Virtual herbarium collections of the Central Siberian Botanical Garden as a resource for biodiversity study

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The first herbarium at the Central Siberian botanical garden (CSBG SB RAS) was organized in 1946. Now there are two herbarium collections in CSBG with own acronyms and registration in the Index Herbariorum (NSK and NS), they registered on ckp.ru as USU_ 440537. Collection contains about 800 000 herbarium specimens of high vascular plants, mosses, lichens and fungi sampled in Siberia, Russian Far East, Europe, Asia and America.
Digitization of high vascular plants of NSK and NS collections was initiated by customized HerbScan unit, which consists of a flatbed scanner (Epson Expression model 10000XL), modified for inverted use, supported by Andrew Mellon Foundation in 2014-2016. Images and metadata of 889 NSK and NS type specimens are currently available on the Virtual Herbaria web site at the Vienna University, Austria (http://herbarium.univie.ac.at/database) and some of them in Jstor (https://plants.jstor.org). Special attention was paid to providing on-line high resolution (600 dpi) images and metadata for all type specimens.
International roles of herbarium digitization (Kew training, 2014)
This is to certify that

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has attended training in:

Specimen Digitisation and Quality Assurance

as a partner of the Global Plants Initiative Programme

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Map of NSK type specimens

Typoteka NSK: herbarium sheet+prologue
In 2017 a new research group “USU-Herbarium” was organized in CSBG SB RAS for digitization and management of herbarium collections (registered as USU_440537). We initiated digitization of NSK and NS high vascular plants collections by two scanners ObjectScan 1600. Specimens were scanned using international standards: at a resolution of 600 dpi, the barcode for each specimen, 24-color scale and scale bar.
We use scanners: HerbScan and 2 ObjectScan 1600 for digitizing CSBG collections (NSK+NS)
Barcoding herbarium specimens

Digitization

Verification of label data
Images and metadata are stored in CSBG SB RAS Database (http://84.237.85.99:8081), generated by ScanWizard Botany (reg. number I41-018966) and MiVapp Botany (reg. number I41-018969) software (Microtek, Taiwan).

Specimen label information have recognized and automatically saved titled by herbarium code and specimen serial number in XML format through ScanWizard-Botany. MiVapp-Botany is both a web-server system and specimen image authentication database, aiming for being an efficient and integrated multi-functional platform. After hierarchical login-based image quality and metadata profile validation by experts, MiVapp-Botany can quickly update the system and make verified specimen access for users.
CSBG SB RAS database with scanning herbarium specimen, map and metadata (http://84.237.85.99:8081)
Currently about 13,000 herbarium specimens were digitized at 600 dpi. Images and metadata are stored in CSBG. The largest numbers of samples scanned are from Primulaceae (4984), Cystopteridaceae (891), Orchidaceae (750), Boraginaceae (664), Poaceae (632), Asteraceae (550), Athyriaceae (436), Fabaceae (418), Amaryllidaceae (381). The database is structured in a way that a user can access a high resolution image and following key information: specimen ID (= barcode), family name, scientific name, collector name and collection date, country or administrative region.

Alternatively, the request may be done by using key words of habitat characteristics, for example, “pine forest”, “meadows”, etc. Images are available for download. In our internal database each image is supplied by the following information: barcode, type status, genus name, species name, author name, subsp./var. name, family name, collectors name, field number of herbarium specimen, date (yyyymmdd), country, admin region, latitude degrees, latitude minutes, longitude degrees, longitude minutes, label text, identifier name, annotation, Catalogue of Life link and accepted name in CoL.
Data from herbarium labels are entered in 26 fields in the Calc tables of the LibreOffice software package. Posting information from herbarium labels on the various fields in the electron tables allows us to search requests, to convert the electron table in the bioresource network centers, international databases, GBIF resources and conduct statistical data processing. The metadata analysis of herbarium labels was conducted in the following 3 modules:
--- taxonomic analysis (including nomenclatural analysis of the species biodiversity of the families in NSK and NS collections,
--- geography analysis (including location-based analysis of the places of collecting herbarium) and
--- historical analysis (analysis date of collection and collectors).

The CSBG herbarium taxonomic database block is compatible with the international resource “Catalogue of Life” (http://www.catalogueoflife.org), where information is updated every month and an annual list of taxa is published.
Our dreams, not realised yet
Mне нравится ваш оптимизм. Постараюсь отрастить себе такой же…
Чем вы его поливаете?

Макс Фрай

Художник: Владимир Румянцев
Thank you for your attention!

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