

Tasmanian Devil declines and their effects on predator ecology

Supervisors

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Project description

Tasmanian devils are undergoing severe declines and are classified as Endangered by the IUCN, mainly as a result of epidemics of a recently emerged infectious cancer, Devil Facial Tumour Disease. As the dominant native marsupial carnivore in Tasmania, devils have important ecosystem roles as predators, scavengers and competitors. Such top-predator species have been shown in other systems to be drivers of ecosystem structure and function. Across the island of Tasmania, devils are declining at variable rates though in some localized situations, there is emerging evidence of stability and possible recovery in numbers. Similarly, populations of native predators, (spotted-tailed and eastern quolls) and non-native predators (feral cats) are unevenly distributed in the landscape and their populations have responded variably to devil declines. This project is a collaboration among GW4+ researchers and the Tasmanian devil research team at the University of Tasmania. The aim is to study the foraging ecology of devils, their native and non-native competitors and their prey and to compare the impact of devil declines and the resulting variation in predator community composition on Tasmania's ecological communities. The principal approach will be to undertake stable isotope analyses of new and archive collections of predator and prey tissues to understand patterns of individual and population level variation in measures of foraging. Practically, the project will entail the student conducting fieldwork for sample collection across Tasmania, working alongside major, ongoing devil ecology and conservation projects led by the UTas team, together with laboratory work to prepare and analyse samples and data in Cornwall and Cardiff.

This is a novel and exciting project affording the student the opportunity of working with international research partners, using cutting edge technology and analytical approaches to study topics of fundamental importance to conservation biology and ecology.

References

Hollings, T., Jones, M., Mooney, N. & McCallum, H. (2014) Trophic cascades following the disease-induced decline of an apex predator, the Tasmanian Devil. *Conservation Biology*, 28, 63-75.

Hollings, T., McCallum, H., Kreger, K., Mooney, N. & Jones, M. (2015). Relaxation of risk-sensitive behaviour of prey following disease-induced decline of an apex predator, the Tasmanian devil. *Proceedings of the Royal Society B*, 282, 20150124.

