

Refresh teaching - Case Studies



Experiences from the MSc course
«*Ecological Assessment and Evaluation*»

Background

- Course taught on Master level, ca. 15 students, 3h per week
- Learning objective for the students is to be able *to perform an ecological evaluation project from the field survey up to giving recommendations for planning and implementation*
- Problems:
 - a) Students are unaware that there are multiple valid solutions to ecological problems
 - b) Students are not used to developing evaluation methods
 - c) Students have never worked with real and unprocessed datasets before
 - d) Students cannot reach the learning objective only by theoretical means

Solution: A case study

Essential steps:

1. Provide only essential information
2. Plan the case study carefully in advance so that it's challenging and yet resolvable
3. Make raw data available
4. Clearly define and communicate initial steps for students
5. Provide guidance and path adjustment when needed
6. Moderate discussion and bring discussions on meta level

Case study: Instructions

1. Background of the case study

Agriculture is one of the main drivers of biodiversity loss all over the world: Intensification, mechanization and the widespread use of fertilizers and pesticides are a direct threat to biodiversity in agro-ecosystems. Some of these ecologically negative processes are also running in the agricultural areas in the UNESCO Biosphere Reserve Entlebuch, mainly provoked by the Swiss national agricultural subsidy scheme which incentivized high livestock numbers over the last decade that ultimately lead to constant land use intensification.

In order to find out about the state of biodiversity in the agriculturally used areas, the Biosphere Reserve ran investigations in some of its biodiversity hot-spots in agriculturally used lands. Butterflies were mapped in 12 and birds in 25 plots of different sizes. The raw data of these field investigations have not yet been analyzed properly for their ecological relevance. You as experts from an Eco-Consultancy office are asked to investigate these data and address the following questions in your study:

- How is the quality / ecological value of the investigated patches?
- Can the quality of the patches be linked to the landscape or land-use context?
- Can you make any recommendations for a) the Management group of the Biosphere Reserve and b) the farmers in the region in order to maintain or increase the agro-biodiversity in the investigated plots?

2. Technical requests for your report / presentation

As in many real project requests, there are no clear methodical instructions for writing this report. You will get the theoretical fundament and propositions for possible approaches of ecological assessment and evaluation within the course. However, you will be free to choose your way to evaluate the available data. The aim of this work is that you apply the gathered knowledge and presented concepts in practice. Remember that many experts simply use their knowledge, their views and their creativity when they design an investigation – you can do the same in this study.

Leaving you with this freedom should make you think yourself about the main points of the course again and deepen your knowledge and experience. Since there is no clear instruction, the grading will be based on the following criteria:

- You answer the questions above,
- you retrieve the relevant information from the data available,
- your report is clear and coherent,
- any subjective decision in your evaluation process is explained (applied criteria, indicators, analyses, etc.),
- the recommendations are coherently derived from the obtained results.

You are completely free in how to proceed. I will be available for answering questions and giving advice during the semester. You can pass by in my office anytime.

To do for next week

General first steps:

- Understand the tables
- Check for irregularities
- Try to condense the information to a more coherent and readable format
- Make first intuitive interpretations of the results

Think and discuss about the following:

- Can the data be used to assess any criteria?
- Which indicators could be used to assess the criteria?
- Are there indicator species that could be used?
- How to analyse and process the data?

Experiences made so far

- students develop interesting and innovative approaches
- students find the case study very useful
- the first steps are hard → support and guidance is necessary
- Important is a clear definition of the goal and the end-product of the case study
- high variance in the quality of end-products