Title:	Natural and sexual selection on morphology and chemical cues in insects
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Abstract:	The adaptive landscape is a central concept in evolutionary biology used to characterize the relationship between multivariate phenotypes and its relative fitness. It is essential in the study of the evolution of quantitative phenotypic traits, to understand the nature of selection acting on these traits. In the first part of my thesis, I explored how two distantly related species differ in their adaptive landscape. I studied two distantly related damselfly species, Ischnura elegans and Enallagma cyathigerum, belonging to the same family (Coenagrionidae; pond damselflies), with similar ecology, with a common ancestor dating back to >10 million years B.P. I characterize the adaptive landscape of wing shape and body size in the two species in these two species. Most insects have an outermost waxy coating over their composed of complex chemical substances, with hydrocarbons forming an important component in this mixture. Insect cuticular hydrocarbons (CHCs) genetically vary across species and sexes, and are associated with different physiological functions. CHC profiles show variation with change in temperature, diet, mating status and age. The divergence of CHC profiles as a consequence of evolution to stress response yet remains unexplored. In the second part of my thesis, I ask if evolutionary history to resistance against cold has any effect on the cuticular hydrocarbon profiles.
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