Progress Report STP 2020-061 (FY 2021-2022)

Assisted colonisation of the western swamp tortoise (*Pseudemydura umbrina*): the role of energy requirements in translocation decisions

BCS Animal Science

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Progress Report

The western swamp tortoise (*Pseudemydura umbrina*) is endemic to south-west Australia and occupies seasonal wetlands where hydroperiods are shortening due to declining rainfall. Trial assisted colonisation translocations 300-400 kilometres south of their current habitat began in 2016 to test whether *P. umbrina* can grow in cooler climates where hydroperiods are likely to be more suitable in the future. Early results indicated suitable food availability as a key component. The aims are to 1) develop novel environmental DNA methods to understand diet in new habitats; 2) document foraging behaviour in relation to water temperatures and prey availability; 3) link metabolic processes and food intake to predict long-term growth rates and reproduction in new environments. This will provide greater certainty on whether southern wetlands can provide viable habitat for this critically endangered species in the near future.

Candidate wetlands were evaluated in the East Augusta region in 2020. 73 juvenile tortoises were released in August 2021 as part of a third assisted colonisation trial. Monitoring showed the juvenile tortoises gained an average 5.6% of their initial body mass over the hydroperiod before moving into aestivation for the summer and autumn months. Analysis indicates there is a positive relationship between tortoise activity levels and carapace temperature. Environmental DNA (eDNA) methods are being tested as a monitoring tool. A review on the use of environmental DNA in reptile conservation was published in *Ecology and Evolution*.