The GBIF-BID Project Team on "Expanding the visibility of the Lagos Herbarium through Digitization and Mobilization of Plant Specimen Data"

Presents

A Webinar on Digitization and Mobilization of Plant Specimen Data: The Lagos Experience

Date: 12th October, 2022

Time: 10.00 am WAT

Venue: ZOOM/Faculty of Science Board room, University of Lagos.
Join Meeting: https://us02web.zoom.us/j/87576865096?pwd=UDh3T09nUHJzTmxwUUNqTEQzTk8wUT09
Meeting ID: 875 7686 5096 **Passcode: GBIF9203**

Chief Host:

Prof. Oluwatoyin T. Ogundipe FAS
Vice-Chancellor, University of Lagos

Host:

Dr O.E. Ade-Ademilua
HOD, Botany

Principal Investigator:

Dr. Temitope O. Onuminya FLEAD

Moderator:

Prof. Kehinde Kemabonta

Panelists:

1. Dr. George Nodza
2. Dr. Aramide Igbari
3. Mrs. Bukola Suberu
4. Mr. Victor Oroleke

Project Partners:

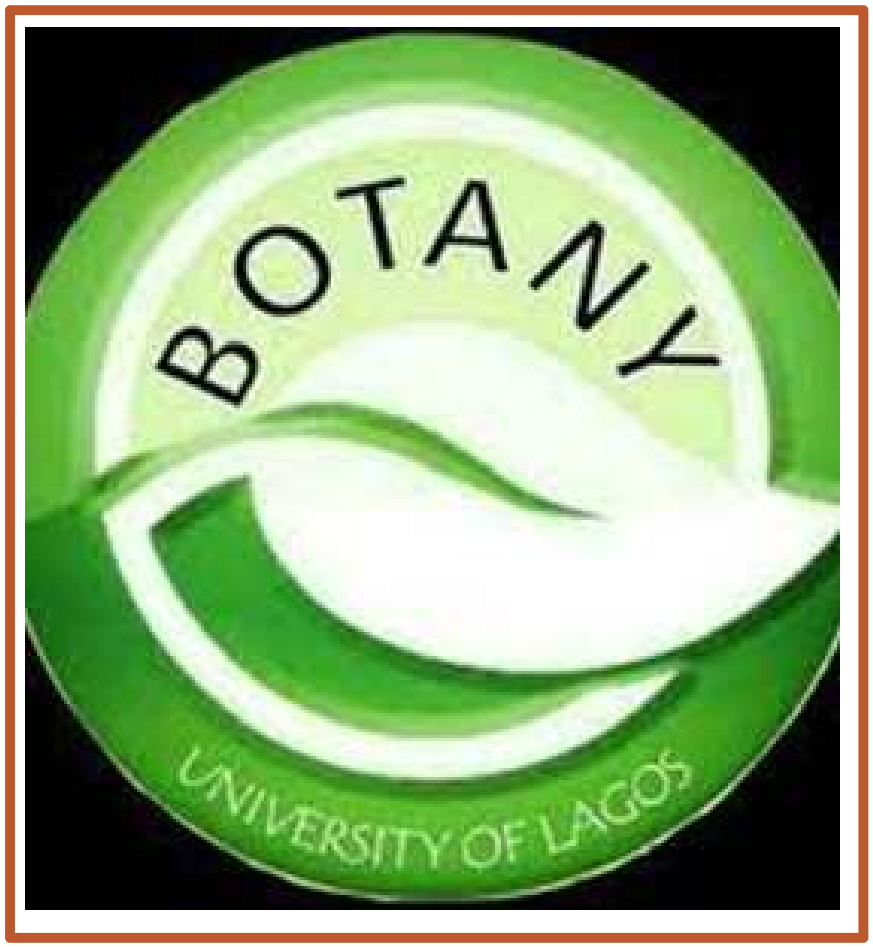
LAGOS STATE GOVERNMENT
Ministry of the Environment & Water Resources

Sponsors:

BID Biodiversity Information for Development

EUROPEAN UNION

THE PROJECT



Expanding the visibility of the Lagos Herbarium through Digitization and Mobilization of Plant Specimen Data

Dr. Temitope O. Onuminya *FLS, FLEAD, fisn*

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INTRODUCTION

The University of Lagos Herbarium (LUH)

Location

- Established 1971,
- One of the oldest institutional herbaria in Nigeria,
- Located in the Department of Botany, University of Lagos.

Function

- Provides services to students, researchers, scientist, and conservationists

Composition

- Over 10,000 plant collections
- 70% vascular plants
- Carpological collections

THE ISSUES

- Uncatalogued or in form of hand written notes in registers
- None digitized
- None visible online

FUNDER

Project ID: BID-AF2020-009-INS (€18,850)

Grant type: Institution-Level biodiversity data mobilization grants

Duration: 18 months (April 2021 – October 2022)

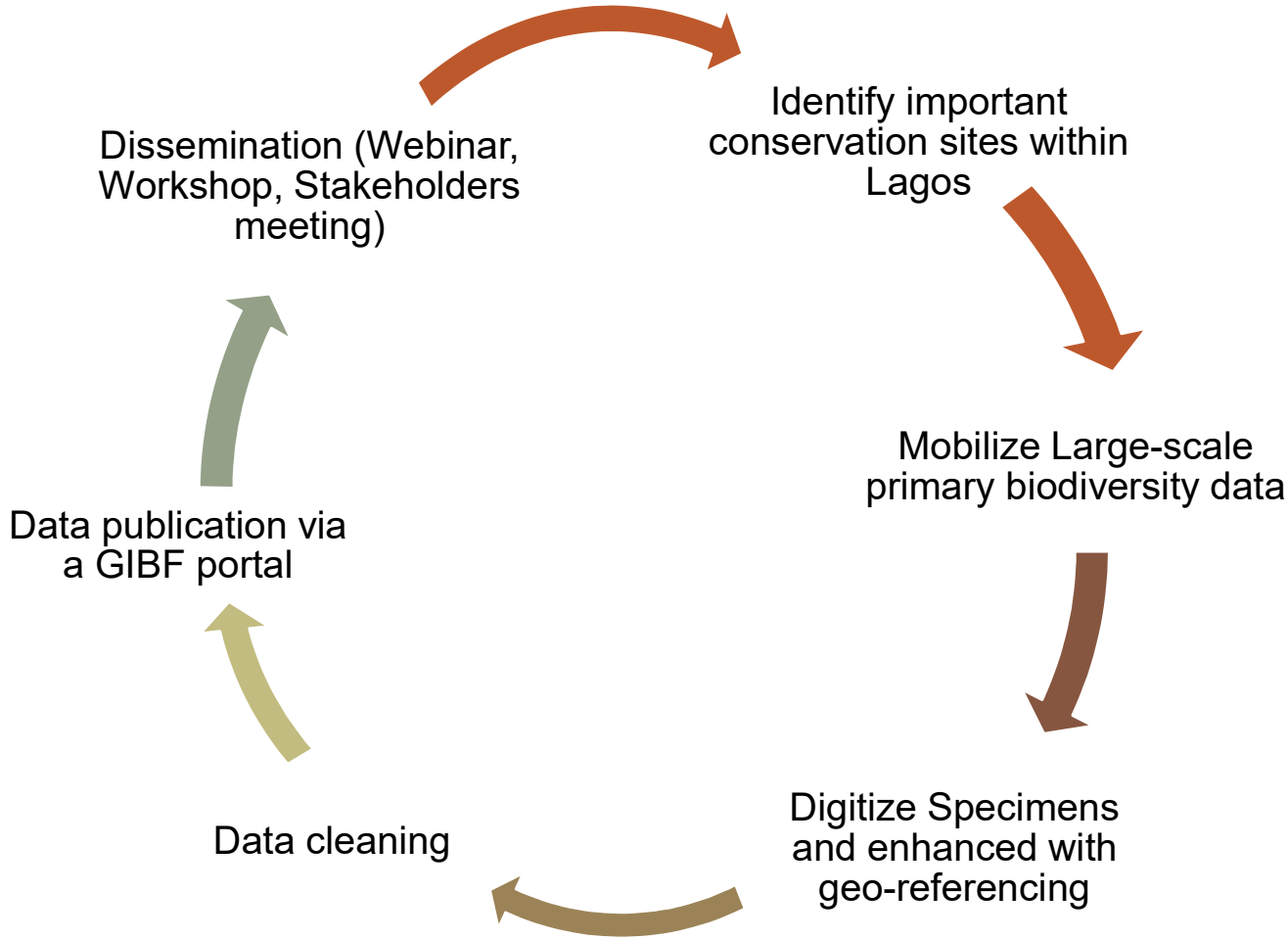
Department of Zoology

UNIVERSITY OF FIRST CHOICE AND THE NATION'S PRIDE

AIM

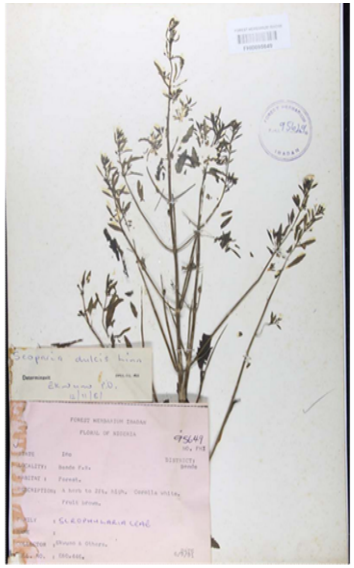
To digitize and publish information from preserved vascular plant collections as well as associated metadata and images at LUH to ensure access for conservation assessments, policy making and stakeholder use.

METHODOLOGY



DATA SOURCES

1. Herbarium Collections



- Herbarium sheets and vegetal materials (seeds, foliage, branches, bark, dried/preserved fruits...)

2. Literature

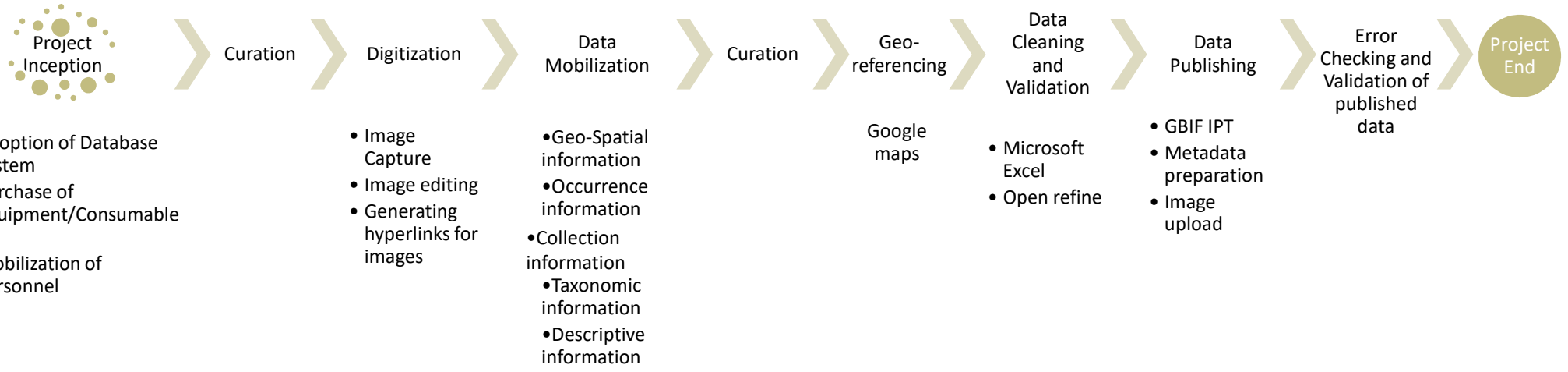
Published or in press scientific articles

GBIF Global Biodiversity Information Facility

UNIVERSITY OF FIRST CHOICE AND THE NATION'S PRIDE

UNIVERSITY OF LAGOS IN DEED AND IN TRUTH

OUR PROCESSING WORKFLOW



ACHIEVEMENT

- Kick off Stakeholders' engagement meeting
- Data Mobilization
  - 10,000 occurrence data
  - ~4,000 checklist data
  - Electronic identification access key – LUCID
  - Capacity enhancement workshop for Government agencies – MOEWR
  - Regional capacity building workshop on Data Use
  - Specimen imaging – 7,000 done others in progress
  - Academic article:
    - Useful plants of Lagos Herbarium (in progress)
    - Medicinal Plants of Gashaka-Gumti National Park (in progress)
  - Data Paper
    - The Higher Plants of the Lagos University Herbarium (in progress)

The Project Team Members L-R Dr A.D. Igbari, Dr. K.A. Kemabonta, Dr. T.O. Onuminya (F
Suberu (Ministry Rep)

L-R Dr. K. Kemabonta, Prof. E.O. Oyeyemi (Dean Faculty of Science), Dr. A.B. Kadiri (Rep.
Department, Botany)

6/25/22, 10:24 PM Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data

PROJECT | APPROVED

Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data

5 April 2021 - 31 October 2022 € 18,850

ABOUT NEWS & EVENTS DATASETS

HOW TO ADD EVENTS TO A PROJECT PAGE

A 3-Day Capacity Building Workshop Event

The GBIF-4ID Project Team BID-AF2020-023-NAC on Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data, invite to a 3-day Capacity Building Works...

Nigeria - Lagos - NSPRI Guest House, Akoka
June 28, 2022 - June 30, 2022

28 Jun 2022

ADD TO CALENDAR

Capacity Building Training on Biodiversity Digitization for staff of Conservation and Ecology Department Event

Capacity Building Training on Biodiversity Digitization for staff of Conservation and Ecology Department, Ministry of the Environment and Water Resources, in connection with the GBIF-4ID Project Team ...

Nigeria - Lagos - Abuja, Ikeja
February 23, 2022 - February 24, 2022

23 Feb 2022

Stakeholders Engagement Meeting I Event

The GBIF-4ID Project Team BID-AF2020-009-INS on Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data, held the first Stakeholders engagement mee...

Nigeria - Lagos - University of Lagos
January 13, 2022 10:00

13 Jan 2022

€ 18,850 FUNDED BY

European Union GBIF

https://www.gbif.org/project/BID-AF2020-009-INS/expanding-the-visibility-of-the-lagos-herbarium-through-digitization-and-mobilization-of-plant-specim... 1/1

6/25/22, 10:26 PM Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data

PROJECT | APPROVED

Expanding the visibility of the Lagos Herbarium through digitization and mobilization of plant specimen data

5 April 2021 - 31 October 2022 € 18,850

ABOUT NEWS & EVENTS DATASETS

HOW TO LINK A DATASET TO A PROJECT

A Checklist of Higher Plant Collections in the Lagos University Herbarium (LUH), Lagos, Nigeria Checklist dataset

This is a species checklist of higher plant collections within the Lagos University Herbarium domiciled at the Department of Botany, University of Lagos, Akoka Campus, Lagos, Nigeria.

Published by University of Lagos

1,487 records

A Checklist of Plants in the Nigerian Arid Zone Checklist dataset

This is a checklist of plants in Nigeria Arid Zone found in the Lagos University Herbarium, Lagos, Nigeria.

Published by University of Lagos

308 records

A Checklist of Fulfulde Names of Plants from Mambila Plateau, Taraba State, Nigeria Checklist dataset

This is a checklist of plants from Mambilla Plateau, Taraba state, Nigeria.

Published by University of Lagos

183 records

A Checklist of Plants Growing on the Akoka Campus of the University of Lagos, Lagos, Nigeria Checklist dataset

This is a checklist of the existing flora within the University of Lagos, Akoka Campus, Lagos, Nigeria.

Published by University of Lagos

142 records

Higher Plant Collections of the Lagos University Herbarium (LUH): Families A - Z Occurrence dataset

This is a record of higher plant collections in the Lagos University Herbarium (LUH)

Published by University of Lagos

6,733 occurrences 2 citations

A Checklist of African Sapindaceae Checklist dataset

This is a checklist of African Sapindaceae in the Lagos University Herbarium at the University of Lagos, Akoka, Lagos, Nigeria.

Published by University of Lagos

113 records



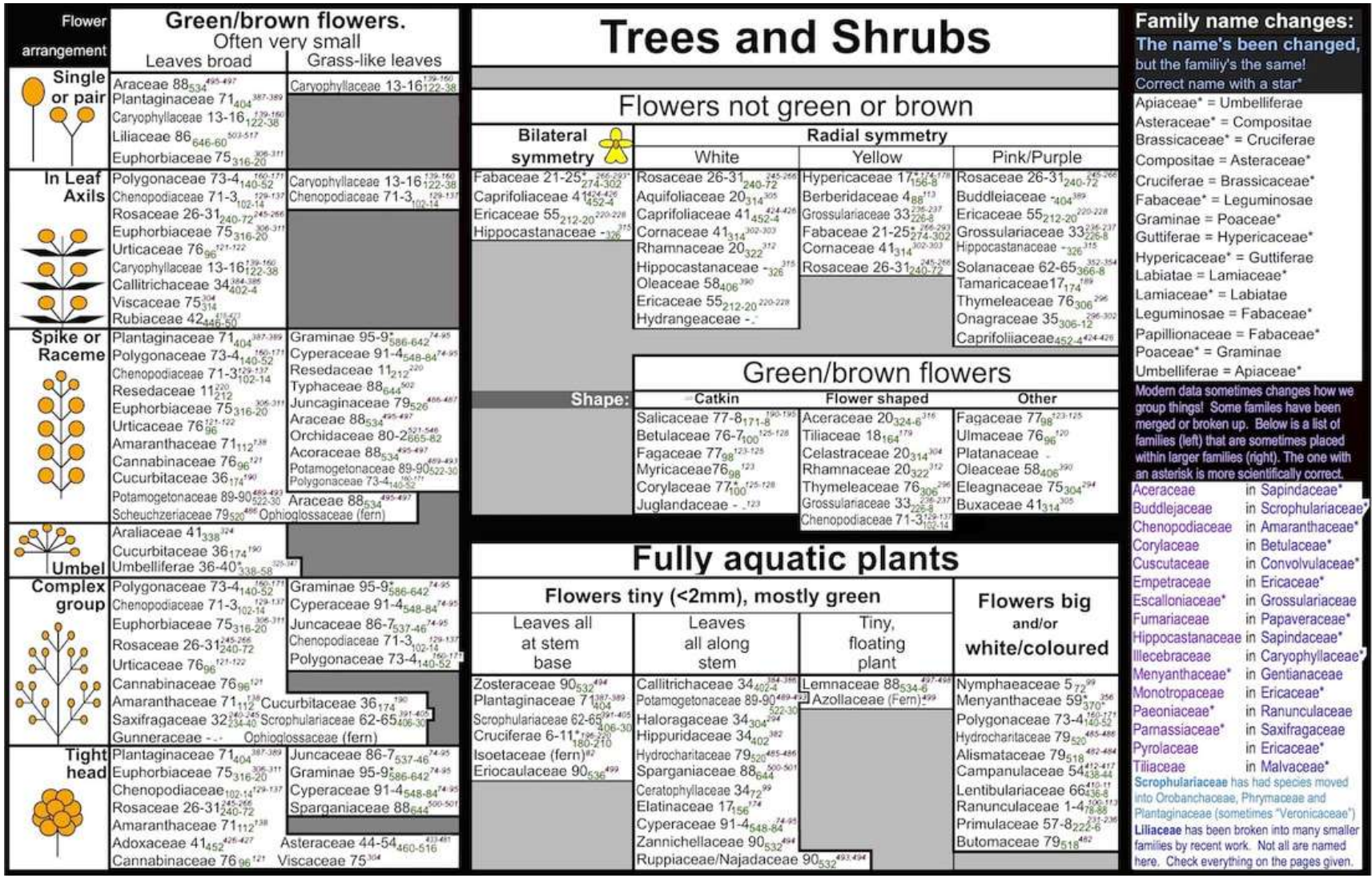


The Mobilization Team



Capacity Building for Lagos State Government Officials

LUCID 4.0
KEY DEMO



Imaging Activities

Regional 3-Day Capacity Building Workshop

OUTPUT

Approximately 14,000 plant specimen data is mobilized.

User Friendly Electronic Identification key is developed for species identification.

Training in biodiversity informatics while also publicizing data resource and exportable model of data mobilization

Insight into spatio-temporal distribution of plant species for improved conservation schemes.

Promote data sharing and collaboration

UNIVERSITY OF FIRST CHOICE AND THE NATION'S PRIDE

Outcomes

- Foster data-mobilization relationships and responsibilities for effective assessment of biodiversity data in Lagos.
- Capacity development in biodiversity data handling.
- Improved access to and use of accurate biodiversity information in conservation and development planning.
- Policy implementation which is being coordinated by the Ministry of the Environment.

LESSONS LEARNT

CHALLENGES AND SOLUTIONS

CURATION

CURATION

- Mounting of specimens on herbarium sheets
- Rearrangement and classification of specimens in the herbarium according to families
- Labeling of herbarium sheets.
- Name change of species e.g. *Nauclea latifolia* is now a synonym of Sa*rcocephalus latifolius.*

Reconciliations

- Some species' names were written without the names of the authorities. We added the authorities to the name of the species e.
- Reconciliation of LUH Number: In some instances, 3-4 species were wrongly assigned the same LUH number. This was resolved using the collection dates
-
- Merging of Papilionoideae, Caesalpinioideae, and Mimosoideae as a single family (Fabaceae)
- Compositae was corrected as Asteraceae.

SPECIMEN DIGITIZATION

Imaging of the Specimen

- Specimens were placed on a White background Surface.
- Pictures were taken using a High definition Nikon 600d Camera with 50mm Lens, A tripod fitted with Umbrella reflector and AD 600 Light for Shadow removal.
- Pictures were taken with a camera due to the High cost of a Scanner.
- Pictures were edited using Adobe Photoshop Lightroom with Precaution of maintaining The Natural Look.
- Pictures were named using the Herbarium Voucher Code (Lagos University Herbarium – LUH).

Cloud Storage and Link Generation

(a)

Cloud Images

(b)

7731	LUH	https://drive.google.com/file/d/1DrcIZY3y_IW9T7A_zcjyfoi2YTvNFT8L/view?usp=sharing	6914 Cole O.
0661	LUH	https://drive.google.com/file/d/1DrnG2tGqN2_ulz2bsWfuACGxIuuJRHZ0/view?usp=sharing	3794 Daramola, B. O.
2993	LUH	https://drive.google.com/file/d/1dROHcsg1orEITMEB-_bQ8Ua1iYSXIMqv/view?usp=sharing	4817 Mr |rew
4548	LUH	https://drive.google.com/file/d/1DRsn3QlOqI-iNgNKHuNgQXF6cwnmgWuJ/view?usp=sharing	2675 Edema Samuel Olusola | Dr A.B. Kadiri
5332	LUH	https://drive.google.com/file/d/1DSKkUhJVZBct4W6U-vcoIZwO3iOHy9YH/view?usp=sharing	9369 David Hammond
4291	LUH	https://drive.google.com/file/d/1DsKORKucKzKBpR4_AZM9IpQtg5vUo4Q3/view?usp=sharing	2687 Ogunremi Adeola
6207	LUH	https://drive.google.com/file/d/1dSKxiNkfVBbUsGz5zDJNaxJ9sYgd6RRf/view?usp=sharing	8445 M.S.Ogundipe
0158	LUH	https://drive.google.com/file/d/1DSpCPAMAYXYDxUXNKIMem6Z1ObkDWSWF/view?usp=sharing	7228 Oyebanji, O.O.
0537	LUH	https://drive.google.com/file/d/1dsvAkQeavymu6hCFgSZLGhp6hERJFy2N/view?usp=sharing	1558 Kejiola, A.O.
5406	LUH	https://drive.google.com/file/d/1DSWMykrREDMhvsu9uHSqUthOSpOEaP2Y/view?usp=sharing	9375 Prof. Ogundipe
6173	LUH	https://drive.google.com/file/d/1dSWUQufibj2xzpQbXns_XiKh2rq-fbLK/view?usp=sharing	515 Dr Akinsoji
2708	LUH	https://drive.google.com/file/d/1DT_w7YtDsciibybABj_fu0mPuKOCQYq-/view?usp=sharing	4897 Folajimi Arubuola
3889	LUH	https://drive.google.com/file/d/1dT8c0TAtMi1WnNPHnXdbnHlclSBPgKnG/view?usp=sharing	4201 T.K.Odewo
5718	LUH	https://drive.google.com/file/d/1DTAvJpNARPixdYn9M3t7DQwEeomYLh9o/view?usp=sharing	6459 Dr Lawal
4061	LUH	https://drive.google.com/file/d/1DtGxgwJtu-gz2ez4Tyew5fr66tTxDTax/view?usp=sharing	2441 Obiorah Tonia
4044	LUH	https://drive.google.com/file/d/1DTYRZSVzxuUx6bk2zm-F2s762lOCQgi3/view?usp=sharing	2429 Chukwu
4882	LUH	https://drive.google.com/file/d/1DuAvnTW9TqfHUoKj-JStL-84yv337d59/view?usp=sharing	113 Adewuyi Adejumoke
4731	LUH	https://drive.google.com/file/d/1dUBve_WiSxWDdbr2b5RahtUJR4VOlGqL/view?usp=sharing	5998 Anisere Abiola
1762	LUH	https://drive.google.com/file/d/1DunDUQ4521l8CCafM7J6iv3B9TUye7fqG/view?usp=sharing	7376 Daniel Abuka
4417	LUH	https://drive.google.com/file/d/1dus51F4Um7VUl2KqOXenMLWNYIAfZi28/view?usp=sharing	405 Prof.Olowokudejo | T.K.Odewo
3683	LUH	https://drive.google.com/file/d/1dv9bTyhhhA9o7cREmsYcfmJNVy6v9O_2/view?usp=sharing	1257 T.K.Odewo
2148	LUH	https://drive.google.com/file/d/1DvlhDeNGrDY9PpdfeA8lKiuqx_VCByLD/view?usp=sharing	3569 Dr. E. Jonathan
6000	LUH	https://drive.google.com/file/d/1dvLSZ-6bcMTi2t3t4kf6SuWmNJJNpFV/view?usp=sharing	2450 Opadeji Kehinde A
0415	LUH	https://drive.google.com/file/d/1dVXhi10BopIZWgmgohdBYrwL5Lq2Eh_P/view?usp=sharing	7120 Adijat Buraihmoh | Odewo, T.K.
5311	LUH	https://drive.google.com/file/d/1dWb9A52PpDqcOkLCSMsOf_TQS3pLnYsB/view?usp=sharing	284 Oyenubi Ajibike
6282	LUH	https://drive.google.com/file/d/1DwkGAUQC-HvYvgdCWiNu6tRZDMKeS1uz/view?usp=sharing	7474 Mrs Okunola
3320	LUH	https://drive.google.com/file/d/1DWrMymwtrtytQiRnR0n9aWT_GeOPTfDA/view?usp=sharing	6519 Sopeyin Aminat
6755	LUH	https://drive.google.com/file/d/1dwT7nUEBG1wksWoWvPEac_LfNaisXY3b/view?usp=sharing	9493 J.D Chapman
3665	LUH	https://drive.google.com/file/d/1DWWPqiv1g7JwB2EvI3z48iRqWngCeesK/view?usp=sharing	4460 Maxwell Juilet .C.

Links generated

DATA MOBILIZATION

Mobilization

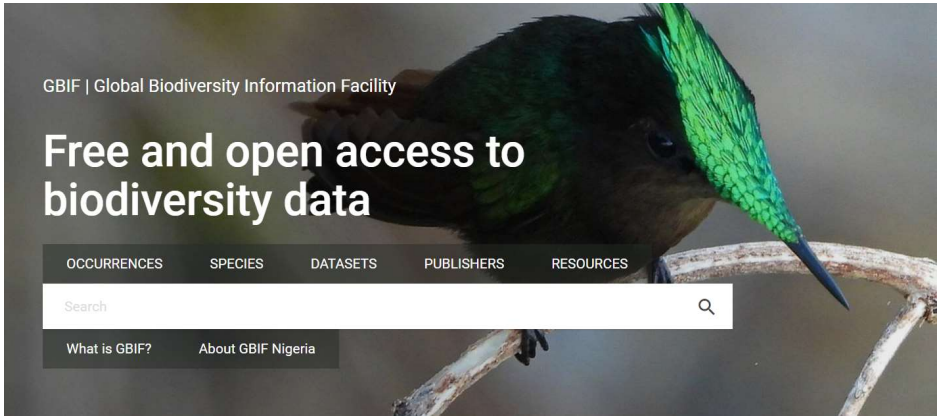
- Specimens were not properly classified; Only Name and Families were provided

- Classification of Specimens were done following Darwin Core standard and validated through the GBIF portal (https://www.gbif.org/)

Types of Information Mobilized

- Taxonomic information
- Spatial information
- Collection information
- Descriptive information

kingdom	phylum	class	order	family	genus	specificEpithet	scientificNameAuthourship	organismName	acceptedNameUsage	taxonRank
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Cyrtosperma	senegalense	(Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Cyrtosperma	senegalense	(Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Cyrtosperma	senegalense	(Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Cyrtosperma	senegalense	(Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Cyrtosperma	senegalense	(Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Cyrtosperma senegalense (Schott) Engl.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Alismatales	Araceae	Pistia	stratiotes	L.	Pistia stratiotes L.	Pistia stratiotes L.	Species
Plantae	Tracheophyta	Liliopsida	Arecales	Arecaceae	Calamus	deerratus	Man & Wendl	Calamus deerratus Man & Wendl	Calamus deerratus Man & Wendl	Species
Plantae	Tracheophyta	Liliopsida	Arecales	Arecaceae	Elaeis	guineensis	Jacq.	Elaeis guineensis Jacq.	Elaeis guineensis Jacq.	Species
Plantae	Tracheophyta	Magnoliopsida	Piperales	Aristolochiaceae	Asarum	canadense	L.	Asarum canadense L.	Asarum canadense L.	Species
Plantae	Tracheophyta	Magnoliopsida	Gentianales	Asclepiadaceae	Calotropis	procera	(Aiton) W.T.Aiton	Calotropis procera (Aiton) W.T.Aiton	Calotropis procera (Aiton) W.T.Aiton	Species
Plantae	Tracheophyta	Magnoliopsida	Gentianales	Asclepiadaceae	Leptadenia	pyrotechnica	(Forssk.) Decne.	Leptadenia pyrotechnica (Forssk.) Decne.	Leptadenia pyrotechnica (Forssk.) Decne.	Species
Plantae	Tracheophyta	Magnoliopsida	Asterales	Asteraceae	Vernonia	camporum	A.Chev.	Vernonia camporum A.Chev.	Vernonia camporum A.Chev.	Species
Plantae	Tracheophyta	Magnoliopsida	Asterales	Asteraceae	Ageratum	conyzoides	L.	Ageratum conyzoides L.	Ageratum conyzoides L.	Species
Plantae	Tracheophyta	Magnoliopsida	Asterales	Asteraceae	Ageratum	conyzoides	L.	Ageratum conyzoides L.	Ageratum conyzoides L.	Species
Plantae	Tracheophyta	Magnoliopsida	Asterales	Asteraceae	Ageratum	conyzoides	L.	Ageratum conyzoides L.	Ageratum conyzoides L.	Species
Plantae	Tracheophyta	Magnoliopsida	Asterales	Asteraceae	Ageratum	conyzoides	L.	Ageratum conyzoides L.	Ageratum conyzoides L.	Species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Free and open access to biodiversity data
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Classification
Select a species
Kingdom Plantae
Phylum Tracheophyta
Class Magnoliopsida
Order Sapindales
Family Anacardiaceae
Genus Mangifera L.
Species Mangifera indica L.
https://www.gbif.org/species/3190638
SPECIES | ACCEPTED
Mangifera indica L.
Published in: L. In: Sp. Pl. 1: 200. (1753). source: Synonymic Checklists of the Vascular Plants of the World
Indian mango In English
OVERVIEW
2 TREATMENTS
METRICS
REFERENCE TAXON
17,506 OCCURRENCES
4,547 OCCURRENCES WITH IMAGES
SEE GALLERY
12,816 GEOREFERENCED RECORDS

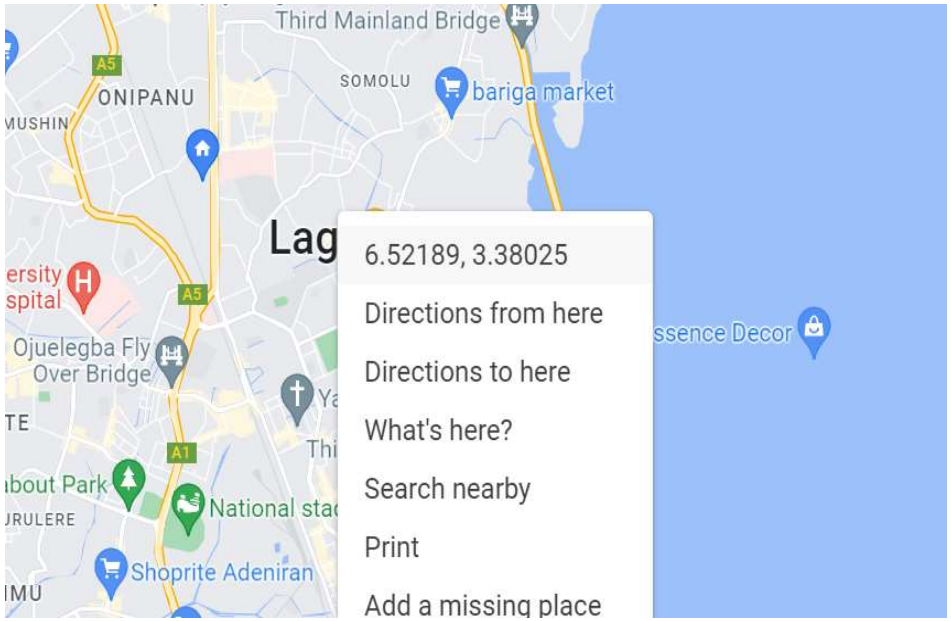
GBIF Portal

Geo-referencing of Specimens

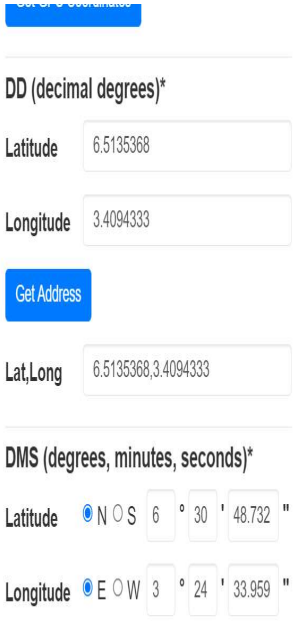
- Majority of the samples had only locations indicated on the sheets. So, Google Maps 2022 (https://www.google.com/maps) was used to get the coordinates for such specimens.

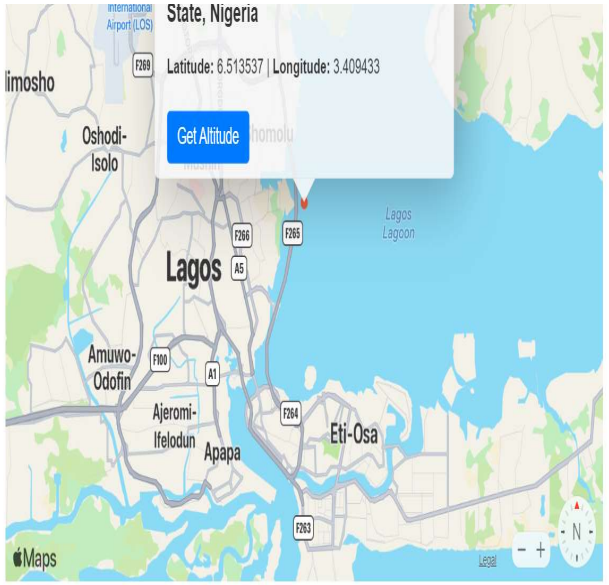
- Specimens with verbatim Coordinates were converted to decimal latitude and longitude using GPS Coordinates converter (https://www.gps-coordinates.net/).

(a)



(b)





(a) GPS coordinates form Google Maps

(b) GPS Converter Used

DATA CLEANING

Data cleaning

- Both checklist and occurrence datasets were initially cleaned on excel spreadsheet.
- Additional cleaning done using Open Refine following GBIF data standards.
- Darwin Core terms were recorded appropriately and checked for mismatch and errors.

Data cleaning

	A	B	C	D	E	F	G	H	I
1	occurrenceID	institutionCode	associated media	catalogNumber	recordedBy	day	month	year	even
2	NG:LUH:EVH:0000001	LUH	https://drive.google.com/file/d/1pnLCnuxlKBewHX_tHyrKbqJ4736z12Ae/view?usp=sharing	4951	Bamgbade Olaoluwa	11	5	2012	11/05
3	NG:LUH:EVH:0000002	LUH	https://drive.google.com/file/d/1WlW8zIkS9f7b9rCvIO3yq_QejY7cKQr9/view?usp=sharing	6474	Afolabi A. | Nwakanma, W.M.C.	12	5	2015	12/05
4	NG:LUH:EVH:0000003	LUH		6513	Babalola Sadat	30	6	2015	30/06
5	NG:LUH:EVH:0000004	LUH	https://drive.google.com/file/d/1sVfbYu2vVrgTw9eiyf6qotTBjEM5Duvq/view?usp=sharing	1270A	Adeonipekun, P.A.	21	6	2012	21/06

	M	N	O	P	Q	R	S	T	U	V	W	X	
1	stateProvince	locality	decimalLatitude	decimalLongitude	georeferencedBy	georeferencedDate	georeferenceSources	georeferenceVerification	kingdom	phylum	class	order	family
2	Ogun	Ijako Ogun state	6.729388579	3.311025144	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
3	Osun	Ikire	7.371712488	4.186862155	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
4	Osun	Ikire	7.371712488	4.186862155	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
5	Osun	Erin-Ijesha	7.56531842	4.902135952	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
6	Niger	Borgu game reserve	10.3252778	3.947777778	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae

	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1	order	family	genus	specificEpithet	scientificNameAut	organismName	acceptedNameUsage	taxonRank	vernacula	identifiedby	taxonRemark	mediatype	mediaformat
2	Lamiales	Acanthaceae	Acanthus	lupulina	T.Anders.	Acanthus lupulina T.Anders.	Acanthus lupulina T.Anders.	Species		B.O. Daramola		Still Image	application/jpeg LUH
3	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
4	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
5	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
6	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		Oyebanji O.O		Still Image	application/jpeg LUH
7	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
8	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
9	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
10	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		Oyebanji O.O		Still Image	application/jpeg LUH
11	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		Oyebanji O.O		Still Image	application/jpeg LUH
12	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		Oyebanji O.O		Still Image	application/jpeg LUH
13	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Acanthus montanus (Nees) T.Anders	Species		B.O. Daramola		Still Image	application/jpeg LUH
14	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		Odewo T.K		Still Image	application/jpeg LUH
15	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		B.O. Daramola		Still Image	application/jpeg LUH
16	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		Oyebanji O.O		Still Image	application/jpeg LUH
17	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		Odewo T.K		Still Image	application/jpeg LUH
18	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		Oyebanji O.O		Still Image	application/jpeg LUH
19	Lamiales	Acanthaceae	Andrographis	paniculata	(Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Andrographis paniculata (Burm.f.) Nees	Species		Oyebanji O.O		Still Image	application/jpeg LUH
29	Osun	Abatadu road	7.37241		4.18739	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
30	Oyo	University of Ibadan, Oyo	7.444703627		3.897720618	Onuminya T.O.	06/02/2022	Google Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae
	Oyo	Akobo, falaje street.	7.438756864		3.969374508									Acanthaceae

Sheet1

OpenRefine Copy of LUH Collections CLEAN 6784 7207 7525(1) xlsx Permalink

Open... | Export | Help

Facet / Filter | Undo / Redo 0 / 0

Refresh | Reset all | Remove all

day — change

32 choices Sort by: name count | Cluster

)1 1
1.0 1304
10.0 291

7525 rows

Extensions | Wikidata

Show as: **rows** records   Show: 5 **10** 25 50 100 500 1000 rows   « first ‹ previous 1 next › last »

	occurrenceID	institutionCode	associated media	catalogNumber	recordedBy	day	m
1.	NG:LUH:EVH:0000001	LUH	https://drive.google.com/file/d/1pnLCnuxlKBewHX_tHyrKbqJ4736z12Ae/view?usp=sharing	4951	Bamgbade Olaoluwa	11	
2.	NG:LUH:EVH:0000002	LUH	https://drive.google.com/file/d/1WIW8zIkS9f7b9rCvIO3yq_QejY7cKQr9/view?usp=sharing	6474	Afolabi A. | Nwakanma, W.M.C.	12	

OpenRefine Copy of LUH Collections CLEAN 6784 7207 7525(1) xlsx Permalink

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Facet / Filter | Undo / Redo 0 / 0

Refresh | Reset all | Remove all

day — change

32 choices Sort by: name count | Cluster

)1 1
1.0 1304
10.0 291
11.0 170

7525 rows

Extensions | Wikidata

Show as: **rows** records   Show: 5 **10** 25 50 100 500 1000 rows   « first ‹ previous 1 next › last »

recordedBy	day	month	year	eventDate	continent	Country	countryCode	stateProvince	locality	decimalLatitude	decimalLon
Bamgbade Olaoluwa	11	5	2012	2012-05-10T23:00:00Z	Africa	Nigeria	NG	Ogun	Ijako Ogun state	6.7293885794293	3.31102514
Afolabi A. | Nwakanma, W.M.C.	12	5	2015	2015-05-11T23:00:00Z	Africa	Nigeria	NG	Osun	Ikire	7.37171248772887	4.18686215
Babalola Sadat	30	6	2015	2015-06-	Africa	Nigeria	NG	Osun	Ikire	7.37171248772887	4.18686215

OpenRefine Copy of LUH Collections CLEAN 6784 7207 7525(1) xlsx Permalink

Open... | Export | Help

Facet / Filter | Undo / Redo 0 / 0

Refresh | Reset all | Remove all

day — change

32 choices Sort by: name count | Cluster

)1 1
1.0 1304
10.0 291
11.0 170
12.0 155
13.0 207
14.0 272
15.0 297
16.0 248
17.0 336

7525 rows

Extensions | Wikidata

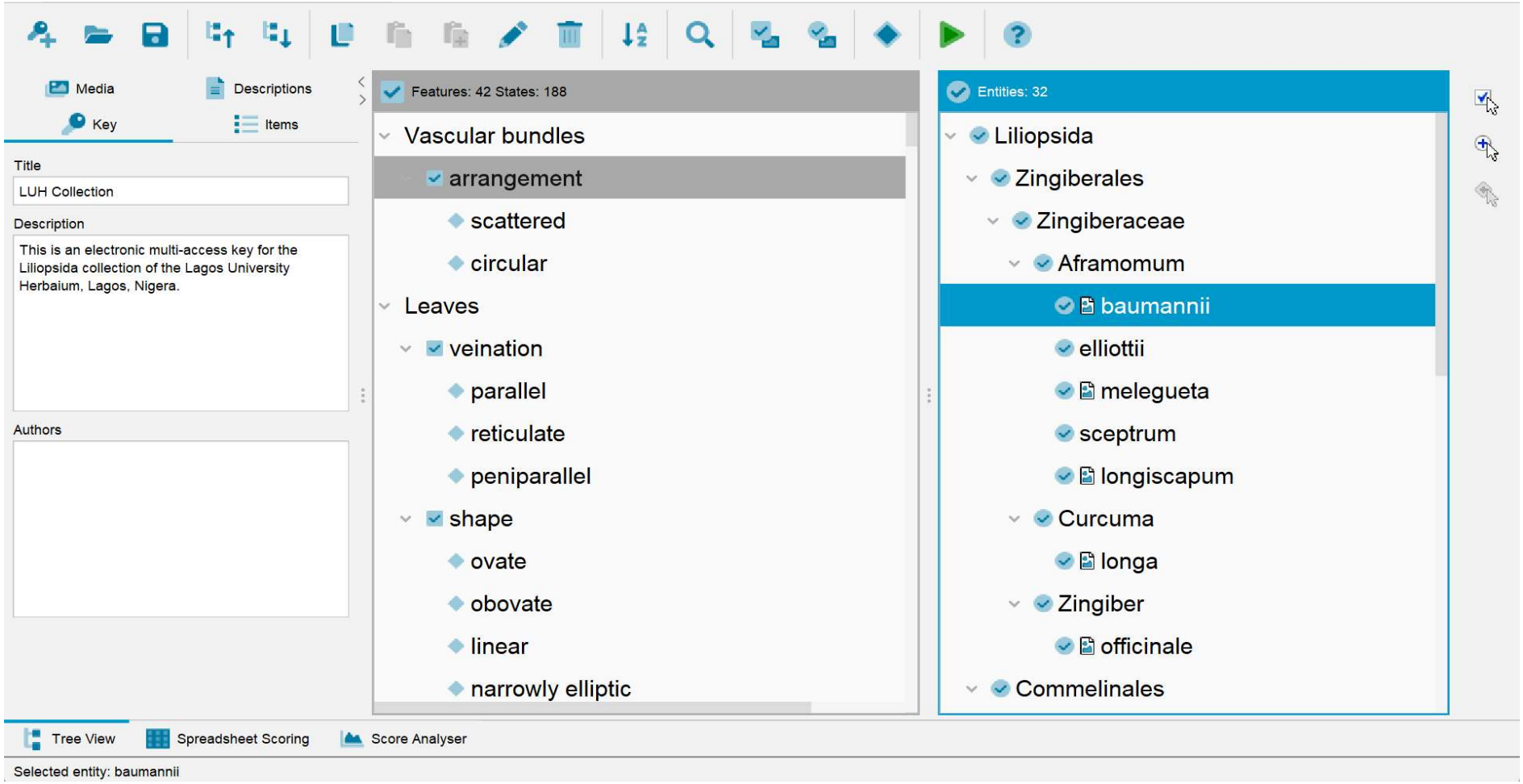
Show as: **rows** records   Show: 5 **10** 25 50 100 500 1000 rows   « first ‹ previous 1 next › last »

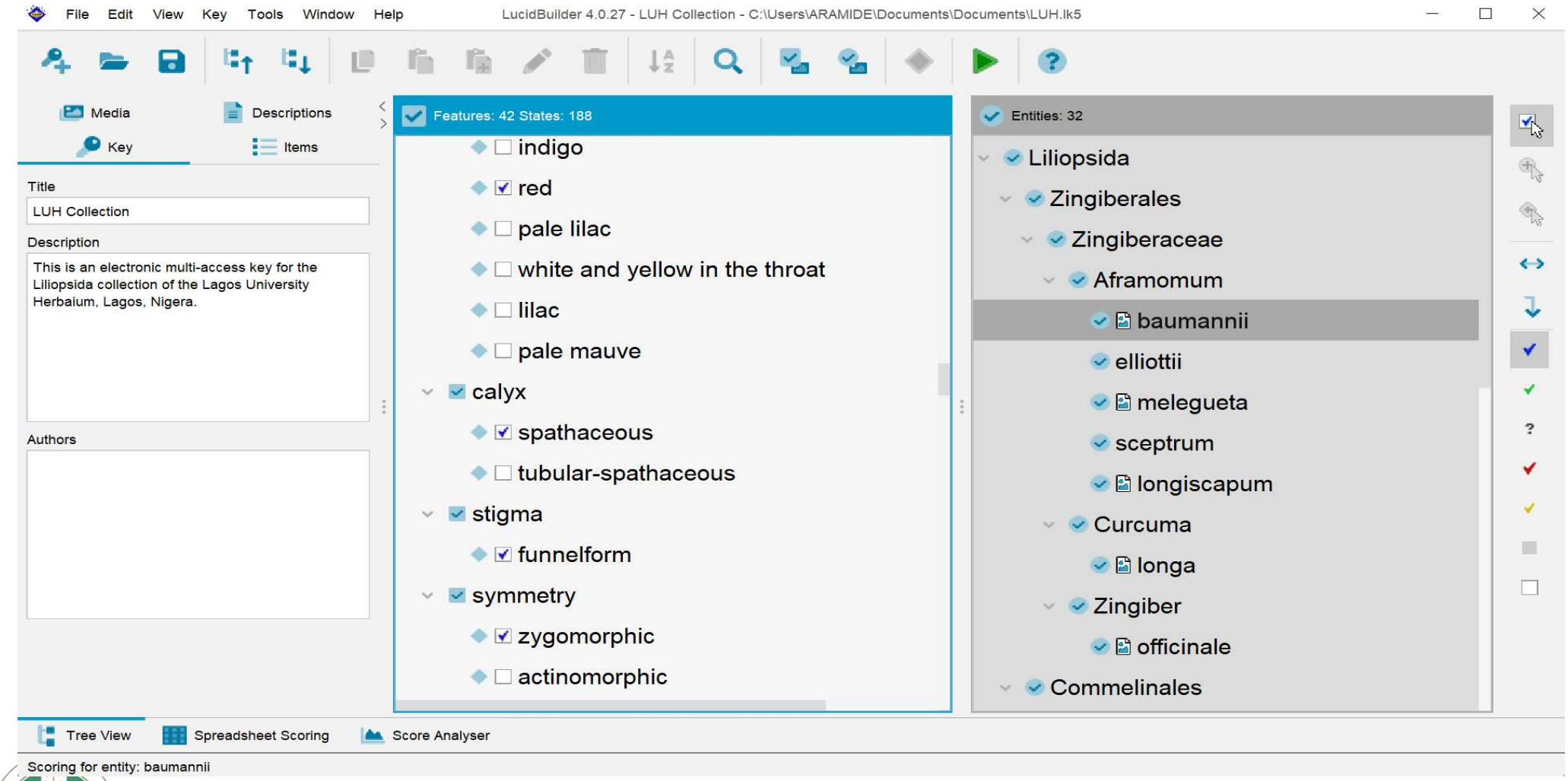
georeferenceSources	georeferenceVerificationStatus	kingdom	phylum	class	order	family	genus	specificEpithet	scientificNameA
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	lupulina	T.Anders.
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders
oogle Maps 2022	verified by curator	Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae	Acanthus	montanus	(Nees) T.Anders

DATABASE AND E-KEY

- Database stored on excel spreadsheet
- Electronic multi access key was developed using Lucid 4.0 software
- Entities were recorded as species name and ranked accordingly
- Features were recorded as character and character states
- Characters and states were scored appropriately

Electronic multi-access key



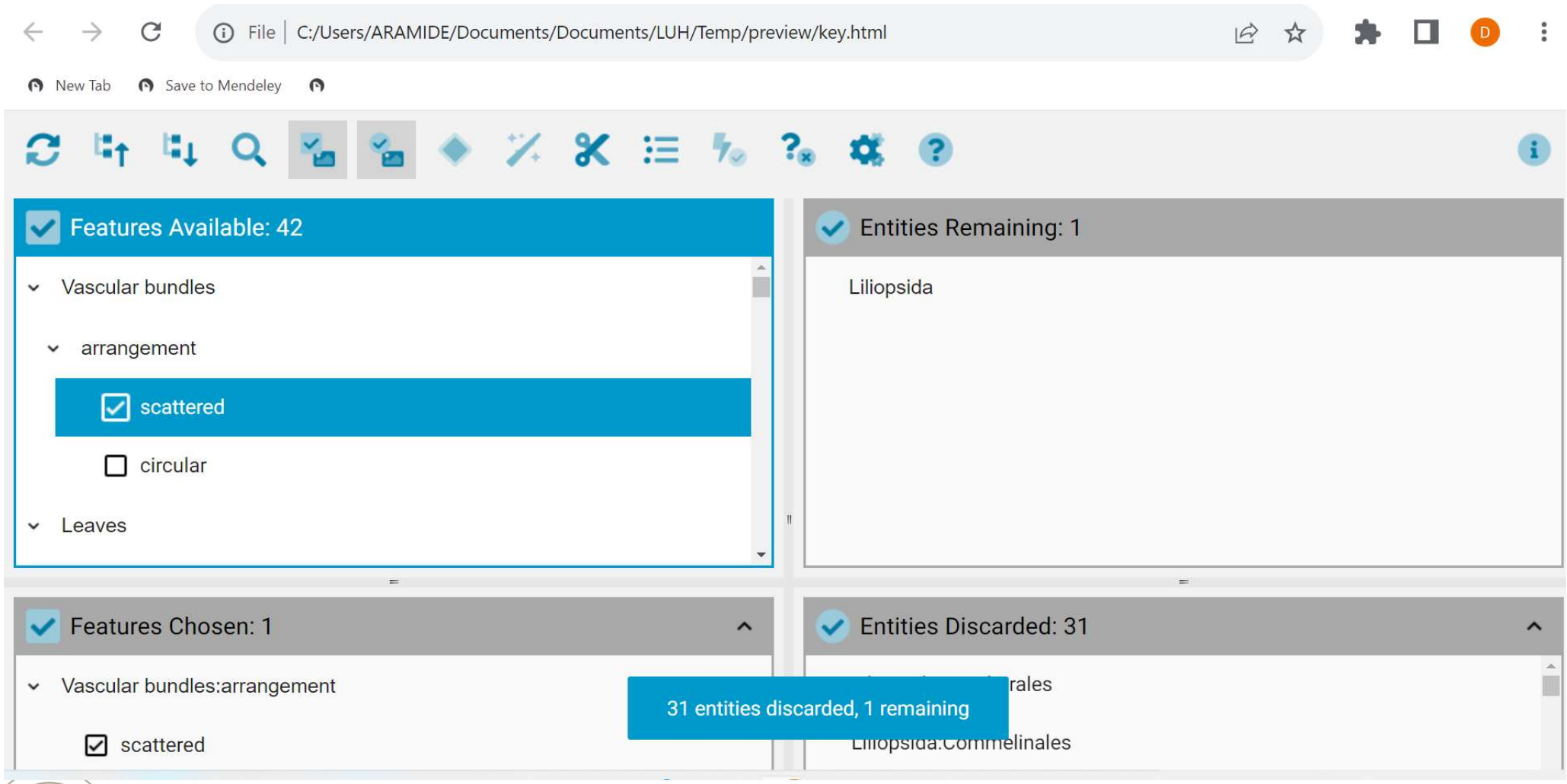

File Edit View Key Tools Window Help
LucidBuilder 4.0.27 - LUH Collection - C:\Users\ARAMIDE\Documents\Documents\LUH.lk5
Media
Descriptions
Key
Items
Title
LUH Collection
Description
This is an electronic multi-access key for the Liliopsida collection of the Lagos University Herbaium, Lagos, Nigera.
Authors
Features: 42 States: 188
indigo
red
pale lilac
white and yellow in the throat
lilac
pale mauve
calyx
spathaceous
tubular-spathaceous
stigma
funnelform
symmetry
zygomorphic
actinomorphic
Entities: 32
Liliopsida
Zingiberales
Zingiberaceae
Aframomum
baumannii
elliottii
melegueta
sceptrum
longiscapum
Curcuma
longa
Zingiber
officinale
Commelinales
Tree View
Spreadsheet Scoring
Score Analyser
Scoring for entity: baumannii

LUH Collection

Description

This is an electronic multi-access key for the Liliopsida collection of the Lagos University Herbaium, Lagos, Nigera.

Start Key


File | C:/Users/ARAMIDE/Documents/Documents/LUH/Temp/preview/key.html
New Tab
Save to Mendeley
Features Available: 42
Vascular bundles
arrangement
scattered
circular
Leaves
Entities Remaining: 1
Liliopsida
Features Chosen: 1
Vascular bundles:arrangement
scattered
31 entities discarded, 1 remaining
Entities Discarded: 31
rales
Liliopsida:Commelinales

File | C:/Users/ARAMIDE/Documents/Documents/LUH/Temp/preview/key.html

New Tab | Save to Mendeley

Features Available: 42

- shape
  - ovate
  - obovate
  - linear
  - narrowly elliptic

Entities Remaining: 1

- Zingiberales
  - Zingiberaceae
    - Aframomum

melegueta

Features Chosen: 1

- Vascular bundles:arrangement
  - scattered

31 entities discarded, 1 remaining

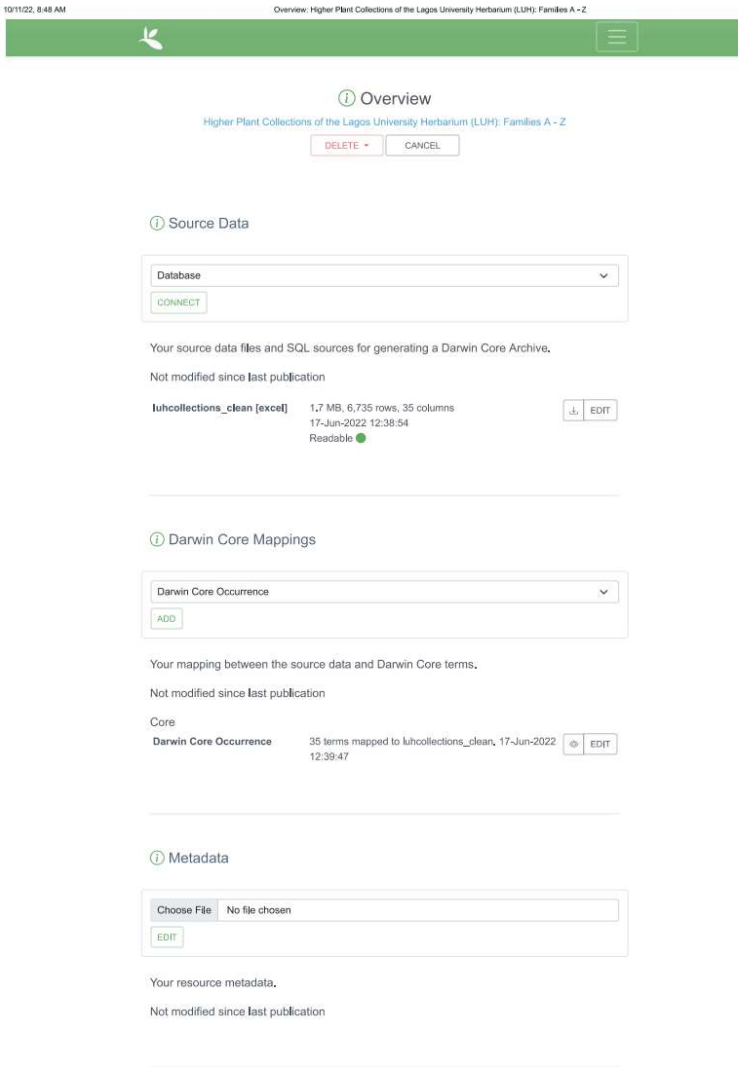
Entities Discarded: 31

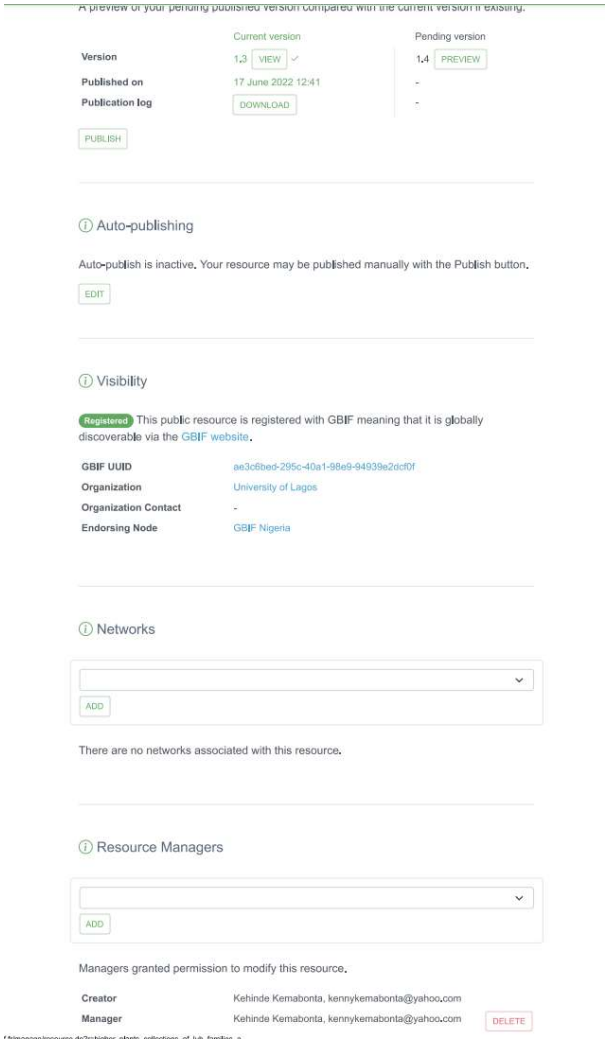
Liliopsida:Zingiberales

DATA PUBLISHING

Publishing

- Data was published using the GBIF Integrated Publishing Toolkit
- Occurrence and Taxon Core were mainly used with Audubond extension for image files
- Meta data were inputted directly
- Errors identified were routinely corrected and re-publication made as necessary


10/11/22, 8:48 AM
Overview: Higher Plant Collections of the Lagos University Herbarium (LUH): Families A - Z
Overview
Higher Plant Collections of the Lagos University Herbarium (LUH): Families A - Z
DELETE
CANCEL
Source Data
Database
CONNECT
Your source data files and SQL sources for generating a Darwin Core Archive.
Not modified since last publication
luhcollections_clean [excel]
1.7 MB, 6,735 rows, 35 columns
17-Jun-2022 12:38:54
Readable
EDIT
Darwin Core Mappings
Darwin Core Occurrence
ADD
Your mapping between the source data and Darwin Core terms.
Not modified since last publication
Core
Darwin Core Occurrence
35 terms mapped to luhcollections_clean, 17-Jun-2022 12:39:47
EDIT
Metadata
Choose File
No file chosen
EDIT
Your resource metadata.
Not modified since last publication


Current version
Pending version
Version
1.3
VIEW
1.4
PREVIEW
Published on
17 June 2022 12:41
Publication log
DOWNLOAD
PUBLISH
Auto-publishing
Auto-publish is inactive. Your resource may be published manually with the Publish button.
EDIT
Visibility
Registered
This public resource is registered with GBIF meaning that it is globally discoverable via the GBIF website.
GBIF UUID
ae3c6bed-295c-40a1-98e9-94939e2dcf0f
Organization
University of Lagos
Organization Contact
Endorsing Node
GBIF Nigeria
Networks
ADD
There are no networks associated with this resource.
Resource Managers
ADD
Managers granted permission to modify this resource.
Creator
Kehinde Kemabonta, kennykemabonta@yahoo.com
Manager
Kehinde Kemabonta, kennykemabonta@yahoo.com
DELETE

Workshops

- Two Workshops held within the project
  - For Lagos State Ministry of Environment Officials (15 people)
  - For Conservationists and Policy Makers.
    - Forty-four (44) participants including: undergraduate (4) and postgraduate (11) students, researchers (11), conservations (2), academics (12) and policy makers (4) from twelve (12) institutions across Lagos state, Kwara and Africa.
    - Modules include: Introduction to GBIF, The Project, Data Types and Data Capture, Darwin Core format, Data Mobilization and Planning, Data Cleaning and Publishing Tools, IUCN red-listing of Species and Species Distribution Modelling.
    - Attending institutions contribute data for publication.

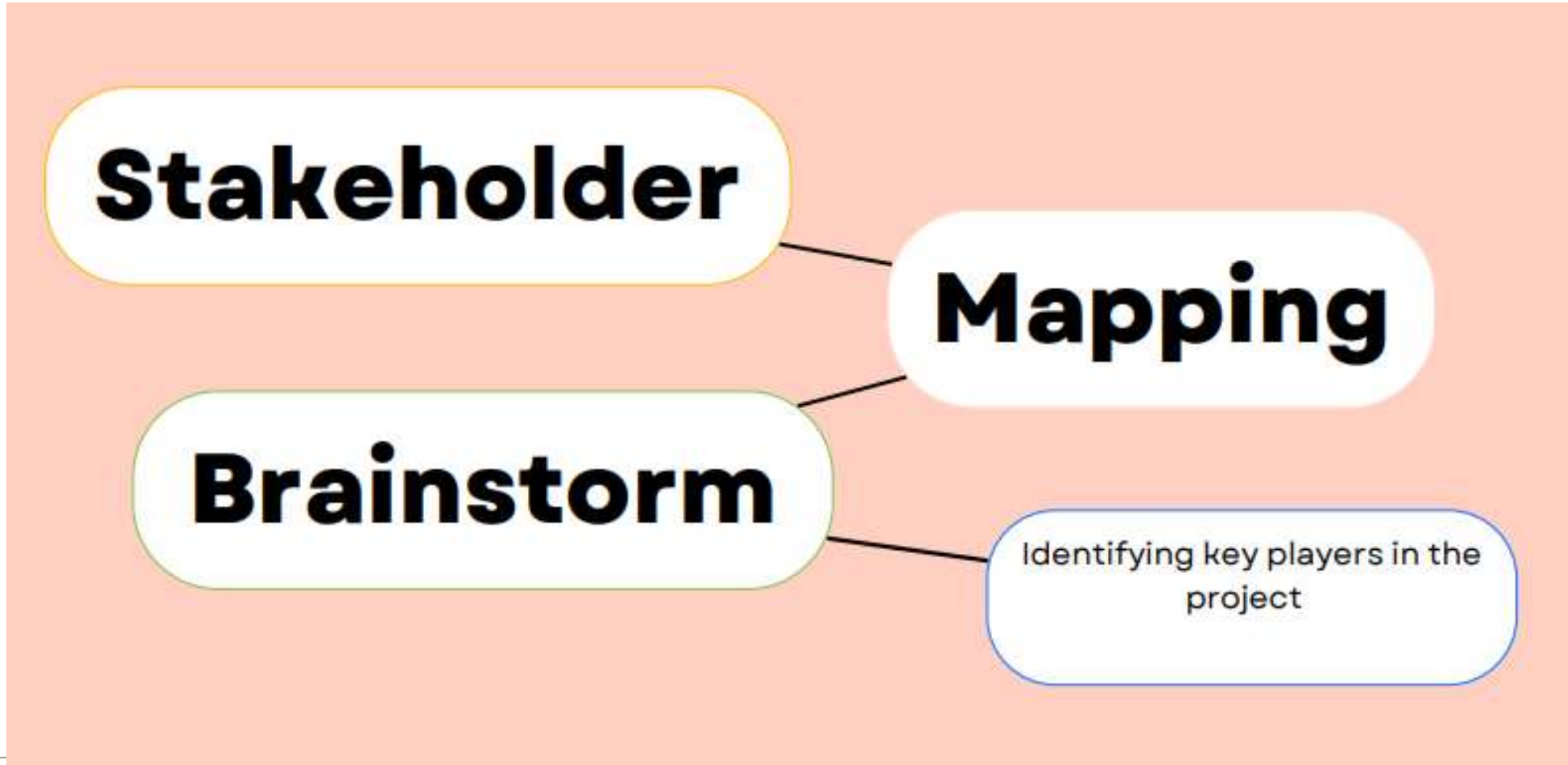
Challenges

- Industrial strike actions
- Permission from participating institutions

Stakeholders' Engagement

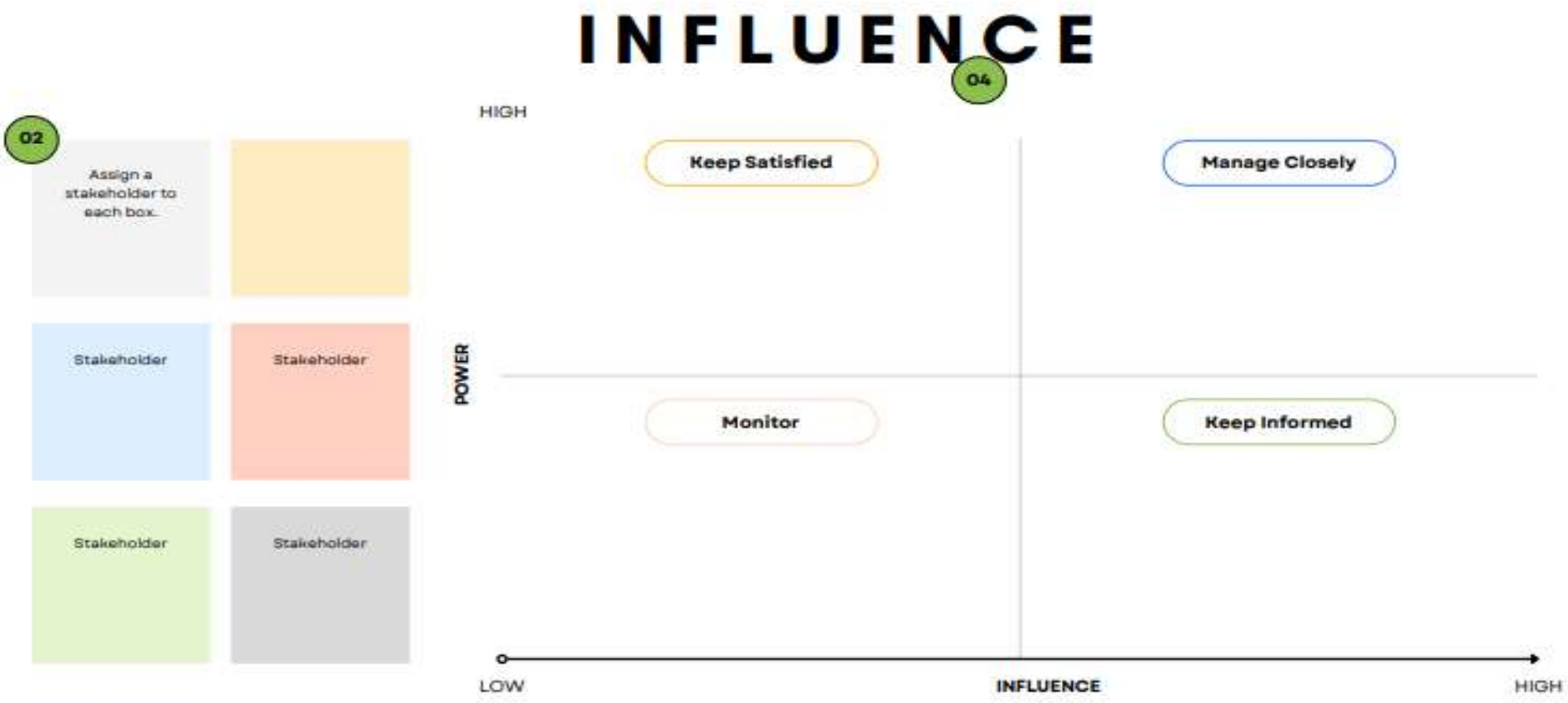
Strategies Adopted

- Stakeholder Mapping
- Understanding Roles and Influence
- Identifying the triggers
- Identifying the opportunities


Stakeholder
Mapping
Brainstorm
Identifying key players in the project

Stakeholder Mapping

Map out a game plan for engaging and managing the stakeholders that would be involved in the project.


INFLUENCE
04
02
Assign a stakeholder to each box.
Stakeholder
Stakeholder
Stakeholder
Stakeholder
HIGH
Keep Satisfied
Manage Closely
POWER
Monitor
Keep Informed
LOW
INFLUENCE
HIGH

Identify the triggers

01

Challenges

02

Mitigative measures

OPPORTUNITIES

THANK YOU
for listening!

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GBIF Global Biodiversity Information Facility

EUROPEAN UNION