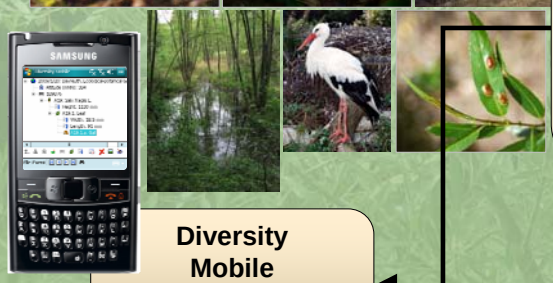
Developing a sustainable working platform for gathering biological data in the field

DAGMAR TRIEBEL[1], Wolfgang Ahlmer[2], Andreas Bresinsky[2], Oliver Dürhammer[2], Stefan Jablonski[3], Alexandra Kehl[4], Jürgen Klotz[2], Dieter Neubacher[1], Peter Poschlod[2], Gerhard Rambold[4], Tobias Schneider[3], Bernhard Volz[3], Markus Weiss[1]

[1]Botanische Staatssammlung München and IT Center of the Bavarian Natural History Collections, München, Germany
[2]University of Regensburg, Institute of Botany, Regensburg, Germany
[3]University of Bayreuth, Institute of Informatics, Bayreuth, Germany
[4]University of Bayreuth, Dept. of Plant Systematics, Bayreuth, Germany

The goal of the project is to gather biological research data in the field by using **mobile devices**, and to transfer them directly or via a locally installed cache database to an institutional **data repository**, based on the **Diversity Workbench** framework, for long-term storage and sustainable availability.



Diversity Mobile
application for mobile devices

MS SQL Server CE 3.5

Diversity Synchronization

- Resolving data conflicts
- Providing schema information
- Postprocessing possible

Special ORM

MS SQL Server 2008

Archival storage

Diversity Workbench database components as part of an **Institutional Data Repository**

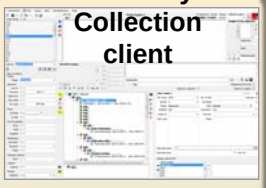
Controlled access rights

Direct access

e. g. ABCD schema, BioCASE protocol

Various export formats

Diversity Collection client



- Data editing
- Access to other data sources

Web Portals: e. g. BioCASE, GBIF

GBIF.DE

Custom-built databases

for thematic internet portals like BIB DGfM-Mapping of Fungi online, and for the Bavarian Environment Agency

Various export formats

Research scientists and other data users

- Analysis of data
- Publication of data with the option to cite individual datasets using URNs

Advantages of data gathering by mobile devices within a working platform:

- GPS functionality of the mobile device
- Digital images linked to certain datasets directly in the field
- Interchangeable user interfaces of **DiversityMobile** give access to additional data sources (taxon names, ecological descriptors, or other general scientific terms) dependent on the user demands
- Easy data transfer to server-based databases installed by a data repository

DiversitySynchronization provides the connection between the mobile device and the repository database. This synchronization framework detects conflicts and prevents the generation of data duplicates.

The transfer of biological data to a institutional data repository database ensures sustainable storage of all gained primary research data as well as access to primary data by users via various types of interfaces. **This mechanism counteracts the loss of primary biological data, ensures data quality, and improves the option for quality control.**