

A comparison of the ecology and behaviour
of
parthenogenetic and sexual taxa
of the Australian skink, *Menetia greyii*:
implications for coexistence.

Clare Louise Griffin

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School of Biological Sciences
Faculty of Science and Engineering
Flinders University of South Australia

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- Table 6.25. Results of independent t-tests comparing change in weight (g) between sexual and parthenogen residents and between sexual and parthenogen intruders. **Error! Bookmark not defined.**

Table 7.1. Number of males, sexual females, WP parthenogens and RP3 parthenogen infected with helminthes, protozoa or both forms of parasites. **Error! Bookmark not defined.**

Table 7.2. Number of sexual (males and females pooled), WP parthenogen and RP3 parthenogen *M. greyii* with endoparasites..... **Error! Bookmark not defined.**

Abstract

Menetia greyii, a small Australian skink, has recently been determined to be a species complex that consists of both sexual and parthenogenetic taxa (Adams et al. 2003). In total, seven distinct taxa have been identified in the south-central region of Australia. This includes three sexual taxa, three apparent parthenogen lineages, and one lizard of uncertain status

The study population occurs near Bunday Bore station in the semi-arid region of South Australia (approximately 160km north east of Adelaide). At this site, one sexual taxon (SAS) and two all-female parthenogenetic taxa (WP and RP3) were found to occur in sympatry. In a search for ecological differences, I examined spatial, thermal, physiological and morphological niche relationships in the parthenogenetic and sexual forms. Capture rates were used to determine microhabitat and macrohabitat use in the field. The use of different microhabitats and the amount of time spent occupying different exposures (sun vs. shade) were also examined under laboratory conditions. Thermal preferences, physiological performance (sprint speed ability) and daily activity periods were investigated in the laboratory. The study failed to find any major differences among the different taxa that would indicate they are partitioning resources and therefore explain how the sexual and parthenogenetic forms are coexisting. The only difference observed was that the parthenogens expressed superior sprinting ability, running faster than the sexuals over a range of temperatures. In addition, I found that sexual and parthenogenetic females within this population differed very little in their reproductive effort and output, indicating that RP3 and WP parthenogens possess a reproductive advantage over sexual females as a result of not having to produce males (Williams 1975, Maynard-Smith 1978, Bell 1982). In staged interactions between pairs of sexual and parthenogen individuals, the parthenogens were more aggressive and dominated the sexuals. As a result, the parthenogens were able to outcompete the sexuals for food items. This had serious consequences on fitness, with the sexuals losing significantly more weight than the parthenogens. All of these factors would suggest that the parthenogens should eliminate the sexuals at

Bundey Bore. Despite this, the parthenogenetic females at Bundey Bore do not outnumber the sexual subpopulation. This raises the question of how the sexuals are persisting. An examination of endoparasites in the scats of parthenogen and sexual *M. greyii* found that WP parthenogens had significantly higher parasite prevalence than sexuals. Further to this, there is evidence of matings occurring within the study population between sexual males and WP parthenogen females with five tetraploid males being captured. Therefore, WP parthenogens may be suffering from destabilising hybridization. These factors may account for why the parthenogens (or at least the WP parthenogens) have not competitively excluded sexual *M. greyii* from Bundey Bore. Other possible reasons are discussed in the general discussion in Chapter 8.

Declaration

“I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.’

Clare Griffin.

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