HONOURS PROJECT

Project Title: Mapping patterns of genetic connectivity in Perth froglets.

Supervisor(s): Dr Brenton von Takach

Project

Understanding how individuals move within urban landscapes is a key aspect of modern ecology. This project aims to quantify, compare, and contrast the patterns of connectivity and movement of the rattling (*Crinia glauerti*) and squelching (*Crinia insignifera*) froglets across the Perth region (How and Dell 2000). To achieve this aim, we need to (1) conduct fieldwork to sample tissue from froglets across geographic or environmental space, perform next-generation DNA sequencing, and use the resulting genetic data to construct a resistance surface to dispersal (Combs *et al.* 2018). This resistance surface is made by overlaying high-resolution spatial layers of environmental attributes (e.g. topography, rainfall, vegetation cover) and anthropogenic activity (e.g. urbanisation, traffic density), and building models that identify how each predictor layer influences genetic relatedness (Dutta *et al.* 2022).

Funding: The Population Biology and Genomics team will cover all operating costs (materials, travel expenses, DNA sequencing) associated with the project.

References:

Combs M, Puckett EE, Richardson J, Mims D, Munshi-South J (2018). Spatial population genomics of the brown rat (*Rattus norvegicus*) in New York City. *Molecular Ecology* **27**, 83–98. doi:10.1111/mec.14437

Dutta T, Sharma S, Meyer NFV, Larroque J, Balkenhol N (2022). An overview of computational tools for preparing, constructing and using resistance surfaces in connectivity research. *Landscape Ecology* **37**, 2195–2224. doi:10.1007/s10980-022-01469-x

How RA, Dell J (2000). Ground vertebrate fauna of Perth's vegetation remnants: impact of 170 years of urbanization. *Pacific Conservation Biology* **6**, 198–217. doi:10.1071/pc000198