Emydure krefftii. Adult

Balancing Responsibilities

Continued from page 2

tity of nutrients if more of us adopted nose-to-tail eating habits. In terms of the growing demand for high-quality dog and cat food, should we be recommending that owners consider keeping herbivorous companion animals?

Our veterinary training in comparative physiology, nutrition and health make us extremely valuable to the team

effort that is required to achieve sustainable development. And possibly, there's never been a more important time for us to actively engage in public discourse while actively demonstrating our concern for the wellbeing of all species and the environment that supports us all.