

Performance of head-started and wild-caught juvenile tuatara following reintroduction to Orokonui Ecosanctuary

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Reintroductions are increasingly used in species conservation, but success rates have historically been low. Experimental approaches can be used to identify factors that influence reintroduction success, including head-starting (the rearing of juveniles in captivity before release). Analysis of the factors that influence the success of a reintroduction is important to improve future programmes. In this study we monitored the reintroduction of juvenile tuatara, *Sphenodon punctatus*, to Orokonui Ecosanctuary in the South Island of New Zealand. We followed juveniles from three sources: wild-caught from a warmer climate, head-started from a warmer climate and head-started from the local climate. Specifically, we compared morphometric, ecophysiological, behavioural, spatial aspects and resource selection during the first 5-months of the reintroduction. Juveniles from all sources had a similar change in body condition post-release; however, wild-caught grew faster than those head-started in captivity, despite being the only animals that had ticks upon release. Source did not affect dispersal distance or home-range size, and no animals had ticks at the study's end. At three scales (landscape, high-use areas and retreat-site), resource selection was similar, and survival of all groups was high (96.4-100%). Our results demonstrate that juvenile tuatara, irrespective of source, have similar post-release performance and resource selection, and suggest that either wild-caught or head-started juveniles could be used as founders for future translocations. Given that tuatara are long-lived, late-maturing reptiles with low productivity and low detection probabilities for hatchlings and juveniles, the relative contributions of head-started and wild-caught founders to the establishment of this population will take decades to confirm.