SEA TURTLE HEALTH BASELINES: SUPPORTING CONSERVATION SCIENCE IN WESTERN AUSTRALIA*

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The current state of sea turtle health in the Indian Ocean, especially for the endemic flatback turtle (*Natator depressus*) is largely unknown. Anecdotally, the causes of illness, injury, and death in Western Australian turtles are comparable to those in other parts of Australia and the world (e.g., spirorchiidiasis, fibropapillomatosis, and marine debris interaction) but scientific studies to validate these reports are particularly limited in this region. To address these knowledge gaps, causes of both live and dead turtle strandings (n=75) in Western Australia (WA) were investigated through an array of veterinary diagnostic techniques including necropsy, clinical pathology, diagnostic imaging, histopathology, parasitology, microbiology, toxicology, and molecular analyses. Health assessments were conducted on live animals (n=220) to determine baseline levels of health and disease for specific populations, predominately nesting and foraging flatback turtles. Through these health and disease investigations, baselines were developed, along with the discovery of new diseases including a novel haemoparasite, *Haemocystidium* spp.; a potentially emerging zoonotic bacterium, *Streptococcus iniae* associated with a multi-species mass mortality event involving post-hatchling flatbacks; as well as spirorchiidiasis in flatback turtles previously unreported in this species. In this study, natural disease-related causes of mortality (69.3%) occurred more frequently than direct anthropogenic causes (12.0%). Spirorchiidiasis was the most common cause of mortality in this study (32.0%), with a prevalence of 93.2% in turtles susceptible to the disease (i.e., excluding the post-hatchling cohort). The next most common cause of mortality was unknown (18.7%), followed by trauma (13.3%), and endoparasitosis (10.7%). We developed the first flatback turtle reference intervals (RIs) following American Society of Veterinary Clinical Pathology (ASVCP) guidelines. We found flatback turtle RIs were generally similar to other published sea turtle RIs but detected significant differences in our study for the various boundary conditions including life stage (nesting or foraging), as well as for measurement methodology (field or laboratory tests), justifying the establishment of separate RIs. This study is the first health and disease investigation in WA and the eastern Indian Ocean and will offer broader insights into sea turtle health and disease status on a regional scale, and, will provide a framework to integrate health into future conservation management decisions.

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