

Title

Impact of egg incubation strategies for the Western Swamp Tortoise (*Pseudemydura umbrina*) and implications for individuals released to the wild.

Presentation Abstract

The western swamp tortoise (*Pseudemydura umbrina*) is a critically endangered species endemic to a small strip of remnant ephemeral clay-based wetlands along the Swan Coastal Plain, north of Perth in Western Australia. Perth Zoo has played a key role in the recovery of the species for over 30 years, through a breeding program which supplies zoo bred individuals for translocation, to augment subpopulations and create new populations through assisted migration. Refining of incubation techniques for over 3 decades resulted in high rates of hatching success, with 1145 zoo bred individuals released to the wild to date. Changing climate, hydrology and land use in western swamp tortoise habitat has increased the difficulty in finding suitable release sites, prompting revision of incubation strategies and an investigation into methods that produce the fittest animals for release with the best chance of survival. There has been limited research on the role of artificial incubation for Testudine, however research into other reptilian species suggested that incubation temperature including fluctuating environmental conditions can influence hatchling sex ratio, morphology, mobility, growth and behaviour and that those found in natural nests had improved fitness and vigour (Booth, 2006).

From 2022 until present, a trial investigates how the environmental conditions at the Perth Zoo breeding facility impact on hatching success, morphology and fitness of western swamp tortoises. The results of this ongoing trial will guide adaptive management and decision making based on scientific knowledge. This project is also a prelude to assessing whether assisted migration sites are thermally suitable to support egg incubation, an important factor to consider for a long-lived species in our changing climate.

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Bio

Kerry Ryan is a Senior Technical Officer of Zoology within the Native Species Breeding Program at Perth Zoo. She began this role in 2022 and is the ZAA species coordinator and studbook keeper for the Western Swamp Tortoise and works on the breeding programs for critically endangered Margaret River Hairy Marron, Western Swamp Tortoise, White Bellied and Orange Bellied Frogs. Prior to this she worked for 9 years on the Perth Zoo Life Sciences team, focusing on the husbandry of reptiles, birds and native mammals. She is committed to developing techniques to improve breeding outcomes and welfare standards in Perth Zoo's conservation breeding programs.