

HONOURS PROJECT

Project Title: Can a mesic habitat, nectar-feeding bird maintain evaporative water loss constancy under perturbing environmental conditions?

Supervisor(s): Dr Christine Cooper, Dr Philip Withers (UWA)

Project: Recent studies have demonstrated that small arid-habitat mammals and birds have acute physiological control of insensible evaporative water loss (EWL). There are two theories concerning the adaptive significance EWL regulation. It may aid in thermoregulation, or facilitate to water conservation. If the major adaptive significance of EWL regulation is water conservation, we would expect that arid-habitat species to have greater control of EWL under perturbing conditions than mesic species. To date, EWL constancy has only been documented for arid-habitat birds and mammals, so examining if species that experience high water availability also have this ability will address the question of whether EWL regulation has a predominantly thermoregulatory or hygro-regulatory function. Therefore, this study will examine the ability of a mesic-habitat, nectar-feeding bird, the rainbow lorikeet, to maintain EWL constancy under perturbing environmental conditions such as varying relative humidity or in helox vs air.

Funding: ARC Discovery grant

Special Requirements: This project may involve field work and/or regular transport of animals. The student is required to have a current driver's license and own transport.

References:

- Withers, P.C. and Cooper, C.E. (2014) Physiological regulation of evaporative water loss in endotherms: is the little red kaluta (*Dasykaluta rosamondae*) an exception or the rule? Proceedings of the Royal Society B. 281: 20140149.
- Cooper, C.E. and Withers, P.C. (2014) Physiological responses of a rodent to helox reveal constancy of evaporative water loss under perturbing environmental conditions. American Journal of Physiology. 307: R1042-R1048.
- Eto, E, Withers, P.C. and Cooper, C.E. (2017) Can birds do it too? Evidence for convergence in evaporative water loss regulation for birds and mammals. Proceedings of the Royal Society B. 284; 20171478.