



GeoSpecify

A Collection Management Platform for Geological Objects

Fitzsimmons, G., Beach, J. H., and Burri, T.

European Mineralogical Conference 2024 | Session 35-36

Specify Collections Consortium

- The Specify Collections Consortium (SCC) was founded in 2018.
- The consortium produces the **Specify Collection Management System** and offers related technical services for processing data associated with specimens and samples in collections used for research.
- *We have partnered with natural history museums and biological repositories for more than 35 years.*

The image displays three screenshots of the Specify software interface, illustrating its evolution over two decades:

- 2004:** Shows the initial version of the software with a menu bar (File, View, Search, Tools, Help) and a main window displaying specimen statistics: "Specimens cataloged: 7780", "Taxa represented: 1940", "Geographic locations represented: 620", "Countries represented: 0", "Open loans: 0", "Specimens on loan: 0", "Specimens checked out: 0", and "Catalogued this month: 0".
- 2014:** Shows a more advanced version of the software. The main window displays a table for "Collection Object Attachments" with columns: Accession #, Cataloger first name, Cataloger middle initial, Cataloger last name, Date Catalogued, Date Last Modified, and Date Entered. A preview image of a specimen is shown below the table.
- 2024:** Shows the latest version of the software. The main window displays a table for "Collection Object Attachments" with columns: Accession #, Cataloger first name, Cataloger middle initial, Cataloger last name, Date Catalogued, Date Last Modified, and Date Entered. A preview image of a specimen is shown below the table.

Specify Collections Consortium

- The SCC aims to advance research and education uses of specimen and sample information.
- **Currently have members in 28 countries and are working with several more.**
- The Consortium is governed by a Board of Directors and Research and Technology Advisory Committees drawn from member institutions.
- The Board and Committees determine the software and technical service priorities of the Consortium.

GeoSpecify

Challenges in Managing Geological Collections



Multidisciplinary Natural History Museums (NHMs) face a common issue with geological collections:

- Biological departments benefit from various Collection Management Systems (CMS) for biodiversity specimens.
 - Limited options exist for geological data curation
 - Use of locally-defined descriptors lacking consistency with domain vocabularies.
 - Non-software engineer scientists designing data platforms.
- 

GeoSpecify Project

Overview

Initiative: Extend Specify specimen data management platform to support geoscience collections.

Focus Areas: Rocks, minerals, meteorites, gemstones, and related objects.

Goals

Provide earth science collections with the same tools and capabilities as Specify 7 for biological collections.

Institution Leads

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Funding: SwissCollNet (Swiss Academy of Sciences)

GeoSpecify Project

Project Timeline

Duration: January 2023 - Q1 2025

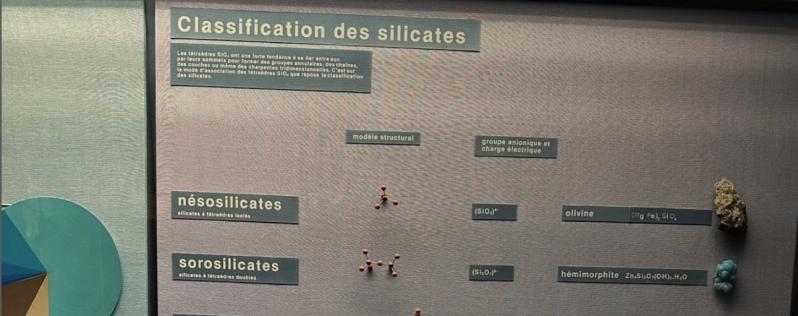
Phases:

Phase 1 (Complete)

- Gather use cases, information models, and best practices.
- Review existing approaches and standards.
- Conduct interviews with geological curators and researchers.

Phase 2 (In Progress)

- Design and software engineering for Geospecify
- Release production-ready version by Q1 2025



Visiting Switzerland

- In June 2023, SCC staff visited natural history museums in Bern, Basel, Geneva, Lausanne.
 - We reviewed existing collections software, discussed and gained insight into geological data collections management
- Met and worked with collections staff to assess requirements



SCC Meeting with Field Experts

- Throughout 2023 and early 2024, SCC staff engaged with scientists, researchers, and collections personnel.
- These meetings took place with a large number institutions worldwide, both virtually and in-person.

Institutions and Organizations:

The team at Mindat.org

The University of Kansas

Denver Museum of Nature and Science

South Dakota School of Mines

University of Texas at Austin

California Academy of Sciences

Colorado School of Mines

Commonwealth Scientific and Industrial Research Organisation

Natural History Museum Bern

Natural History Museum Geneva

Natural History Museum Basel

Natural History Museum Lausanne

Smithsonian Institution

Scripps Institution of Oceanography

... and many others

GeoSpecify Advisory Committee (GAC)

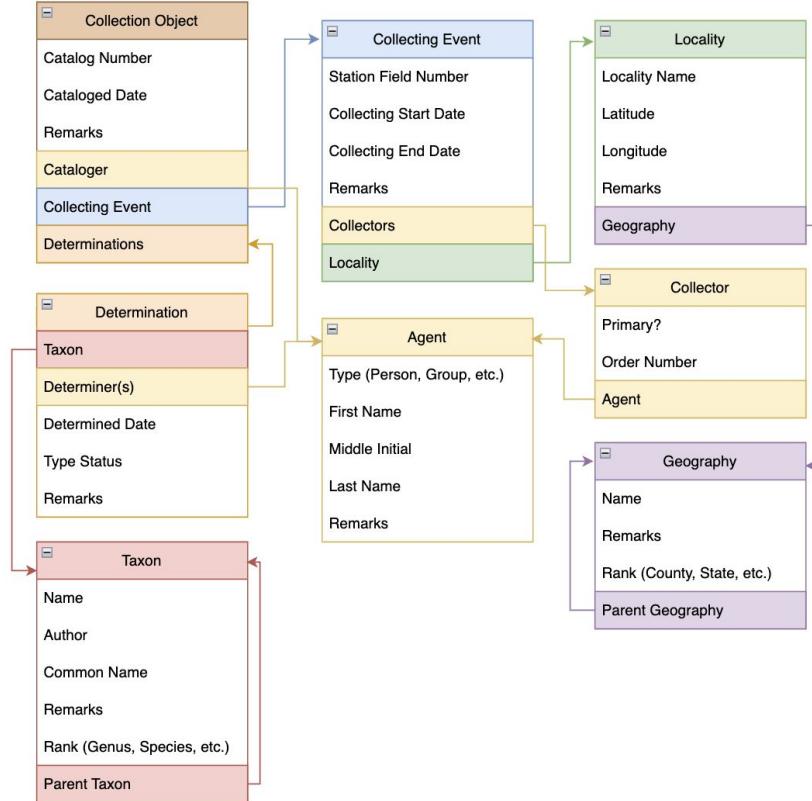
The **GeoSpecify Advisory Committee** was established to involve the geocollections community in our evolution and work, ensuring we meet the needs of our future users.

The committee includes **40** people from over 30 different collections.

Date	Topic
5 April 2023	Introduction to GeoSpecify
26 July 2023	Unique Identifiers
28 September 2023	Containers
14 November 2023	Geologic Age
7 February 2024	Multiple Object Types
31 July 2024	Using GeoSpecify

Specify Data Model

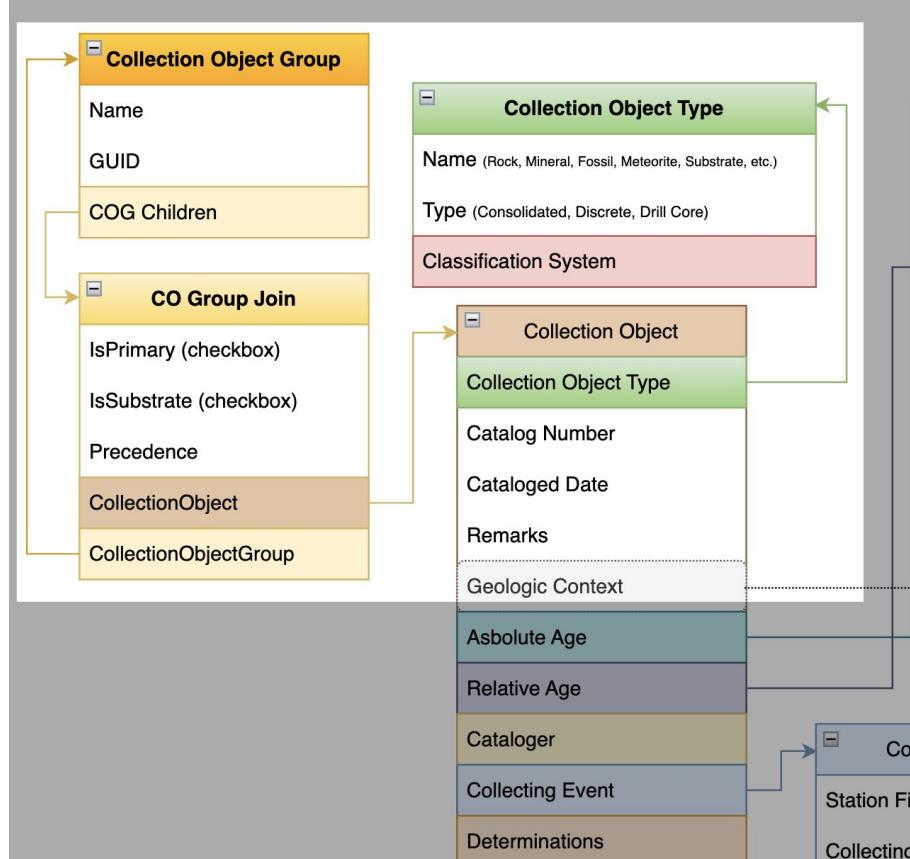
Current Model



Adapting Specify's Model for the Geosciences

- All new capabilities:

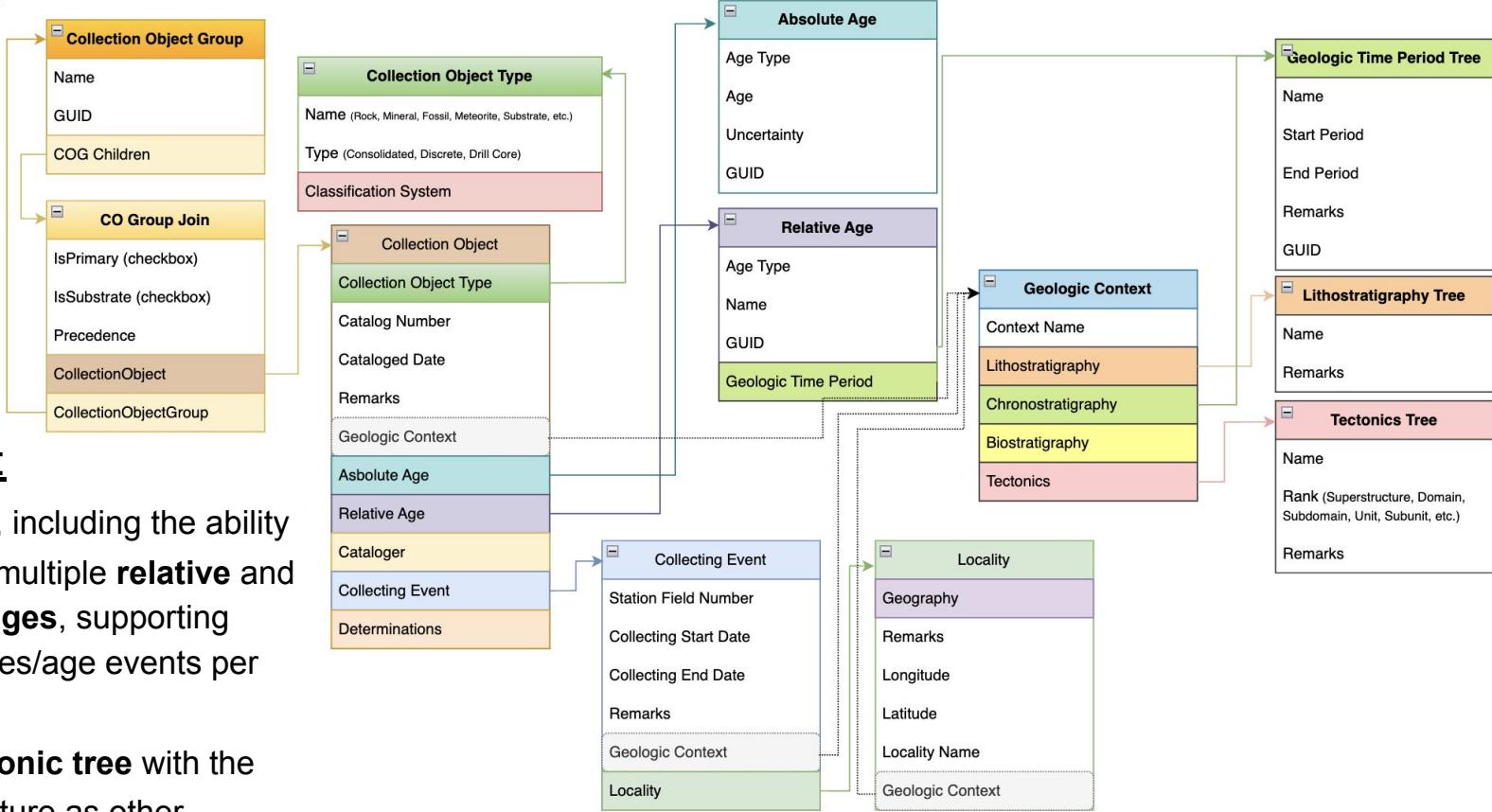
- Multiple ‘Collection Object Types’ (rocks, minerals, meteorites, fossils) within a **single collection**
- A single “catalog number” can refer to multiple objects
- Supporting constituent parts physically on the same substrate
- Multiple ‘classification systems’ within a single collection for different Collection Object Types.
- Data entry is responsive to object type



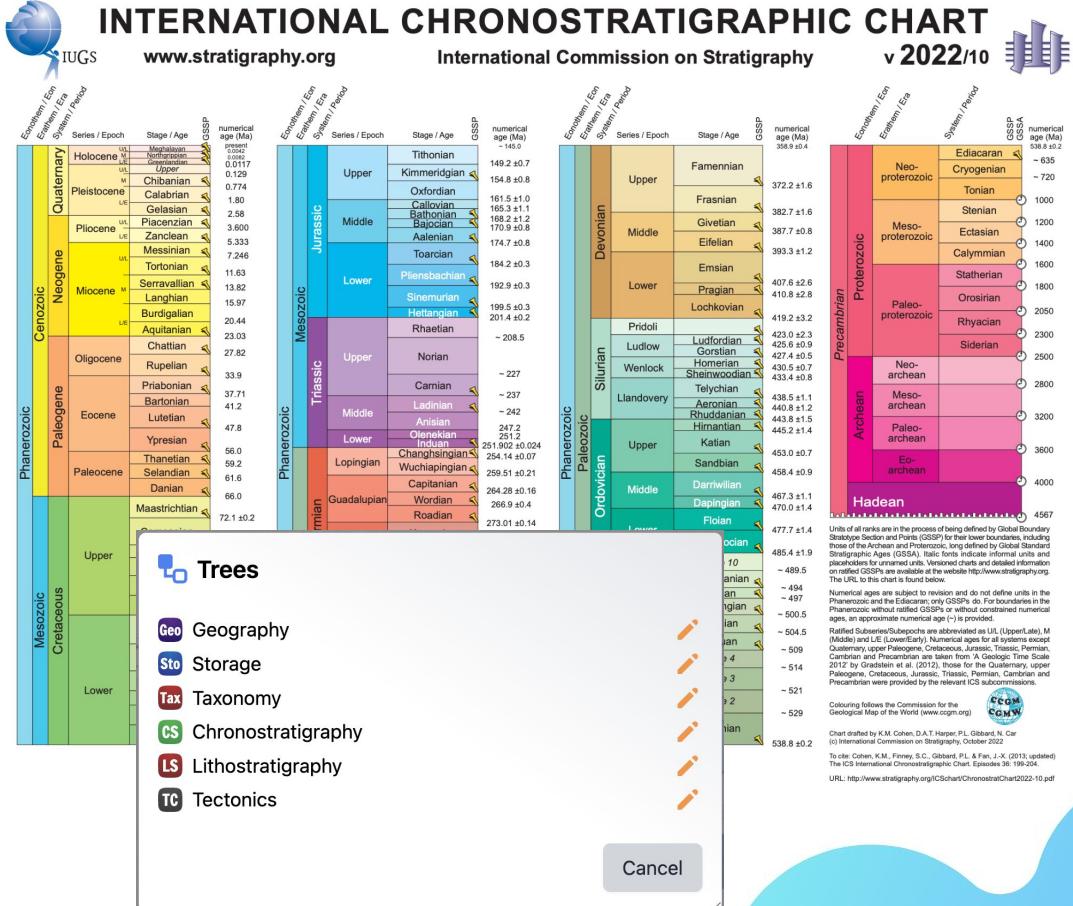


- Introducing:

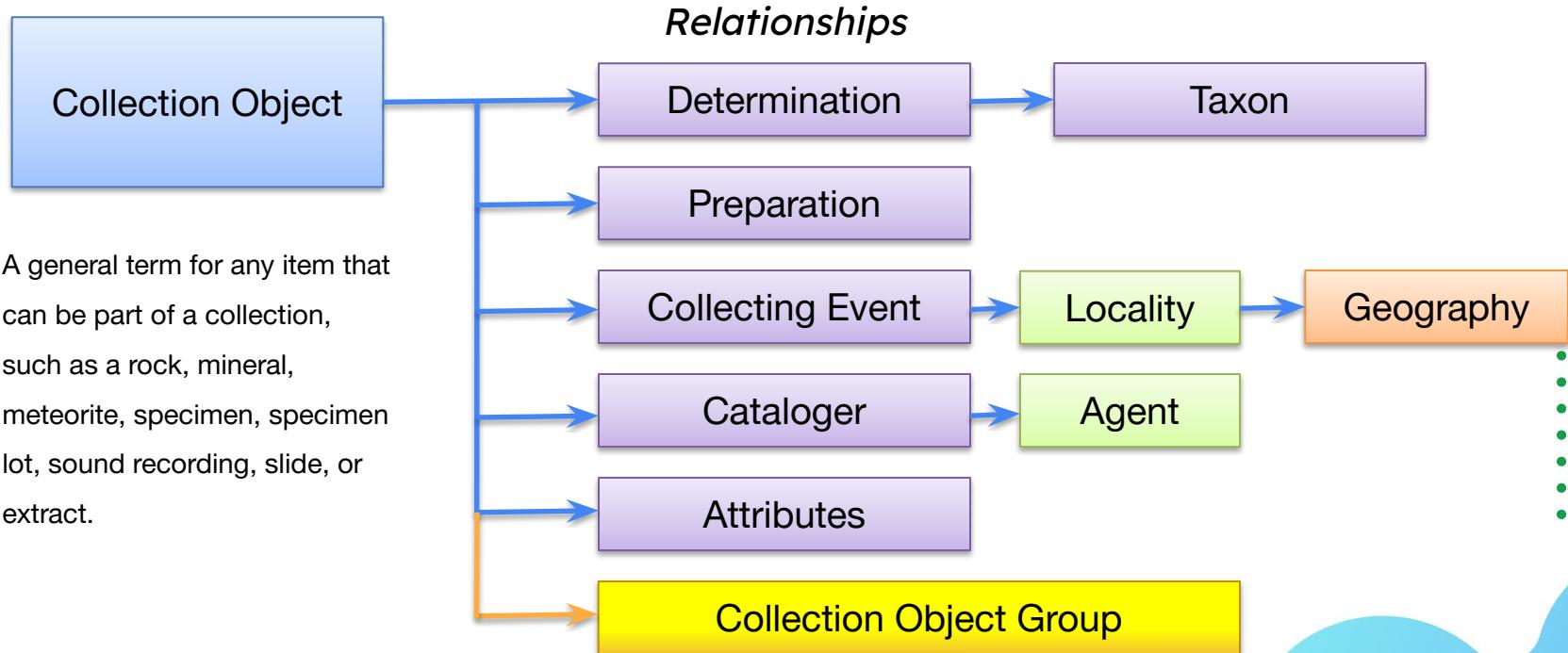
- Age tables, including the ability to capture multiple **relative** and **absolute ages**, supporting multiple ages/age events per specimen.
- A new **tectonic tree** with the same structure as other hierarchically managed trees.



- **Chronostratigraphy**
 - Begin sourcing from the IUGS International Chronostratigraphic Chart as the default geologic time period tree.
 - Useful for searching or assigning an age to a specimen.
- **Magnetostratigraphy**
- **Tectonics Tree**
 - Constructed from user data

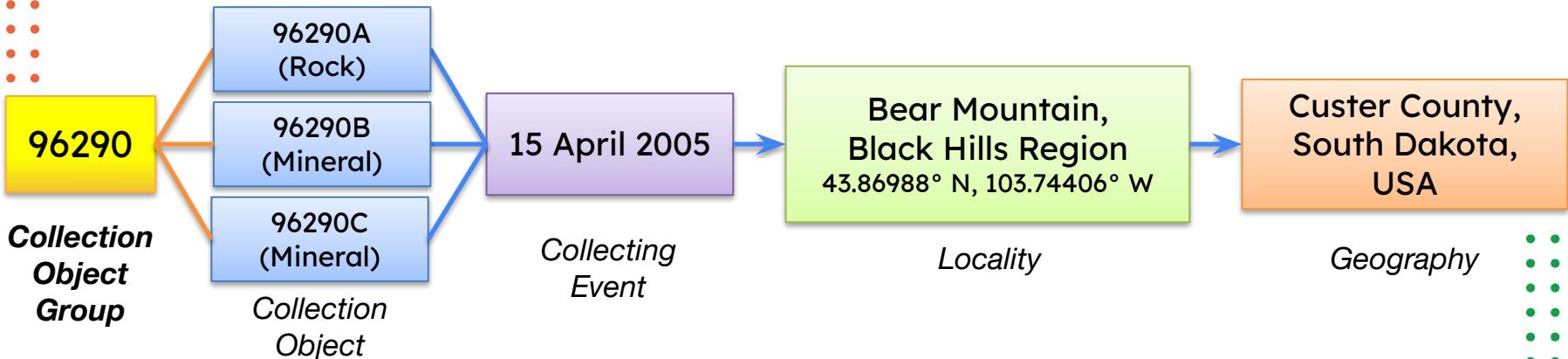


Specify: A Collection Object



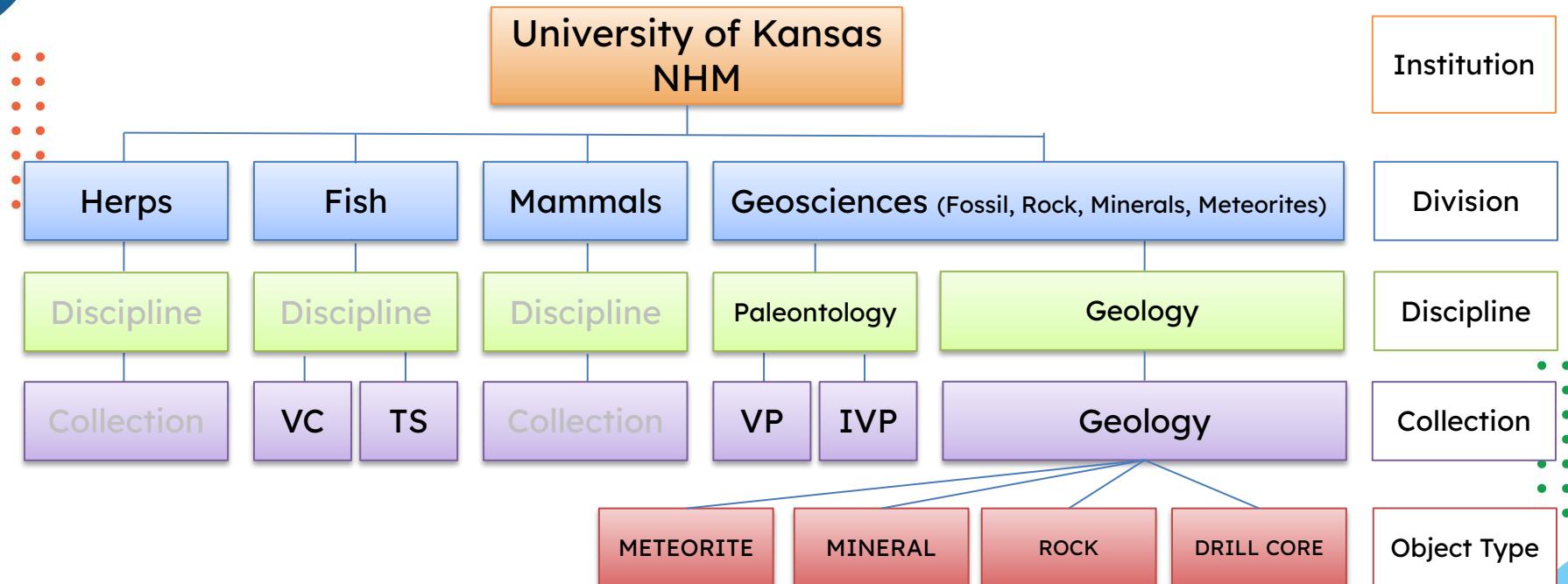
Collection Object Group (COG)

If the entities were physically joined in the field and/or they were physically joined in a collection as the result of a preservation or storage method.



- Multiple object types (minerals, rocks, fossils, etc.) can be part of the same COG
- COGs can be hierarchical, meaning rocks can be made up of different catalogued minerals

Extended Organizational Model



CO New Collection Object



Catalog
Number

Material
Type

- Mineral
- Rock
- Meteorite
- Fossil
- Substrate
- Other

Alt Cat
Number

Cataloged
Date

Full 06/11/202

Accession



Cataloger

Quality

Collection
Object
Group

Primary

▼ Determinations + -

Taxon



Current

Preferred Taxon **04.DA.05 Quartz**

Taxon **04.DA.55 Quartz-beta**

Verbatim **09.HH.05 Macquartite**

Name **+ Add**

Determined Date **Full** **06/11/2024**

Determiner



Type Status

▼ Attributes + -



Size

Weight

Color

Streak

Transparency

Crystal Form

Cleavage

Specimen Value (\$)

Appraised Value

Current Value

Insured Value

Collection Object Group: Segment 3: 3.1 ▶ Sandstone - 3.2 - 3.3 ▶ 04.DA.05 Quartz - 3.4 ▶ 05.AB.05 Calcite - 3.5 ▶ 09.EC.20 - 3.6 ▶ 09.AD.25 - 3.7 ▶ 09.BG.05a Epidote - 3.8 ▶ 09.CK.05 - 3.9 ▶ 09.DA.15 Diopside - 3.10 ▶ *Gatropodius giganticus*



Name Segment 3

Type Core Segment

Parent Group Meters 363.5 – 364.5

Description



▼ Child Collection Objects (10)

Catalog Number	Primary	Material Type	Determinations	Role	Relation	Proportion
> 3.1	<input checked="" type="checkbox"/>	Rock	Sandstone			
> 3.2	<input type="checkbox"/>	Mineral		Rock-forming		Major
> 3.3	<input type="checkbox"/>	Mineral	04.DA.05 Quartz	Rock-forming		Major
> 3.4	<input type="checkbox"/>	Mineral	05.AB.05 Calcite	Rock-forming		Major
> 3.5	<input type="checkbox"/>	Mineral	09.EC.20	Rock-forming		Major
> 3.6	<input type="checkbox"/>	Mineral	09.AD.25	Interstitial Rock-forming		Trace
> 3.7	<input type="checkbox"/>	Mineral	09.BG.05a Epidote	Interstitial Rock-forming		Trace
> 3.8	<input type="checkbox"/>	Mineral	09.CK.05	Interstitial Rock-forming		Trace
> 3.9	<input type="checkbox"/>	Mineral	09.DA.15 Diopside	Interstitial Rock-forming		Trace
> 3.10	<input type="checkbox"/>	Fossil	<i>Gatropodius giganticus</i>	Abundant in Lens		

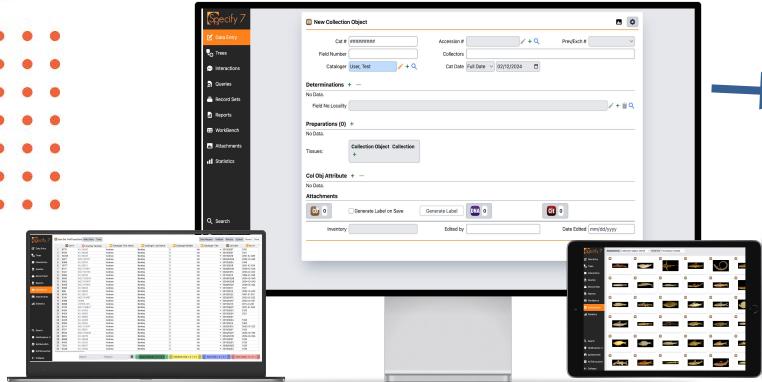


Close

Save

Using Specify as a CMS

Specify System Configuration



Specify 7



No software installation required. Any device.

Specify 7



Specify 7

Data Entry

Collection Object: 6893 - *Fuckus Putinum* sp

Collection Object
 Type: Mineral Material: Fossil Alt Cat Number:
 Catalog Number: 6893 Accession: Cataloger: User: Demo Cataloged Date: 09/17/2024
 Collection: Quality: Object Example: 6893 - *Fuckus Putinum* sp Group: Primary

Collection Object Group
 Name: Example 5 Type: Specimen Container: Parent
 Role: Relation: Proportion: (CO 5)
 A stone core of the mussel.
 The mussel shell (actually the stone core of the mussel) of the species *Fuckus Putinum* sp stems from Kertch, Krim peninsula, Ukraine. The mussel is of upper Devonian age (Frasnian) and belongs to the Rospund-Formation and a specific biocoenose.
 Remarks: As it contains an especially nice mineralization of Vivianite, it is physically arranged within the mineralogic collection and not within the paleontological collection.
 Additional minerals present are (besides Vivianite) Pyrolusite, Siderite, and Calcite. The age of the mineralization is known to be Pliocene.

Attributes
 Size: Weight:

Determinations
 Taxon: *Fuckus Putinum* sp Preferred Taxon: *Fuckus Putinum* sp Verbatim Name:
 Determined Date: Full Date: 05/17/2024 Determiner: Type Status:

Collecting Information
 No Data.

Preparations (1)
 Prep Type: Fossil Count: 1 Current Count: 0 Attachments: Bar Code: Remarks: Is On Loan: Prepared By: Prepared Date: mm/dd/yyyy Storage:

Paleo Context
 Context Name: Frasnian Age LithoStrat: Rospund Chrono Strat: Frasnian, Late Bio Strat: *Fuckus Putinum* Zone

Preparation Details
 Delete Carry Forward Clone Add Save

Specify 7

Statistics

Last refreshed 3 seconds ago Refresh Download as TSV Edit

Holdings		Preparations		Loans	
Collection Objects	43,128	EODH	41,629 / 6,720	Items on Loan	1,175
Preparations	44,970	C&S	1,957 / 8,689	Open Loans	68
Type Specimens	220	Skel	912 / 1,496	Overdue Loans	59
X-Ray	460 / 460				

Locality / Geography		Type Specimens		Digitization	
Localities	9,261	Holotype	18	Digitized Last 7 Days	0
Geography Entries	1,899	Paratype	199	Digitized Last Month	55
Georeferenced Localities	8,822	Neotype	1	Digitized Last Year	216
Percent Georeferenced	95.26%	Topotype	1		
		Paratotype	1		

Attachments		Taxonomy		Geography	
Collection Objects with attachments	2,253	Classes	6	Continents	11
Collection Objects with images	2,253	Orders	60	Countries	80
Percent Imaged	52.2%	Families	365	States/Provinces	313
Collecting Events with attachments	3,050	Genera	1,531	Counties	919
		Species	2,651		

CTES/Endangered/Threatened		Citations	
CTES Appendix I	5	Collection Objects cited	5,548
CTES Appendix II	15	Total citations	840
Endangered	520		

Attachments All (9) Order By: Timestamp Created

Nr. B6893

Nr. B6893

File Name: Nr. B6893
 Title: Nr. B6893
 Date Imaged:
 File Created Date: mm/dd/yyyy
 Copyright Holder:
 Copyright Date:
 Attachment Location: f4420b2d-1288-4382-a251-7ec
 is public:
 License:
 Credit:
 Mime Type: image/png
 Remarks:

Download Open in New Tab Collection Object Close Save

Image from Naturhistorisches Museum Bern

Specify 7

KU BIODIVERSITY INSTITUTE

Shipping funding: Ichthyology (2454230 - 099) Date: 2023/07/27

Shipping Address:

Hogue, Gabriela
NC Museum of Natural Sciences, 11 West Jones Street
Raleigh, NC 27601 USA

Weight: _____

Amount of Postage: \$_____

Contents: Preserved fish specimens _____

Value: \$_____

Check One: _____ No Ethanol

Phone No.: (919) 707-8868

Account No.: _____ X Under 30ml/500ml total

Insurance Amount: \$_____ Over 30 ml/500ml total

Dimensions: _____ L x _____ W x _____ H

US POSTAL SERVICE
DOMESTIC **INTERNATIONAL** **OPTIONS**

1st Class	Air Mail Letter	Registered
Express	Global Priority	Certified
Priority	Air Mail Parcel	Return Receipt
Parcel Post		
Media Mail/Book Rate		

FedEx: Domestic and International

Ground	Priority overnight (delivery by 10:30am)
3 Day Select	Standard overnight (del)
2nd Day Air	1st Overnight
Next Day Air (3:00pm delivery)	2-Day
Next Day Air (10:30am delivery)	Express Saver (if available)
International	International Priority
	International Economy

Specify 7

Queries

Collection Object Sample Query

Collection Object

- Prev Inst
- Remarks
- Cataloger
- Col Obj Attribute
- Collecting Information
- Collection Object Attachments
- Determinations

Determination

- (aggregated)
- Addendum
- Current
- Guid
- Name Usage
- Qualifier
- Remarks
- Type Status

Taxon

- Tax (any rank)
- Tax Kingdom
- Tax Division
- Tax Class
- Tax Order
- Tax Family
- Tax Genus
- Tax Species

Taxon

- Author

Basic View Hide Field Mapper Save Query Save As

Query: Collection Object Sample Query

Catalog Number Equal Any Contains Contains

Cataloged Date Any

Remarks Contains

Prev Inst Contains

Determinations

Determinations

Determinations

Determinations

Determinations

Determinations

GeoMap - Plotted 1,904 records

Details

UC 305 Annonaceae

Uvariastrum neglectum

Africa, Angola, Cabinda, Maiombe, Djinje.

Collector #: 115 Date: 10/26/1957

Coll:

Sheet - 1

University of Canada Biodiversity Institute - Botany

UC 305

Leaflet | Tiles © Esri — Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS user community

Close

Specify 7

Specify 7

Data Set: Botany Demo Spreadsheet Meta Data Tools

Locality Name	Country	State
1 5 km SE of Aboiso.	Ivory Coast	Piet
2 Blaauwberg, in kloof leading to Beacon.	South Africa	Transvaal
3 Found on the road to Kambole Escarpment.	Zambia	Abercorn
4 Road from Kambole to Kalongola.	Zambia	Abercorn
5 Great North Road, Saa Hill, 60 ml. S. of Iringa.	Tanzania	Iringa
6 Sabaki, 4 mi. N. of Malindi.	Kenya	Kilifi
7 About 11 km E. of Songea District.	Tanzania	Tunduru
8 About 8 km S. of Dodoma.	Tanzania	Dodoma
9 Mbamba Bay on sandy ground near shore of L. Nyasa.	Tanzania	Songea
10 Nyika Plateau c. 2,5 miles. SW from Rest House.	Zambia	
11 Sebungwe, near Karlyangwe.	Zimbabwe	
12 António Enes, Nantangula forest area.	Mozambique	
13 4 km N of Kiribi.	Cameroun	
14 Mense pan, 11 mls. E.S.E. of Chirindu bridge.	Zimbabwe	Urungwe District
15 Zimunya Reserve.	Zimbabwe	Umtali
16 Chimanimani Mts. Bank of Musapa River, Musapa Gap.	Mozambique	
17 Margarueque, Ilha.	Mozambique	
18 António Enes, Nantangula Beach.	Mozambique	
19 António Enes, Nantangula Beach.	Mozambique	
20 Ponta Barra Falsa, E. Coast. Pomene River estuarine mouth.	Mozambique	
21 Sambret Catchment South West Malu Forest.	Kenya	
22 Walindi Forest, Misuk Hills.	Malawi	Northern Province
23 Western Shegal forest, West Usambaras.	Tanzania	Lushoto
24 Eastern Matagoro about 60 km. E. of Songea in upland rain forest.	Tanzania	Songea
25 Gumbiro on large termite hill in woodland.	Tanzania	Songea
26 SE. slope of Mafinga Mts.	Malawi	Northern Province
27 Nyika Plateau, 1 mile SW. of Rest House.	Zambia	Eastern Prov.
28 Nyika Plateau, 1/2 miles SW. of Rest House.	Malawi	Northern Province
29 Nyika National Park, c. 0.5 km SW of Zambian Govt. Rest House.	Zambia	North Region
30 Kayuni Hill, 36 km WSW of Karonga.	Malawi	Melsetter
31 Chimanimani Mts.	Zimbabwe	
32 Rowa Lownships Zimmy's Reserve on cliffs among granite boulders.	Zimbabwe	Umtali
33 Pugu Hills, Forest belt.	Tanzania	
34 Dundo (Jd). Rio mais proximo: Luachimo.	Angola	
35 Dundo, Rio Luachimo.	Angola	
36 Plant collected from cliff top on escarpment W of Tchivinguiro above Broco.	Angola	Huila
37 Near the Buzi Dondo border +/- 18 miles S of Muda Cuttingo.	Mozambique	Manica e Sofala
38 10 miles SSW of Vila Pery.	Mozambique	Manica e Sofala
39 Coastal woodland margin in region of Mambone (Save, Riv.).	Mozambique	Sul do Save
40 Mazabuka. +/- 18 miles W of Chirundu.	Zambia	
41		

Search Replace Search Results (0 / 0) Modified Cells (0 / 0) New Cells (0 / 0) Error Cells (0 / 0)

Specify 7

Botany Demo Spreadsheet (Collection Object) Base Table Clear Mappings AutoMapper Hide Field Mapper Must Match Validate Cancel Save

Collection Object

- Catalog Number
- Cataloged Date
- GUID
- Prev Inst
- Remarks
- Cataloger
- Col Obj Attribute

Map

WorkBench

Det 1 - Family Determinations → #1 → Taxon → Family → Name

Det 1 - Genus Determinations → #1 → Taxon → Genus → Name

Det 1 - Species Determinations → #1 → Taxon → Species → Name

Det 1 - Determiner First Name Determinations → #1 → Determiner → First Name

Det 1 - Determiner Last Name Determinations → #1 → Determiner → Last Name

Det 2 - Family Determinations → #2 → Taxon → Family → Name

Det 2 - Genus Determinations → #2 → Taxon → Genus → Name

Det 2 - Species Determinations → #2 → Taxon → Species → Name

Det 2 - Determiner First Name Determinations → #2 → Determiner → First Name

Det 2 - Determiner Last Name Determinations → #2 → Determiner → Last Name

Locality Name Collecting Information → Locality → Locality Name

Country Collecting Information → Locality → Geography → Country

State Collecting Information → Locality → Geography → State

Add New Column Reveal Hidden Form Fields

11262	09/02/1961
5103	10/01/1962
11888	10/09/1963
9506	11/01/1961

Trees in Specify

Taxonomy, Geography, Storage, Chronostratigraphy, Lithostratigraphy, Tectonics

The screenshot displays two main windows of the Specify application:

- Taxon Module:** Shows a hierarchical tree of biological taxa under the "Life" category. The tree includes levels from Kingdom down to Subphylum, and further branches into Animalia, Chordata, Vertebrata, Gnathostomata, Actinopterygii, and Chondrichthyes.
- Storage Module:** Shows a hierarchical tree of storage locations under the "Site" category. The tree includes levels from Site down to Cabinet, and further branches into 190 PSB, Arthro10, Arthro3, Arthro9, and Brach10, with associated item counts (e.g., 3 (0), 6 (0)).

A central modal dialog is open for the taxon "Quartz":

- Parent of Taxon:** Flat Minerals
- Name:** Quartz
- Rank:** Rank
- Full Name:** Quartz
- Preferred Taxon:** (empty)
- Common Name:** (empty)
- Strunz 10ed Number:** 4.DA.05
- Dana Number:** 75.01.03.01
- Heys Number:** 7.8.1
- IMA Status:** Approved
- IMA No. / Year:** IMA1967 s.p.
- IMA Structural Group Name:** Quartz
- Approved Formula:** SiO₂
- Mindat URL:** <https://www.mindat.org/min-3337.html>

Search

Edit

Delete

Add

Move

Merge

Synonymize

WorkBench – Bulk Data Uploading & Editing

Data Set: Mineral Taxonomy (Uploaded, Read-Only) Meta Data Tools

Change Owner Upload Plan Export

	Tax mineral_name	Tax strunz_10ed_number	Tax dana_number	Tax heys_number	Tax ima_number	Tax ima_status
1	Albite	9.FA.35	76.01.03.01	16.2.1		Approved,Grandfather
2	Almandine	9.AD.25	51.04.03a.02	16.17.1		Approved,Grandfather
3	Anorthite	9.FA.35	76.01.03.06	16.9.2		Approved,Grandfather
4	Augite	9.DA.15	65.01.03a.03	16.23.1	IMA1988 s.p.	Approved
5	Azurite	5.BA.05	16a.02			
6	Calcite	5.AB.05	14.01.0			
7	Diopside	9.DA.15	65.01.0			
8	Dolomite	5.AB.10	14.02.0			
9	Enstatite	9.DA.05	65.01.0			
10	Fayalite	9.AC.05	51.03.0			
11	Fluorapatite	8.BN.05				
12	Forsterite	9.AC.05	51.03.0			
13	Halite	3.AA.20	09.01.0			
14	Magnetite	4.BB.05	07.02.0			
15	Microcline	9.FA.30	76.01.0			
16	Muscovite	9.EC.15	71.02.0			
17	Orthoclase	9.FA.30	76.01.0			
18	Phlogopite	9.EC.20	71.02.0			
19	Pyrite	2.EB.05a	02.12.0			
20	Quartz	4.DA.05	75.01.0			
21	Taenite	1.AE.10	01.01.1			
22	Tremolite	9.DE.10	66.01.0			
23	Wulfenite	7.GA.05	48.01.0			
24						

Data Set: FMNH exchange_Specify Metadata Tools

Data Mapper Validate Results Upload Revert Save

	Sort	Cat #	Accession #	Alt Cat #	Cataloger first name	Cataloger Middle Initial	Catalog date	Cataloguer last name	Family	
1	3751	#####	2021-IC-004	✓ FMNH 3751	Andrew	C	11/5/2021	Bentley	Anablepidae	
2	16185	#####	2021-IC-004	✓ FMNH 16185	Andrew	C	11/5/2021	Bentley	Antennariidae	
3	17166	#####	2021-IC-004	✓ FMNH 17166	Andrew	C	11/5/2021	Bentley	Cyclopeltidae	
4	20643	#####	2021-IC-004	✓ FMNH 20643	Andrew	C	11/5/2021	Bentley	Lobotidae	
5	22292	#####	2021-IC-004	✓ FMNH 22292	Andrew	C	11/5/2021	Bentley	Ambassidae	
6	23493	#####	2021-IC-004	✓ FMNH 234931	Andrew	C	11/5/2021	Bentley	Atherinidae	
7	31092	#####	2021-IC-004	✓ FMNH 21234	Andrew	C	12/31/2021	Bentley	Osmeridae	
8	34595	#####	2021-IC-004	✓ FMNH 34595	Andrew	C	12/31/2021	Bentley	Gadidae	
9	41606	#####	2021-IC-004	✓ FMNH 41606	Andrew	C	12/31/2021	Bentley	Pomacentridae	
10	43102	#####	2021-IC-004	✓ FMNH 43102	Andrew	C	12/31/2021	Bentley	Lutjanidae	
11	43122	#####	2021-IC-004	✓ FMNH 43122	Andrew	C	12/31/2021	Bentley	Carangidae	
12	44130	#####	2021-IC-004	✓ FMNH 44130	Andrew	C	12/31/2021	Bentley	Holocentridae	
13	44331	#####	2021-IC-004	✓ FMNH 44331	Andrew	C	12/31/2021	Bentley	Plesiopidae	
14	44813	#####	2021-IC-004	✓ FMNH 44813	Andrew	C	12/31/2021	Bentley	Channidae	
15	45242	#####	2021-IC-004	✓ FMNH 45242	Andrew	C	12/31/2021	Bentley	Percophidae	
16	45959	#####	2021-IC-004	✓ FMNH 45959	Andrew	C	12/31/2021	Bentley	Hemiramphidae	
17	46140	#####	2021-IC-004	✓ FMNH 46140	Andrew	C	12/31/2021	Bentley	Antennariidae	
18	46322	#####	2021-IC-004	✓ FMNH 46322	Andrew	C	11/5/2021	Bentley	Chloropthalimidae	
19	46612	#####	2021-IC-004	✓ FMNH 46612	Andrew	C	11/5/2021	Bentley	Dactylopteridae	
20	46676	#####	2021-IC-004	✓ FMNH 46676	Andrew	C	11/5/2021	Bentley	Ophidiidae	
21	47879	#####	2021-IC-004	✓ FMNH 47879	Andrew	C	11/5/2021	Bentley	Tetraodontidae	
22	48130	#####	2021-IC-004	✓ FMNH 48130	Andrew	C	11/5/2021	Bentley	Bythitidae	
23	48469	#####	2021-IC-004	✓ FMNH 48469	Andrew	C	11/5/2021	Bentley	Diodontidae	
24	48561	#####	2021-IC-004	✓ FMNH 48561	Andrew	C	11/5/2021	Bentley	Coryphaenidae	
25	49215	#####	2021-IC-004	✓ FMNH 49215	Andrew	C	11/5/2021	Bentley	Fistularidae	
26	51652	#####	2021-IC-004	✓ FMNH 51652	Andrew	C	11/5/2021	Bentley	Hemiramphidae	
27	51726	#####	2021-IC-004	✓ FMNH 51726	Andrew	C	11/5/2021	Bentley	Phalostethidae	
28	51754	#####	2021-IC-004	✓ FMNH 51754	Andrew	C	11/5/2021	Bentley	Plesiopidae	
29	53192	#####	2021-IC-004	✓ FMNH 53192	Andrew	C	11/5/2021	Bentley	Doradidae	Previous catalog
30	59037	#####	2021-IC-004	✓ FMNH 59037	Andrew	C	11/5/2021	Bentley	Gobiidae	Previous catalog
31	60174	#####	2021-IC-004	✓ FMNH 60174	Andrew	C	11/5/2021	Bentley	Holocentridae	
32	62298	#####	2021-IC-004	✓ FMNH 62298	Andrew	C	11/5/2021	Bentley	Serranidae	
33	62631	#####	2021-IC-004	✓ FMNH 62631	Andrew	C	11/5/2021	Bentley	Siganidae	
34	62666	#####	2021-IC-004	✓ FMNH 62666	Andrew	C	11/5/2021	Bentley	Poeciliidae	

Search Replace Search Results (0 / 0) Modified Cells (0 / 13) New Cells (0 / 0) Error Cells (0 / 124)

Reports & Labels

KU BIODIVERSITY RESEARCH CENTER
The University of Kansas

INVOICE OF SPECIMENS
Division of Ichthyology
Biodiversity Institute
1345 Jayhawk Boulevard
University of Kansas
Lawrence, KS, USA 66045-7561
Voice: 785-864-3863, Fax: 785-864-5335
e-mail: abentley@ku.edu

Loan # : 2009-01

To: Reznick, David
Department of Biology
Spieh Hall
University of California - Riverside
900 University Avenue
Riverside, CA 92521
USA
Student:

Prepared by: Bentley, Andy
Mode of Shipment: USPS
of packages: 1
Category: LOAN
Length of Loan: N/A

Return type specimens via hand carry or first class, registered mail Dissection of C&S requires prior authorization

KU #	TAXON & LOCALITY	SPECIMEN COUNT
4443	<i>Xiphophorus xiphidium</i> North America, Mexico, Nuevo Leon, trib. lo Rio Blanco, 7 mi. S Aramberri Field No.: RWD 2895	194 ETOH of 194 ETOH Date: 1954/02/20
	Specimen comments: Permission granted to remove ovaries from 25 females and to possibly "probe" up to six smaller females.	
7341	<i>Gambusia krumholzi</i> North America, Mexico, Coahuila, Rio de Nava, 5.6 mi. WSW Nava Field No.: WM 821	358 ETOH of 383 ETOH Date: 1963/04/14
	Specimen comments: Permission granted to remove ovaries from 25 females and to possibly "probe" up to six smaller females.	
7419	<i>Xiphophorus gordoni</i> North America, Mexico, Coahuila, Los Fresnos Lagunas Field No.: WM 840	79 ETOH of 79 ETOH Date: 1963/04/18
	Specimen comments: Permission granted to remove ovaries from 20 females and to possibly "probe" up to five smaller females.	
19190	<i>Jenynsia multidentata</i> South America, Argentina, Mendoza, Dique Benegas, -33.25000000°, -68.6663894653° Field No.: Z19190	27 ETOH of 54 ETOH Date: 1976/03/19
	Specimen comments: Permission granted to remove ovaries from 8 females.	

Loan Comments: Permission granted to dissect female ovaries for analysis.

Total Number of Lots = 863 Total Number of Specimens = 9530
Copies of any publications citing these specimens must be lodged with the KUNHM Ichthyology Division
Retain in 70% ethanol unless otherwise noted

Received in good order except as noted. Signed: _____ Date: _____

PLEASE SIGN AND RETURN ONE COPY

cfs.specifycloud.org
1 / 12 | - 203% + | ☰

UC 11822 **Euphorbiaceae**
Euphorbia persistentifolia
Africa, Zambia, Mazabuka. +/- 18 miles W of Chirundu.
Collector #: 9506 Date: 11/01/1961
Coll: Leach, Lexi
Sheet - 1
University of Canada Biodiversity Institute - Botany

UC 11822 **Euphorbiaceae**
Euphorbia persistentifolia
Africa, Zambia, Mazabuka. +/- 18 miles W of Chirundu.
Collector #: 9506 Date: 11/01/1961
Coll: Leach, Lexi
Sheet - 1
University of Canada Biodiversity Institute - Botany

UC 11815 **Euphorbiaceae**
Euphorbia subsalsa
Africa, Namibia, Distr. 1713 (Swartboersdrif?). Near Epupa Falls on Cunene Riv..
Collector #: 15036 Date: 07/19/1973
Coll: Leach, Lexi; Cannell, I.C.
Sheet - 1
University of Canada Biodiversity Institute - Botany

UC 11815 **Euphorbiaceae**
Euphorbia subsalsa
Africa, Namibia, Distr. 1713 (Swartboersdrif?). Near Epupa Falls on Cunene Riv..
Collector #: 15036 Date: 07/19/1973
Coll: Leach, Lexi; Cannell, I.C.
Sheet - 1
University of Canada Biodiversity Institute - Botany

UC 11671 **Aloaceae**
Aloe vallaris
Africa, Angola, Huila, Western escarpments of the Serra da Chela, a few miles west of Tchivinguiro.
Received in good order except as noted. Signed: _____ Date: _____
PLEASE SIGN AND RETURN ONE COPY

UC 11671 **Aloaceae**
Aloe vallaris
Africa, Angola, Huila, Western escarpments of the Serra da Chela, a few miles west of Tchivinguiro.
Received in good order except as noted. Signed: _____ Date: _____
PLEASE SIGN AND RETURN ONE COPY

Query Building

Query: Mineral Collection Object Query

Basic View Hide Field Mapper Save Query Save As

Collection Object

- Cojo
- Collecting Information
- Collection
- Collection Object Attachments
- Collection Object Group
- Collection Object Type
- Determinations
- Modified By Agent
- Data Context

Collecting Information

- Start Date (Day)
- Start Date (Month)
- Start Date (Year)
- Verbatim Date
- Collecting Event Attachments
- Collectors
- Geologic Context
- Locality

Locality

- Latitude1
- Latitude2
- Locality Name
- Long1text
- Long2text
- Longitude1
- Longitude2
- Max Elevation

Filter Conditions

- Catalog Number Equal mm/dd/yyyy
- Cataloged Date Equal mm/dd/yyyy
- Material Type Equal Mineral
- Cataloger (formatted)
- Collection Object Group Name Equal
- Collection Object Group (formatted)
- Collection Object Type Name Any
- Preparations (aggregated)
- Determinations (aggregated)
- Determinations Preferred Taxon (any rank) Full Name
- Determinations Current True or Empty
- Paleo Context Context Name Any
- Collecting Information Collector Number Any
- Collecting Information Locality Latitude1 Longitude1

GeoMap

Leaflet | Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri Thailand, NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Cancel Save

Real-Time Statistics Page

Statistics		Last refreshed 8 hours ago		Refresh	Download As TSV	Edit
Shared	Holdings	Collection Objects	43,141	Preparations	41,638 / 527,579	Loans
		Preparations	44,983	C&S	1,957 / 8,689	Items on Loan
Private	Type Specimens	220	Skel	912 / 1,496	Open Loans	88
			X-Ray	460 / 460	Overdue Loans	59
Locality / Geography		Type Specimens		Digitization		
Localities	9,262	Holotype	18	Digitized Last 7 Days	13	
Geography Entries	1,889	Paratype	199	Digitized Last Month	43	
Georeferenced Localities	8,823	Neotype	1	Digitized Last Year	229	
Percent Georeferenced	95.26%	Topotype	1			
		Paratopotype	1			
Attachments		Taxonomy		Geography		
Collection Objects with attachments	2,253	Classes	6	Continents	11	
Collection Objects with images	2,253	Orders	60	Countries	80	
Percent Imaged	5.22%	Families	365	States/Provinces	313	
Collecting Events with attachments	3,052	Genera	1,531	Counties	919	
		Species	2,651			
CITES/Endangered/Threatened		Citations				
CITES Appendix I	5	Collection Objects cited	5,548			
CITES Appendix II	15	Total citations	840			
Endangered	520					
Threatened	1,201					

Security & Permissions

Security and Accounts



Institution
University of Kansas Biodiversity Institute

Collections
KUFishTeaching
KUFishtissue
KUFishvoucher

Role: Export Data

← University of Kansas Biodiversity Institute

Name

Export Data

Description

Gives ability to export DwC Archive from any table.

Role Permission Policies

	Export	
	Dwca	<input checked="" type="checkbox"/> Execute

	Table	
	All tables	

▼ User's Permission Profile (read-only)

Action	User Roles	Resource
Read		
Create		
Update		
Delete		
Table		

Accession

Action	User Roles	Resource
Access - Legacy	Delete	Accession

Accession Agent

Action	User Roles	Resource
Read		
Create		
Update		
Delete		
Table		

Accession Authorization

Action	User Roles	Resource
Access - Legacy	Delete	Accession Authorization

Accession Citations

Action	User Roles	Resource
Access - Legacy	Delete	Accession Citations

Address

Action	User Roles	Resource
Access - Legacy	Delete	Address

Address Of Record

Action	User Roles	Resource
Access - Legacy	Delete	Address Of Record

Agent

Action	User Roles	Resource
Access - Legacy	Delete	Agent

Agent Geography

Action	User Roles	Resource
Access - Legacy	Delete	Agent Geography

Agent Identifier

Action	User Roles	Resource
Access - Legacy	Delete	Agent Identifier



Special Thanks

GeoSpecify Funding: SwissCollNet (Swiss Academy of Sciences)

Questions about Specify? Contact support@specifysoftware.org

Thank you for your attention

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SwissCollNet