Distributed Systems of Scientific Collections (DiSSCo) Information day, 25.11.2019, Vienna

Research possibilities depend on accessibility to modern collections and data systems

Andreas Tribsch

Department of Biosciences & Herbarium SZU


Leontopodium alpinum
19.7.2019, National Park Hohe Tauern
A nice specimen

Overview – with the view from small university collection

Present and future challenges in university collections – University of Salzburg as starting point

DNA-barcoding results in new collections (as example)

Infrastructure situation in Austria and the DiSSCo vision

How could DiSSCo and a better national and international infrastructure change the future in biodiversity research and policy


217 - 288
289-360
361-432
433 - 504


HERBARIUM


HERBARIUM UNIVERSITÄT SALZBURG (SZU)
213 - Cyperaceae
Carex pallescens L.
37987

The present collection – SZU (Uni Salzburg)

The collection was founded in the 1930s (Heinrich Wagner) and become part of the university 1975 (SZU)

Vascular plants (ca. 70k)
Bryophytes (ca. 13k)
Lichens (ca 25k)
Carpological collection (ca. 4k)

Since 2005 (in collaboration with Botanical Garden HBS)
Tropical orchid wet collection (mainly *Bulbophyllum*)
Tropical orchid living collection (mainly *Bulbophyllum*)
Silica sample collection
DNA-Bank related to research projects (e.g., ABOL)
Digital collection database (collaboration with GBIF)

The challenges for collections in Austrian universities

Collections and databases are insufficiently financed as they are **not directly linked to teaching and project driven research**

Long-term curating collections, databases, and easy access are at present not regarded as a priority also due to lacking resources

Usually only one (or few) persons curate collections with often insufficient IT knowledge and support access

BUT

Modern research (e.g., DNA-barcoding) results often in new type of collections and data mainly in universities (e.g., DNA banking)

These new collections/data should be made available after the research projects – which potentially requires new expertise and also resources beyond the projects (e.g., databasing and making all available)

...DiSSCo could facilitate new research infrastructure

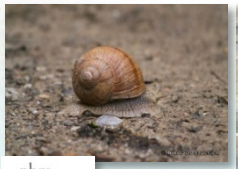
Nikola Szucsich – ABOL-coordinator (NHM)

AUSTRIAN BARCODE OF LIFE

focus

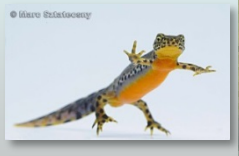
2014 **INITIAL PHASE** 2017

2017 **MAIN PROJECT** 2027



Schnecken & Muscheln

Schmetterlinge



Wirbeltiere

Parasitische Würmer

(1.600)

Fauna

Flora

Funga

70.000 (56.000)

Nikola Szucsich – ABOL-coordinator (NHM)

Bundesministerium
Bildung, Wissenschaft
und Forschung

AUSTRIAN
BARCODE
OF LIFE

structure

2014 **INITIAL PHASE** 2017

2017 **MAIN PROJECT** 2027

Consortium

tiroler landes museen
ferdinandeum
volkskunstmuseum

KARL-FRANZENS-UNIVERSITÄT GRAZ
UNIVERSITY OF GRAZ

vetmeduni vienna

nhm naturhistorisches museum wien

2017-2021 – University infrastructure project (1M€)
(5 universities involved in Vienna, Graz, and Salzburg)

2017 MAIN PROJECT 2027

LAND PLANTS IN A: CA. 4085 SPECIES

ca. 1050 bryophyte species

mosses/liverworts/hornworts
(758 spp./ca.270 spp./3 spp.)

ca. 85 fern species

lycopods s.l./horsetails/ferns s.str.
(12 spp./13 spp./ ca. 60 spp.)

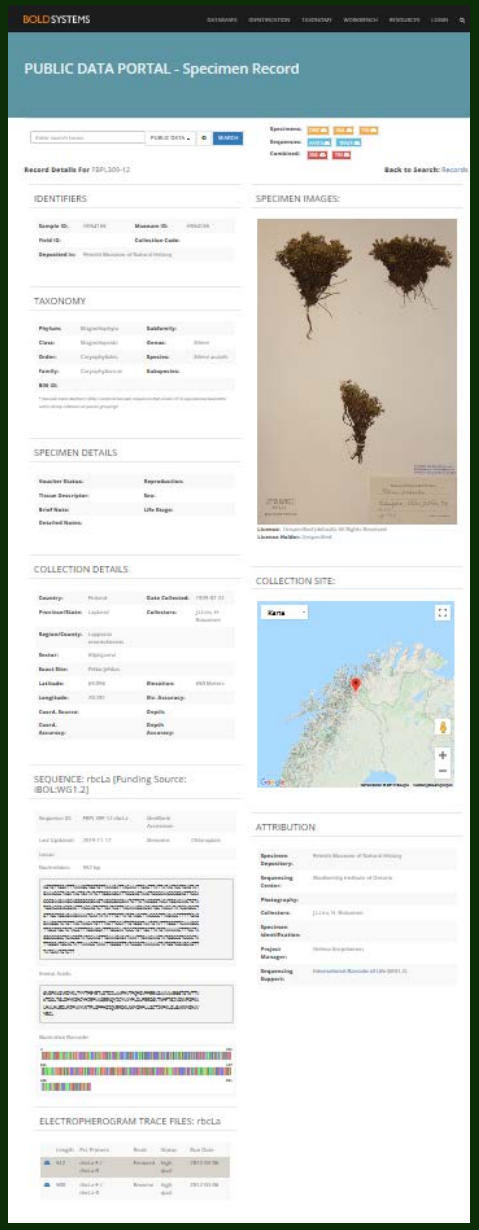
ca. 2950 species of vascular plants

Gymno-/Angiosperms
(11 spp./ca.2940 spp.)

AUSTRIAN BARCODE OF LIFE

ABOL-aim 80% of all Austrian species are barcoded by 2027 (started 2017)

BOLD SYSTEMS



Example for new collections – DNA-barcoding

DNA barcoding projects result in new collections and data

Herbarium specimen (in «normal» collection)
tissue sample collection (fresh, ethanol, silica gel,...)
DNA-sample collection (stored in DNA bank)
DNA sequences (in GenBank/NCBI and/or BOLD)
Related biological data (in non public databases)
Link to institution is given, but only a part of potentially valuable data is in the BOLD database

Biodiversity collections in Austria are hosted by many different institutions

Quality of curation of collections and institutional support naturally varies among institutions

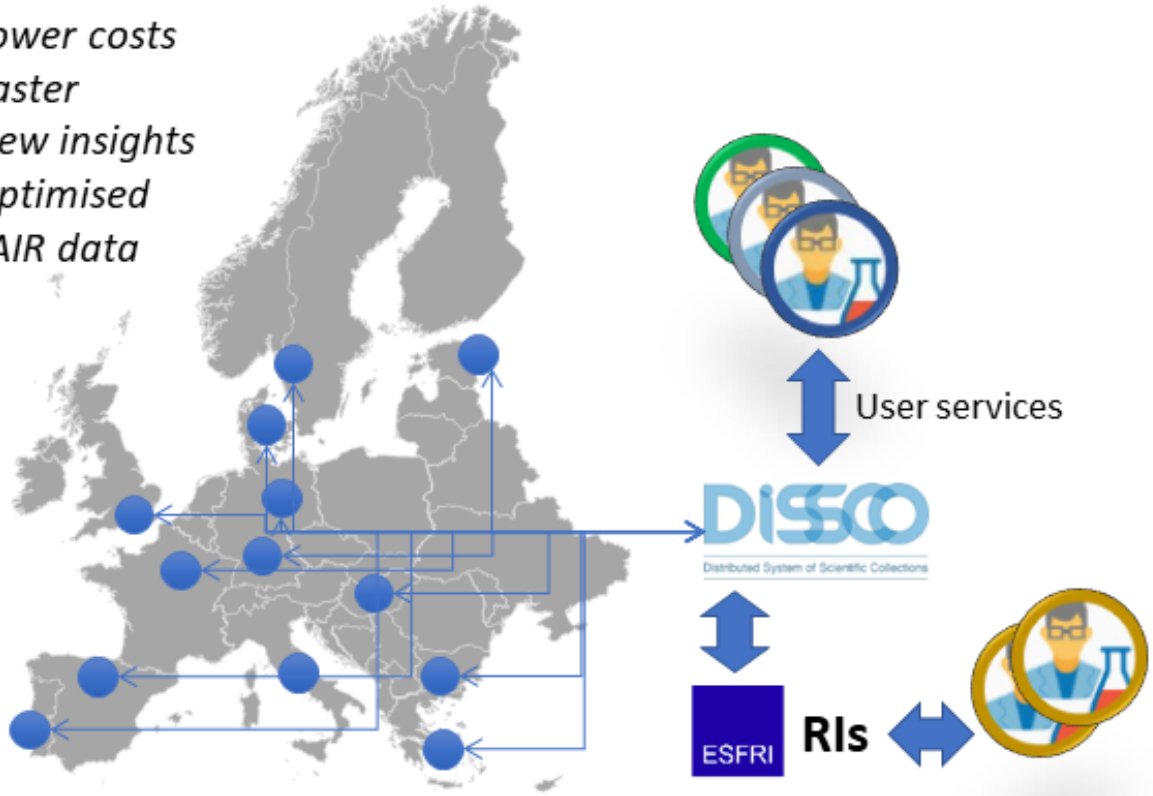
Better accessibility to collections and related specimen data depends on the mobilization of all institutions

Austria lacks a strong national institution as key Research Infrastructure that could pave the way towards a «distributed system of collections»

DiSSCo might facilitate efficient support and also consult institutions

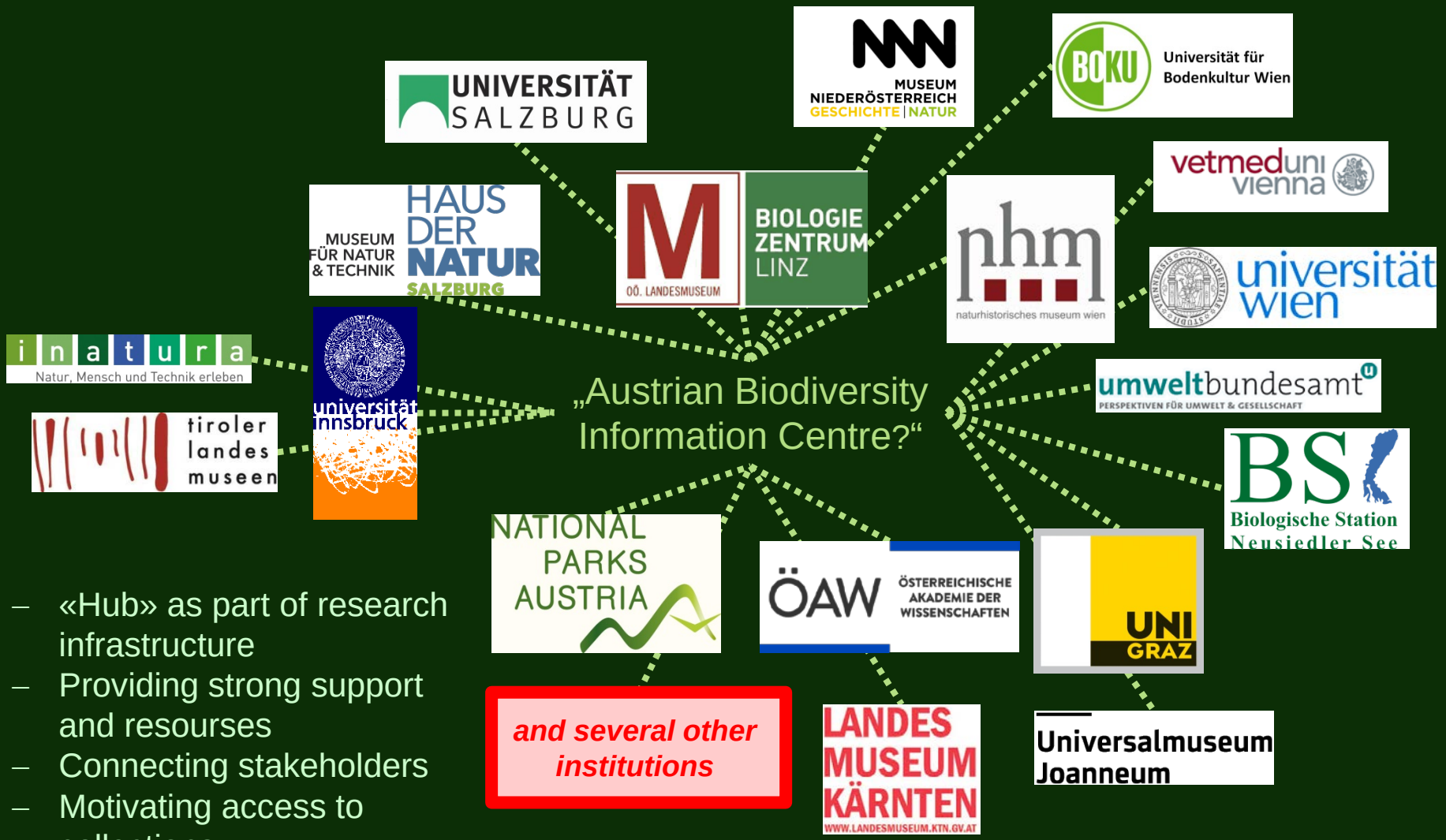
Integrated RI model

Wide access
Lower costs
Faster
New insights
Optimised
FAIR data



*The **first mass scale initiative to re-unite and serve** genomic, chemical, geographical, morphological and taxonomic information and link it to collections objects*

An efficient Research Infrastructure in Austria needs a strong «hub»



- «Hub» as part of research infrastructure
- Providing strong support and resourses
- Connecting stakeholders
- Motivating access to collections
- Provide and/or raise funds

Expectations, predictions and some hope for the scientific community with DiSSCo

Better standards for physical and also digital collections and modern curation

Moving the Austrian collections finally into the 21st century - Allocation of resources for **high quality digitizing all specimen collections** (by institutions, public funds – further supporting **GBIF Austria**)

Motivation also for smaller institutions «to join» an **Austrian Consortium**

University collections **could become one inter-institutional core facility**

Stronger research collaboration between universities and museums in research and teaching (as internationally often already achieved)

Better **collaboration of institutions involved** (maybe also merging collections).

Only a strong **support by an «Austrian hub»** will result in better infrastructure

Motivation of **up do date research projects** asking environmental and/ or biodiversity related questions – at the National, European, Global level

Easier access to biodiversity related data also for govermental agencies (e.g., related to nature conservation or land development)

Mitigating the national biodiversity crisis by faster availability and access to biodiversity data and related knowledge

AUSTRIAN BARCODE OF LIFE

Bundesministerium Bildung, Wissenschaft und Forschung

GBIF

UNIVERSITÄT SALZBURG

Thanks for your attention

Silene acaulis

19.7.2019, National Park Hohe Tauern


In search for environmental DNA in lake sediments *(in collaboration with Inger Alsos et al. Univ. Tromsö)*
coring Sulzkarsee National Park Gesäuse October 2019