

Cracking the Niche:

**An investigation into the impact of climatic variables
on germination of the rare shrub
Verticordia staminosa subspecies *staminosa* (Myrtaceae).**

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2011

Declaration

This thesis is my original work and has not been submitted, in whole or in part, for a degree at this or any other university. Nor does it contain, to the best of my knowledge and belief, any material published or written by another person, except as acknowledged in the text.

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20th May 2011

Word count for all parts of the thesis, excluding references and appendices:

Abstract

The influence of annual rainfall and a Mediterranean climate in structuring the indigenous vegetation in the Southwest Botanical Province of Western Australia has long been recognised, especially in relation to seedling germination during the cooler wet season. However, over the past decade numerous authors have hypothesised that a number of climatic factors, including variability in the timing and intensity of rainfall events, may be drivers of germination. *Verticordia staminosa* subsp. *staminosa* (Myrtaceae) is a naturally rare narrow range endemic shrub that occurs on only one granite inselberg near Wongan Hills in the 'wheatbelt' of southwest Western Australia. Smoke and fruit wall weathering have been claimed to be specific dormancy breakers for the seeds of many Australian genera, including *Verticordia*. However, I found no evidence of smoke and artificial weathering influencing germination of *Verticordia staminosa*. Using data from a long-term (12 year) investigation into field germination of *Verticordia staminosa*, my thesis applies logistical regression techniques to model the impact of climatic variables on germination within the only recorded *Verticordia staminosa* subsp. *staminosa* meta-population. My analyses reveal that a complex interplay of the amount of rainfall, number of rainy days, diurnal temperature range, and storms related to tropical cyclones/lows, under a traditional four seasons or six Noongar seasons climate, best describes the observed germination of *Verticordia staminosa* seedlings.

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Acknowledgements

I need to thank my family for the part they have played in the production of this thesis. To my son Luke who provided the motivation for me to complete my BSc (Hons) in Environmental Science and to become a better person. To my Mum and Dad who wondered many times if they would ever see this day, but always stood by me none the less.

While it is always traditional to do so, I wish to genuinely thank my supervisor (the not quiet so long suffering) Dr Philip Ladd for his guidance, patience, and perseverance through both my undergraduate and Honours programs. Your mentoring and support Phil has opened a plethora of opportunities that I would never have experienced otherwise.

Thanks also for the support of my mates Richard and Andrew who have shared the twists and turns of life's journey and a wine or three whenever it was needed.

I would like to acknowledge the Noongar People of the Bibbulmun Country as I draw on their 40,000+ years of climatic and ecological knowledge for this thesis. Specifically I would like to acknowledge the Ballardong Noongar People as the traditional custodians of lands in the vicinity of Wongan Hills.

I am grateful to the Men of the Trees and family of Shirley Fyffe for providing the scholarship that put a roof over my head while I completed this research and has set me up for the next stage of my life.

This thesis would not have been possible without the data from the Department of Environment and Conservation's long term study of *Verticordia staminosa* germination provided by Dr Colin Yates and the weather observations for Wongan Hills published on the Australian Bureau of Meteorology's website.