
Contents

1. Introduction	1
1.1. Responses of herbivorous insects to leaf tissue quality	1
1.2. Objectives	3
1.3. Study area	4
1.4. References	4
2. Authors' contribution to the research papers and manuscripts	8
3. Plant-animal interactions in the canopy: Intraspecific variability in herbivory on sycamore (<i>Acer pseudoplatanus</i> L.)	10
3.1. Abstract	10
3.2. Introduction	10
3.3. Materials and Methods	11
3.4. Results	13
3.5. Discussion	14
3.6. References	18
4. Heterogeneity in palatability and utilization of leaves among and within trees of four broad-leaved tree species	21
4.1. Abstract	21
4.2. Introduction	21
4.3. Methods	22
4.4. Results	25
4.5. Discussion	30
4.6. References	33
5. Is there an efficient physiological adaptation of a generalist herbivore to individual host plants?	38
5.1. Abstract	38
5.2. Introduction	38
5.3. Methods	39
5.4. Results	41
5.5. Discussion	42
5.6. References	43

6. Are sawflies adapted to individual host trees? A test of the adaptive deme formation hypothesis	46
6.1. Abstract	46
6.2. Introduction	46
6.3. Methods	47
6.4. Results	49
6.5. Discussion	50
6.6. References	53
7. Synthesis	57
7.1. Resource heterogeneity and fine-scale adaptations of herbivorous insects	57
7.2. References	59
8. Summary – Zusammenfassung	63
9. Acknowledgements	66
10. Appendix	67
10.1. Pictures of the study area and used insect species	67
10.2. Declaration of self-contained work	69
10.3. Curriculum vitae	70