

Tools and tricks to outsource the specimen digitization process using a network of Symbiota data portals

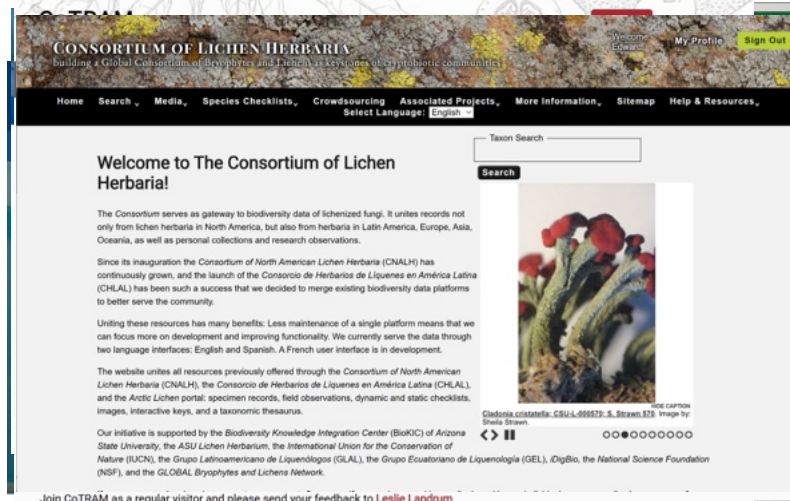
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Mark Fisher, Samanta
Orellana, Katie
Pearson, Gregory Post,
Nikita Salikov, Lindsay
Walker, Logan Wilt,
Jenn Yost, Nico Franz



Single Software => Platform / Framework

Open-source software to create community biodiversity data portals

- Research scopes
 - Taxonomic theme
 - Geographic theme
 - Project theme
- Custom design
 - CSS / config files
- Community portals
- Expand beyond plants
 - Adoption of Darwin Core
- Open-source



Content Management System

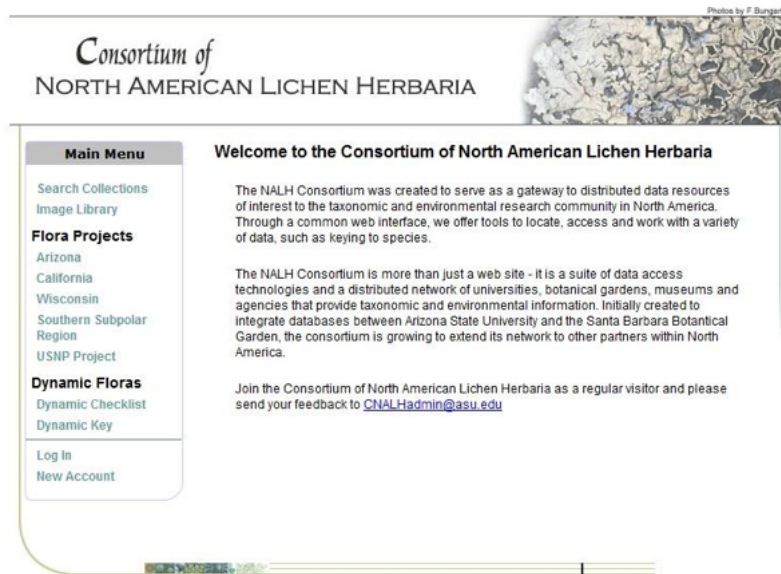
- Browser-based
 - Platform independent
 - Globally accessible
- No special software
 - Free!
 - No software updates
- Password protected
- Centralized support
 - Automated services
 - Nightly backups

[illegible]

Advancing Digitization of Biological Collections

Thematic Collections Network (TCN)

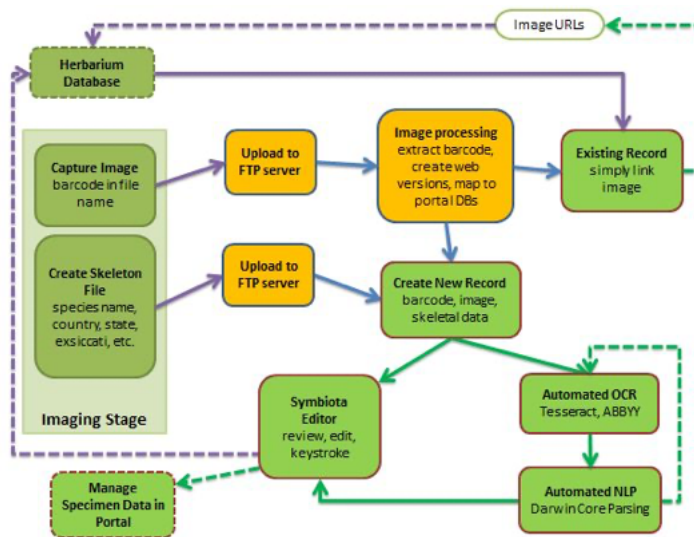
- 2011 - 2021
- NFS funding to digitize natural collections
 - LBCC – Lichens & Bryophytes
 - MACC – Macro-fungi
 - NEVP – New England vascular plants
 - SCAN – Arthropods
- iDigBio ☐ central hub



Object-to-Image-to-Data Workflow

Thematic Collections Network (TCN)

- LBCC TCN
 - Lichen & Bryophyte
- Rapid imaging of labels
- Skeletal data collection
- Load images on server
- Use portal to convert images to digital record
- Migrate data back to collection database



Advancing Digitization of Biological Collections

- Rapid data entry
- Duplicate harvesting
- OCR / NLP
- Batch georeferencing
- GeoLocate integration
- Crowdsourcing
- Darwin Core publishing
- Data versioning
- Load management
- Exsiccata index

Sustainability

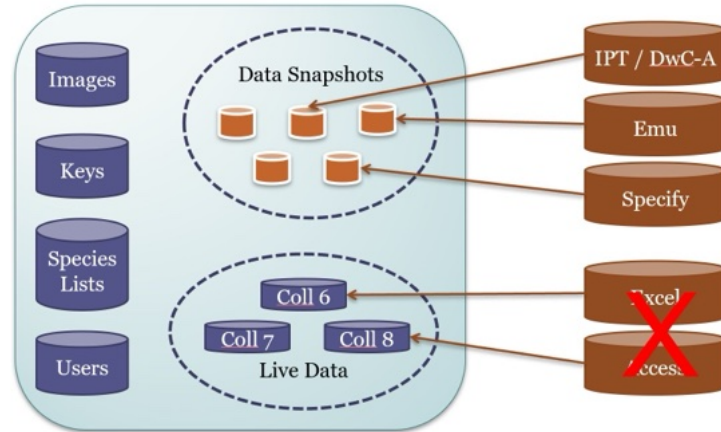
Thematic Collections Network (TCN)

Related Portal(s)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Lichen & Bryophyte	North American Lichens and Bryophytes (LBCC)													
SCAN		SW Collections of Arthropods Network (SCAN)												
MycoPortal		The Macrofungi Collection Consortium (MaCC)												
CNH Portal		Mobilizing New England Vascular Plant Specimen... (NEVP)												
MacroAlgae Portal		Macroalgal Herbarium Consortium (MHC)												
SERNEC (SEINet)			The Key to the Cabinets (SERNEC)											
InvertEBase			InvertEBase: Reaching Back to See the Future... (InvertEBase)											
GLI Network Portal			Great Lakes Invasives Network (GLI)											
MycoPortal				Microfungi Collections Consortium (MiCC)										
MAM Portal (SEINet)					Mid-Atlantic Megalopolis (MAM)									
SCAN					Lepidoptera of North America Network (LepNet)									
SoRo Portal (SEINet)						High Peaks and High Plains of the Southern Rockies (SoRo)								
PteridoPortal							Pteridophyte Collections Consortium (PCC)							
CCH2							CA Phenology Network / Capturing CA's Flowers							
PILSBRY Portal								Pacific Island Land Snails (PILSBRY)						
TORCH (SEINet)								Texas/Oklahoma Regional Consortium of Herbaria						
InvertEBase									Digitizing Marine Invertebrates (DigIn)					
Lichen & Bryophyte										Consortium of Bryophytes and Lichens (GLOBAL)				
InvertEBase										Marine Mollusks of the Eastern Seaboard (ESB)				
Big-Bee Library											Extend Anthophila research... (Big-Bee)			
All-Asia Portal											Bringing Asia to digital life			

Mid-level Data Aggregator

Digitization Benefits

- Multiple collections
 - Live managed
 - Snapshot datasets
 - Hybrid management
- Cross-collection data processing
- Encouraged collections to move away from:
 - Excel “databases”
 - Custom management systems



Benefits of Aggregator Digitization

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- Duplicate networking
- Data cleaning
- Batch georeferencing
- GeoLocate CoGe

The screenshot displays a digitization interface with two main panels. The left panel is a form titled "Occurrence Data" with various input fields for specimen information. The right panel is titled "Label Processing" and shows a scanned image of a specimen label with handwritten text and a Tesseract OCR processing window below it.

Occurrence Data

Collector / Observer * Number * Date (start) * End Date *

Associated Collectors * Verbatim Date *

Scientific Name *

Country * State/Province * County *

Locality *

Latitude Longitude Uncertainty * Verbatim Coordinates *

Elevation in Meters * Verbatim Elevation *

Habitat *

Substrate *

Description *

Notes (Occurrence Remarks) *

☐ Cultivated/Captive

Save Edits Status Auto-Set: Pending Review

Label Processing

Zoom? Rotate: L R Med Res. High Res.

PLANTS OF PLACER COUNTY
CALIFORNIA
COLLECTED FOR THE HERBARIUM OF
CALIFORNIA STATE UNIVERSITY, SACRAMENTO

Conyza sp.
Lobelia decurrens Torr.
Joeger Rd.
Cell at long abandoned
Thagarden house site
T3N R8E S31
grassy slopes
28 110° 33S, 47m.
COLLECTOR: John E. 4787 DATE: 10

Tesseract OCR
☐ OCR whole image
☐ OCR w/ analysis
OCR Image

Image 1 of 1

Harvesting Cross-Collection Data

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- **Duplicate networking**
- Data cleaning
- Batch georeferencing
- GeoLocate CoGe

Details Map Duplicates Comments Linked Resources Edit History

Current Record

OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI)

A. A. Beetle 1566 1940-01-21
Catalog #: OBI110062
GUID: d54d104e-8d0c-456d-8e10-07d2cd49b52f
Latest Identification: *Selaginella wallacei* Hieron.

Specimen Duplicates

SBBG - Clifton Smith Herbarium, Santa Barbara Botanic Garden (SBBG)

Alan A. Beetle 1566 1940-01-21
Catalog #: SBBG228141
GUID: b06a8f27-c724-429b-93ef-b3f219c69db7
Latest Identification: *Selaginella wallacei* Hieron.
[Show Full Details](#)

RSA - California Botanic Garden Herbarium (RSA:VascularPlants)

Alan A. Beetle 1566 1940-01-21
GUID: 4e3eb85a-f62d-4741-afdb-1a0466033859
Latest Identification: *Selaginella wallacei* Hieron.
[Show Full Details](#)

DAV - University of California, Davis Center for Plant Diversity - Vascular Plants (DAV:VascularPlants)

A. A. Beetle 1566 1940-01-21
Latest Identification: *Selaginella wallacei* Hieron.
[Show Full Details](#)

UCJEPS - University and Jepson Herbaria, University of California, Berkeley (UCJEPS:VASC)

A. A. Beetle 1566 1940-01-21
Catalog #: UC665704
GUID: c2d33dcf-9977-43fd-b835-f10541fe879f
Latest Identification: *Selaginella wallacei* Hieron.
[Show Full Details](#)

CAS - California Academy of Sciences Vascular Plants (CAS:BOT-BC)

Beetle, A. A. 1566 1940-01-21
Catalog #: 69750
GUID: urn:catalog:CAS:BOT-BC:69750
Latest Identification: *Selaginella wallacei* Hieron.
[Show Full Details](#)

Collector Info

Catalog Number [Ⓢ]	Tag Name (optional) [Ⓢ]	Additional Identifier Value
<input type="text"/>	<input type="text"/>	<input type="text"/>
Collector / Observer [Ⓢ]	Number [Ⓢ]	Date (start) [Ⓢ] End Date [Ⓢ]
A. C. Sanders	3465	1983-03-07
Associated Collectors [Ⓢ]		Verbatim Date [Ⓢ]
M. Dimmitt, G. Montgomery, et al.		7 Mar 1983

Latest Identification

Scientific Name [Ⓢ]	Author [Ⓢ]
Lupinus arizonicus	(S. Watson) S. Watson
ID Confidence [Ⓢ] Undefined	Identification Qualifier [Ⓢ]
Family [Ⓢ] Fabaceae	
Identified By [Ⓢ]	Date Identified [Ⓢ]

Locality

Country [Ⓢ]	State/Province [Ⓢ]	County [Ⓢ]	Municipality [Ⓢ]	Location ID
Mexico	Sonora	Caborca		
Locality [Ⓢ]				
Coast of the Gulf of California near the mouth of the Rio Concepcion. El Desemboque, sand dunes be				
Locality Security: Security not applied [Ⓢ]				<input type="checkbox"/> Deactivat
Latitude	Longitude	Uncertainty [Ⓢ]	Datum [Ⓢ]	Verbatim Coordinates [Ⓢ]
30.083333	-113.016667		WGS84	30° 05' N 113° 01' W
Elevation in Meters [Ⓢ]	Verbatim Elevation [Ⓢ]	Depth in Meters [Ⓢ]	Verbatim Depth [Ⓢ]	
6	20 ft.			

Misc

Habitat [Ⓢ]
Inland side of coastal dunes with sparse perennial vegetation of Ambrosia dumosa, Opuntia bigelovii and Lycium br
Substrate [Ⓢ]
<input type="text"/>
Associated Taxa [Ⓢ]
Ambrosia dumosa, Opuntia bigelovii and Lycium brevipes

Duplicate Record Search

Possible EXACT Duplicates

SD

A. C. Sanders 3465 1983-03-07
 Associated Collectors: M. Dimmitt, G. Montgomery, et al.
Lupinus concinnus J. Agardh
 Mexico; Sonora; Unknown; Near the mouth of the Rio Concepcion; El Desemboque, sand dunes behind the school.
 30.08333; -113.01667 (WGS84)
 n/a
 6 meters
 Associated Taxa: Ambrosia dumosa, Opuntia bigelovii and Lycium brevipes.
 Misc: FFI

Transfer All Fields

Transfer to Empty Fields Only

☒ Link as Duplicate

UCR

A.C. Sanders 3465 1983-03-07
 Associated Collectors: M.A. Dimmitt, Geo. Montgomery, et al.
Lupinus arizonicus (S. Wats.) S. Wats.
 Mexico; Sonora; Caborca; Near the mouth of the Rio Concepción. El Desemboque, sand dunes behind the school

Fixing Misidentifications via Duplicates

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- **Duplicate networking**
- Data cleaning
- Batch georeferencing
- GeoLocate CoGe

The screenshot displays a web interface for a digital herbarium. At the top, there is a navigation bar with tabs: Details, Map, Duplicates, Comments, Linked Resources, Traits, and Edit History. The 'Duplicates' tab is currently selected. Below the navigation bar, the 'Current Record' section shows information for 'SD - SD Herbarium, San Diego Natural History Museum (SD)'. The record details include: A. O. Kleker 3465, 1983-03-07, GUID: 505F34EA-0F56-420C-9412-008C05B358A2, and Latest Identification: *Lupinus concinnus* J. Agardh. Below this, the 'Specimen Duplicates' section lists two other specimens. The first duplicate is from 'UCR - University of California, Riverside Herbarium - Vascular Plants (UCR)', with details: A.O. Kleker 3465, 1983-03-07, GUID: UCR-BPS-21733, Latest Identification: *Lupinus arizonicus* (S. Wats.) S. Wats., Identified by: R.S. Felger 2001, and a link to 'Show Full Details'. The second duplicate is from 'OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI)', with details: A. Kleker 3465, 1983-03-07, Catalog #: OBI117734, Latest Identification: *Lupinus arizonicus* (S. Watson) S. Watson, Identified by: Rhonda Riggins 1988, and a link to 'Show Full Details'. A small image of a plant specimen is visible on the right side of the OBI entry.

Details Map Duplicates Comments Linked Resources Traits Edit History

Current Record

SD - SD Herbarium, San Diego Natural History Museum (SD)

A. O. Kleker 3465 1983-03-07
GUID: 505F34EA-0F56-420C-9412-008C05B358A2
Latest Identification: *Lupinus concinnus* J. Agardh


Specimen Duplicates

UCR - University of California, Riverside Herbarium - Vascular Plants (UCR)

A.O. Kleker 3465 1983-03-07
GUID: UCR-BPS-21733
Latest Identification: *Lupinus arizonicus* (S. Wats.) S. Wats.
Identified by: R.S. Felger 2001
[Show Full Details](#)

OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI)

A. Kleker 3465 1983-03-07
Catalog #: OBI117734
Latest Identification: *Lupinus arizonicus* (S. Watson) S. Watson
Identified by: Rhonda Riggins 1988
[Show Full Details](#)



Cleaning Taxonomic Errors

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- Duplicate networking
- **Data cleaning**
- Batch georeferencing
- GeoLocate CoGe

Multiple Collection Cleaning Tool ([2 collections](#))

OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI)
UCSB - University of California Santa Barbara Herbarium (UCSB)

- Resolving #2: *Acmispon wrangelianus* [7 specimens]
- Checking Catalog of Life...
 - Taxon not found
- Checking close matches in thesaurus I...
 - *Acmispon wrangelianus* => [remap to this taxon](#)
- Manual search:

Remap

- Resolving #3: *Aesculus sylvatica* var. *neglecta* [1 specimen]
- Checking Catalog of Life...
 - Taxon not found
- Checking close matches in thesaurus I...
 - *Aesculus sylvatica* => [remap to this taxon](#)
 - *Aesculus sylvatica* var. *lanceolata* => [remap to this taxon](#)
- Manual search:

Remap

- Resolving #4: *Agapanthus patens* [1 specimen]
- Checking Catalog of Life...
 - *Agapanthus patens* found within Catalog of Life
 - Taxon *Agapanthus campanulatus* added to thesaurus as accepted
 - Taxon *Agapanthus patens* added to thesaurus as synonym of taxon #432216
- Resolving #5: *Agastache pallidiflora* subsp. *pallidiflora* var. *greenei* comb. nov. ined. [1 specimen]
- Checking Catalog of Life...
 - Taxon not found
- Checking close matches in thesaurus I...
 - *Agastache pallidiflora* => [remap to this taxon](#)
 - *Agastache pallidiflora* subsp. *havardii* => [remap to this taxon](#)
 - *Agastache pallidiflora* subsp. *meamsii* => [remap to this taxon](#)
 - *Agastache pallidiflora* subsp. *neomexicana* => [remap to this taxon](#)
 - *Agastache pallidiflora* subsp. *pallidiflora* => [remap to this taxon](#)
 - *Agastache pallidiflora* subsp. *typica* => [remap to this taxon](#)
 - *Agastache pallidiflora* var. *gilensis* => [remap to this taxon](#)
 - *Agastache pallidiflora* var. *greenei* => [remap to this taxon](#)
 - *Agastache pallidiflora* var. *havardii* => [remap to this taxon](#)
 - *Agastache pallidiflora* var. *neomexicana* => [remap to this taxon](#)
 - *Agastache pallidiflora* var. *pallidiflora* => [remap to this taxon](#)
- Manual search:

Remap

• Data cleaning

Cross-Collection Georeferencing

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- Duplicate harvesting
- Data cleaning
- **Batch georeferencing**
- GeoLocate CoGe

Batch Georeferencing Tools

Multiple Collection Cleaning Tool (2 collections)®

Home >> Specimen Management >> Batch Georeferencing Tools
OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI-)
UCSB - University of California Santa Barbara Herbarium (UCSB)

Return to: [Batch Georeferencing Tools](#)

Coconino; Top of Mogollon Rim at Woods Canyon (1)
Coconino; Top of Mogollon Rim, along Ariz. 160 [2]
Gila; 11 miles N of Strawberry. Top of Mogollon Rim [1]
Gila; 13 miles north of Strawberry, on top of Mogollon Rim [1]
Gila; 13 miles north of Strawberry. Top of Mogollon Rim [2]
Gila; Ariz. 160 at the top of the Mogollon Rim [1]
Gila; Ariz. 160, Top of Mogollon Rim [1]
Gila; Ariz. 78, 5 miles N Strawberry. Top of Mogollon Rim [1]
Gila; Mogollon Rim, Strawberry Hill, North of Pine [1]
Gila; Strawberry Hill, Mogollon Rim, north of Pine [1]
Gila; Strawberry Hill, Mogollon Rim north of Pine [1]
Gila; Top of Mogollon Rim Ariz. 160 [1]

Deg. Min. Sec. Decimal

Latitude: N 34.25031

Longitude: W -111.5984

Error (in meters): 5000 Datum: WGS84

Footprint WKT:

Sources: georef batch tool 2025-05-23; GeoLocate

Protocols:

Remarks:

Verification Status:

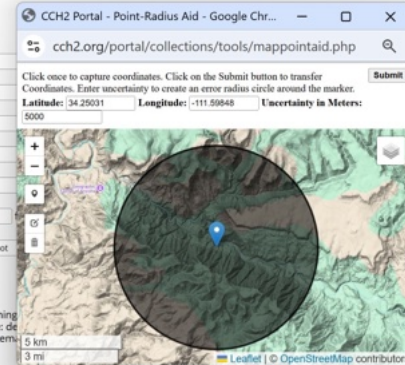
Elevation: to meters to

Processing Status: Leave As Is Georefer by: egbot

[Update Coordinates](#)

Note: Existing georeference field data will be replaced by incoming fields are null. Georeference fields that will be replaced include: geodeticdatum, footprintwkt, georeferencedby, georeferenceRemarks, georeferenceVerificationStatus

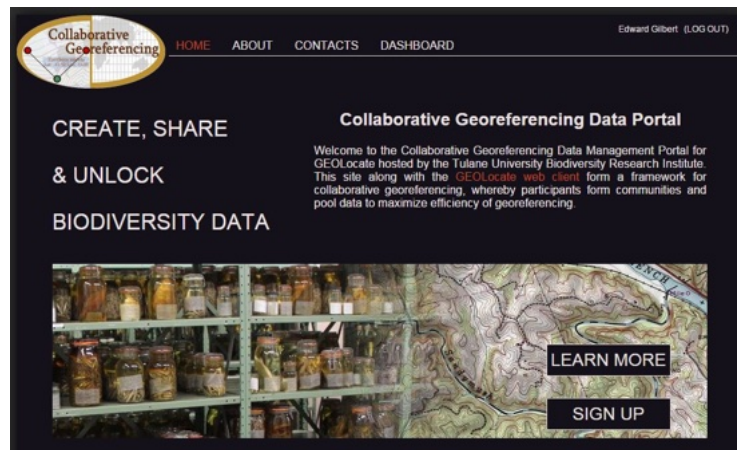
Statistics
Records to be Georeferenced
Total: 44560
Percentage: 29.4%



Symbiota ↔ GeoLocate Interoperability

Digitization Benefits

- Online digitization
 - Distributed workstations
 - Platform independent
- Cross-collection processing
- Crowdsourcing
- Duplicate harvesting
- Data cleaning
- Batch georeferencing
- **GeoLocate CoGe**



GeoLocate CoGe - Interoperability

Digitization Benefits

- **Define dataset**
 - Cal Poly herbarium
 - Lacking coordinates
 - Quercus sp.
- **Select CoGe target**
 - Rare oaks
- **GeoLocate data push**
 - 244 records
 - Transferred via DwC-Archive data package

OBI - Robert F. Hoover Herbarium, Cal Poly State University

GeoLocate Community Toolkit

This module is used to filter and package occurrence recordsets and import them directly into the GeoLocate Community project.
Pre-defined filters include: locality IS NOT NULL, catalog number IS NOT NULL

Processing Status:

Additional Filters:

Decimal Latitude	IS NULL
Scientific Name	STARTS WITH <input type="text" value="Quercus"/>
Select Field Name	EQUALS

CoGe Status

Match Count: 244 records

[Reset Count](#)

CoGe Authentication: Connected

[Check Status](#)

[Login to CoGe](#)

Available Communities

To import data into an existing geoLocate community, login to GeoLocate (see above), select the target community, provide a required identifier, an optional descriptive name, and then click the Push Data to GeoLocate button.

☐ Rare Oak Species (Quercus) (Admin): This project designed to aid Morton Arboretum's Ecological Niche Modeling of Rare Oak Species.

Datasets

- USCH_Quercus (Symbiota upload [\[check status\]](#); brownh): data set generated for collaboration with Morton Arboretum
- GEO_Quercus (Symbiota upload [\[check status\]](#); emoryherbarium): Emory herbarium Quercus
- KNK_Quercus (Symbiota upload [\[check status\]](#); Maggie): KNK oak records for Morton Arboretum project

GeoLocate CoGe - Interoperability

Digitization Benefits

- Define dataset
 - Cal Poly herbarium
 - Lacking coordinates
 - Quercus sp.
- **Select CoGe target**
 - Rare oaks
- GeoLocate data push
 - 244 records
 - Transferred via DwC-Archive data package

OBI - Robert F. Hoover Herbarium, Cal Poly State University

The screenshot shows the 'GeoLocate CoGe' interface. At the top, there is a navigation bar with tabs: 'Image Loading', 'Crowdsourcing', 'OCR', 'Reports', 'Exporter', and 'GeoLocate CoGe'. Below this is the 'GeoLocate Community Toolkit' section, which includes a description of the module and pre-defined filters. The 'Processing Status' is set to 'All Records'. The 'Additional Filters' section shows 'Decimal Latitude' set to 'IS NULL', 'Scientific Name' set to 'STARTS WITH Quercus', and 'Select Field Name' set to 'EQUALS'. Below this is the 'CoGe Status' section, which shows a 'Match Count' of 244 records, a 'Reset Count' button, 'CoGe Authentication: Connected', a 'Check Status' button, and a 'Login to CoGe' link. The 'Available Communities' section provides instructions on how to import data into an existing geoLocate community. It lists several communities, with 'Rare Oak Species (Quercus) (Admin)' highlighted by a yellow circle. Below this, there is a 'Datasets' section listing 'USCH_Quercus', 'GEO_Quercus', and 'KNK_Quercus' with links to check their status.

GeoLocate Community Toolkit

This module is used to filter and package occurrence recordsets and import them directly into the GeoLocate Community project.
Pre-defined filters include: locality IS NOT NULL, catalog number IS NOT NULL

Processing Status:

Decimal Latitude

Additional Filters: Scientific Name

Select Field Name

CoGe Status

Match Count: 244 records

[Reset Count](#)

CoGe Authentication: Connected

[Check Status](#)

[Login to CoGe](#)

Available Communities

To import data into an existing geoLocate community, login to GeoLocate (see above), select the target community, provide a required identifier, an optional descriptive name, and then click the Push Data to GeoLocate button.

☐ **Rare Oak Species (Quercus) (Admin)**: This project designed to aid Morton Arboretum's Ecological Modeling of Rare Oak Species.

Datasets

USCH_Quercus (Symbiota upload [\[check status\]](#); brownh): data set generated for collaboration with Morton Arboretum

GEO_Quercus (Symbiota upload [\[check status\]](#); emoryherbarium): Emory herbarium Quercus

KNK_Quercus (Symbiota upload [\[check status\]](#); Maggie): KNK oak records for Morton Arboretum project

GeoLocate CoGe - Interoperability

Digitization Benefits

- Define dataset
 - Cal Poly herbarium
 - Lacking coordinates
 - Quercus sp.
- Select CoGe target
 - Rare oaks
- **GeoLocate data push**
 - 244 records
 - Transferred via DwC Archive data package

The screenshot displays the GeoLocate CoGe web interface. At the top, a list of datasets is shown, including 'Florida MiamiDade NorthCoastal_georef' and 'Florida no county specified_nongeoref'. Below this, the 'Data source identifier (primary name)' field is populated with 'Cal_Poly_Quercus', which is circled in yellow. The 'Description' field is empty. A large yellow oval highlights the 'Push Data to GeoLocate CoGe' button, the success message 'Success! GeoLocate action required', the data package URL 'https://cch2.org/portal/temp/data/CoGe_1748031837_DwC-A.zip', the dataset identifier '4c5e7812-1f77-4dd8-bb0a-5078eb2706ab', and the 'Download Records Locally' button. Below these, there is a 'Reset Page' button and a link to 'Review and Approve Edits'. At the bottom, a note states '* Default query criteria: catalogNumber and locality are NOT NULL'.

Florida MiamiDade NorthCoastal_georef (manual CSV upload; rdelapena)
Florida MiamiDade NorthCoastal_nongeoref (manual CSV upload; rdelapena)
Florida WestCoast toPanhandle_georef (manual CSV upload; rdelapena)
Florida WestCoast toPanhandle_nongeoref (manual CSV upload; rdelapena)
Florida no county specified_georef (manual CSV upload; rdelapena)
Florida no county specified_nongeoref (manual CSV upload; rdelapena)

Data source identifier (primary name):

Description:

Push Data to GeoLocate CoGe
Success! GeoLocate action required
Data package (DwC-Archive): https://cch2.org/portal/temp/data/CoGe_1748031837_DwC-A.zip
Dataset identifier: 4c5e7812-1f77-4dd8-bb0a-5078eb2706ab
Download Records Locally
Reset Page

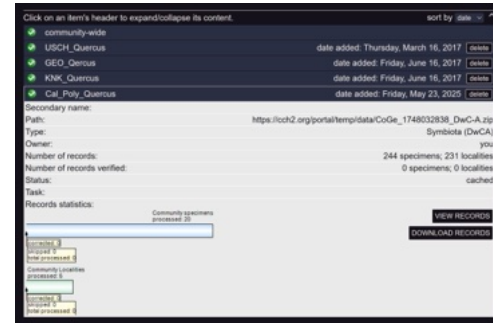
[Review and Approve Edits](#)

* Default query criteria: catalogNumber and locality are NOT NULL

GeoLocate CoGe - Interoperability

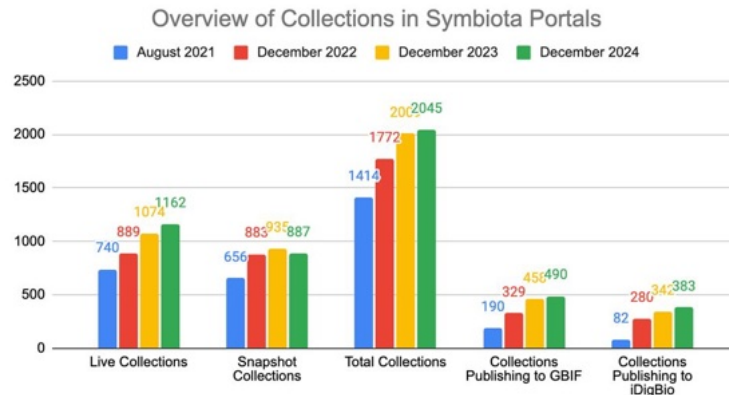
Digitization Benefits

- Georeference using GeoLocate tools
 - Distinct community of editors
 - Separate toolset
- Real-time data transfer to Symbiota
 - Coordinates
 - Error radius
 - Additional metadata
- Web service driven
 - Automated data flow
 - Data provenance tracking



Symbiota - Communities of Practice

- Live managed datasets
 - 1100+ collections
 - 25 million occurrences
 - Migration of processed data not necessary
- Snapshot dataset
 - Migration to source database is required
 - Problematic data interoperability issues



Versioning of all Data Edit

- Full tracking of changes
 - Name of editor
 - Timestamp of edit
 - Field changed
 - Old value
 - New value
- Export options
 - CSV download
 - Printable report
 - API – JSON output

OBI - Robert F. Hoover Herbarium, Cal Poly State University (OBI)

Action Panel:

☒ Leave As Is Review Status: Leave As Is ▼

☐ Apply Edits

☐ Revert Edits

[Update Selected Records](#)

Additional Actions

[Download Selected Edits](#)

[Download All Records](#)

* Based on search parameters in Filter Pane to the right

[Print Friendly Page](#)

Filter

Applied Status: All Records ▼

Review Status: Open/Pending ▼

Field Name: All Fields ▼

Editor: All Editors ▼

Date: mm/dd/yyyy - mm/dd/yyyy

Editing Source: Internal ▼

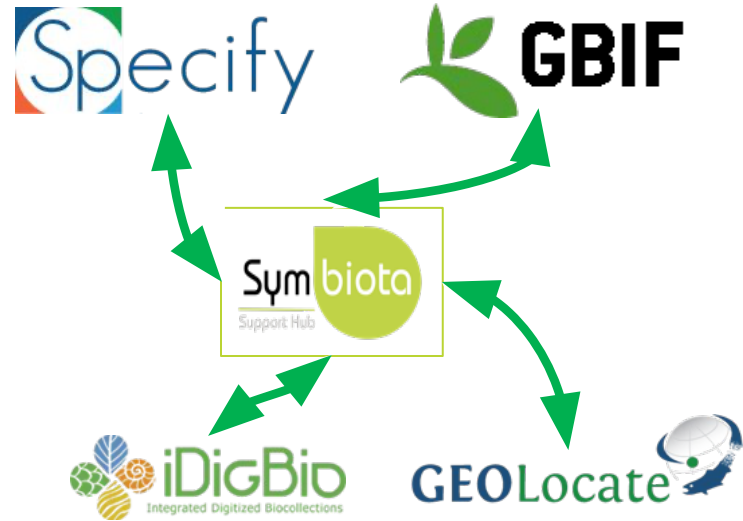
[Submit Filter](#)

<< | 0-1000 of 893281 fields edited | >>

Record #	Catalog Number	Review Status	Applied Status	Editor	Timestamp	Field Name	Old Value	New Value
5752774	OBI183532	Open	Applied	Pearson, Katie	2025-05-19 15:15:52	coordinateuncertaintyinmeters	100	
5752774	OBI183532	Open	Applied	Pearson, Katie	2025-05-19 15:15:52	decimallongitude	33.987206	-119.690136
5752774	OBI183532	Open	Applied	Pearson, Katie	2025-05-19 15:15:52	georeferencedby		kdpearso
5752774	OBI183532	Open	Applied	Pearson, Katie	2025-05-19 15:15:52	georeferencemarks		verbatim coordinates are incorrect, I changed longitude to 119 from 33 (utms say 125, which is also wrong)
5752774	OBI183532	Open	Applied	Pearson, Katie	2025-05-19 15:15:52	verbatimcoordinates		10N 251500E 3764000N
5769780	OBI183650	Open	Applied	Pearson, Katie	2025-05-19 15:13:43	decimallongitude	118.01	-118.01
5769780	OBI102538	Open	Applied	Pearson, Katie	2025-05-13 15:13:43	decimallongitude	118.01	-118.01

Expanding Interoperability

- API version 1
 - DwC-Archive Publishing
 - GeoLocate CoGe
 - Specify data pushes
- API version 2
 - Lumen by Laravel
 - Swagger docs
- Expose data to external Apps
- Data flow between portals



Versioning of all Data Edit

- Full tracking of changes

- Name of editor
- Timestamp of edit
- Field changed
- Old value
- New value

- Export options

- CSV download
- Printable report
- **API – JSON output**

```
{
  {
    "annotationID": 3242079,
    "occid": 163861,
    "occurrenceID": "7551d80c-3877-41fc-82dc-70c00eb5079e",
    "fieldName": "decimallatitude",
    "newValue": "33.264535",
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    "appliedStatus": 1,
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    "recordTimestamp": "2020-09-24 18:47:47"
  },
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    "occid": 163861,
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    "fieldName": "decimallongitude",
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  },
  {
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    "occurrenceID": "7551d80c-3877-41fc-82dc-70c00eb5079e",
    "fieldName": "coordinateuncertaintyinmeters",
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    "oldValue": "",
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    "occid": 163861,
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    "fieldName": "georeferencesources",
    "newValue": "Geolocate",
    "oldValue": "",
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    "appliedStatus": 1,
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    "recordTimestamp": "2020-09-24 18:47:47"
  },
  {
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    "occid": 163861,
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    "fieldName": "geoteticdatum",
    "newValue": "M5584",
    "oldValue": "",
    "reviewStatus": 1,
    "appliedStatus": 1,
    "recordID": null,
    "recordTimestamp": "2020-09-24 18:47:47"
  },
}
```


Symbiota Support Hub Team



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Greg Post
IT & System
Administrator



Ed Gilbert
IT Lead



Samanta Orellana
Community Coordinator
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Lindsay Walker
Community
Manager



Nico Franz
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Developer



Mark Fisher
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**Nikita
Salikov**
Developer