

MesoHABSIM: Habitat model for river restoration planning

Date: June 19-22, 2018 - Location: Hydraulic Laboratory Obernach, TUM, Germany

MesoHABSIM Course Schedule

Day 1: Tuesday, 19 June 2018

Introduction and Data Collection

9:00 - 09:15 **Welcome and logistics**

9:15 - 10:30 **Introduction to physical habitat models & MesoHABSIM**

Teacher: Dr. P. Parasiewicz

Objective: Present the place of MesoHABSIM within the framework of habitat simulation models.

Topics:

- Physical habitat models
- MesoHABSIM approach
 - * Survey techniques
 - * Calculations
 - * Results

10:30 – 11:00 **Break**

11:00 - 11:45 **Biophysical templates**

Teacher: Parasiewicz,

Objective: Introduction to ecological underpinnings and the concept of biophysical templates

Covered topics:

- Theory of Biophysical templates
- Biological targets and indicators
- Reference fauna
- Existing fish community
- Bioperiods
- Indicators

11:45 – 13:00 **Biological filters**

Teacher: P. Parasiewicz, P. Vezza

Objective: Demonstrate the process of creating biological filters

Covered topics:

- Literature based
- Empirical data
 - Sampling
 - Multivariate Suitability criteria
 - Random Forest

13:00 - 14:00 **Break for lunch**

14:00 – 15:00 **Instream Habitat Classification**

Teacher: Dr. P. Parasiewicz, J. N. Rogers, P. Vezza

Objective: Present the concept and procedures of classification

Covered topics:

- Spatial Delineation of river sites
- Assessment of physical attributes
 - Mapping surveys
 - Applying filters
 - Defining Suitable and Optimal habitat
 - Validation procedures

15:00 - 19:00 **Visit to Field Site**

Teachers: Dr. P. Parasiewicz, J. N. Rogers, P. Vezza

Objective: Demonstrate standard operating procedures of data collection for MesoHABSIM

Covered topics:

Field data collection (BYO Waders and suits)

Equipment demonstration

Grid Electrofishing

Snorkeling

Invertebrate and mussel sampling

Map hydromorphologic units (HMU),

Map high gradient streams

Measure water depth and velocity

Aerial photography with drones

Day 2: Wednesday, 20 June 2018

Habitat simulation and application

9:00 - 10:30 **Lecture: Computation of suitability criteria**

Teacher: Dr. P. Parasiewicz, P. Vezza

Objective: Present the procedures for analysis of model training data

Covered topics:

- Logistic regression and random forest model
- Compute logistic regression with or R
- Upscaling
 - o Aggregation across the scales
 - o Aggregation from species to community habitat
 - o Community rating curves
 - o Spatial aggregation
 - o Temporal aggregation
- Biophysical Templates
 - Habitat deficit analysis
 - Restoration Simulation

10:30 – 11:00 **Break**

11:00 - 13:00 **Lecture: Habitat Time Series**

Teacher: Dr. P. Parasiewicz

Objective: Interpretation and Simulation

Covered topics:

- UCUT analysis
- Flow management criteria

13:00 - 14:00 **Break for lunch**

14:00 - 15:00 **Lecture: Interpretation and Management Tools**

Teacher: Dr. P. Parasiewicz

Objective: Discuss Interpretation and Present Application

Covered topics:

- Identify habitat thresholds and management criteria
- ACTograms
- Restoration Scenario comparison
- Integrative assessment

15:15 - 17:00 **Examples of MesoHABSIM application and SimStream08**

Covered topics:

- Examples of projects applying MesoHABSIM for river restoration.
- High gradient streams
- Regional application
- Other possibilities

End of two day course Part 1

Day 3: Thursday, 21 June 2018

Project Preparation

9:00 - 10:15 **Project preparation**

Teacher: J. N. Rogers, K.Suska

Objective: Present the methods and procedures creating data foundation for MesoHABSIM analysis

Covered topics:

- Preparing drone survey
- Gathering background data and establishing geo-database
- Spatial delineation to Reaches, Sections and Representative Sites
- Obtaining templates for mapping and fishing
- Installing software

10:15 –11:15 **Starting your Project**

Teacher: J. N. Rogers

Objective: Setting up the framework for your project and practical application of the software

Covered topics:

- Development of GeoDatabase
- Adding data to GeoDatabase
- Begin project
- Setup basic attributes

11:15 - 11:30 **Break**

11:30 - 13:00 **Entering data into SIM-Stream software (standalone and QGis app)**

Teacher: J. N. Rogers, P.Vezza

Covered topics:

- Database import
- Import data from Excel
- Manual input
- Associations
- Data validation

13:00 - 14:00 **Break for lunch**

14:15 - 15:30 **Part 2**

Teacher: J. N. Rogers, P.Vezza

Objective: Data entry and calculations continued

Covered topics:

- Entering available fish data
- Import coefficients
- Input coefficients cut-offs
- Data QA&QC

15:30 – 15:45 **Break**

15:45 – 17:00 **Lab: Calculations continued**

Teacher: J. N. Rogers

Objective: SimStream calculations continued

Covered topics:

- Calculate Velocities
- Calculate Suitabilities
- Calculate Rating curves
- Reports

Day 4: Friday, 22 June 2018

9:00 – 10:30 **GIS Lecture**

Teacher: J. N. Rogers, P. Vezza

Objective: Tutorial on Geodatabase export and Map production

Covered topics:

- Export Suitabilities to Geodatabase
- Create HMU maps
- Create Suitability Maps

10:30 – 11:00 **Break**

11:00 – 12:00 **GIS Lecture**

Teacher: Dr. P. Parasiewicz

Objective: Practical application of the software by students in analysis of training data

Covered topics:

- Adjusting templates
- Simulating Reference Conditions

12:00 – 13:00 **Lab Continued**

- Reference Rating curves
- Calculate Time series
- Calculate UCUTs
- Calculate Flows
- Flow management criteria

13:00 - 14:00 **Break for lunch**

Lab continued - Scenario Comparison

- Simulate river restoration
- Compare rating curves
- Compare UCUTs
- Calculate Stress Days

15:30 - 16:00 **Break**

16:00 – 17:00 **Discussion of Results and Interpretation**

Teacher: Dr. P. Parasiewicz, J. Rogers, P. Vezza, K. Suska

Objective: Interactive Discussion

Covered topics:

- Discussion of Results
- New Developments

End of course