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Evidence-based conservation of ecosystems (3CB2005)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en biologie	Cours: 30 pg	Voir ci-dessous	3
Master en conservation de la biodiversité	Cours: 30 pg	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Clara Zemp

Contenu

The course is organized in three separate parts:

Part 1: Importance of biodiversity for ecosystem functions and services

Part 2: The Land sharing - Land sparing controversy

Part 3: Ecosystem restoration planning

In Part 1, students will learn and discuss concepts related to the relationship between biodiversity and ecosystem functioning, how this research field has been developing and potential implications for restoration and conservation of biodiversity and Nature's contributions to people. Moreover, we will explore theoretical basis of biodiversity-ecosystem functioning relationships and the underlying mechanisms as well as the influence of interactions between organisms of multiple trophic levels, contrasting facets of biodiversity, and multifunctionality. Students will also be introduced to various empirical research approaches used to assess the relationship between biodiversity and ecosystem functioning, and the strength of evidences in this field of research.

In Part 2, students will animate and participate in constructive debates about land-sharing and land-sparing strategies, each with its own advantages, trade-offs, and contextual considerations. By delving into real-world case studies and theoretical frameworks, students will develop nuanced insights into reconciliation of agricultural production with biodiversity conservation.

In Part 3, students will explore ecosystem restoration principles, practices, and applications, with a focus on restoring degraded forest landscapes. Through a combination of theoretical knowledge, case studies, and virtual excursions, students will gain a deep understanding of the ecological processes underpinning restoration efforts and develop theoretical skills for planning, implementing, and monitoring restoration projects in a specific context.

Forme de l'évaluation

Graded continuous assessment.

The final grade will be based on three main deliverables:

- 1) A scientific report on the relationship between biodiversity and ecosystem functions, and implications (1/3 of the grade)

Students will work on the scientific report in group of 2 or 3 students.

The final report will contain around 1 000 words (excluding references)

Deadline for the final version: 31th of March.

Your report will critically assess the current state of scientific knowledge on past and present trends in local interactions between people and nature. The assessment will examine status, past trends, direct and indirect drivers of change, values and response options regarding nature (including biodiversity and the structure and functioning of ecosystems on land), nature's benefits to people (including ecosystem goods and services) and the interlinkages.

As your report is expected to strengthen the science-society interface, please choose a topic that is relevant for Switzerland. It does not necessarily mean that all the published literature has to be based in Switzerland. Within this scope, you are free to choose a specific topic (for example, related to a particular ecosystem or habitat, or a particular species, or group of species).

The evaluation will be based on the following criteria : Correct use of concepts; Fits within the scope; References and how they are included;

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Statements of confidence; Aligns with constraints (deadline and word count); Structure (intro, development, conclusion); Clarity.

2) Preparation and contribution to a debate related to the land-sharing and land-sparing controversy (1/3 of the grade)

5 study cases will be defined by the professor.

Each study case is assigned to a group of students (approx. 10 students)

The activities consist of 4 phases: Preparation, Debate, Debriefing, General conclusion.

Phase 1: Preparation of the debate:

- Each group familiarize themselves with the context, the specific problematic and the arguments
 - Each group provides a 1-page document to plan the debate: describe each question that will be raised during the debate.
- Each group of students will be evaluated on the final 1-page document.

Phase 2: Debate

- each sub-group of students (2 students) will be assigned a specific role, either as participants of the debate or as moderators.
- They will debate during 45 minutes in a structured manner.
- The debate will be recorded and the video will be made available on Moodle.

Each student will be evaluated individually on the overall performance during the debate.

Phase 3: Debriefing

- each group visualizes the video of a debate conducted by another group and takes notes on the pro/contra arguments.
- They summarize the observations in a PowerPoint document and present it to the class (30 minutes per group).

Phase 4: General conclusion:

Each student of the class prepares a poster to present the overall conclusion and key take-home-messages from the land-sharing/sparing debate that can be generalized (beyond specific study cases).

As part of this course, the students will be evaluated on Phases 1 and 2 only.

3) An ecosystem restoration plan written in group (1/3 of the grade)

In group of 2 or 3 students, you will develop a restoration plan for an ecosystem of your choice.

Deadline for the final version: 5th of June

Criteria for evaluation are: Selection of ecosystems and statement of targets; References and how they are included; Relevance of monitoring parameters and methods; Relevance of corrective restoration actions.

Modalités de rattrapage

If the final mark is insufficient and results in a failure, the student will have to prepare one scientific review report (1000-2000 words without references, and including 5 references) related to a topic suggested by the professor. The report should be handed in two weeks before the official start of the exam session for which a second attempt is made. In addition, the student will pass an oral exam of 30 minutes scheduled during the exam session. A failure to hand in the critical essay or an unjustified absence from the oral exam constitutes a second and definite failure from the course.

Documentation

Documents will be provided on Moodle

Pré-requis

You should register to the course "Evidence-based conservation of species and habitats" during the same semester.

Forme de l'enseignement

Lectures, in-class activities, virtual excursions and group debates.

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Develop an ecosystem restoration plan
- Discuss the pros and cons of land sharing and land sparing strategies based on scientific evidences

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- Explain the effects of biodiversity loss on ecosystem functions and services

Compétences transférables

- Communicate confidence quantitatively
- Work in group
- Criticise arguments in a constructive manner
- Identify a scientific evidence