



FloraGREIF

From a data repository to an expert system

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The Needs

Plant identification skills are needed:

- for applied projects, e.g. in vegetation ecology, pasture management
- to teach students in universities and schools
- for interested lay persons and
- eco tourism

Data repositories are needed:

- as a resource for taxonomic research
- to allow verification of determination by specialists



The Idea

Make use of existing resources

- large herbaria of Mongolian plants in Germany
- combine it with images of living plants to
- summarize the taxonomic knowledge

Create a system

- to identify a plant by comparison
- to check your identification by images and descriptive data
- to be extended with contributions of the users

Virtual Guide to the Flora of Mongolia Plant Database as Practical Approach

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Family	Occurrence	Availability	Icons	Info
Elaeagnaceae	genus: 2 species: 2	3 herbar sheets 1 photo record in 2 species	  	S. Rilke, July 2009
Empetraceae	genus: 1 species: 1	7 herbar sheets in 1 species	 	S. Rilke, April 2009
Ephedraceae	genus: 1 species: 10	171 herbar sheets 10 photo records in 9 species	  	H. Freitag & M. Maier-Stolte, April 2009
Equisetaceae	genus: 1 species: 9	3 herbar sheets 9 photo records in 7 species		
Ericaceae	genus: 6 species: 13	2 herbar sheets 1 photo record in 2 species	 	
Euphorbiaceae	genus: 2 species: 15	7 herbar sheets 8 photo records in 5 species	  	

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FloraGREIF project
is in progress.
Let us know what
we can do better.

Family: Alliaceae

For Mongolia the key of N. Friesen (1995) and for former Soviet Central Asia the use of the "Flora of Siberia / 4 / Araceae - Orchidaceae" (1987/2001) is highly recommended.

Scientific name: ***Allium malyshevii* N. Friesen**

Source: Gubanov 1996, not in Grubov 1982/2001

Synonym: *A. amphibolum* auct. non Ledeb.: Grubov 1982/2001: 65/127 p.p. (acc. to Friesen 1995)

Description: Bulbs several on distinct rhizome, cylindrical- conical, 5-9 cm long, with grayish-brown reticulate-fibrous covered at very base with erubescen linear, flat, narrowed towards base and shorter than or as long as scape; umb subhemispherical, compact, capitate; perianth; perianth lobes bright purple, than perianth lobes, inner filaments w (acc. to Friesen 1987/2001)

Confuse with: *Allium amphibolum* Ledeb., *A. pumilum* Vved.

Comments: *A. malyshevii*: scape covered at very base with erubescen leaf sheaths (difficult to separate mentioned species by means of this property, cf. herbar scans); inner filaments with 1, often bifurcate tooth at each side. *A. amphibolum* & *A. pumilum*: scape covered 1/3 - 1/2 with leaf sheaths; inner filaments with 1 short tooth at each side or undentate.

Distribution: Khubsugul, Khentei, Khangai (acc. to Gubanov 1996)

Sources:

- Gubanov (1996)
- Grubov (1982)
- original papers

[open map in a new window](#)



Herbarium scans

Herbscan device (Key Botanical Gardens): A3 scans with 1200 dpi
Macro shots with a digital camera mounted at a microscope



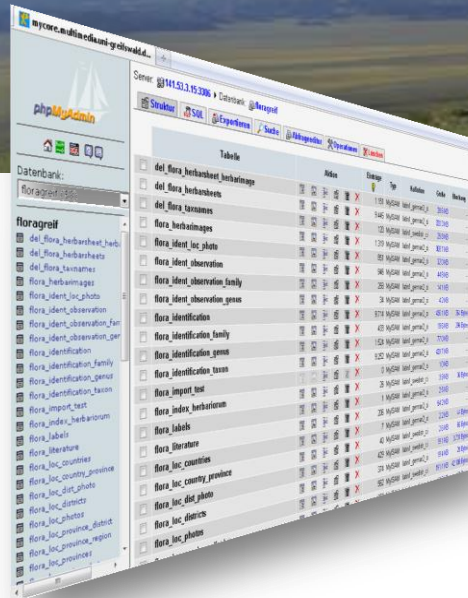
Macro images



*Stellera
chamaejasme*
(Thymeleaceae)



Status quo



Database

- **2871** taxa (**264** synonyme names)
- **5862** records, of these **4977** refer to specimens from 26 herbaria

Photo Library

- **1339** scans of herbarium specimens
- **5986** images of living plants
- **733** macro photos
- **758** habitat photos

WebGIS

- Elevation Maps
- Distribution Maps
- Satellite Images
- Geobotanical Units
- Vegetation Zones
- Topographic Maps
- and more

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Family

Genus

Species

Additional search terms for: [Taxon](#) | [Record](#) | [Image](#)

Growth form:

(data not yet complete)

annual perennial shrub tree

Status:

endemic subendemic

Red list:

rare relict extinct

Special Features: *(in preparation)*

medical plant

Local Name: *(in preparation)*

Distributed:

- | | | | |
|--|--|--|---|
| <input type="checkbox"/> Khubsgul | <input type="checkbox"/> Khentei | <input type="checkbox"/> Khangai | <input type="checkbox"/> Mongol-Daurian |
| <input type="checkbox"/> Great Khingan | <input type="checkbox"/> Khobdo | <input type="checkbox"/> Mongolian Altai | <input type="checkbox"/> Middle Khalkha |
| <input type="checkbox"/> East Mongolia | <input type="checkbox"/> Depression of Great Lakes | <input type="checkbox"/> Valley of Lakes | <input type="checkbox"/> East Gobi |
| <input type="checkbox"/> Gobi-Altai | <input type="checkbox"/> Dzungarian Gobi | <input type="checkbox"/> Transaltai Gobi | <input type="checkbox"/> Alashan Gobi |

Habitat:

[List frequent habitat terms](#)

Search for [Taxon](#) [Record](#) [Image](#) matching the above search terms.

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Family

Genus

Species

Additional search terms for: [Taxon](#) | [Record](#) | [Image](#)

Collected:

Determined:

Tested/Revised:

Coll. Number:

Herbarium:

Flowering Status:

Habitat:

[List frequent habitat terms](#)

Search for [Taxon](#) [Record](#) [Image](#) matching the above search terms.

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Family

Genus

Species

Additional search terms for: [Taxon](#) | [Record](#) | [Image](#)

Type:

all scans species photos habitat photos

Collected:

Determined:

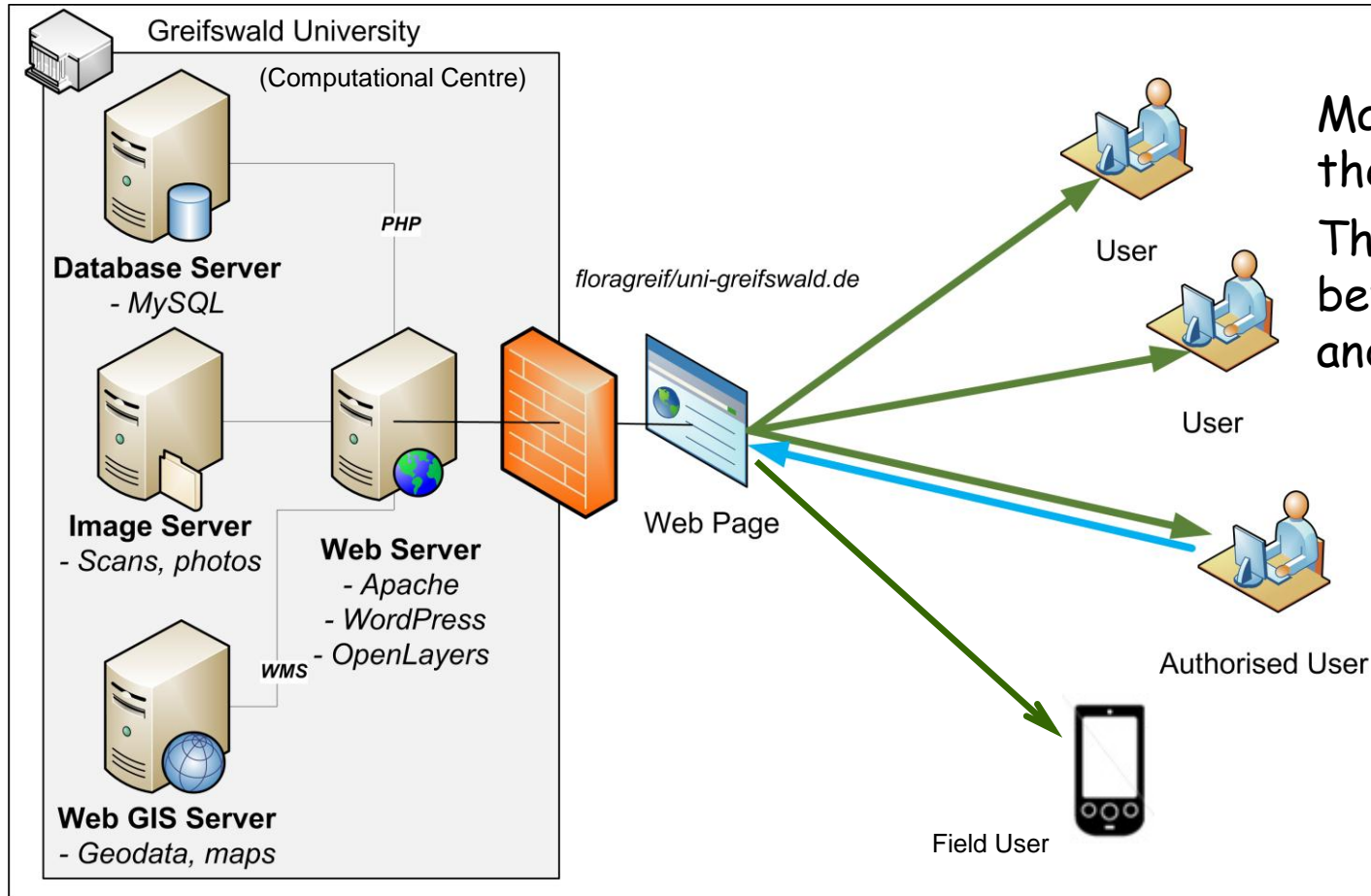
Tested/Revised:

Habitat:

[List frequent habitat terms](#)

Search for [Taxon](#) [Record](#) [Image](#) matching the above search terms.

Technical Realisation



Main object is the web page.
This is the interface between data input and data presentation.

Web GIS - Demonstration



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Please note: the webGIS-component is in progress. It may take some time until the map is completely loaded.

Alliaceae ***Allium subsicolum* Regel**

Revised by: Friesen, N., Aug. 2008
Record formerly determined as: *eduardii*

Collected by: Zemmrch, A., Sommer 2003
Determined by: Zemmrch, A., 2005
Flowering status: adult, flowering
Herbarium: GFW
Country: Mongolia
Province: Khovd
District: Khovd
Locality: Mongolian Altai 8,5 km ssw of sum centre Dund-Uus, westerly beside of road between sum centre Dund-Uus and centre of former Brigad. No. 3
Coordinates: geogr. Coord. 91.341843 (lon) 48.052306 (lat) decimal grad WGS84
[hide map](#)

DFG

Embedded in record description

Displays automatically the location of a record, if geographical coordinates are available.

Longitude: 91.341843° E
Latitude: 48.052306° N
decimal grad, WGS84

Allium subsicolum Regel, collected
by Dr. A. Zemmrch, 2003

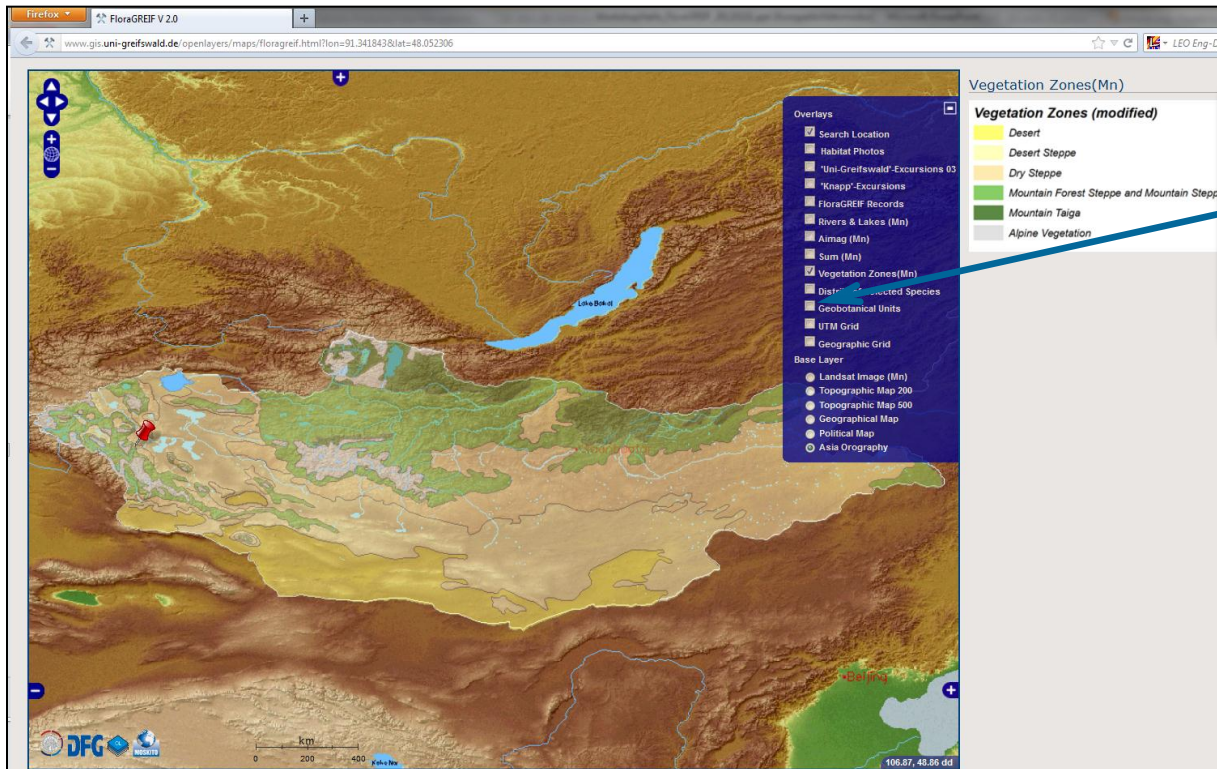
Web GIS - Demonstration

Web GIS as application

Include overlays for additional information of the location.

Layers:

- *Sum/Aimag*
- *Vegetation Zones*
- *Geobotanical Units*
- *UTM Zone*
- *Satellite Image*
- ...



Allium uzbekicum Regel, collected by
Dr. A. Zemrich, 2003

We are grateful to...



- Herbaria with comprehensive collections on the Mongolian Flora: Halle (U. Braun, E. Jäger), Gatersleben (K. Pistrick), Jena (A. Zündorf, K.-F. Günther)
- Taxonomists revising groups: H. Freitag (*Ephedra*, Suaeda, Kassel), N. Kilian (Liguliflorae, Berlin), M. Maier-Stolte (*Ephedra*, Kassel), R. Wisskirchen (Polygonaceae, Bonn), N. Friesen (*Allium*, Osnabrück), P. Kuss (Pedicularis, Zürich), E. Raab-Straube (*Saussurea*, Berlin), D. Podlech (Fabaceae, München), P. Hanelt (*Papaveraceae*, Gatersleben), H. Scholz (*Eragrostis*, Berlin), K.-F. Günther (Apiaceae, Jena)
- Mongolian Academy of Sciences, Ulaanbaatar (M. Urgamal, I. Tuvshintogtokh), University of Khovd (D. Oyuunchimeg)
- Botanischer Garten und Botanisches Museum Berlin (W.G. Berendsohn)
- Compilation of GIS and ecological data: A. Zemmrich, Greifswald
- Technical assistance: E. Dauber, K. Münse, Greifswald





Thanks for your attention!

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Topic-oriented information networks

01/07/2007 - 05/11/2010

01/01/2012 - 31/12/2014

Förderung: Themenorientierte
Informationsnetze der DFG

01/07/2007 - 05/11/2010

01/01/2012 - 31/12/2014