

The Biodiversity Informatics Toolbox

A Project of the Swiss Plant Science Web (SPSW)



Boosting Natural History Expertise: Using and Contributing to Open Access Internet Resources for Biodiversity Surveys

1 | The Goal

Research-oriented teaching is the explicit intention of many leading universities across the world.

2 | The Problem

Descriptive biology, while fostering natural history expertise, is based on observation rather than experiment and faces cuts in the allocated resources and an ever-increasing need to justify continued funding at university level.

3 | The Symptom

Particularly affected is the physical infrastructure of biodiversity surveys: field stations and natural history collections such as botanical and mycological herbaria or entomological, zoological and paleontological collections at universities are losing out.

4 | The Diagnosis

Responsible for this plight is a downturn of descriptive biology in research, not only in Switzerland but all over the world, particularly at leading institutions where immediate international impact and recognition is more important than the tradition of largely descriptive and comparative research disciplines of organismal biology such as taxonomy.

5 | The Solution

There have been several initiatives to invigorate natural history expertise both in Switzerland and abroad and they have generally been focusing on particular taxa and/or areas. In contrast, with *The Biodiversity Informatics Toolbox* we take a resource-based approach by focusing on modern tools for using observation and collection data of taxa and by putting the resources in context of fundamental issues, essential concepts and current research in biodiversity.

6 | The Benefit

We can now increasingly harness new open access media like databases of species occurrence data for this sort of self-directed or supplementary learning material—and by contributing their own data, students can even evolve from passive learner to active participant in ways, which the Web 2.0 has made possible and which should ultimately lead to a renewed interest in the ambition to achieve an inventory of all forms of life on Earth.

Who's the Toolbox for?

- ✓ Biology lecturers and students
- ✓ Taxonomists and conservationists
- ✓ Natural history collection curators
- ✓ Specialist librarians
- ✓ Amateur naturalists and citizen scientists

What's in the Toolbox?

Resources: Get the key facts on open online resources such as the Global Biodiversity Information Facility (GBIF).

Tutorial: Review fundamental issues, revise essential concepts, test recommended resources and assess influential publications.

Outlook: Obtain current news and views on hot topics and controversies in biodiversity informatics.

Opportunities: Receive a wide selection of information regarding jobs, grants, awards, conferences and courses in biodiversity informatics.

How to Use the Toolbox?

We use the simple open source software **Docendo** (<http://docendo.ethz.ch/>) for the management of the modular learning objects. These can be accessed on the our website (www.biodiversity-informatics.org) for self-directed learning, or alternatively, exported from Docendo to an LMS such as Moodle or OLAT as supplement for already existing courses.

www.biodiversity-informatics.org

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From the Collection to the Internet: The ABC of Mobilizing Collection Data for Biodiversity Research and Teaching

A | The Collection



Photo: Stefan Ungricht

Herbarium specimens are being selected for digitization. Digitization typically consists of making a digital image of the specimen and recording the associated label data in a database.

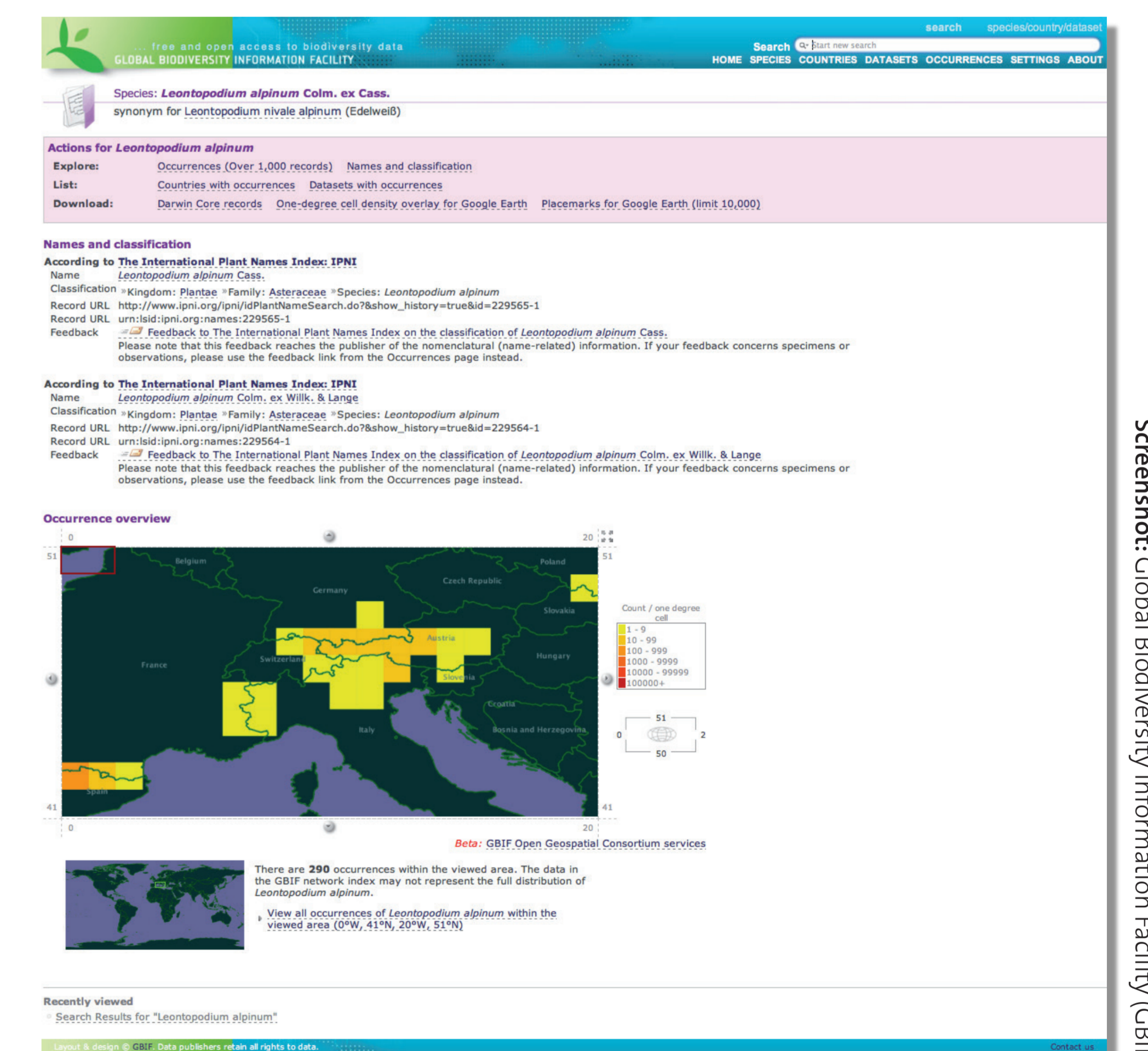
B | The Specimen



Photo: Zürich Herbarium Z + ZT

Digitized herbarium specimen. Each specimen has been designated a unique barcode number (top left hand corner of the sheet) for unambiguous reference.

C | The Portal



Screenshot: Global Biodiversity Information Facility (GBIF)

Online collection specimen data. Portals like the GBIF integrate the content of many collections across the world and hence make powerful searches readily feasible.

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