# Introduction to workflows for taxonomic refinement, biogeographic analysis, and species distribution modelling

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Location:

Cardiff University, UK
Event Description and Information:

## 26-27 November 2013, Cardiff University, UK

### Background
In the last two decades the relationship between biodiversity and ecosystem function has become a central issue in ecology, while biodiversity loss has been identified as a major driver of ecosystem change. As a result, ecological research transforms into a species-rich scientific discipline with increased focus on the ability to document, study, and predict the biodiversity composition in ecosystems. However, the analysis of patterns of biodiversity over large temporal and spatial scales is still very difficult to achieve as it requires biologists and environmental scientists to integrate their expertise, data, and methodologies across the traditional biological disciplines.

The Biodiversity Virtual e-Laboratory, BioVeL, addresses this challenge by having scientists and computer engineers working together to develop tools for pipelining data and analysis into efficient analytical pipelines, called "workflows." Workflows are complex digital data manipulations and modeling tasks that execute sequences of web services. BioVeL designs and deploys such workflows for a selected number of important areas in systematic, ecological, and conservation research, e.g. for the analysis of data sets with ecological, taxonomic, phylogenetic, and environmental information.

BioVeL data refinement and ecological niche modelling workflows allow researchers to:

(i) explore, access, refine, and format large data sets from major data providers;

(ii) combine disparate data sets with the researchers' own data; and

(iii) run complex and computationally intense analytical cycles.

(iv) generate comparative maps of species distribution

### Workshop Objective
The training workshop will teach the attendees in using the informatic tools and services developed by the BioVeL project to address research topics such as historical analyses, invasive species distribution modelling, endangered species distribution modelling, and dynamic modelling of ecologically related species. In particular, there will be  introductions to the BioVeL e-infrastructure, Taxonomic data cleaning,

Taxonomic name resolution and synonym expansion, Ecological niche modelling, model testing, statistical analysis of GIS data, invasive and endangered species distribution modelling, historical comparison biodiversity from museum collections.

Outcomes
After completion of course the participants are expected to be able to
- Perform their research using BioVeL e-infrastructure (portal, workflows, services)
- Carry out research projects requiring including taxonomic data discovery and integration, and niche modelling
- Initiate and participate in cross-disciplinary projects in biodiversity research

Required preparation
- Participants need to bring their own laptops. All workflows offered will be browser-based and don't need any desktop installations. A sample data set will be provided with each workflow.
- Scientists should bring their own data and/or should have identified accessible data sources.

## Target community & qualifications
This workshop is designed for scientists with a solid background in any of the relevant areas in biodiversity research, e.g. taxonomy, ecology, environmental sciences, genetics, population genetics, species distribution and population modelling, bioinformatics, phylogenetics, etc. It is desirable that the attendees are working or planning to work with taxonomic revisions, biodiversity inventories, ecological assessments, descriptive studies, conservation projects, or analyses for the management of natural protected areas.

## Format
The course is a two-day **hands-on** training event. 10-15 researchers will be admitted. The program consists of introductory lectures, practical computer work, and discussions.

After a short individual presentation, Day 1 will be dedicated to the preparation of data using BioVeL Data Refinement Workflow. The morning will focus on a general demonstration of the tool and exercise with a provided data set. In the afternoon, participants will work with their own data set and/or data from public sources.

In Day 2 we will demonstrate the Ecological Niche modelling workflows, ask participants to practice with a provided data set. Then participants will run the workflows with their data prepared during day 1, addressing the scientific issues of their research interests.

## To participate in the workshop, an application is required, and includes the following information:

- Short CV/biography
- 10 line explaning your scientific project objectives
- Short description of the data you want to analyse, indication their origin (personal collection and/or public repositories)

**Registration is available here.[1]**
**Application deadline: 18 October, 2013**
**Notice of Admittance: 25 October, 2013**

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**Source URL:** http://cybertaxonomy.africamuseum.be/node/1283

**Links:**
[1] http://www.biovel.eu/index.php/events/training-events/23-events/training-events/143-registration-form-to-enm-training-workshop