

## Acknowledgements

I have been very lucky indeed, and I have much to be thankful for. My first thanks go to my primary supervisor, Dr Alex Twyford. None of this thesis would have been achieved without his guidance, patience, scientific rigour, and passion for plants and science in general. I am very proud to have been a student of Alex's over the past four years, and I hope we continue our collaboration and friendship into the future. My other supervisors have also been fantastic, and supportive throughout. Dr Jarrod Hadfield has given a lot of his time in furthering my understanding of statistics, for which I am humbled, and grateful. I also thank Dr Darren Obbard, who has scrutinised and advised on various aspects of the thesis with his keen eye.

I am indebted to various researchers, students, and horticulturalists who gave data, input, and their time for each thesis chapter. In Chapter 2, I thank Richard Abbott for his contributions to the list of cross-ploidy hybrid examples and his comments on the text. In Chapter 3, on DNA barcoding, Natasha de Vere and Laura Jones provided unpublished DNA barcode sequence data for British native flowering plants and Pete Hollingsworth provided comments on the text. In Chapter 4, Seb Williams generated the ITS sequence data, and Hannes Becher provided the demographic modelling analysis. For Chapter 5, I thank Hannes Becher again for his contributions in both the field for undertaking reciprocal transplant experiments under tricky conditions, and for help across the manuscript. In Chapters 6 and 7 Natacha Frachon looked after *Euphrasia* plants throughout, and Chris Methereil identified all *Euphrasia* accessions. In Chapter 6, Edgar Wong collated the 'Eye for Eyebright' datasets, and in Chapter 7 Paloma Moore helped me record and measure *Euphrasia* plants. Of course, I thank Alex Twyford again for comments and help on every Chapter.

The majority of my PhD has taken place in Ashworth Laboratories, and it has been an extremely pleasant and welcoming environment from the very first day I arrived. I would like to thank all of the people I have shared room 1.55 with in no particular order: Tom Booker would help with scraps of code, Jon Richardson showing me what my notebook should look like, Surabhi Ranavat distracting me with plant pictures, Rory Craig showing me his wiggly plots, and Tom Ratz with our beetle chats. Moving office after three years was naturally sad, but I was lucky to share with Megan Wallace, Christina Hodson, Jim Downie, and Kat Keogan for a time. Thank you all for the daily company.

Part of my PhD required a substantial amount of time growing and measuring plants in the Royal Botanical Gardens Edinburgh. It is here that I met some truly wonderful people who have given an immense amount of time to help me get things done. Natacha Frachon is one of the hardest working and generous person I've met, and without whom I would have achieved very little! I want to thank you for spending your time with me in the growth experiments, and potting up literally thousands of *Euphrasia* plants. It was a time I enjoyed very much. In addition, I'd like to thank Gavin and Steve for their help and generosity, and also the horticultural staff at the nursery for putting up with me almost daily for two growing seasons. Although the cytological

work on *Euphrasia* was put on hold, thank you Michael Möller for your assistance in the lab.

Field work has been a really rewarding part of the PhD, and again I have plenty of people to thank. My first year field work would not have been completed, if not for the botanists who showed me the sites and gave me a place to stay – thank you Helena Crouch, Nick & Elisabeth Sturt, Jeremy Roberts, Wendy McCarthy and Colin French. In fact Helena has helped me over multiple years, so special thank you to her. Many of these botanists took the time out of their day to show me the botanical specialties around where they live too, so thank you! Although not strictly part of my PhD, I have been extremely lucky to venture to Fair Isle. I was lucky to have Chris Metherell on the trip, who has taught me a lot about *Euphrasia* identification over the years, and who has identified a great many of my *Euphrasia* specimens since. I also thank Nick Riddiford, the Fair Isle endemic naturalist, who was very generous with his intimate knowledge of the island – I still remember the *Sonchus arvensis* var. *glabrescens* that you pointed out to me. I would especially like to thank Hannes Becher for the opportunity to go to a beautiful and remote island, and for his help on all things genetics throughout.

Demonstrating for undergraduates has been a highlight over the years, but there is one particular course which was so fun and inspiring. Thank you Matt Bell for running Field Ecology, and allowing me to demonstrate on it! And thank you to the co-demonstrators for making it even better – Andy, Aythya, Nadia, Nathan, Hamish, Rosemary, and Deirdre. On a side note, I'd like to thank Jim, Stefan, and especially Koorosh for indulging all my naturalist cravings – from fungi, to plants, to insects. I have probably enjoyed too many an evening staring down a microscope at insects, during a botanical PhD!

Scotia Seeds was my industrial partner for part of my PhD, and I could not have landed at a better place. Not only were Montrose and Mavisbank beautiful (with some interesting *Euphrasia* around too) but everyone at the company was welcoming. Thank you Giles and Fiona for providing me with accommodation and work, and I would do it all over again if I could.

I give thanks to my family for their support throughout all the years, and who nurtured my interest in science and nature from a very young age. None of this would have happened without you!

There is one person that I've not mentioned yet, whom I must give my most heartfelt thanks to, and that is Molly. Not only have I dragged you through some pretty miserable field work conditions, but this PhD meant living away from you for nearly four years. Thank you for always being there for me, and for being infinitely kind and generous. I can't wait to see where this world takes us.