EPFL ENAC IIC LCH
Laboratoire de constructions hydrauliques
GC A3 504 (Bâtiment GC)
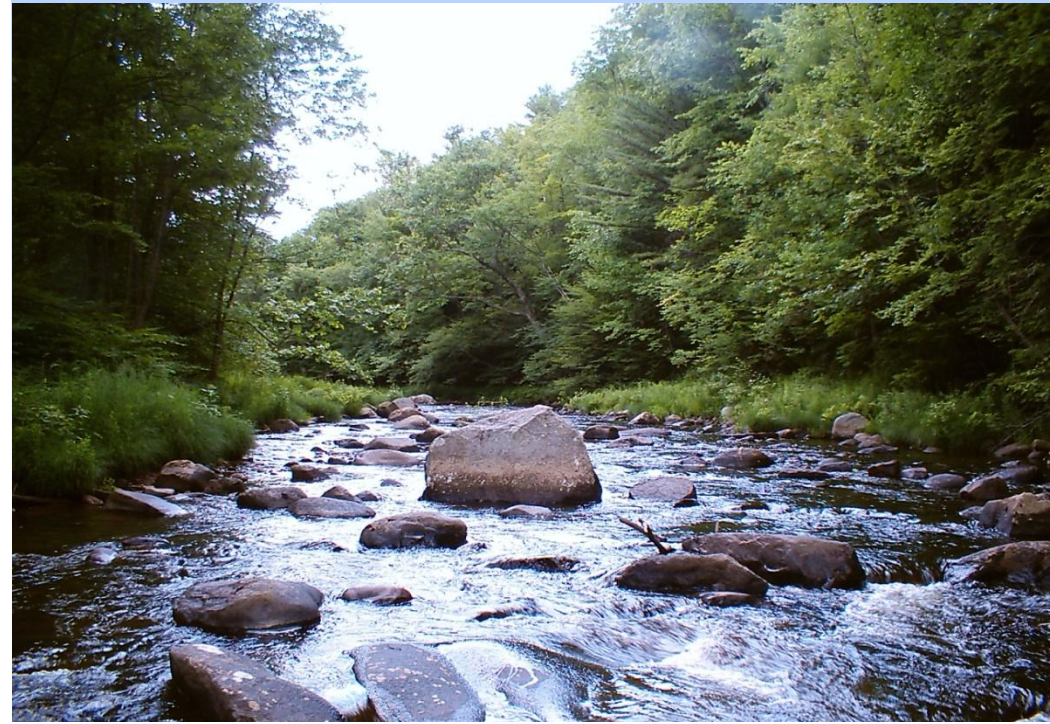Station 18
CH - 1015 Lausanne

Rushing River Institute

Training Workshop

MesoHABSIM

A Habitat Model for River Restoration Planning

23/24 May 2012 : Introduction with field work

29/30 May 2012 : Practical software use

Training Workshop MesoHABSIM

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The objective of the course is to introduce the participants to the concept of the methodology of habitat modeling as well as the application of the provided Sim-Stream software. The participants will be guided through the process of data collection, organization, analysis and interpretation. To accommodate a wide range of participant needs we offer a two-level course:

I. Two-day introduction to MesoHABSIM
II. Four-day in-depth application training, including software use and field data collection of a nearby river

At the end of the four-day course the participants can apply the method with some additional oversight and guidance. Those who attend the two days course will have an overall familiarity with the method. Environmental and river engineering consultants, researchers, conservationists and agency personnel interested in sustainable management of water resources will all benefit. With the exception of some basic knowledge in computer software and river ecology, no particular skills are necessary.

MesoHABSIM has been widely applied across the USA, and more recently in Europe, to provide information for instream flow management as required by law and by regulators. This method offers more scientifically definitive answers regarding the costs and risks of future operations. MesoHABSIM has been peer-reviewed and published in scientific journals and by the Instream Flow Council. In addition, MesoHABSIM has been used as a part of the Ecologically Sustainable Water Management (ESWM) framework by The Nature Conservancy.

More information about the MesoHABSIM method and information on past and future courses can be found on the website: www.MesoHABSIM.org.

- **What is MesoHABSIM?**
  MesoHABSIM is a comprehensive planning tool used in the sustainable management of running waters, which is valuable for the effective river restoration. It is a physical habitat simulation model that describes the instream habitat conditions for aquatic fauna, allowing users to simulate changes in habitat quality and quantity in response to alterations of river morphology or flows. It numerically specifies **how much** habitat for fish or invertebrate community has gained or lost in consequence of restoration.

- **Software**
  The accompanying Sim-Stream software integrates field collected data, biologic observations, literature-based data and historical flow records and then performs the computations necessary to quantitatively evaluate the spatio-temporal impact of human actions on selected fauna. Sim-Stream includes multiple reporting options, thus providing the manager with comprehensive tools for interpretation and decision-making.

- **Benefits**
  MesoHABSIM approach is **ecologically sound** and well suited for evaluation of entire riverine community in alpine as well as in lowland environments. It stands out by **fast and effective** data collection and analytical procedures, **biological precision** and **scientific rigor**. It allows to recreate **reference habitat** conditions and **evaluate possible restoration measures**. It offers **quantitative metrics** as a basis for establishing **trade-offs** between resource use and river restoration needs.

Einschreibung / Inscription / Registration

Training Workshop MesoHABSIM

A Habitat Model for River Restoration Planning

❏ Part I 23/24 May 2012: Introduction with field work
❏ Part II 29/30 May 2012: Practical software use

I register for the Training Workshop

Name / Nom

Vorname / Prénom

Organisation

Strasse / Rue

PLZ, Ort / No postal, lieu

Telefon / Téléphone

Fax

E-Mail

Datum / Date

Unterschrift / Signature

Rechnungsadresse / Adresse de facturation

Bitte senden oder faxen Sie die ausgefüllte Karte an :
Svp envoyer ou faxer la carte dûment remplie à :
EPFL ENAC IIC LCH, GC A3 504, Station 18, CH-1015 Lausanne, Fax 021 693 22 64

Teachers
Rushing Rivers Institute

### Dr. Piotr Parasiewicz – Scientific and Executive Director
Dr. Piotr Parasiewicz is a civil and environmental engineer and an expert in instream flow models, habitat restoration and nature-like fishways and a developer of MesoHABSIM. He worked at University of Agricultural Sciences in Vienna, Cornell University and University of Massachusetts, Amherst. He is also an Adjunct Professor at the University of Nebraska Lincoln and research scientist at S. Sakowicz Inland Fisheries Institute in Poland.

Joseph Rogers – Associate Director
Joseph Rogers is an ecologist with over ten years' experience. For the past seven years he has been refining the MesoHABSIM technique and the accompanying Sim-Stream software as well as conducting courses around the world. He earned a bachelor's degree in physical geography from Plymouth State University and earned a master's degree in geoscience at the University of Massachusetts.

Edwin Hammond – Programmer
Edwin Hammond is a graduate of the Computer Science Department of the University of Massachusetts in Amherst. He collaborates with Rushing Rivers Institute since 2005 and among others programmed Sim-Stream 7 and Sim-Stream 8 version of the software.
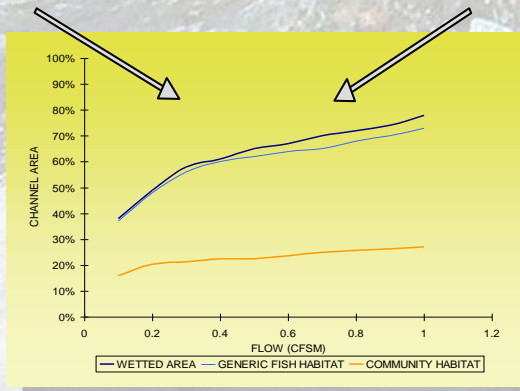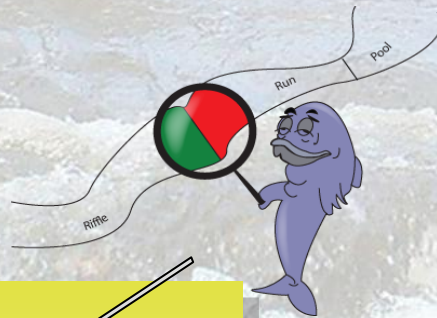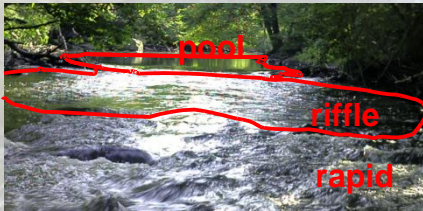
MesoHABSIM Course Schedule – Part I

Thursday May 23: Introduction and data collection

9:00 - 9:15: Welcome

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
Covered topics: Physical habitat models, MesoHABSIM approach, Survey techniques, Calculations, Results

10:30 - 11:00: Break

11:00 - 11:45: Biophysical templates
Teacher: Dr. P. 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: Dr. P. Parasiewicz
Objective: Demonstrate the process of creating biological filters
Covered topics: Literature based, Empirical data, Sampling, Multivariate suitability criteria

13:00 - 14:00: Break for lunch

14:00 - 15:00: Instream habitat classification
Teachers: Dr. P. Parasiewicz, J. N. Rogers
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
Objective: Demonstrate standard operating procedures of data collection for MesoHABSIM
Covered topics: Field data collection (BYO Waders), Equipment demonstration, Grid electrofishing, Invertebrate and mussel sampling, Map hydromorphologic units (HMU), Measure water depth and velocity

Friday May 24: Habitat simulation and application

9:00 - 10:30: Computation of suitability criteria
Teacher: Dr. P. Parasiewicz
Objective: Present the procedures for analysis of model training data
Covered topics: Logistic regression model, Compute logistic regression with SPSS or R, Upscaling, Aggregation across the scales, Aggregation from species to community habitat, Community rating curves, Spatial aggregation, Temporal aggregation, Biophysical templates, Habitat deficit analysis, Restoration simulation

10:30 - 11:00: Break

11:00 - 13:00: 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: 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, Other possibilities

MesoHABSIM Course Schedule – Part II

Tuesday May 29: Practical software use

9:00 - 10:15: Project preparation
Teacher: J. N. Rogers
Objective: Present the methods and procedures creating data foundation for MesoHABSIM analysis
Covered topics: 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-Stream07 software
Teacher: J. N. Rogers
Covered topics: Database import, Import data from Excel, Manual input, Associations, Data validation

13:00 - 14:00: Break for lunch

14:15 - 15:30: Entering data continued
Teacher: J. N. Rogers
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: Computations of velocities, suitabilities and rating curves, Reports

Wednesday May 30: Practical software use

9:00 - 10:30: GIS Lecture
Teacher: J. N. Rogers
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 continued
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

14:00 - 15:30: 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
Objective: Interactive discussion
Covered topics: Discussion of results, New developments

Administration

Information

Anton Schleiss, Tel. 021 693 23 82, anton.schleiss@epfl.ch
Caroline Etter, Tel. 021 693 23 85, caroline.etter@epfl.ch

Date

23/24 May 2012 (Part I): Introduction to MesoHABSIM with field work
29/30 May 2012 (Part I & II): Practical software use

Location

Laboratoire de constructions hydrauliques (LCH)
Ecole Polytechnique Fédérale de Lausanne (EPFL)

Registration

Until 18 May 2012 at LCH secretary with attached mailing card, fax or e-mail (secretariat.lch@epfl.ch). The registration form and the course bulletin can be downloaded at http://lch.epfl.ch. With the registration confirmation you will receive an invoice for the participation fees.
Please note that number of participants is limited.

Registration fees

Part I only (2 days)	CHF 960.-
Part I & II (4 days)	CHF 1360.-

The registration fees include coffee breaks, meals as well as a time limited version of the Sim-Stream Software.
Workshop participants can purchase a full unlimited version of the software for a reduced price of US$ 600.-.

Accommodation

A limited number of rooms have been reserved in hotel **Au Lac** (www.aulac.ch) and **Crystal** (www.crystal-lausanne.ch) in Lausanne until end of February. Hotel booking has to be done directly to the hotel or by Lausanne Tourism (www.lausanne-tourisme.ch) for other hotels.

Documents

The participants will receive a course documentation during the teaching workshop.

Workshop secretary

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