



**ses**

school of environmental sciences

The MSc Thesis Examination for

**Emily Agar**

will be held on

**Wednesday, May 19, 2021**

At 1:00 p.m.

Investigating the relative impacts of environmental stressors on wild bee community composition through an analysis of historical records

**EXAMINATION COMMITTEE:**

Dr R Prosser (Chair)  
Dr N Raine (Advisor)  
Dr A MacDougall (Internal-External)  
Dr D van Engelsdorp (Committee member)

**ADVISORY COMMITTEE:**

Dr N Raine (Advisor)  
Dr D van Engelsdorp (Committee member)

Everyone is welcome to attend.

While it is widely understood that wild bees are impacted by a variety of environmental stressors (including habitat loss and fragmentation, pesticide use, and climate change), the combined impacts of these stressors have rarely been studied and never across a spatio-temporal gradient. To better understand the relative impacts of environmental stressors on wild bee communities, historical data of bee communities and environmental variables were collated and curated for Pennsylvania between 1992-2014. Findings suggest that community composition varied substantially over this period and that the majority of variations could be explained by changes in landscape composition and pesticide use, while climatic variables had minimal impact. Responses to environmental stressors were highly variable depending on spatial scale and wild bee functional traits. Based on these findings, conservation efforts should focus on anthropogenic practices that directly influence the landscape, especially increasing landscape heterogeneity and reducing pesticide use in agro-ecosystems.