

# Entomology in the 21st century

integrative molecular and AI-based methodologies to assess, monitor and preserve insect biodiversity and their ecosystems



**Apennine Lucano Val d'Agri-Lagonegrese National Park (Basilicata, Southern Italy)**



**Mid-June:**

5 preparatory online lessons

**8-13 July:**

On-site field session

**August-September:**

Online thematic workshops



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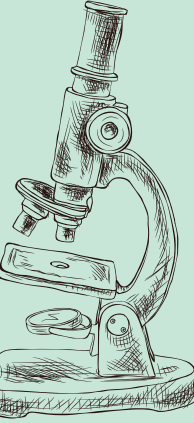


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# Main activities

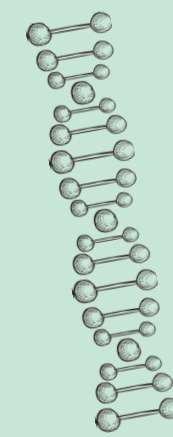
## Integrative Methods for insect biodiversity Assessment

- Insect classification and systematics
- Field sampling and sample collection/storage procedures
- Basic knowledge and tools for insect identification (e.g. dichotomous keys)
- Application of molecular tools and integrative approaches



## Metabarcoding and Environmental DNA analysis for insect biomonitoring (freshwater and terrestrial environments)

- Metabarcoding and eDNA principles
- General introduction to NGS technologies
- Bioinformatic tools
- Field applications



## Analysis of Multitrophic Interactions

Observational methods to investigate interactions among:

- Plants
- Herbivorous insects
- Predators and parasitoids



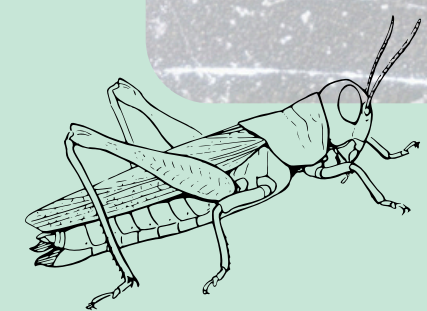
Petschenka et al. 2020

## Analysis of Functional Traits in entomological communities by means of AI-based

- Introduction to functional traits analysis
- AI-based insect trait measurement by means of robotics
- Automated classification of insects
- Insect monitoring through sound recording
- Application for ecological quality monitoring of environmental matrices (e.g. soil, freshwater)



Ascenzi et al.



**Social events and trips planned!**