

SEINet: Two Decades of Bio-collaboration Building a North American Specimen Network

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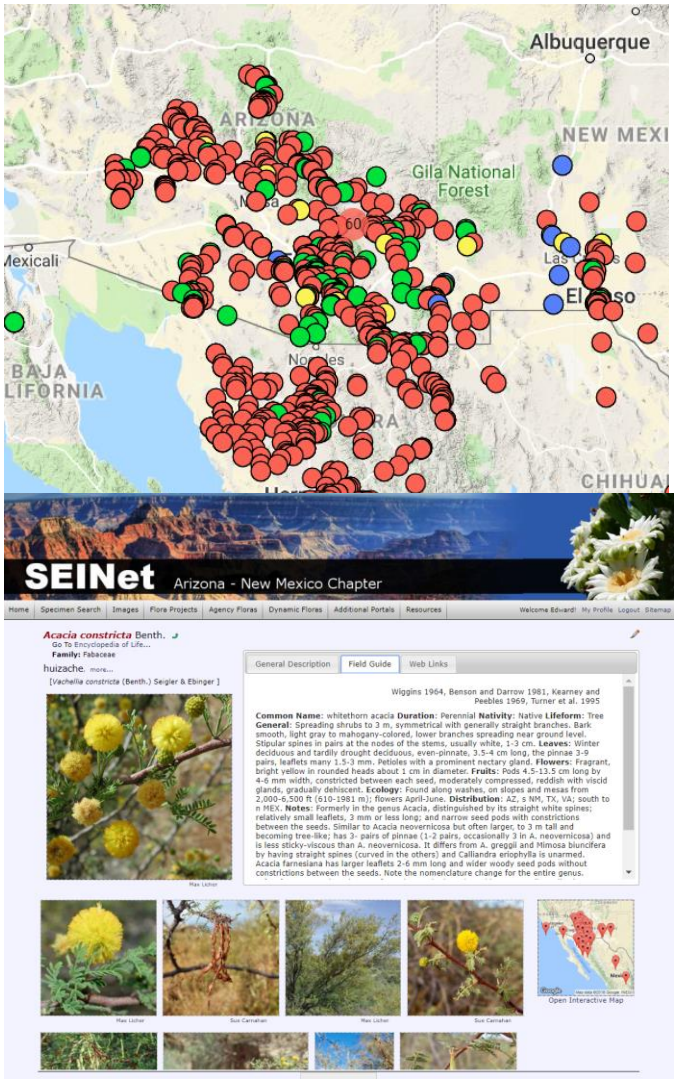
WHERE DISCOVERIES BEGIN

SEINet - 2000 to present

- Vascular plants
- North America
- Virtual flora
  - 13.7M specimens
  - 7.6M images
  - Distribution maps, species lists, keys, descriptions, etc
- Field research, wildlife managers, plant inventories, amateur biologist
- 20,000 / month



SEINet version 1.0 – 2000 to 2008

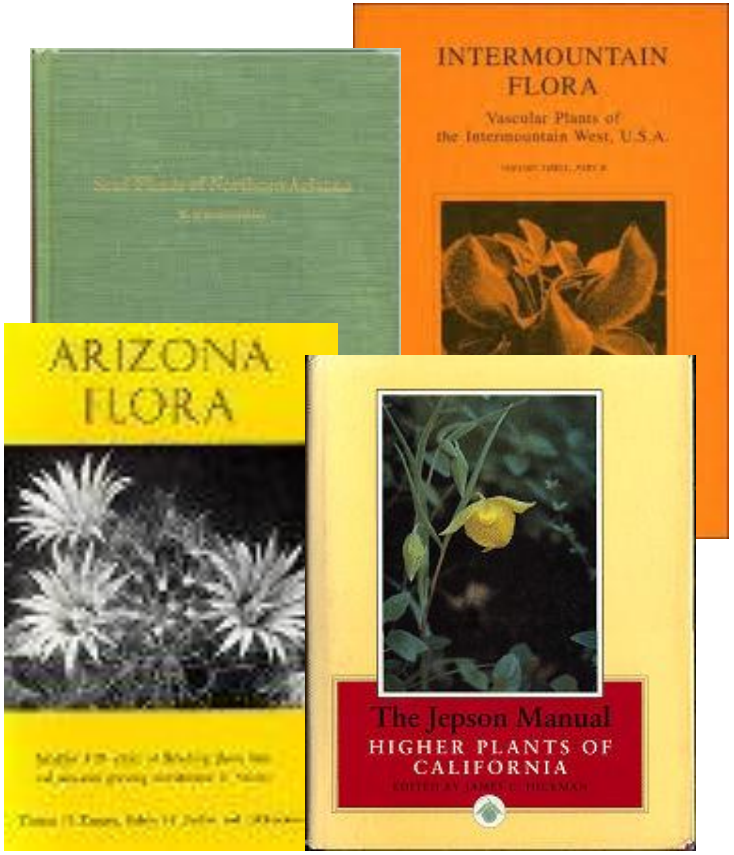
- Southwest Environmental Information NETwork
- JSP, MS SQL
- Distributed specimen DBs
  - ASC, ASU, ARIZ, DES
- Pros: progressive, lightweight
- Cons: connectivity, slow-ish
- NSF-ABI: 2000-2002
  - Peter McCartney, Corinna Gries
  - Grad students: Ed Gilbert, Robin Schroeder
- NSF-BRC: 2003-2008
  - Landrum, McLaughlin, Ayer

West Fork of Oak Creek Flora

- Flora and Vegetation of the West Fork of Oak Creek Canyon
- Master thesis
  - 1999-2002
- 10mi N. of Sedona
- Over 500 taxa

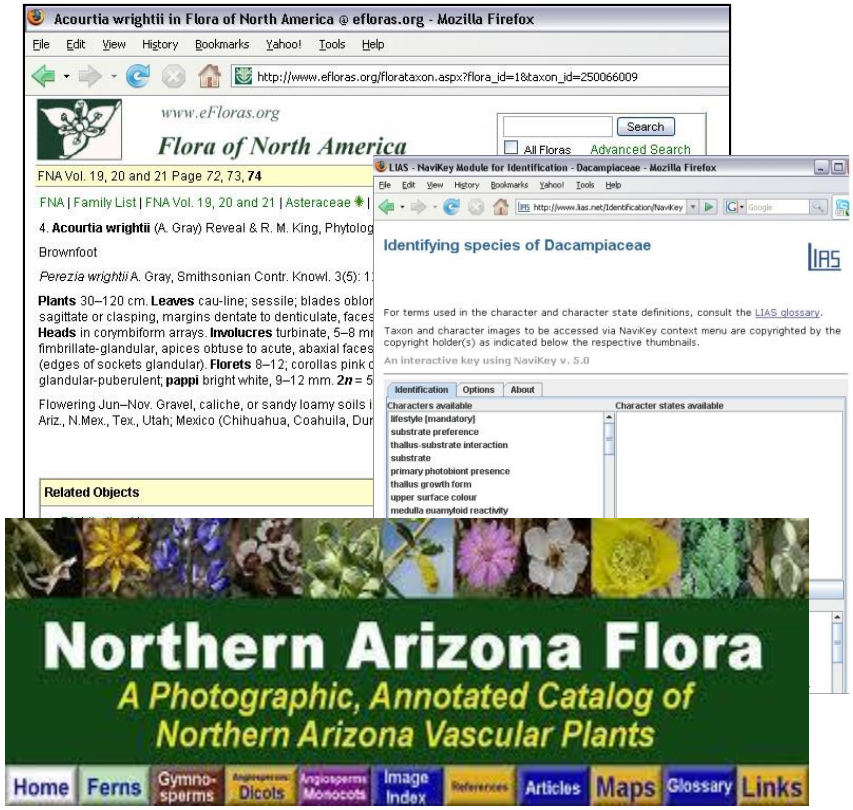
Traditional Floristic Treatments

- Taxonomic information (synonyms, family, vernacular names, etc)
- Descriptions
- Images or illustrations
- Distribution maps
- Identification keys
- Voucher information



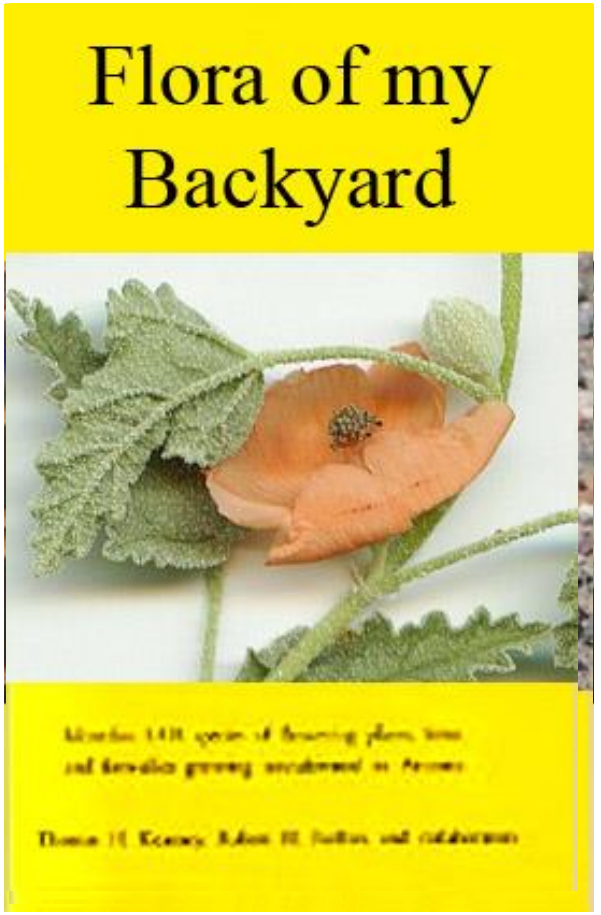
Virtual Floras / Virtual Herbaria

- Inexpensive
- Numerous Images/Illustrations
- Continuously Updatable
- Flexible
- Collaborative Efforts
- A Living Document



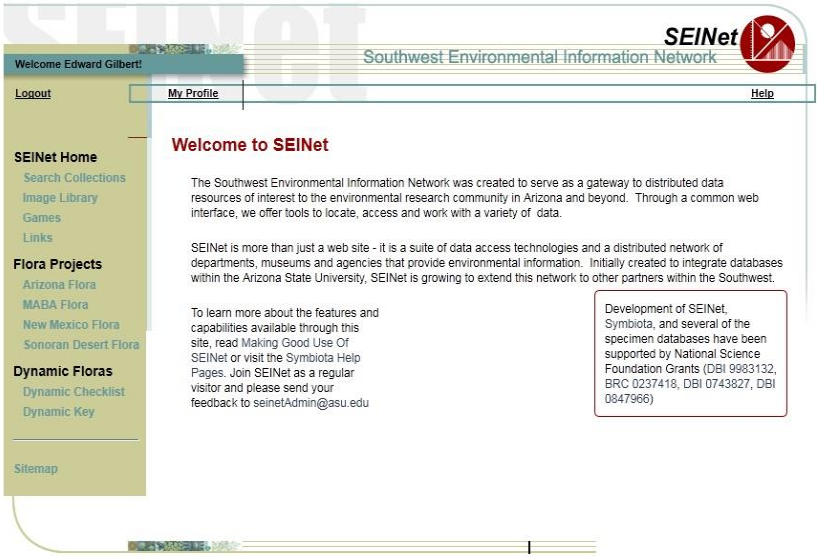
Potential of Virtual Environment

- Arizona Flora
- Annuals of the Grand Canyon
- Poaceae of Pima Co.
- Asteraceae within 30km of 34.2°, -112.4°
- My Backyard Flora



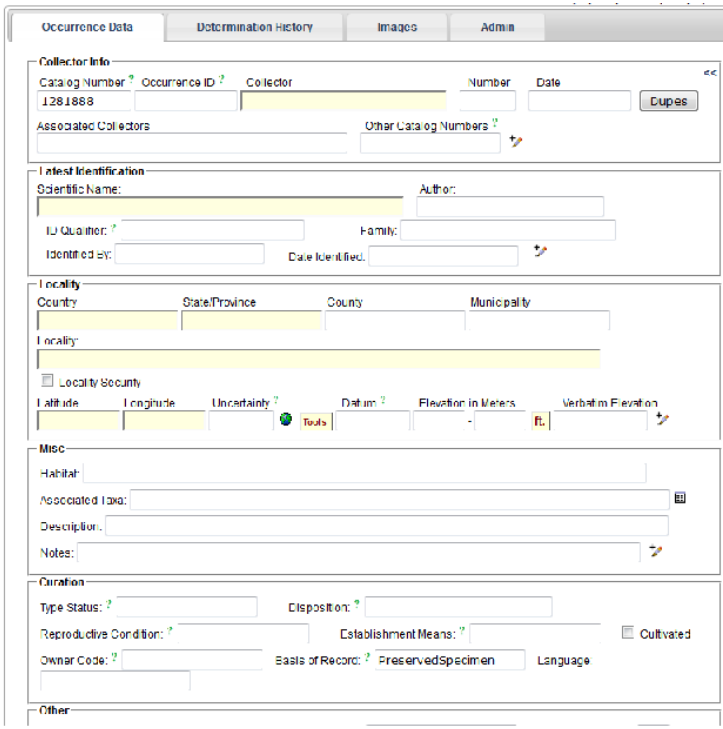
SEINet version 2.0 – 2008 to 2011

- NSF-ABI: 2008 to 2012
  - Corinna Gries
  - Tom Nash
  - Edward Gilbert
- PHP & JavaScript
- MySQL backend
- Data cache model
  - 30 collections
  - NAVA, DES, USON, URC, UNM…
- Improved connectivity, faster

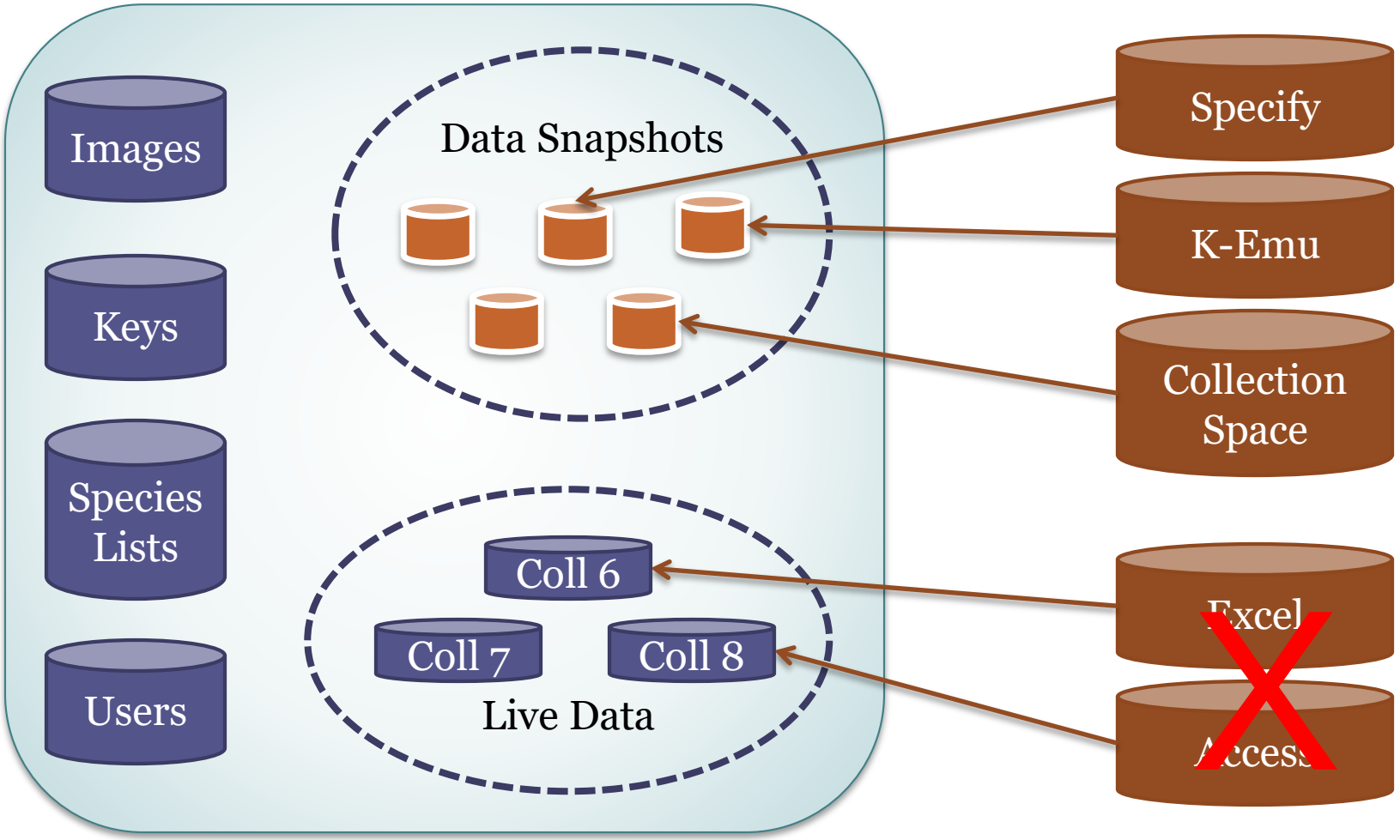


Content Management System (CMS)

- Read-only user interface
- Password Protected
  - Browser-based application
  - Platform independent
  - Globally accessible
  - No special software installation (free)
  - Make use of web services
  - Data protection (backups)

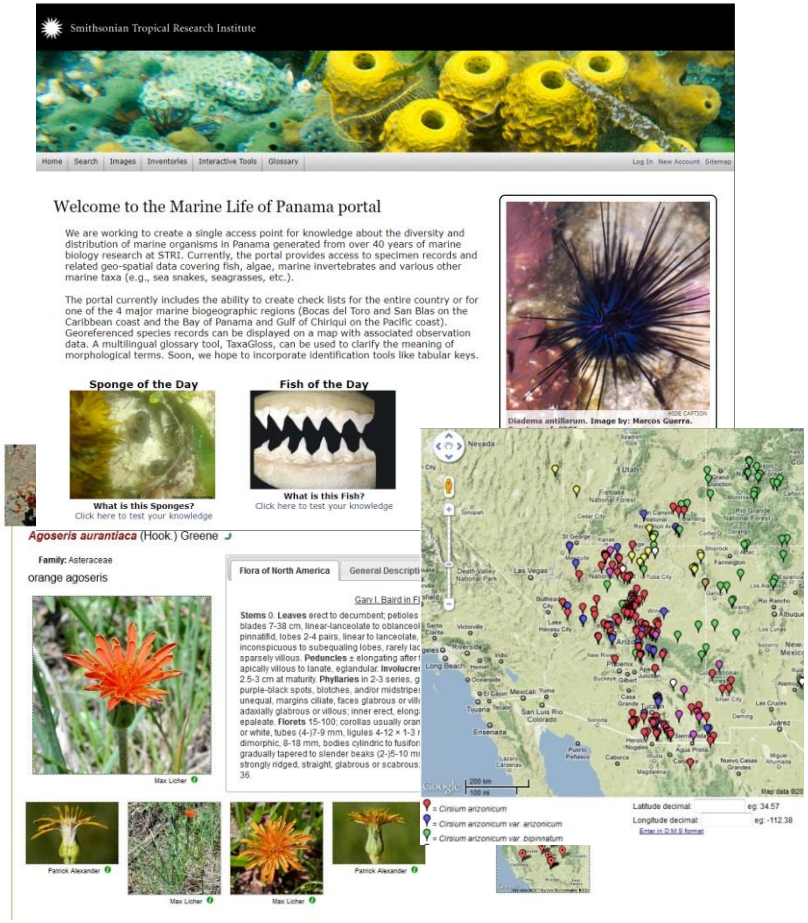


Publishing: Snapshot vs Live



Symbiota Software Project

- Darwin Core compliant
- Open source software
- Virtual flora/fauna
  - Specimen search
  - Biodiversity inventories
  - Identification keys
- Images, distribution maps, species descriptions, taxonomy, common names, etc



Symbiota Data Portals

- CMS - biodiversity
- Custom look & feel
  - CSS, config files
- Themed datasets
  - Taxonomic scope
  - Geographic scope
- Community portals
- 30-60 public portals

SEINet vers. 3.0 – 2011 to present

- NSF-ADBC: 2011 to present
  - 12 of 20 TCN use Symbiota
  - 4 are connected to SEINet
- ASU => iDigBio (UFL) servers
- Biodiversity CMS
- Current statistics
  - 313 collections
  - 13.7 million specimens
  - 216 live datasets (6.5m spec)
  - 7.6 million images
  - 1900+ data managers

SEINet Regional Portal Networks

- Consortia of regional herbaria
- ~~Southwest Environmental Information Network~~
- 13 Distributed Network
  - SERNEC
  - Mid-Atlantic
  - Midwest / Great Lakes
  - Southern Rocky Mountain
  - NANSH
  - TORCH
  - Northern Great Plains
  - InterMountain

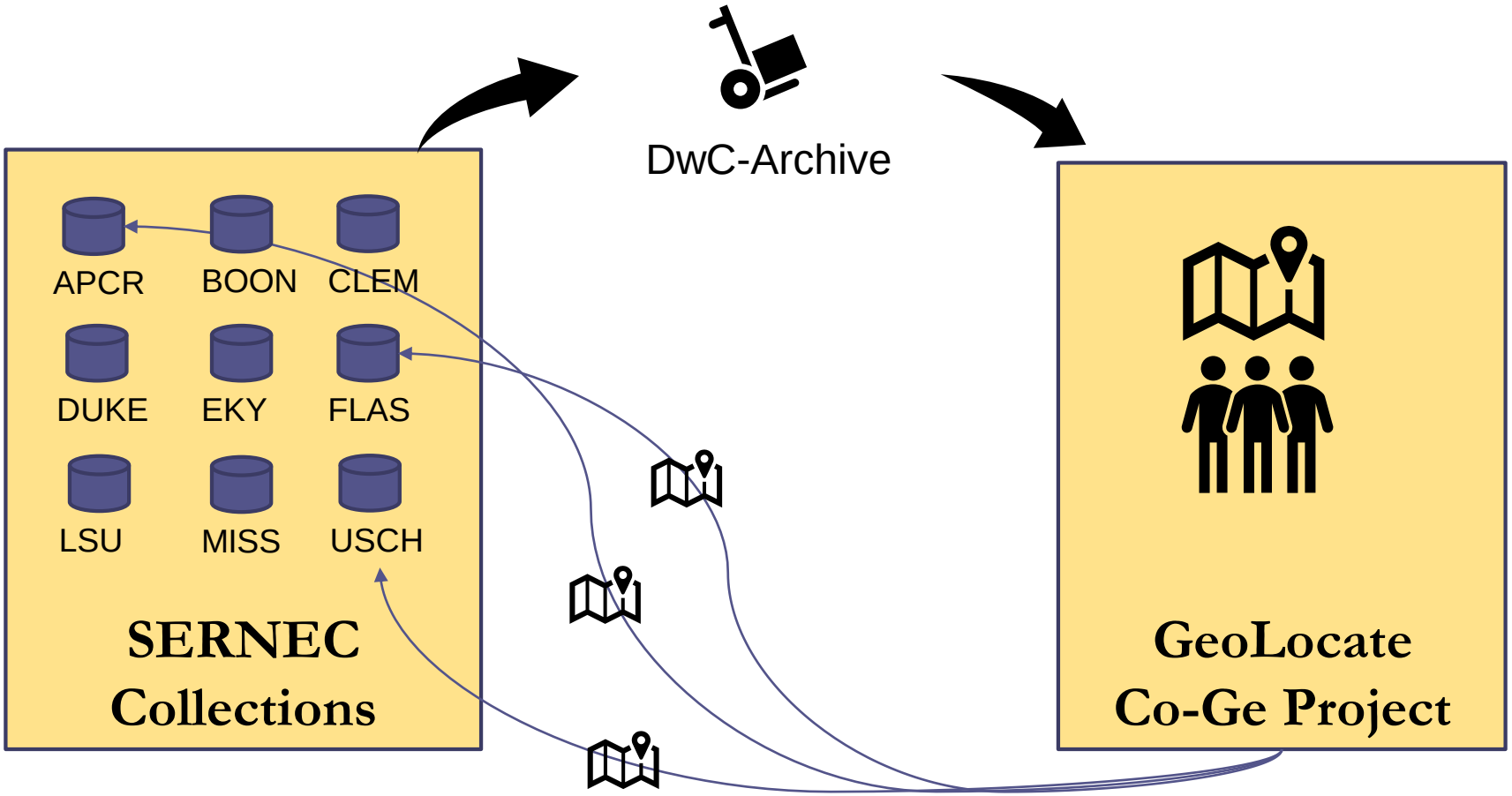
Digitization Services

- Exsiccati
- Loan management
- Genetic linkages
- Specimen comments
- OCR / NLP
- Crowdsourcing
- Versioning of edits
- Batch georeferencing
- GeoLocate collaborations
- Darwin Core Archive publishing
- Pensoft publishing
- Duplicate linking
- Vouchered inventories
- Multiple taxonomic thesauri

SEINet vers. 4.0 - 2018 to…

- Mobilization of specimen data
  - Digitization – specimen and images
  - Open-Data – iDigBio, GBIF
- Interoperability
  - Bi-directional data flow
- Bio-collaboration
  - Field research
  - Regional floras
  - Outreach and education
  - Wildlife managers
- Long-term Sustainability

GeoLocate CoGe Interoperability

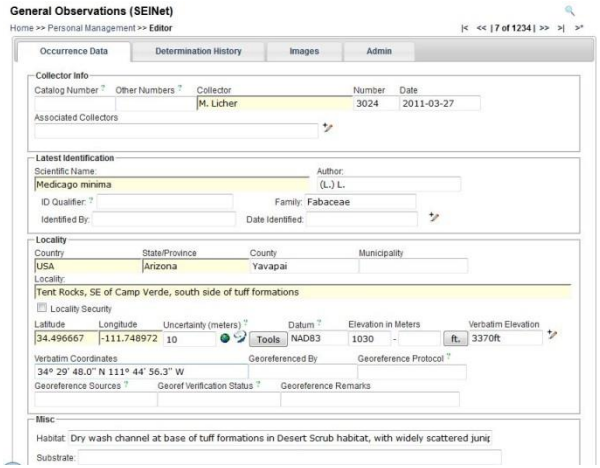


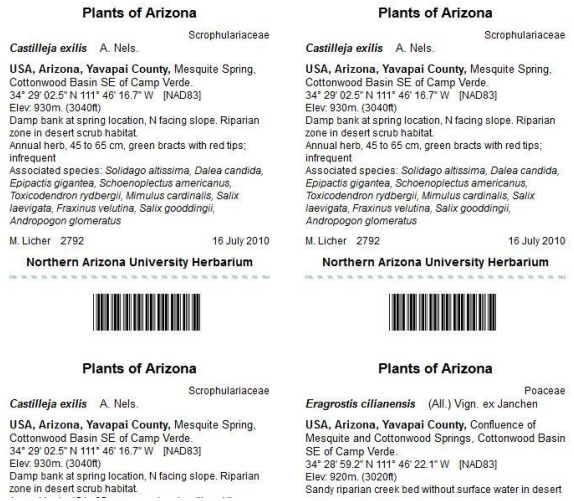
Support Grassroot Collaborations

- 1900+ data managers
- 1700+ floras/inventories
- 600 checklist editors
  - Jesus Sanchez, Steve Buckley
- 100+ field researcher
- 40,000 field images
- 300+ photographers
  - Patrick Alexander, Max Licher, Sue Carnahan, Liz Making

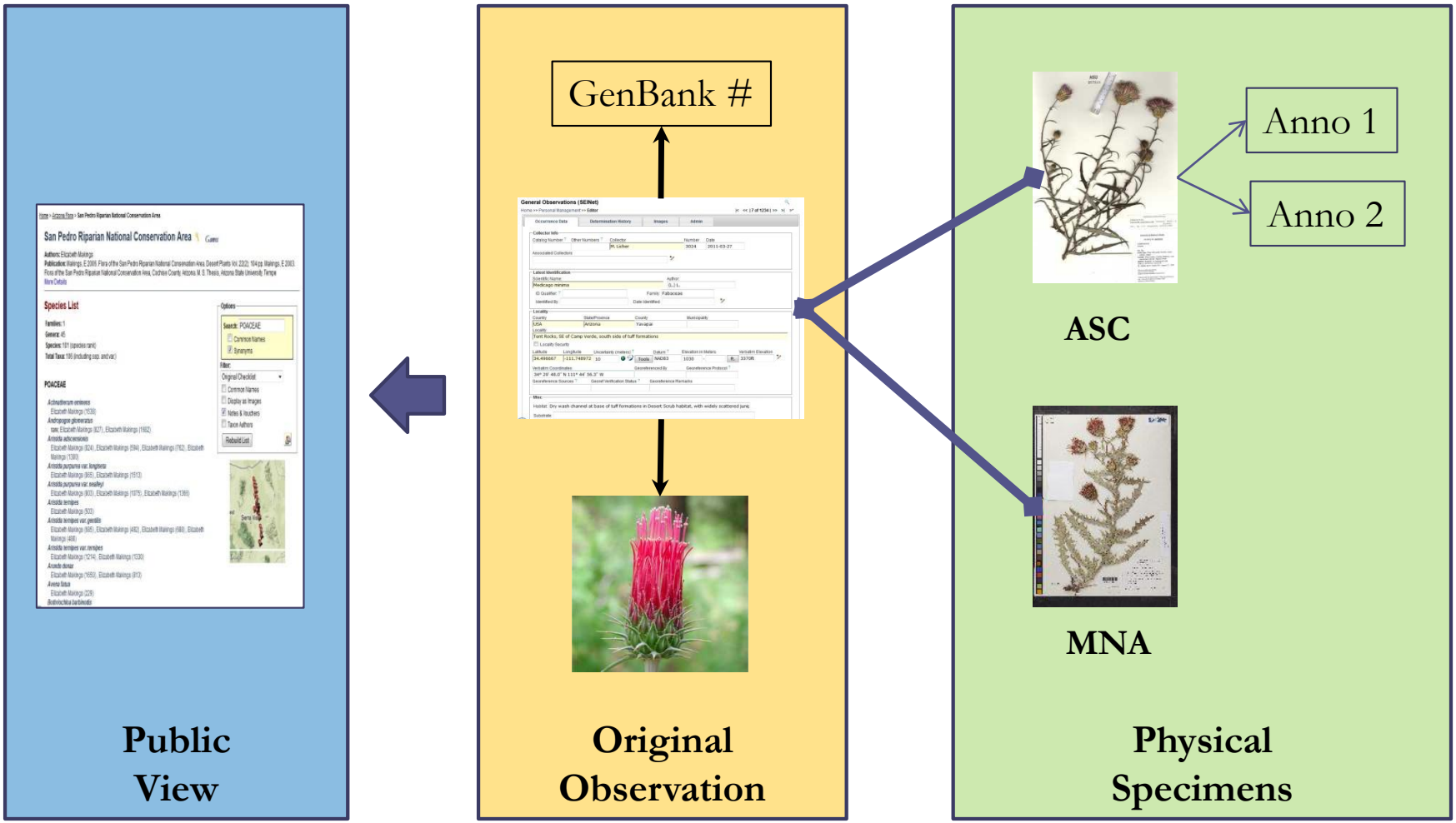
Personal Specimen Management

- Data entry
- Data Management
- Label Printing
- Cloud management
  - Password Protected
  - Web browser
  - Platform independent
  - Globally accessible
  - No special software
- Initially “Observations”

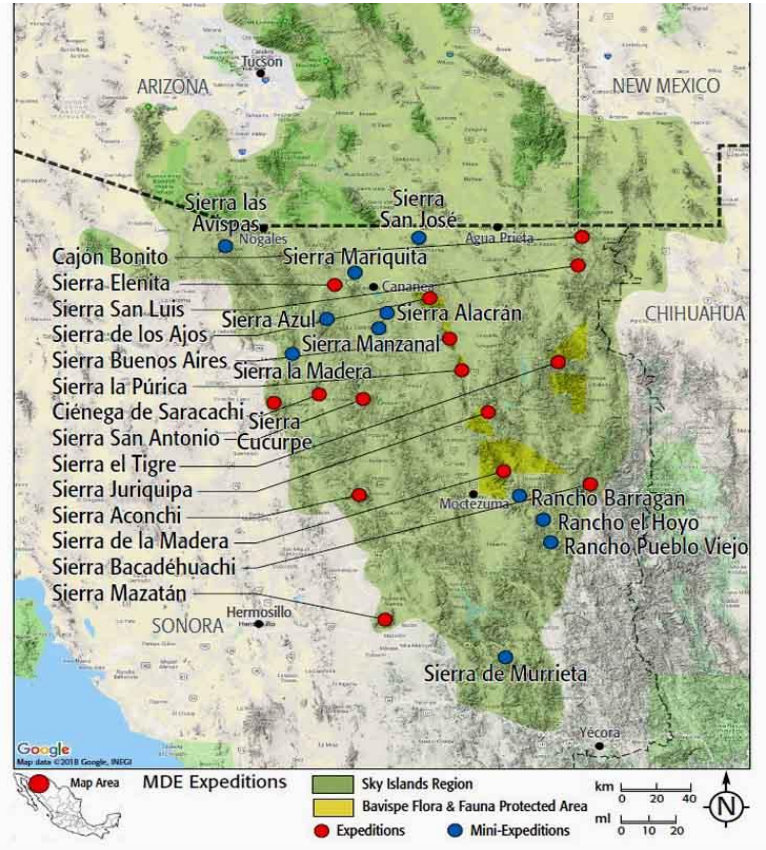




Voucher Network



Madrean Discovery Expeditions



Welcome, and Thank You for Visiting the Madrean Discovery Portal

Flora Database

Click here to access hundreds of thousands of plant records in the Sky Island region, build species checklists, view existing checklists, view species images, and customize taxonomic keys for areas of interest.

Fauna Database

Click here to access hundreds of thousands of animal records in the Sky Island region, build species lists, view existing species lists, and find species images.

Acknowledgments

- National Science Foundation
  - ADBC and iDigBio
- Herbaria, collection managers
- Regional TCN projects
- Individual content providers
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- Robin Schroeder, Ben Brandt, etc