

Module Name Myxomycete Ecology - Hunting Giant Amoebae: integrating field work, lab work and bioinformatics						
Type of Module ○ Advanced Module				Module Code Myxomycete Ecology		
Identification Number MN-B-SM (E 3)	Workload 360 h	Credit Points 12 CP	Term 2 nd term of studying	Offered Every Summer term, 2 nd half	Start Summer term only	Duration 7 weeks
1	Course Types a) Lectures b) Excursion/Practical/Lab c) Seminar		Contact Time 21 h 155 h 4 h		Private Study 42 h 114 h 24 h	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • will explore the diversity and ecological roles of the remarkable giant amoebae known as myxomycetes, discovering their colourful fruiting bodies and uncovering their still largely unknown functions in soil ecosystems. • will gain a comprehensive understanding of the evolutionary relationships and phylogeny of Myxomycetes within the Amoebozoa. • will acquire advanced practical skills through the full research process—from field excursions and sampling in forests, to cultivation and morphological identification under the microscope. • will apply modern molecular methods, including DNA and RNA extraction, Illumina and long-read sequencing, and subsequent bioinformatic analyses to study phylogeny, genomes and transcriptomes of the discovered species. • will develop the ability to identify orders, genera, families and species based on fruiting body morphology, and to analyse genetic data for evolutionary and functional interpretation. • will understand the complex life cycle of myxomycetes and their position in the broader context of protist diversity and soil ecology. • will learn to present and critically discuss research findings in written and oral form. • are able to transfer the methodological and analytical skills acquired in this module to a wide range of biological research fields. 					
3	Module Content 1. Introduction and Evolutionary Context 2. Ecology and Functional Roles: habitats, ecological adaptations of distinct lineages, trophic interactions, ecological significance within terrestrial ecosystems 3. Field Methods and Sampling: collecting fruiting bodies, habitat characterization, specimen documentation, moist chamber method for cultivation 4. Morphological and Taxonomic Identification 5. Molecular Methods and Laboratory Techniques: DNA, RNA extraction, quality control 6. Bioinformatics and Data Analysis: sequence alignment, phylogenetic inference, transcriptomic analysis including assembly and functional analysis 7. Research Integration and Scientific Communication 8. Applications and Broader Context					
4	Teaching Methods <ul style="list-style-type: none"> • Lectures; Practical/Lab (Project work); Seminar; Field excursions; Guidance to independent research; Training on presentation techniques in oral and written form. 					

5	<p>Prerequisites (for the Module)</p> <p>Enrollment in the Master's of Science degree course "Ecology, Evolution and Environment"; Successful completion of the basic modules Lecture, Tutorial and Seminar of the Master's of Science degree course "Ecology, Evolution and Environment"</p>
6	<p>Type of Examination</p> <p>The final examination consists of two parts: Oral presentation (20-30 min; 50 % of the total module mark), written report (50 % of the total module mark),</p>
7	<p>Credits Awarded</p> <p>Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p>Compatibility with other Curricula</p> <p>None</p>
9	<p>Proportion of Final Grade</p> <p>12.0 %</p>
10	<p>Module Coordinator</p> <p>Prof. Dr. Michael Bonkowski, phone 470 3152, e-mail: m.bonkowski@uni-koeln.de</p>
11	<p>Further Information</p> <p>Video: https://www.youtube.com/watch?v=OltvGZUvpvw</p> <p>Literature:</p> <ul style="list-style-type: none"> • Information on recommended textbooks and other reading material will be given on the ILIAS website of the course (see https://www.ilias.uni-koeln.de) <p>General time schedule: Week 1-6 (Mon.-Fri.): Start 01.September 2026 9:00. Lectures, practical/lab and preparation for the seminar talk (topic and date will be arranged individually); 10-day excursion to the Northern Vosges Nature Park (Parc naturel régional des Vosges du Nord) (11.09.-20.09.2026) Completing of the written report and oral presentation (OBRS studio: room -1.802, Biocenter, booked 28.09.-02.10.).</p> <p>Note: The module contains hand-on field work, and laboratory work conducted by small groups of students in research laboratories. The module further contains computer-based practicals/research as a main component.</p> <p>Introduction to the module: June 19th, 2026; 10:00; Biocenter -1.005; for preparation to the module before this introduction see ILIAS link above.</p> <p>Oral examination: October 2nd, 2026, second/supplementary examination October 9th, 2026; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>