# Sex ratio variation and sex determination in Urtica dioica

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# Epilogue

Finally I'm holding the result of four years of intensive research in my hands and I have to say: it is a good feeling! I still remember the time when I started working on my PhD project and I thought: four years, this is really a lot of time. However, I soon realized that in connection with research four years is almost nothing and finally I wished I had infinite time.

Nicole van Dam, my prior supervisor at the Max-Planck Institute pitched the idea to me of doing a PhD project in Holland. Here upon I informally visited the NIOO at Heteren and the Institute of Biology at Leiden University, where I gave a presentation about my masters study. At this time the Plant Ecology group at Leiden was looking for a PhD candidate to explore the mechanisms behind seed sex ratio variation in the stinging nettle. After reading the proposal, I immediately became interested in this project. A few months later Pawel and I moved to Holland. We did not know then that this country would become our second home.

Beside using the stinging nettle as a model organism to study sex determination and sex ratio variation in a dieocious plant species, I soon recognized that it also has a constitutional value. While I grew thousands of plants to determine the sex of each single individual, I also collected the leaf material to make my own herbal tea. However not everybody appreciated the taste of this home-made tea.

During my study I was frequently asked whether working with the nettle wasn't rather unpleasant and if there were no 'stingless' nettles at all. Indeed, in these four years I was stung more than I had been in the previous twenty-five years of my life. Answering the second question: yes, there is a variant of the stinging nettle with an almost total lack of stinging hairs in Southern England. Next time I plan to work on this one.

The completion of this thesis was supported by many people, whom I would like to thank here. First of all I would like to thank all of my colleagues at the plant ecology group for sharing their knowledge, many insightful discussions and valuable advice. Klaas, Kirsten, Peter, Sonja, Heather, Martina, Grażyna, Natasha, Mirka, Gera, Karin, Cilke and Henk: I'm glad for having spent this time with you. Furthermore I would like to thank all the colleagues outside the group. Russ Lande and Leo Beukeboom gave professional suggestions when the genetics of the stinging nettle turned out to be more complicated than we initially thought. Nicole van Dam, as my external supervisor keeping track on my schedule, shared lots of ideas and gave valuable advise. Tom van Dooren and Evert Meelis helped me with the statistics when investigating heritability of the sex ratio trait. Also I want to thank all people that are not listed here but offered lots of help. Finally, I want to thank my family and friends for their support during these four years. And last, but certainly not least, Pawel: thank you for your understanding and patience, and for your interest in my work. I always could count on your support, trust and love.

# Curriculum vitae

Grit Anja Glawe was born on 3rd September 1976 in Erfurt, Germany. In June 1995 she finished her secondary-school examinations (Abitur) at the Heinrich-Heine-Gymnasium in Erfurt. The same year, she started her studies in biology at the Friedrich-Schiller University in Jena. After she finished her undergraduate study she developed an interest in ecology, the study of how organisms interact with each other and their physical environment, and attended many seminars and workshops in this field. In January 1999 she started working as a scientific assistant (HIWI) at the Max-Planck Institute for Chemical Ecology in Jena. There she studied dynamics of plant-herbivore interactions with an emphasis on inducible plant defence mechanisms in wild tobacco. A year later she was offered a final year project (Diploma thesis) on this subject under the supervision of Nicole van Dam and Ian Baldwin. Beside lab work her study also included three months of field research in Southwestern Utah, which is the natural habitat of the wild tobacco, *Nicotiana attenuata*. In December 2000 she completed her thesis, entitled 'Chemical polymorphism in plant defense among naturally occurring genotypes of *Nicotiana attenuata*'. She received her masters degree (Diploma) in May 2001. After her graduation she worked for 6 months as a research associate at the Max-Planck Institute, where she performed competition experiments to determine costs of resistance and developed new transformation methods. In March 2002 she started her PhD project at the section of Plant Ecology at the Institute of Biology at Leiden University. During this time of research she became interested in the evolutionary ecology of plant reproductive systems. The PhD project was completed in February 2006, resulting in this thesis. From April 2006 she works as pre-breeder at the plant breeding company Rijk Zwaan in Fijnaart.

# Publications


Glawe GA, Zavala J, Kessler A, van Dam NM, Baldwin IT (2003) Ecological costs and benefits correlated with trypsin protease inhibitor production in *Nicotiana attenuata*. Ecology 84: 79-90.

Glawe GA, de Jong TJ (2005) Environmental conditions affect sex expression in monoecious, but not in male and female plants of *Urtica dioica*. Sexual Plant Reproduction 17: 253-260.

de Jong TJ, Nell H, Glawe GA (2005) Heritable variation in seed sex ratio of the stinging nettle (*Urtica dioica*). Plant Biology 7: 190-194.

Glawe GA, de Jong TJ. Inheritance of progeny sex ratio in *Urtica dioica*. Accepted by Journal of Evolutionary Biology.

Glawe GA, van der Meijden E, de Jong TJ. Sex ratio and clonal growth in the stinging nettle (*Urtica dioica*). Submitted to Ecological Research.

Glawe GA, de Jong TJ. The genetic basis of sex determination in the subdioecious plant *Urtica dioica*. In preparation.