

**Summer School**

MSc Umwelt und Natürliche Ressourcen | HS 2022

# Biodiversity Monitoring

Zürcher Hochschule  
für Angewandte Wissenschaften



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# Background

***Biodiversity loss and compositional change of ecological communities are two main and mostly negative consequences of the current rapid **global change** driven by humankind. In parallel to biodiversity, also biodiversity experts are at decline, while they are much needed to **detect and quantify change and to plan appropriate mitigation actions.*****



# Main topics & learning outcomes

## **Białowieża N.P. or Jezioro Łukajno Biosphere Reserve**

- Particular ecosystems of Northeast Poland
- Nature conservation and socioeconomic settings

## **Advanced species determination**

- Main focus on vegetation (mainly vascular plants)
- Additionally: small mammals, orthopterans, fungi

## **Field sampling**

- Modern sampling methods (including plant traits)
- Sampling designs (including multi-scale sampling)
- Setting up and analysing monitoring schemes
- Advanced statistical analysis of biodiversity data

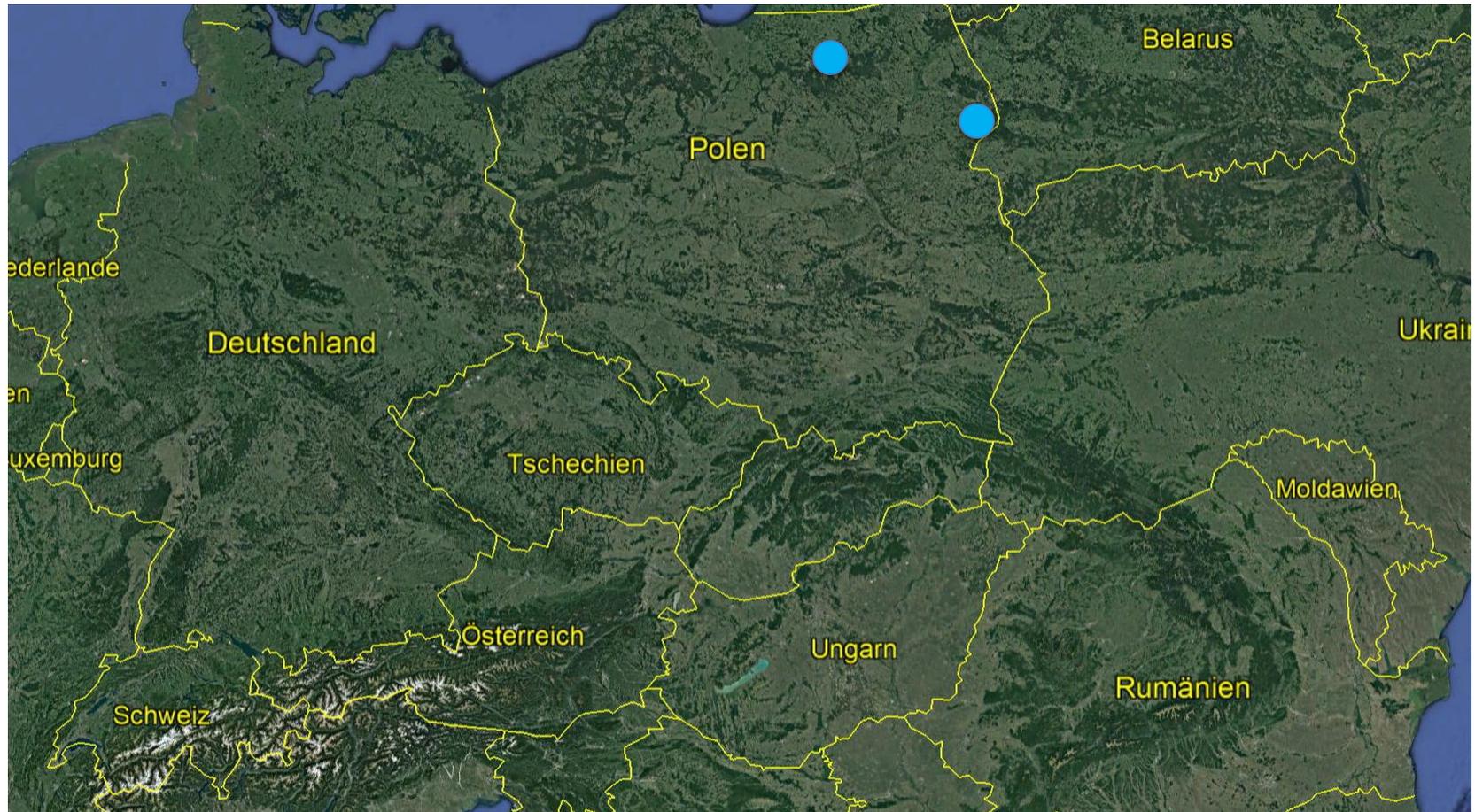
## **Project work (2nd week)**

- Scientific projects in small groups
- Writing of a scientific report



# Alternative venues

*The Summer School is planned as an **11-day international field class in one of the field stations of the University of Warsaw in NE Poland in August 2022, depending on the situation at the Belarusian border either in **Białowieża** or in **Urwitałt**.***



# Venue I

## Geobotanical Field Station of the University of Warsaw in Białowieża at the border of the Białowieża National Park



# Venue II

## Biological Field Station of the University of Warsaw in Urwiągł, Masurian Lake District



# Organisational issues

- Most likely **15-25 August 2022** (i.e. autumn term)
- Since access to **Białowieża** might still not be possible in summer 2022 due to the situation at the Belarusian border, we plan now **as alternative Urwitałt.**
- Normally **10 places for Swiss and 10 for Polish students** (but waiting list if more Swiss students are interested)
- **Approx. costs for Swiss students** (including food & taking into account the financial support of IUNR):
  - > Likely you will only have to pay for travel costs to/from Poland
- **Organisation** (in both venues):
  - Białowieża : sleeping rooms for 2-6 persons
  - Urwitałt : sleeping rooms for more persons or personal tents
  - Joint cooking (with alternating kitchen teams)
- **Handing in of project reports:** ca. 4 weeks after Summer School
- **Updated information** will be provided in Moodle ASAP

# Admission criteria

Students should be able to...

- **understand how various environmental drivers impact biodiversity** and lead to unequal distribution of biodiversity in space and time;
- **recognize species** of various plant and animal groups and use scientific determination keys; and
- **apply the software R effectively** to manipulate data and conduct descriptive and inferential statistical analyses (for Swiss students this normally means that they should have attended the Research Methods Module before).

# Learning outcomes

Students will learn...

- determine plant, invertebrate, vertebrate and fungal species of NE Poland or the Swiss Alps, respectively;
- develop and perform sampling and monitoring schemes for different components of biodiversity along ecological gradients and across spatial scales to identify patterns and temporal changes as well as their drivers;
- analyse various types of biodiversity data with adequate statistical methods;
- connect their findings to in-situ measured abiotic data, remote sensing data and information on socioeconomic drivers; and
- write up the outcomes of a research project conducted in a smaller group according to the standards of international scientific journals.

# Taxonomic groups

- The **focus is on vascular plants/vegetation** as they are typically the backbones of biodiversity monitoring programs.
- Additionally, all students will get an **introduction to small mammals, orthopterans and fungi**.
- In the second part of the summer school, the students will conduct a **project focussing on one (or maximum two) of the four taxonomic groups**. However, we cannot guarantee that each student can work on his/her first priority taxon.

# Impressions from previous years

- **Summer School 2019 – Reader:**

[https://www.zhaw.ch/storage/lsvm/institute-zentren/iunr/vegetationsoekologie/lehre/summer-school-2019\\_reader.pdf](https://www.zhaw.ch/storage/lsvm/institute-zentren/iunr/vegetationsoekologie/lehre/summer-school-2019_reader.pdf)

- **Summer School 2019 – Report in the IUNR Magazin:**

<https://www.zhaw.ch/storage/lsvm/institute-zentren/iunr/vegetationsoekologie/lehre/iunr-magazin-summer-school-biodiversity-monitoring.pdf>

- **Summer School 2020 – Online news:**

<https://www.zhaw.ch/de/lsvm/studium/master-of-science-in-umwelt-und-natuerliche-ressourcen/berichte-aus-dem-masterstudium/detailansicht/event-news/am-puls-der-forschung/>

- **Summer School 2020 – Reader:**

<https://www.zhaw.ch/storage/lsvm/institute-zentren/iunr/vegetationsoekologie/lehre/summer-school-2020-reader.pdf>

- **Summer School 2021 – Online news:**

<https://www.zhaw.ch/de/lsvm/institute-zentren/iunr/ecosystems-and-biodiversity/vegetationsoekologie/news-und-veranstaltungen/detailansicht-news/event-news/biodiverse-und-kulinarische-highlights-in-der-summer-school-in-preda/>