

# Open Master Thesis

## Assessing Genetic Diversity and Structure of *Andrena* (Mining Bee) Species in Austria: A National Approach to Monitoring Wild Bee Populations for Conservation

The decline of pollinators has been a topic of increasing concern in recent years. Wild bees, in particular, play a crucial role in pollination and the maintenance of ecosystem services. To understand the current status of wild bee populations, genetic monitoring approaches are essential. This master thesis project aims to contribute to the genetic monitoring of native solitary bees, specifically, species of the genus *Andrena* in Austria.

The main objective of the project is to use genetic data to establish nature conservation management strategies for the targeted species. To achieve this goal, several work packages will be carried out. This involves collecting additional samples and genotyping them using microsatellite markers. Cross-species amplification of microsatellites will be tested on a broad range of *Andrena* species and next-generation sequencing techniques will be used to sequence the samples. The resulting genetic data will be analyzed using various bioinformatic programs. This analysis will aid in understanding the genetic effects at the population or species level and develop nature conservation management strategies.

### Research Questions:

Possible research questions include, but are not limited to:

1. What is the genetic diversity and structure of *Andrena* populations in Austria?
2. Are there any genetically distinct subpopulations of *Andrena* species in Austria?
3. How does the genetic diversity of *Andrena* populations vary across different habitat types in Austria?
4. What is the relationship between genetic diversity and bee health and fitness?



The exact topic of the thesis will depend on the interests of the student. The research questions may change through discussion with the advisor, allowing the student to explore a topic of particular interest to them while contributing to the broader field of bee conservation and population genetics.

### Requirements:

Applicants for this master thesis should have a background in (molecular) biology, ecology or related fields. Experience in laboratory techniques is preferred but not mandatory.

### Interested candidates, please contact:

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**Availability: immediately**