UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Integrative Identification of Functional Biodiversity

2223-1-F0601Q109-F0601Q110M

Aims

Knowledge and understanding: The laboratory course is aimed at provide the students with tools and multidisciplinary knowledge about the monitoring and identification of animal biodiversity, with a specific focus on the species and/or communities mediating relevant ecosystemn services of support and regulation in natural and anthropized environments (e.g., birds, pollinator insects, predator insects). The vision that the course intends to provide is the biological complexity in different tipologies of habitats and strategies for a suitable selection of tools to be applied in the operational environment to address biodiversity topics in the framework of ecological transition.

Applied knowledge and understanding: the laboratory will make the student able to have a multilevel vision of the animal diversity and to acquire a detailed knowledge about the standard methodologies used for its monitoring in the field, also considering the subsequent analytical techinques of integrative identification. From the applicative point of view, the course will enable the students with skills in the context of biodiversity monitoring for the critical evaluation of ecological transition processess (e.g., Nature Based Solutions, mitigation stragies of environmental and anthropic effects) that could be applied to the territory at both the micro and macroscale.

Autonomy of judgment: To understand and interpret in a modern vision, the main tools for the monitoring, analytics and data elaboration for the collection of data regrding functional animal biodiversity.

Communication skills: the course is aimed at providing the students with the necessary skills to efficiently evaluate and communicate in a modern way and by using a specific jargon, the topics related to identification and mionitoring of the animal functional biodiversity in order to identify conservation issues and cues for the management of the territory.

Ability to learn: at the end of the course the student should be able to autonomously investigate the treated topics, to have a multidisciplinary vision and to develop the capability of interacting with experts or to access the specific scientific literature.

Contents

The laboratory course is composed of strongly connected theoretical-practical elements. Didactic activities will be conducted in operational environment and will focus on the characterization and estimation of animal biodiversity in natural and anthropized environments. The main investigated aspects will regard environmental features and disturbance factors that are likely implied in shaping the biological complexity. The last part of the course will be devoted to the multidisciplinary investigation of the results obtained from the previous activities with the aim of finding which functional components of biodiversity need conservation, reinforcement actions. These will be investigated and discussed in a context of riqualification/management of the territory.

Detailed program

The course program includes a number of topics and activities for a total of 2 CFU. Frontal lessons will be alternated with practical multi-day field activities. These last will encompass several parts, ranging from the collection of environmental data, to the active and passive sampling of organisms and the collection of biological samples for molecular identification. Field activities will be conducted in different ecosystems of natural areas (parks, reserves) and/or in anthropic landscapes close to the former ones. Actually, one of the aims of the course is the understanding of the ways the composition of functional animal biodiversity is influenced by key variables such as land use, water abundance, resource availability, ecc. In this context, after the collection of environmental variables and biological samples, identification activities will be conducted by using morphological, and molecular tools to characterize the main taxonomic groups and of the functional traits associated with the principal support/regulation ecosustem services (e.g., pollination, seed dispersal, pest removal). A critical step will be the elaboration of possible conservation and restoration strategies for biodiversity to mitigate the environmental stressors effects.

Prerequisites

Basic knowledge of zoology and statistics.

Teaching form

Frontal lessons in the field and in the classroom, possible seminar lessons held by experts in different animal groups and territory management.

Textbook and teaching resource

The lesson slides and the material provided in the field will be made available on the e-learning platform.

Semester

Second semester

Assessment method

The oral exam will evaluate the knowledge acquired by the student regarding the topics treated during the course. Evaluation criteria: evaluation of the scientific and technical knowledge regarding the topics of monitoring, sampling and integrative identification of functional biodiversity, critical ability and ability of individual (or teamwork) rielaboration of experimental problems assigned by the teachers, ability of communication and correct use of specific tecnical jargon.

Office hours

Upon request at andrea.galimberti@unimb.it

Sustainable Development Goals

LIFE ON LAND