Anuran richness and occurrence relative to urbanisation on the Swan Coastal Plain, Western Australia

Thesis submitted for the Honours Degree in Environmental Science, Murdoch University

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Litoria adelaidensis, Lake Joondalup. Photo: Jai Thomas

Declaration

I declare this thesis is my own account of my research, and contains as its main content work that has not been previously submitted for a degree at any tertiary educational institution.

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Jai Thomas

Word Count

Introduction	3,960
Methods	4,065
Results	1,087
Discussion	2,907
Total (including Abstract)	12,327

Abstract

Anurans are an important component of ecosystems, as they contribute to the transfer of energy between aquatic and terrestrial habitat and act as predators, prey, and herbivores. However, even though urbanisation is acknowledged as a threat to 50% of Australia's endangered anurans, there is little published research on anurans in urban patches in Australia compared to those in undisturbed habitat. This type of research may prove vital to the management of biodiversity within the Perth region, which is currently the fastest growing capital city in Australia, and existing urban remnants may become increasingly important to conservation. The aim of this thesis is to investigate the influence of a modified landscape on anuran occupancy and species richness, incorporating analyses to account for variations in detection probability amongst species within wetlands on the Swan Coastal Plain in Western Australia. Temperature was found to exert a consistent effect on the detection of all species. The observed influence of survey-dependent variables on species detection can aid the design of future surveys of the study species. Occupancy amongst species was best predicted by combinations of road cover and residential area. Interestingly, residential area showed a positive relationship with occurrence, which is most likely due to the changes in hydroperiod that occur within urban wetlands. Species richness was best predicted by both residential and wetland area. Several species were encountered very infrequently during the survey period, which may indicate that these species are limited in their distribution along the Swan Coastal Plain. Projected climate change predicts the loss of surface water groundwater expressions in some areas, which may pose a threat to the local existence of these species. Overall, the findings of this study may inform the future management of anurans within the Swan coastal Plain, and highlights the potential for wetlands to contribute to the protection of biodiversity in an increasingly degraded environment.

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Cheers

Jai

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