# Emerging Pathways for the Transcription of Scientific Field Notes

#### CLIR DHC Symposium October 12, 2022 | Baltimore, MD



# Smithsonian





#### Field Notes: Invaluable Primary Resources

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Smithsonian Institution Archives, SIA RU007203, Created by Murdoch, John, 1852-1925, "Record of collections made by the Point Barrow Polar Expedition, 1881-1883", SIA2015-001147









#### **Our Panel**

#### **Riccardo Ferrante**

Associate Director of Information Systems, Digital Lifecycles and User Experience Smithsonian Libraries and Archives

#### Sonoe Nakasone

Data Specialist American Women's History Initiative and Smithsonian American Art Museum

#### Katie Mika

Data Services Librarian Harvard Library and Institute for Quantitative Social Science (IQSS)









# A good start

# Making scientific field notes accessible with The Field Book Project

By Riccardo Ferrante, he/him







# Building a road of discovery



- First things first where are they?
  - In 2009, the CLIR *Cataloging Hidden Collections* program funded the Smithsonian's *Exposing Biodiversity Fieldbooks and Original Expedition Journals* with two objectives
    - Catalog an estimated 6,000 fieldbooks and journals whose only online presence, if any, was as a line in an online archival finding aid.
    - Build and launch an online catalog of the field books making it accessible to researchers worldwide.
    - Utilize standards such as MODS and EAC-Cpf to facilitate data sharing with biodiversity and natural history organizations, libraries, archives and aggregators.







# Consequences of a good thing



#### • Along the way

- Item-level cataloging revealed a **pressing need for conservation** and preservation treatment. Working directly with decades- and century-old field journals and notes, project catalogers were trained to make preliminary preservation assessments and alert conservators when further handling of a field book posed such risk to its condition.
- "Have you digitized this?"

followed soon after by "Do you have a transcript of this?"







### Pressing forward



- Preservation and Conservation
  - The National Park Service's Save America's Treasures grant program allowed us to stabilize at-risk field books.
- Digitization
  - Small internal grants funded internships to continue small project-based digitization.
- Transcription
  - An inaugural contributor to the Smithsonian's crowd-sourced transcription platform provided a way to respond despite lack of funds







# Pressing forward (more)



- Preservation and Conservation
- Digitization
- Rapid-capture digitization and more cataloging
  - A large grant from the Arcadia Foundation enabled the cataloging of over 3,000 additional scientific biodiversity-related field books, growing the catalog by 50%, and enabling us to implement rapid capture digitization of these materials.
- Access via more platforms, at a deeper level
  - Digitized field books were added to the Field Book Registry, the Biodiversity Heritage Library, and the Digital Public Library of America.
  - Crowd-sourced transcriptions create a full-text searching option on those platforms, also Google.







#### Even better together

In 2015, CLIR Launches the Digitizing Hidden Collections program.

Ten BHL partners came together to further expand the scientific field notes collections in the Biodiversity Heritage Library.

#### **Biodiversity Heritage Library Field Notes Project**

- Smithsonian Institution
- Missouri Botanical Garden, Peter H. Raven Library;
- American Museum of Natural History;
- Yale Peabody Museum;
- Harvard University, Herbaria Botany Libraries;
- Harvard Museum of Comparative Zoology, Ernst Mayr Library;
- University of California, Berkeley Museum of Vertebrate Zoology;
- New York Botanical Garden, LuEsther T. Mertz Library;
- The Field Museum;
- Internet Archive







# It's about access, right?

- The access-based empowerment we expected
  - From cataloging
    - Taxonomic names, geolocations, subjects, authors
  - From digitization
    - Viewing the item
    - If printed, OCR is possible for full text and specialized indexing
- Increased use and downloads globally







#### **Empowerment surprises**

- Transcription impact on handwritten field notes
  - Paleography is a dying art, but far from dead yet. Thousands of volunteers worked together, producing high quality transcripts when there were no funds to be found. (thank you, Internet crowd!)
  - Full text searching became possible, including searching across handwritten and printed material, i.e., primary and secondary sources together or apart.
  - Taxonomy links between historic and current names, both scientific and common
  - Hidden or misrepresented collectors







#### ⊙ ⊙ C ೫ ∧ ♪ ?



#### Empowerment surprises

Transcription revealed hidden or misrepresented collectors, especially women

- <u>Example</u>: Joseph Nelson Rose's 1851 catalog of specimens documented over 25 women contributors
- Meet Mrs. Katherine Ross Gaillard. Misattributed in several catalogs as "D. D. Gaillard," these entries can now be properly attributed.







#### Untapped potential

#### Linked data



#### Item Discussion

#### Katherine Ross Gaillard (Q81115987)

#### American botanical collector

In more languages

Mrs David DuBose Gaillard | Mrs D. D. Gaillard | Katherine Ross Davis | K. R. Davis | K. R. Gaillard | K. Gaillard

Main page Community portal

Project chat Create a new Item Recent changes Random Item Query Service Nearby Help Donate

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Configure			
Language	Label	Description	Also known as
English	Katherine Ross Gaillard	American botanical collector	Mrs David DuBose Gaillard Mrs D. D. Gaillard Katherine Ross Davis K. R. Davis K. R. Gaillard K. Gaillard
Spanish	Katherine Ross Gaillard	No description defined	
Traditional Chinese	No label defined	No description defined	
Chinese	No label defined	No description defined	

All entered languages





**Biodiversity Heritage Library** 



sedit 🖉

#### Untapped potential

• Extracting data sets from handwritten sources

F.W. True and Daniel W. Prentiss, Jr. "Maine, 1897." Pages 6 and 7 of this field catalog

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## Thank you.









# Legacy Data to Linked Data

#### How Linked Data Could Change Field Book Metadata

By Sonoe Nakasone, she/they







### Vision of 2009 Field Book Project

- Repository of metadata about field books
- Detailed item level descriptions of field books
- Save time and money on travel for research







#### 'Linked Data' = 2006 | Our project = 2009

- Field Book Project used XML schemas: MODS, NCD, and EAC-CPF
- 'Linked data' was around, but new and unfamiliar to many in libraries









Pearl and Hermes Reef --> Honolulu --> Hawai'i --> United States

Location subjects in field book record

Pearl and Hermes Reef Hawai'i United States

EVERY TIME, in all 49 items matching "Pearl and Hermes Reef"

Works for queries: 1) Show me all "**Pearl and Hermes Reef**" field notes; 2) all "**Hawai'i**" field notes; and 3) all "**United States**" field notes







#### If we did it LD

Pearl and Hermes Reef --> Honolulu --> Hawai'i --> United States

As triples...

"Field book X" "depicts location" "Pearl and Hermes Reef". (EVERY TIME)

"Pearl and Hermes Reef" "is part of" "**Hawai'i**". (ONCE) "Hawai'i" "is part of" "**United States**". (ONCE)

Works for queries: 1) Show me all "**Pearl and Hermes Reef**" field notes; 2) all "**Hawai'i**" and its subsidiaries field notes; and 3) all "**United States**" and its subsidiaries field notes







#### Example components of a Linked Data stack

Search / display GUI Using SPARQL Metadata GUI Optional to simplify creating new statements

**SPARQL endpoint** Querying service for RDF Search and display GUI Optional using search index

Search index

Optional to simplify search

**Triplestore** Database of RDF Statements







#### Wikibase, Wikidata, or similar

- Ready to use linked data infrastructure
- Tools that lower barrier for sparql queries like Query Builder by Jakob Warkotsch (WMDE): <u>https://bit.ly/3V1pLR5</u>
- Connectivity to other data on the web and search engine users







# (Truncated) record for a field book

Title:	Pearl and Hermes Reef, September 1966, Lewis		
Creator:	<u>LEWIS, T. JAMES</u>	See an example of	
Repository location:	Smithsonian Institution Archives	a different field book in	
Places:	<u>PEARL AND HERMES REEF</u> <u>HAWAII</u> <u>UNITED STATES</u>	https://bit.ly/	
Start date:	1966-09-25	<u>515ptvv</u>	
End date:	1966-09-27		
Topic:	PACIFIC OCEAN BIOLOGICAL SURVEY PROGRAM Ornithology		
Accession Number:	SIA RU000245		
Collection:	National Museum of Natural History, Pacific Ocean Biologic records, circa 1961-1973, with data from 1923	al Survey Program,	







### Looking ahead toward LD for field books

- Field book metadata is already structured data
- Some data shouldn't be open
- Shared data model to aide interoperability









# Thank you

Nakasones@si.edu







# Extracting Datasets from Digital Collections

Katie Mika Data Services Librarian Harvard Library & Institute for Quantitative Social Science









#### Kinds of data

#### How to extract data & datasets from items

# Collections as Data as a distinct service model









#### Kinds of Data









#### "Data refers to entities used as evidence of phenomena for the purposes of research or scholarship."

"Data are not pure or natural objects with an essence of their own. They exist in a context, taking on meaning from that context and the perspective of the beholder."

Borgman, C. (2015). Big data, little data, no data: scholarship in the networked world. Cambridge, Massachusetts: MIT Press.







#### ADDISONIA

(Plate 388)

Ints Family

11

LAPEYROUSIA CRUENTA

Blood-spotted Lapeyrousia

Native of South Africa

Family IRTRACEAR

Annenikan orusen 1,indl. Bot. Soy. M. M. 1999. 1891, Lappyvana orusen Haker, Handb. Irid. 173. 1890,

Lapprovaria is a genus of some forty-five species, mostly African, inhabiting the dry hilly Cape regions, and one of a series of most beautiful garden subjects from that country, whence came our standard garden flower gladiolus. From the same regions are also produced the fragrant freesia of greenhouses, the belladoona lily, and such other tender "hulhs" as *Watowia*, *Authoryza* or wandflower, *Tritonia*, *Creassnia*, *Monthetia* and *Laia*, all brillianty colored. Like the gladiolis, *Laphyronia* has a corn ("bufb"), and can be propagated in much the same way, so it is treated in the same manner as that popular flower. The corns can be taken up and dried off over winter. South of New York is probably hardy, meeting a covering only during the most severe weather.

Under such conditions it is said to require frequent division of the corms. It is cultivated in Bermuda occasionally and probably in other West Indian islands.

Our illustration was made from greenhouse-grown seedlings, the seed having been sent from the Botanic Garden at Cambridge, England, last summer. In England it is grown in rockeries, and other summy situations out doors.

Lappy points crown is a perennial herb from a small ovoid corus with fibrous reticulated brown cost. The smooth stem is about one foat high, with many narrowly sword-shaped leaves in two ranks. The lower leaves are about six inches long, the upper shorter and narrower. The two to six flowers are in loose terminal spikes, each flower subtended by two ovate acute herbaceous bracks, one larger than the other. The perianth-tube is slender, straight, about an inch and a half long, the six segments bright red, about a half of an inch long, oblong to isuccesshaped and obuse; three of them plain red, and three larger with a conspicions dark red spot at the base. The stamens are about one quarter of an inch long, inserted in the threat of the perianth-tube, the anthers two-celled, the stigms red, two lobed, on a long slender style. The fruit is a rough, rounded, three-celled capsule, with many round sects in two series. KERNETER, ROWERDE

Addison/a 11	
(Plate 368)	
LAPLYHOUSIA CRUENTA	
Blood spotted Lapeyrousia	
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"Details - Addisonia : Colored Illustrations and Popular Descriptions of Plants - Biodiversity Heritage Library." Accessed October 5, 2022. https://www.biodiversitylibrary.org/bibliography/5044.







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"Details - Addisonia : Colored Illustrations and Popular Descriptions of Plants - Biodiversity Heritage Library." Accessed October 5, 2022. https://www.biodiversitylibrary.org/bibliography/5044.

Title table of BHL hosted material. Accessed October 5, 2022. <u>https://about.biodiversitylibrary.org/tools-and-services/developer-and-data-tools/#Data%20Exports</u>.







Stork, Lise, Andreas Weber, Eulàlia Gassó Miracle, Fons Verbeek, Aske Plaat, Jaap van den Herik, and Katherine Wolstencroft. "Semantic Annotation of Natural History Collections." *Journal of Web Semantics* 59 (December 2019): 100462. https://doi.org/10.1016/j.websem.2018.06.002.



1	2		

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Favorite, Capt. Keen, of Portland, arrived and anchored in the Western anchorage. Reported the Jameslown launch as forty miles this side of Chilkaht River a week ago, bound up and all well. Draw large seine in the lake for trout with poor success being just the commencement of the season. Small messes are caught with a hook.

[[line]] Tuesday, June 1st/80 [[line]]

[[page includes tables with 5 columns -  $^{\prime \prime}$  used to better distinguish separate column fields for readability.]]



[[line]]Wednesday June 2nd[[line]]

[[table]] 6 A.M. | 29.96 | 56 | 48 | SW 12 M. | 30.06 | 61 | 50 | \* [[ditto for: SW]] 6 P.M. | 30.12 | 53 | 49 | \* [[ditto for: SW]] [[/table]]

"William H. Dall - Field Notes, 1880 (1 of 2) | Smithsonian Digital Volunteers." Accessed October 7, 2022. https://transcription.si.edu/project/6980/

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At-sea, 1963-1966, 1968, part 3 : July - August 1966. *Pacific Ocean Biological Survey Program - 1966*. https://www.biodiversitylibrary.org/bibliography/148243







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Show me all "Pearl and Hermes Reef" field notes; all "Hawai'i" and its subsidiaries field notes; and all "United States" and its subsidiaries field notes

#### Show me all "*Puffinus pacificus*" field notes; where "date" is "July"

Thomer, Andrea, Gaurav Vaidya, Robert Guralnick, David Bloom, and Laura Russell. "From Documents to Datasets: A MediaWiki-Based Method of Annotating and Extracting Species Observations in Century-Old Field Notebooks." *ZooKeys* 209 (July 20, 2012): 235–53. https://doi.org/10.3897/zookeys.209.3247.







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#### How to extract data and datasets from items







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18	Star No. 1. Star 16	4	12.2.1	0.047313005814	207.5	14	P. However	molt repairs	Sal the	ECL .
17	and the second	5	4	-0.47 H 176 1/141	Init's	IT I	CT CARTER CAR.	COMMENT OF S	PRIX	132
1		-		0.46 2 177 Acres	170	100	17.10	- 4	ecopin t.	U.rer
20	4			112 404 410	2.50	1	1 au	-	1	1
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0.6	Put nic Pach c.s	5	1	C 50 N 175 7	111	1.4	TEXTERNA IN	carmets ras	Sheldor	Hel.
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20		8	4	1001N 178:06 W	125	ia t	15 25 40	Ho P Colles have	Ske ehon	lart *

"confidence": 0.986, "text": "Alco" }, "appearance": { "style": { "confidence": 0.909, "name": "handwriting" } }, "boundingBox": [ 2468, 254, 2613, 253, 2613, 281, 2468, 283 ], "text": "Haber 872", "words": [ "boundingBox": [ 2469, 256, 2540, 255, 2540, 283, 2469, 282 ],













Page 4

Page 7











https://github.com/kmika11/bhl unlocking datatables/blob/main/creating tables using bounding boxes.ipynb







col_1	1	2	3	4	5	6	7	8	9	10	11 12	13
Field Number	SPECIES	SEX	DATE	1966	LOCATION		FAT CON .	REproduction		Remarks		
2259	PhAsthow rubricAndA	#NAME?	6-Jul-56		180 05'N 160 40' W	670"		OUA A' IL 5/225 -pota4me	Color watss			Huber 836
60	Pt. ExterNA ExterNA		7-Jul		150 II'N 1830 19'W	473.7		L . ovum / mm				Chandler 9
61					15 03'N 1630 26' W	429					ESB	BALcomb 103
62		0	8-Jul		110 38'N 166 0 23 W		very light	DvAry 8X 44-1				21
63	it hypoluca NigriDENNIS	No	9-Jul		110 34' N 1660 27'W	134.7	Light - mad	testss 2x1 mm (black )		BES		Huber 837
64	SterNA tuscatA				090 56N 1680 06'W		1154+	JonAds Not found.	color Notes			PEARSON 23
65	Puffinus pacificus					360	Light - med.	RODAry 7x 5-2m				Huber 838
29						365	med.	OUA MINUTE				839
68	PhaEthon rubricandA	ко			690 18'N 168025 W	849	Very halt	+EstEs 12 x 6mm	Color Watts 9 -007		ES	846
70	Puffinus puffinus NEwEllii		10-Jul		06 0 19'N 1710 29' W	422		oug granular	color Notss 4-010 EBS	H-00 9		PEArson 24
71	Pt. hypoluca Nigri PENNis				050 35'N 1720 09'W		Very light	Ov Ary 6 x 2mm	colarvates	4-011 BES		Bulmer 935
72	Puffivins pacificus	31			05 22'N 1720 21' w	410		L. 7. 4x/mm dark,	colorNotis			BALcom5 104
23						442		Ovary 5x4mm	color vates		SB	Chandler 10
74		8			2:30 44'N 173059 W	315		LT 2x1mm RT 1XImm				PEARSON 25
75			13 tily		00 47'N 1760 57W	318.7	Light		ColorNatEs		5 SkElEton	Hoff
76	SterNA EuscatA				0 0 47 N 1760 58' W	207.5		L+ 3X/mM Rt 2xl	colorwatss	Flus **	SKIN	Hott 63
77					00 47'N 176 14 W	160.5						Huber 890
78					0 46'N 177 34'W	179						891
79						186		NOBP	molt			892
80	Puttivis pacificus				0 0 46'N 1770 36 'W	364	klavy	120765 3X2mm	Color Notes		S SkElston	Hoff 64
81	StERNA fuscato		14-Jul		10 0ON 176 520	175		Ovary 5×4.1m	color wotes			52

https://github.com/kmika11/bhl unlocking datatables/blob/main/sea19631966196800natib 0004.csv







#### What we learned

- Can work for optimal items
- Contribute datasets to Open Data landscape
- Validation is iterative
- "Low hanging fruit"









# Collections as Data as a distinct service model









#### Granularity Curation Publication

6				No. of Lot of Lo				-	Dist		-	States and the second				116
											1	1 Strain				
S. C		-	Terr	Loos	we to the mount	E.c.	where	TI	TY	H.F.	=.	ALL STREET	Ne	TES		1
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3 11741	MINIOPTERUS		APRIL 5	CAPE VOLEL PENIN	ISULA, MENAPI	5.1.	-	- 11	. The second	To my	A Different	TH FORMALIN	. SHOT AFT	TCR DAR	REST HOUSE .	
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66	SMALL, MARY MARY DES	9_		Star Barrow	07 0-	5.1	-	-	-	-	-	TH FORMANN				-
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Van Deusen, Hobart M., American Museum of Natural History, and Archbold Expedition to New Guinea (1953). 4th Archbold Expedition to New Guinea, 1953 Papua -- Cape Vogel, Maneau Range (Mt. Dayman), Goodenough Island, 1953. https://doi.org/10.5962/bhl.title.133896.















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#### Thanks!





