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Presentation · July 2017

DOI: 10.13140/RG.2.2.13364.55685

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**Untangling the koala stress syndrome: Understanding relationships between stress, disease and trauma in relation to clinical outcomes (#32)**

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Anthropogenic induced environmental challenges such as habitat alteration and climatic warming can increase physiological stress in wildlife species. Wildlife species face multiple stressors so they require physiological and behavioural coping mechanisms for survival. The neuroendocrine stress response system provides physiological response to stressors in animals. However, it can become maladaptive under prolonged exposure to moderate stressors, such as environmental trauma and disease. This can lead to down-stream consequences on overall animal health and survival. The emerging theme of conservation physiology includes non-invasive physiological tools that can be applied to understand the stress biology of threatened and managed wildlife species. This research work focussed on the stress biology of rescued wild koalas (*Phascolactos cinereus*). The primary aim was to understand how environmental trauma and diseases influenced their physiological stress responses and the relationships between stress levels, clinical diagnosis, recovery and endpoint. Key stressors included chlamydia, physical demeanor (appearing flat or copious drinking), hit by car, dog attack, injury and burns. Diagnosis included chlamydia, infection, injury, burns, renal failure, inability to climb, respiratory illness, heat shock and diabetes. Chronically stressed koalas had generated significant allostatic load (elevated faecal glucocorticoid metabolites) and pathological state which required euthanasia. Noninvasive faecal glucocorticoid monitoring clearly reflected the diagnosis and recovery or endpoint of both mildly and moderately stressed koala patients. In conclusion, the stress biology of koalas should be studied in combination with clinical tests for environmental trauma and disease which may assist in more efficient stress management in koalas.