



Universiteit
Leiden

The Netherlands

Natural hybridization between *Senecio jacobaea* and *Senecio aquaticus* : ecological outcomes and evolutionary consequences

Kirk, H.E.

Citation

Kirk, H. E. (2009, November 12). *Natural hybridization between Senecio jacobaea and Senecio aquaticus : ecological outcomes and evolutionary consequences*. Retrieved from <https://hdl.handle.net/1887/14333>

Version: Corrected Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/14333>

Note: To cite this publication please use the final published version (if applicable).

Acknowledgements

I would like to thank many people for their financial, practical, and moral support in the preparation of this thesis.

Firstly, I would like to thank the Natural Resources and Engineering Council of Canada (NSERC) for financially supporting my research.

I would also like to thank my colleagues who provided excellent feedback and professional support during my time in the plant ecology section at Leiden University. First and foremost, I would like to thank my supervisors, Prof. Dr. Ed van der Meijden, Dr. Peter Klinkhamer, and Dr. Klaas Vrieling, for their expertise, valuable guidance, and patience in overseeing my work. Thanks to Tom, Kirsten, Martina, Grit, and Sonja for useful discussions relating to the content of this thesis. Thanks also to Henk Nell, Karin van Veen, Cilke Hermans, Margriet Peet, and Jung van der Meulen who provided invaluable technical support for the experiments described here.

I could not have completed the chemical analyses conducted without the help of Helene de Vos, who spent countless hours running samples for GC analyses. Also, thanks to the group of Prof. Dr. R. Verpoorte, including H.K. Kim and Y.H. Choi, who made the NMR spectroscopy work described in the metabolomics chapter of this thesis possible.

I would like to thank all the reviewers of my published papers for their useful comments and suggestions. All the remaining errors are of course mine.

Thanks to Cilke Hermans who provided the Dutch translation of the summary of my thesis, and to Jan Bruin, who created the graphical design for the thesis.

Lastly, thanks to my loving family who provided valued emotional and moral support during times of stress, and who celebrated my successes with me with great enthusiasm. Thanks to my father in law, Jacob Bruin, who has worked diligently in organizing events surrounding my defense, and who has taken pride in my accomplishments as though I am his own daughter. Thanks especially to my husband Coen Bruin, who supports me unfailingly in all of my endeavors.

Curriculum vitae

I was born on July 18, 1980, in Toronto, Ontario, in Canada. After graduating from Ajax High School (Ajax, Ontario, Canada) in 1998, I attended both the University of Guelph and the University of Toronto for undergraduate studies, where I developed an interest in ecology and evolution. A field ecology course that took me to Nicaragua especially stimulated my interests. I graduated with high distinction from the University of Toronto (BSc) in 2001.

After moving to the Netherlands in 2001, I applied to the Masters program at Leiden University as an international student. After carefully considering the available programs, I chose to undertake my studies in the Plant Ecology section, which offered a variety of fascinating student projects. I started my Masters studies in September 2002, and completed the requirements of the program in March, 2004. I had the good fortune of having three supervisors for my Masters project, including Klaas Vrieling, Peter Klinkhamer, and Ed van der Meijden, who exposed me to a variety of knowledge regarding plant ecology, molecular biology, and plant chemical defense mechanisms. During the summer of 2003, I was offered a three-month internship at CABI Biosciences, where I worked under Urs Schaffner to test the specificity of several specialist flea beetle species on *Senecio jacobaea* and a number of its close relatives. The aim of this project was to verify the usefulness of these specialist insects as biological control agents.

Upon completion of my MSc. studies in 2004, I was offered a position as a PhD-student in the plant ecology section at Leiden University, which allowed me to carry on the work that I initiated during my MSc. studies. This work was very diverse in nature, and allowed me to develop my skills in various aspects of biology. I conducted AFLP studies in the molecular lab, and learned various chemical techniques including gas chromatography, and metabolomic profiling using NMR spectroscopy.

From the fall of 2009, I am employed on a part-time basis as a college instructor at Sir Sanford Fleming College (Lindsay, Ontario, Canada) in the school of Environmental and Natural Resource Sciences. I also run my own freelance business for coaching equestrian sports, and currently coach approximately 40 students.

SCIENTIFIC CONTRIBUTIONS

Publication list

- Kirk H, Macel M, Klinkhamer PGL, Vrieling K. 2004. Natural hybridization between *Senecio jacobaea* and *Senecio aquaticus*: molecular and chemical evidence. *J Mol Ecol* 13: 2267-2274.
- Kirk H, Vrieling K, Klinkhamer PGL. 2005. Heterosis and maternal effects influence the fitness of plant hybrids. *New Phytol* 166: 685-694.
- Kirk H, Choi YH, Kim HK, Verpoorte R, van der Meijden E. 2005. Comparing Metabolomes: a search for evidence that hybridization can lead to adaptive change in plant chemistry. *New Phytologist* 167: 613-622.
- Kirk H, Vrieling K, Klinkhamer PGL. 2005. Reproductive fitness of hybrids between *Senecio jacobaea* and *S. aquaticus*. *Am J Bot* 92: 1467-1473.

Conferences and workshops

- Schaffner U, Kirk H, Pelser P, Vrieling K. 2004. What determines resistance to specialist herbivores? A case study with the plant genus *Senecio* and *Longitarsus* flea beetles. Entomological Society of America Meeting in Salt Lake City.
- Kirk H, Vrieling K, Klinkhamer PGL. 2005. Heterosis and maternal effects influence the fitness of plant hybrids. Workshop on Natural Hybridization and Introgression in Skodobo, Denmark.

Scholarships

2004. Natural Sciences and Engineering Research Council of Canada (NSERC) postgraduate (doctoral) scholarship. Value: \$21 000 yearly for three years.
2003. Three month fellowship with the Max Planck Institute of Chemical Ecology (Jena, Germany). Value: 715 Euros monthly plus living expenses.
2001. University of Toronto, Woodsworth College Graduate Book Prize. Value: \$100.
1998. Canadian Federation of University Women Achievement Award. Value: \$1000.
1998. University of Guelph Entrance Award. Value: \$5000.
1998. Monarch Youth Scholarship. Value: \$5000.