# Annex 9 The Virtual collections Module

1. INTRODUCTION	2
2. METHODOLOGY	2
3. INFRASTRUCTURE	3
4. RESULTS AND RECOMMENDATIONS	3
4.1 Providence	3
4.1.1 New	4
4.1.2 Find	5
4.1.3 Management	8
4.1.4 Import	13
4.2 Pawtucket	16
4.2.1 Interface Pawtucket	16
4.2.1.1 Header	16
4.2.1.2 Footer	16
4.2.2 Welcome page	17
4.2.3 Advanced search	17
4.2.4 Collections	22
4.2.5 Contact	24
4.2.6 Browse	25
4.2.7 Details form	26
4.3 Security	27
4.3.1 Users	27
4.3.2 Groups	28
4.3.3 Roles	28
4.3.4 Registration	30
4.4 The IIIF Image viewer	31
4.5 Establishing the links between CMS DaRWIN / Plone and CA	31
4.5.1 Collective Access as a stand alone picture server	31
4.5.2 DaRWIN	31
4.5.3 Plone	35
5. CONCLUSION	35

# **1. INTRODUCTION**

The setup of DiSSCO defines new requirements for multimedia displays which need to be covered by the Natural Heritage project.

- DaRWIN can host multimedia files but is not designed for this.
- RBINS uses several Plone 4.3 sites since a decade (mars, collections, virtualcollections). The system is fast and versatile and can link to the DaRWIN illustrated specimens. Nevertheless, none of the Plone image viewers are compatible with IIIF wich is now required by the setup of DiSSCo.
- A website presenting media of the collections of the Royal Museum for Central Africa (RMCA) was developed some years ago (<u>http://digit03.africamuseum.be/</u>) but the process to upload pictures to the website was long and not straightforward.

As RMCA got a new general website, it was decided to create a new website for media, easier to maintain and technically up to date, to be readable on various platforms (pc, tablet, smartphone).

Objectives of this new site called "Virtual Collections" (V.C.) are to present in a first step biological specimens and some anthropological objects. In the future, V.C. should be used to present other collections of the museum and will also be used at Royal Belgian Institute of Natural Sciences (RBINS) as media server and a new tool to present virtual exhibitions.

V.C. will also be used as a media server for the main search portal of the museum' collections, Natural Heritage.

# 2. METHODOLOGY

In order to save development time, a search has been done to find tools already existing. During the museum' renovation, a tool called "CollectiveAccess" (C.A.) was used to organize the content of the museum. Tests were done to see whether it could be used to create a new public website and it has been chosen to develop V.C.

Based on CollectiveAccess, it consists of a backend allowing management of the MySQL tables, security, lists, various objects and of a frontend which is a public interface.

Several hundreds of pictures have been imported as case study, in Biology and Anthropology.

# **3. INFRASTRUCTURE**

The new multimedia server joins already existing websites.

NaturalHeritage portal will be the main gate to explore data of Royal Museum for Central Africa, Royal Belgian Institute of Natural Sciences and Meise Botanical Garden.



Figure 1. Infrastructure of the different websites under Natural Heritage

# 4. RESULTS AND RECOMMENDATIONS

Collective Access is a free open-source software for managing and publishing museum and archival collections (<u>https://www.collectiveaccess.org/</u>).

It consists of a MySQL database with 226 tables, of a backend web interface called "Providence" and a frontend called "Pawtucket". The majority of the tables contains basic, system fields and metadata are mainly in tables "attributes"

C.A. has integrated viewers for pictures of various formats, videos, sounds, 3D objects. Other types of files may be imported but can not directly be viewed, as text files, excel, ...

Biological data come from the RMCA database DaRWIN where an UUID is given to every record.

This allows a link between DaRWIN and Virtual Collections.

## 4.1 Providence

is used as management interface for various points:

- Management of the MySQL tables which are the basis of C.A.: creation, deletion, modification of the fields, of their types, and characteristics.
- Indices management
- Interface customization
- Creation of lists, simple or hierarchical.
- Management of the access rights by groups, roles.

- Creation of multiple objects allowing to organize data: objects, places, entities, lots, collections, exhibitions, storage locations,...
- Management of the multiple relations occurring between these objects.
- Mass editing with the help of sets allows to finely modify data in every field.
- Management of the various languages.
- Media and data import

The Providence interface of C.A. has not been deeply modified, regarding the original package. Only data and some fields have been added. There are 5 sections in Providence : New, Find, Manage, Import and History.

#### 4.1.1 New

In this section, we can create a lot of different elements : lots, objects, entities, places, collections,... More info in section 2.3.2

CACOLLECTIVEACCESS	NEW FIND M	IANAGE	IMPORT HISTORY	
	Lot	Þ	Edit dashboan	d ə
	Object	×.	Anthropology	
This is your CollectiveAccess dashboard. Click the "Edit Dashboard" button above to add widgets to	c Entity	) ->	Archives	
activity. You'll see your dashboard whenever you login or click the CollectiveAccess logo above.	Place		Botany	
	Collection	F	Document	
	Exhibition		Drawing	
	Public program		Film & Media	
	Publication		Mineralogy	
	Storage location		Painting	
	Loan	►	Paleontology	
			Photography	
			Print	
			Sculpture	
			Zoology	

Figure 2 List of the New entries

#### 4.1.2 Find

This section contains the same entries as New, to retrieve and edit elements. The main elements used for V.C. are objects, entities, collections, storage locations.

Each entry can be explored with a basic search, an advanced search or a browse



Figure 3 List of the Find entries

The Browse view contains some predefined facets to retrieve easily data.

CACOLLECTIVEACCESS			NEW	FIND	MANAGE	IMPORT	HISTORY	
BROWSE OBJECTS CURRENT SORT: Digitisation	Browse by • OBJECT TITLES	O HAS N	IEDIA			S		
Visualize	© COLLECTIONS © STATUSES	© STOR	AGE LOCATIONS SS STATUSES		© TYPES			
SEARCH ADVANCED SEARCH BROWSE	TYPES Anthropology (154)	Documents (5)	Zoology (1	914)				

#### Figure 4 Submenu in Find objects by browsing

mp to pa	age: 🔤 🔊	Yo	ur browse found	d 1914 objects			Page	1/40 Next
3								± 0
Edit	Object identifier \$	Object titles \$	Digitisation •	Description \$	Dates	<u>Type</u> ¢	Date of collect \$	Related er
1	RMCA_Mam_25421	Loxodonta africana - RMCA_Mam_25421	3D	Grand éléphant de la savane de la Bushimae, actuellement monté dans les salles publiques du musée. Hauteur au garrot : 3,40 m Hauteur de foreille : 1,80 m		Zoology	August 1956	<u>M. Poll ()</u>
2	RMCA_MOLL_9976	Subulina paucispira - RMCA_MOLL_9976	3D			Zoology	1935	Aurore Mat
3	RMCA_MOLL_97774	Cerastus drymacoides minor - RMCA_MOLL_97774	3D			Zoology		Aurore Mat
4	RMCA_MOLL_97773	Limicolaria tapetis - RMCA_MOLL_97773	3D			Zoology		Aurore Mat
5	RMCA_MOLL_97772	Limicolaria candidissima loevenotata - RMCA_MOLL_97772	3D			Zoology	March 3 1913	Aurore Mat
6	RMCA_MOLL_97668	Ledoutxia koenigi - RMCA_MOLL_97668	3D			Zoology	March 14 1913	Aurore Mat
, 🖿	RMCA_MOLL_97591	Trochozonites théelei - RMCA_MOLL_97591	3D			Zoology		Aurore Mat
8	RMCA_MOLL_97590	Trochozonites pilosus - RMCA_MOLL_97590	3D			Zoology		Aurore Mat
, 🖿	RMCA_MOLL_97589	Trochozonites lindstromi - RMCA_MOLL_97589	3D			Zoology		Aurore Mat
。 🖿	RMCA_MOLL_97580	Cerastua fratheri - RMCA_MOLL_97580	3D			Zoology		Aurore Mat
	RMCA_MOLL_97572	Dorcasia ponsonbyi - RMCA MOLL 97572	3D			Zoology		Aurore Mat

Figure 5 Result of a browse objects

A click on the edit icon of a line opens the detail form of the object. Form is divided in sections listed on the left.

Details of each section on the right give the possibility to enter metadata, translations, user access, codes, media, locations,...

Objects may be of different types and each type can get its specific fields. For Virtual Collections, 2 types have up to now been created, for zoology and anthropology.

CACOLLECTIVEACCESS		NEW	FIND	MANAGE	IMPORT	HISTORY	
RESULTS (5/85)     Editing Zoology:	Save Cancel					X De	lete
anahitaeformis -	Title						0
RMCA_ARA_66567 (RMCA_ARA_66567)	Ctenus anahitaeformis - RMCA_ARA_66567						8
< <b>*</b> *	Locale Ergian						
	ioology:       Image: Contents of mises of m	•					
							~
• • • •	KMCA_AKA_66567						
	Source						O
In sets 2D, ara, ara2, zoo, zoo3, zzo	EXULTS   EXAMPLE   EXAMPLE   Source   Clenus anahitaetarmis - RMCA_ARA_66567   Source   Clease anahitaetar   as adminiatedar   IPS						
Created 2 months, 2 days ago by Collective Access Administrator							
Last changed	Status						0
CollectiveAccess Administrator	new -						
Export this zoology							
	Access						•
ADMINISTRATIVE INFO	accessible to public 👻						
MEDIA							
STORAGE	Alternate titles						O
SETS							8
RELATIONSHIPS							
KEYWORDS							
BIOLOGY	Locale English   Type alternate						
SUMMARY	O Add alternate title						
ACCESS	Description						•
LOG	Description						U

Figure 6 Details of an object - Basic info

The media section allows users to enter various media :

- pictures,
- videos,
- sounds.

Picture metadata are directly read from the file and access may be given for each media, as well as order of presentation and primary picture.



Figure 7 Details of an object - Media

In Relationships, links are done with other kinds of objects : entities, locations, storage,...

<pre>     RESULTS     (5/85)</pre>	Related entities	Ø
Editing Zoology:	Sort by Relevance	•
Spinachtigen > Ctenus anahitaeformis - RMCA_ARA_66567	Arnaud Henrard (contributor)	
(RMCA_ARA_66567)	Add relationship	
< 📢 >	Related places	0
	Place Authority >	0
● t과 t <sup>4</sup> ● In sets 2D, ara, ara2, zoo, zoo3, zoo Created 2 months, 2 days ago by		
CollectiveAccess Administrator Last changed 1 day, 21 hours ago by	Search:	
CollectiveAccess Administrator	• Mar ( Call of Sinp	
Export this zoology 🔀	Related occurrences	O
BASIC INFO		
ADMINISTRATIVE INFO		
MEDIA	C Add relationship	
STORAGE	Related collections	O
SETS	Sort by Relevance	
RELATIONSHIPS	Arachnide (Arachnide) (is part of	
KEYWORDS	Ardennids (Ardennids) (is part of	
BIOLOGY	O Add relationship	
SUMMARY	Generatoren	•
ACCESS	veoreierence	C C
LOG	+	0
	Firme O Dataile of an abiant - Datationabian	

Figure 8 Details of an object – Relationships

A section called Biology has been added to gather all metadata specific to biology and especially taxonomy.

RESULTS (5/85)		Y Delete
Editing Zoology:		
Spinachtigen > Ctenus anahitaeformis -	Sex	O
(RMCA_ARA_66567)	Undefined •	
< 📢 >	Life stage	O
	undetermined lifestage	
- Star	Locale Ergien	
	Phylum	O
👁 🗗 🖆 🗢	Arthropoda	
In sets 2D, ara, ara2, zoo, zoo3, zzo	Locale English	
Created	Class	O
CollectiveAccess Administrator	Arachnida	_
Last changed 1 day, 21 hours ago by CollectiveAccess Administrator	Locale Ergin	
Export this zoology 🛃	Order	o
BASIC INFO	Araneae	
ADMINISTRATIVE INFO	Locale Erglish -	
MEDIA		
STORAGE	Family	O
SETS	Ctenidae	
RELATIONSHIPS	Locale English -	
KEYWORDS		
BIOLOGY	Genus	٥
SUMMARY	Ctenus	
ACCESS	Locale English	
LOG		
	Species	0
	Ctenus anahitaeformis	

Figure 9 Details of an object – Zoology

#### 4.1.3 Management

The management menu contains a lot of important forms to manage directly from Providence interface various system operations.

It also allows users to manage user lists and preferences.

MANAGE	IMPORT H	ISTORY
My prefere	nces	
My watche	d items	C Delete
Tools		
My project	teams	(
My display	s	
My sets		>
My search	tools	
My metada	ita alerts	
User gener	rated content	
Lists & voc	abularies	
Exporters		
Access cor	ntrol	(
Pawtucket		
Logs		
Administro	ition	-

Figure 10 List of Manage entries

The My sets entry allows me to manage lists of objects created from the results of a search. These sets may be used to modify all the records in the set, in 1 operation. All the fields defining the record may be used to update the records in a mass action. Records may also be deleted and the type of document may be changed.

#### BBR/175/A3 NaturalHeritage: The Virtual Collection Module

SET STATISTICS: 38 available to you	Search:			Create	new Pub	elic presentatic 🔻 cont	aining collection	5	- 0
38 created by users 2 created by the public	Jump to p	oage: 🔤 🕥			38 se	əts		• Previous	Page 2/
SHOW SETS:	* <u>Nam</u>	ne 🔹	Content type 🕈	Type \$	<u># Items</u> +	<u>Owner</u> +	Access +	<u>Status</u> ♦	
Available to you	2D (2D)		objects	Public presentation	<b>7</b> 1585	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ŀ
	□ <sup>3D</sup> (3D)		objects	Public presentation	<b>7</b> 481	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ľ
	aa (aa)		objects	User set	0	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ľ
	afaire (afair	e re)	objects	Public presentation	<b>*</b> 4	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ľ
	afaire (afair	e2 re2)	objects	Public presentation	<b>7</b> 2	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ľ
	afaire (afair	e3 re3)	objects	Public presentation	<b>%</b> 8	CollectiveAccess Administrator (jimherp@hotmail.com)	not accessible to public	new	Ľ

Figure 11 Manage My sets : list of entries

#### For each field, values can be modified, removed, added.

BACK TO SETS		
Editing : Batch editing		
Set contains Zoology,	Title	In batch do not use
Anthropology More options >	Object identifier	In batch add to each item
BASIC INFO	Source	In botch remove all values
ADMINISTRATIVE INFO	Status	In batch do not use
MEDIA STORAGE	Access	In batch do not use
SETS	Alternate titles	In batch do not use
RELATIONSHIPS KEYWORDS	Description	In batch do not use
BIOLOGY	Physical description	In batch do not use

Figure 12 Set management : list of fields that can be used to modify all records in the set

In Lists & vocabularies, simple or hierarchical lists may be defined. For example, different levels of collections can be created. These levels are then used in the creation of a collection, in the relationships between collection levels.

Editing list item:	Location in hierarchy	
toot node for object_types > locument (document)	Numbe	r of list items in hierarchy: 1
<b>t</b> 7 (2)	Object types → Document	Close browser
art of: Object types		
ASIC INFO	Explore Move Add	
TERNATE NAMES	Click list item names to explore. Click on an arrow icon to open a list item for Find:	
LATED LIST ITEMS	earling.	
MMARY	Object types (object_types) >  Documents (document)	
CESS	Object workflow statuses > Drawings (drawing)	
 G	(worknow_statuses) Film & Media (film_media)	
0	Occurrence label types > Mineralomy (Mineralom)	
	(occurrence_rabel_types)	
	Occurrence sources > Paintings (painting)	
	Paleontology (Paleontology)	
	Occurrence types > *	
	Preferred labels	
	Item name (singular)	
	Document	
	Item name (niural)	
	Documents	
	Description	

Figure 13 Lists management : hierarchy and parameters

In the Administration entry of Manage, basic elements of the databases and of the interface may be modified.

The metadata elements are all the fields used in the different elements of Providence (Objects, collections,...) Each field can be edited to change the type of field, size, access, translations, where it can be used, in which type of element, if it must be unique or not,...

elements are defined	Filter:					O Ne
SER INTERFACES	Label \$	Element code \$	Type \$	Applies to \$	Usage in UI 🔶	
ETADATA ELEMENTS	Introduction	set_description	Text	Sets [*]	Sets (1)	<b>b</b> >
CALES	Item description	set_item_description	Text	Set items [*]	Set items (1)	•
ONFIGURATION CHECK	Presentation type	set_presentation_type	List	Sets [Public presentation]		•
AINTENANCE	Is primary item for set?	set_item_is_primary	List	Set items [Public presentation]	Set items (1)	
	Chronology element code	set_chron_date_element_code	Text	Sets [Public presentation]		
	Authorization date	loan_authorization_date	DateRange	Loans [*]	Loans (1)	•
	Loan in date	loan_in_date	DateRange	Loans [loan in]	Loans (1)	
	Loan out date	loan_out_date	DateRange	Loans (loan out)	Loans (1)	•
	Loan return date	loan_return_date	DateRange	Loans [*]	Loans (1)	•
	Loan renewal application date	loan_renewal_date	DateRange	Loans [*]	Loans (1)	•
	Loan conditions	loan_conditions	Text	Loans [*]	Loans (1)	•
	Loan note	loan_note	Text	Loans [*]	Loans (1)	
			Text	Loaps (*)	Loans (1)	

Figure 14 List of metadata elements

LECTIVEACCE	SS	NEW
IACK TO LIST (35/89)	> Sove Cancat	🗙 Doloto
	Labels	0
	Name	0
de: taxon_phylum	Phylum	
d by user interfaces	2 Description	
ecceditor (dojecis)	Phylum	
RFACES		
ELEMENTS		
SHIP TYPES		
	Locale English -	
ATION CHECK		
NCE -	Name Embranchement	8
	Description	
	Embranchement	
	Loosle Prinçak 👻	
	Name	0
	Phylum	
	Description	
	Loodie Nederland -	
	Element code	
	taxon_phylum	
	Changing this value may break parts of the system configuration	
	Documentation URL	
	Defetime	
	Text •	
	A Changing this value may delete existing data in this element	
	Use list (for list elements only)	
	Use list for list elements only Address type (address_type)	
	Use list (por list elements ont)) Address type (address type)  Datatype-specific options	
	Use list (for list elements only) Address type (address_type) Datatype-specific options Minimum number of oharacters	
	Use list (for list elements only) Address type (address type) Datatype-specific options Minimum number of oheraolers 0	
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	Use list (for list elements only) Address type (address_type)  Delabys-specific options  Minimum number of oharsolars  Maximum number of oharsolars  S35 Regular expression to validab input with  Visidh of data entry field in user interface  90 Height of data entry field in user interface	
	Use list (for list elements only) Address type (address_type)  Delatype-specific options  Minimum number of obaracters 0 Maximum number of obaracters 533 Regular expression to validate input with 533 Regular expression to validate input with 90 Height of data entry field in user inferface 90 Height of data entry field in user inferface 1	
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	Use list (for list elements ont) Address type (address_type)  Detatype-specific options  Minimum number of characters 535 Regular expression to validate input with  Maximum field of user interface 90 Height of data entry field in user interface 1 Use not field editor  Does not use locale setting	
	Use first for first elements enty) Address type (address_type)  Delatype-specific options  Minimum number of obtarsolers 535 Regular expression to validate input with Viridih of data entry field in user interface 90 Haight of data entry field in user interface 1 Use riot field entry field in user interface 1 Use riot field entry field in user interface 1 Can be used for sorting	

Figure 15 Edit form of metadata

In Administration – User interfaces, fields can be added and organized in subsections in the different forms of Providence. For example in Fig.16, subsections Basic info, Administrative info, Media in form Standard object editor.

CACOLLECTIVEACCESS			NEW	FIND	MANAGE	IMPORT	HISTORY
BACK TO LIST (7/25)	Editor code						0
Viewing editor UI: Standard object editor	objects_ui						
,	Color						0
Number of screens: 9 Edits: objects							
BASIC	Type restrictions						•
LOG	Anthropology Archives Botany Document						
	Screens						0
	Basic info (24) 👄						0
	Administrative info (10)						0
	Media (1)						0
	Storage (2)					•	0
	Sets (1)						0
	Relationships (7)						0
	Keywords (2)					•	0
	Biology (10)	Zoology					0
	Anthropological data (5)	Anthropology					0
	Add screen >						
	Is system UI?						O
	Yes						-
	User access						0
	Add user access						
	Group access						0
	Add group access						
	Role access						O
	Administrators has no access set -	Cataloguers has no access set   ▼	Import has no ac	cess set	•		
	Researcher	User content moderator					

Figure 16 User interface management



Figure 17 Elements in user interface of object editor

## 4.1.4 Import

Import of data can be done directly through the forms or via mass import of the Import entry in the menu.

For this project, Import data and Import media have been used.

Import data can be used in nearly all cases. Import media must be used only to import special files as text or excel files.

There are 4 main steps to import data:

• Prepare 2 excel files : one for the mapping and the other with data. First one must be done only one time for a type of object. Several mapping files can be created for each corresponding type of object.

,	AutoSave 🤇	- - - - - - - - - - - - - -	~ =	import_biology_mappi	ng.xlsx 👻	♀ Search		
Fi	le Hor	me Insert Pag	e Layout Formulas Data	Review View	Developer Help			
C5		• : × ~	fx ca_object_representations					
	А	В	С		D	E	F	G
1	Rule type	Source	CA table.element		Group	Options	Refinery	Refinery parameters
26	Mapping	25	ca_objects.sex			{"skipIfEmpty": 1}		
27	Mapping	26	ca_objects.stage			{"skipIfEmpty": 1}		
28	Mapping	27	ca_objects.amount			{"skipIfEmpty": 1}		
29	Mapping	28	ca_objects.collect_country			{"skipIfEmpty": 1}		
30	Mapping	29	ca_objects.georeference			{"skipIfEmpty": 1}		
31	Mapping	30	ca_objects.locationdetails			{"skipIfEmpty": 1}		
32	SKIP	31						
33	SKIP	32						
34	Mapping	33	ca_objects.collect_date			{"skipIfEmpty": 1}	entitySplitter	<pre>{"entityType"."individual","relationshipType"."co liector","idno"."^2", "attributes": { "access"."1" }}</pre>
36	Mapping	35	ca_entities			{"skipIfEmpty": 1}	entitySplitter	{"entityType":"individual";"relationshipType":"id entifier","idno":"^2", "attributes": { "access":"1" })
37	Mapping	36	ca_objects.access					
38 39 40	mapping Mapping	37	ca_objects.Institution_Collection			{"skipIfEmpty": 1}	collectionSplitter	<pre>{ "relationshipType": "part_of", "collectionType": "A38", "attributes": { "access":1" })</pre>
41								
42		Setting name	Setting value		Description	Notes		
43	Setting	name	mapping_Biology_photos		Human readable name of the mapping	Arbitrary text		
44	Setting	code	mapping_Biology_photos		Alphanumeric code of the mapping	Arbitrary, no special	characters or spaces	
45	Setting	inputFormats	XLSX		Sets types of source (input) data that	file type		
46	Setting	table	ca_objects		Sets the table for the imported data	Corresponds to Colle	ectiveAccess Basic Tables	
47	Setting	existingRecordPolicy	merge_on_idno_with_replace		Determines how existing records are	checked for and hand	led for the mapping	
48	Setting	errorPolicy	stop		Determines how errors are handled for	or the import. "Stop" v	vill halt the entire import on	any error.
49	Setting	type	Zoology		Set the target record's type_id			
50 51	Setting	numInitialRowsToSkip	2		The number of rows at the top of the o	If this is not set, the	first row of your data set (the	e headers) will be imported as a record.

Figure 18 Mapping Excel file

A A	EN1_000014134_AC	maeodera_a	anuauui_ni_u_zo_ewiax_bxo_scaled.Jpg										
ē			n			6	н				M	N	
e		Descripti		Related_ol		View formu		displa di y aş	apl				
	Identifier	on med	dia	jeot	media info	la	View	order or	ler phyli	um olass	order	family	genu
steren o cotrate reason - freese o correte	Achatina autorata	640	(54) ison		840%41 ince			9	9 Malu	roa Gartro	ad Sulammutanka	- Achaticidae	Achar
ina marteli - Achatina marteli	Achatina mateli	640	(68) ineq		640(58) inen				3 Mollu	sea Gastro	odi Sulonmatopho	z Achatinidae	Acha
a tigrinus - 794118	EMCA 794118	BMC	CA 79418 Conus tigrinus D ZS PMax Scaled.ipg		EMCA 79418 Conus tigrinus D 25 PMax Scaled.ipg	Dorsal	Dorsal	2	2 Mollu	sca Gastro	odi Neccastropoda	Conidae	Con
tigrinus - 794118	RMCA_794118	RMC	CA_794118_Conus_tigrinus_V_ZS_PMax_Scaled.jpg		RMCA_794118_Conus_tigrinus_V_ZS_PMax_Scaled.pg	Ventral	Vertral	3	3 Mollu	sca Gastro	odi Neogastropoda	Conidae	Con
as tigsinus - 794118	RMCA_794118	RMC	CA_794118_Conve_tigrinue_Lb.jpg		RMCA_794118_Conus_tigrinus_Lb.jpg	Label	Label	10	10 Mollu	rca Gastro	odi Neogastropoda	Conidae	Con
us tigrinus - 794118	RMCA_794118	RMC	CA_794118_Conus_tigrinus_Lb_All.jpg		RMCA_794118_Conve_tigrinus_Lb_All.jpg	Label	Label	10	10 Mollu	rca Gastro	odi Neogastropoda	Conidae	Con
as textile - RMCA 794726	RMCA_794726	RMC	CA_794726_Conus_textile_D_2S_PMax_Scaled.jpg		RMCA_794726_Conus_textle_D_2S_PMax_Soaled.jpg	Dorsal	Dorsal	2	2 Mollu	sca Gastro	odi Neogastropoda	Conidae	Con
us textile - RMCA 794726	RMCA_794726	RMC	CA_794728_Conus_textile_V_2S_PMax_Scaled.jpg		RMCA_794728_Conus_textle_V_ZS_PMax_Soaled.jpg	Ventral	Ventral	3	3 Mollu	soa Gastro	odi Neogastropoda	Conidae	Con
us textile - RMCA 794726	RMCA_794726	RMC	CA_794726_Conus_textile_Lb.jpg		RMCA_794726_Conus_textle_Lb.jpg	Label	Label	10	10 Mollu	soa Gastro	oodi Neogastropoda	Conidae	Con
us textile - RMCA 794735	RMCA_794735	RMC	CA_794735_Conus_textile_D_25_PMax_Scaled.jpg		RMCA_794735_Conus_textle_D_ZS_PMax_Scaled.jpg	Dorsal	Dorsal	2	2 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us testile - RMCA 794735	RMCA_794735	RMC	CA_794735_Conus_textile_V_25_PMax_Scaled.jpg		RMCA_794735_Conus_textile_V_ZS_PMax_Scaled.jpg	Ventral	Vervral	3	3 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us textile - RMCA 794735	RMCA_794735	RMC	CA_794735_Conus_textile_Lb.jpg		RMCA_794735_Conus_textile_Lb.jpg	Label	Label	10	10 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us quercinus - RMCA 794747	RMCA_794747	RMC	CA_794747_Conus_quercinus_D_ZS_PMax_Scaled ipg		RMCA_794747_Conus_quercinus_D_2S_PMax_Scaled.jpg	Dorsal	Dorsal	2	2 Mollu	rca Gastro	oodi Neogastropoda	Conidae	Con
us quercinus - RMCA 794747	RMCA_794747	RMC	CA_794747_Conus_quercinus_V_ZS_PMax_Scaled ipg		RMCA_794747_Conus_queroinus_V_2S_PMax_Scaled.jpg	Ventral	Ventral	3	3 Mollu	rca Gastro	ood: Neogastropoda	Conidae	Con
us quercinus - RMCA 794747	RMCA_794747	RMC	CA_794747_Conus_quercinus_Lb.jpg		RMCA_794747_Conus_queroinus_Lb.jpg	Label	Label	10	10 Mollu	sca Gastro	ood: Neogastropoda	Conidae	Con
us queroinus - RMCA 794747	RMCA_794747	RMC	CA_794747_Conus_queroinus_LB_All.jpg		RMCA_794747_Conus_queroinus_LB_ALjpg	Label	Label	10	10 Mollu	soa Gastro	oodi Neogastropoda	Conidae	Con
us textile - RMCA 794762	RMCA_794762	RMC	CA_794762_Conus_textile_D_2S_PMax_Scaled.jpg		RMCA_794762_Conus_textile_D_ZS_PMax_Scaled.jpg	Dorsal	Borsal	2	2 Mollu	soa Gastro	oodi Neogastropoda	Conidae	Con
us textile - RMCA 794762	RMCA_794762	RMC	CA_794762_Conus_textile_V_25_PMax_Scaled.jpg		RMCA_794762_Conus_textile_V_2S_PMax_Soaled.jpg	Ventral	Ventral	3	3 Mollu	sca Gastro	odi Neogastropoda	Conidae	Con
us testile - RMCA 794762	FMCA_794762	RMC	CA_794762_Conus_textile_Lb.jpg		RMCA_794762_Conus_textile_Lb.jpg	Label	Label	10	10 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us testile - RMCA 794762	FMCA_794762	RMC	CA_794762_Conus_textile_Lb_All.jpg		RMCA_794762_Conus_textle_Lb_Allipg	Label	Label	10	10 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us textile - RMCA 794763	RMCA_794763	RMC	CA_794763_Conus_textile_D_2S_PMax_Scaled.jpg		RMCA_794763_Conus_textile_D_ZS_PMax_Scaled.jpg	Dorxal	Dorsal	2	2 Mollu	rca Gastro	odi Neogastropoda	Conidae	Con
us textile - RMCA 794763	RMCA_794763	RMC	CA_794763_Conus_textile_V_ZS_PMax_Scaled.jpg		RMCA_794763_Conus_textile_V_ZS_PMax_Scaled.jpg	Ventral	Ventral	3	3 Moliu	rca Gastro	odi Neogastropoda	Conidae	Con
ustextile - RMCA 794763	RMCA_794763	RMC	CA_794763_Conus_textile_Lb.jpg		RMCA_794763_Conus_textle_Lb.jpg	Label	Label	10	10 Mollu	sca Gastro	odi Neogastropoda	Conidae	Con
ustextile - RMCA 794763	RMCA_794763	RMC	CA_794763_Conus_textle_Lb_All.jpg		RMCA_794763_Conus_textle_Lb_All.jpg	Label	Label	10	10 Mollu	soa Gastro	odi Neogastropoda	Conidae	Con
us queroinus - RMCA 794972	RMCA_794972	RMC	CA_794972_Conus_queroinus_D_2S_PMax_Soaled.jpg		RMCA_794972_Conus_queroinus_D_2S_PMax_Soaled.jpg	Dorsal	Borsal	2	2 Mollu	soa Gastro	odi Neogastropoda	Conidae	Con
us quercinus - RMCA 794972	HMCA_794972	RMC	CA_794912_Conus_quercinus_V_25_PMax_Scaled.jpg		FMCA_794972_Conus_queroinus_V_25_PMax_Scaled.pg	Ventral	Ventral	3	3 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us quercinus - RMCA 794972	RMCA_794972	RMC	CA_794912_Conus_quercinus_Lb.jpg		FMCA_794972_Conus_quercinus_Lb.jpg	Label	Label	10	10 Mollu	sca Gastro	oodi Neogastropoda	Conidae	Con
us quercinus - RMCA 736715	RMCA_798715	RMC	CA_798715_Conus_quercinus_D_25_PMax_Scaled.jpg		RMCA_798715_Conus_quercinus_D_25_PMax_Scaled.jpg	Dorsal	Borsal	2	2 Mollu	sca Gastro	odi Neogastropoda	Conidae	Con
us quercinus - RMCA 738715	RMCA_798715	RMC	CA_798715_Conus_quercinus_V_25_PMax_Scaled.jpg		RMCA_798715_Conus_quercinus_V_ZS_PMax_Scaled.jpg	Ventral	Verital	3	3 Mollu	rca Gastro	odi Neogastropoda	Conidae	Con
us quercinus - HMLA (36/15	HMLA_798715	HP0,	LA_7387b_Conus_quercinus_Lb.pg		HMLA_736715_Conus_quercinus_Lb.jpg	Label	Label	10	10 Moliu	rca Liastro	odi Neogastropoda	Lonidae	Con
us quercinus - HMLA 736/15	HMLA_798715	HMU	LA_7387b_Conus_quercinus_Lb_All.jpg		HMLA_7367b_Conus_quercinus_Lb_All.jpg	Label	Label	10	10 Moliu	sca Liastro	odi Neogastropoda	Lonidae	Con
ophosia petriolata - HMLA DIP 0000001	HNCA_UP_000001	Prole	lophosia_petriolata_N1_HMLA_UP_UUUUUU1_L_25_PMax_Scaled.jpg		Prolophosia_petriciata_N1_HMCA_UP_000001_L_25_PMax_Scaled.jpg	Lateral	Lateral	1	1 Artho	opoda Insect	Uptera	Tachinidae	Prok
ophosia petriolata - HMCA DIP 0000001	FMCA_DP_000001	Prok	lophosia_petriolata_NT_HMCA_DIP_0000001_0_25_PMax_Scaled.jpg		Prolophosia_petriolata_N1_PMCA_UP_0000001_U_2S_PMax_Soaled.jpg	Dorsal	Dorsal	2	2 Artho	poda insect	Diptera	Tachinidae	Prok
ophosia periorata - HPICA DIP 0000001	PMCA_DP_0000001	Pion	lopnosia_petilolara_NT_HRLA_DP_0000001[r_25_PRiak_Soaled.jpg		Protopriosia_periosiaa_N1_HPICA_DP_0000001_F_25_PMak_Scaled.pg	FION	Panteno	3	4 Althou	spoda insect	Diptera	Tachinidae	PTOP
ophosia perindrata - HPICA DIP 0000001	HMCA_DP_0000001	Pion	lopnosia_petiola/a_NI_HRLA_DP_0000001_Lb.pg		Protophosia_petriciata_NT_HPICA_DP_0000001_Lb.pg	Laber	Label	0	ID Anno	poda insect	Deptera	Tachinidae	Prop
eniamina - HPILA DP 000002	HMCA_DP_000002	Lab	wraa_mma_P1_HMLA_UP_000002_L_25_M1ax_Scaled.pg		Cahenia_mma_P1_PMLA_UP_000002_L_25_PMax_Scaled.pg	Lateral	Lateral	1	1 Anno	opoda insect	Deptera	Tachinidae	Can
eniamma - nPLA UP 0000002	HMLA_UP_000002	Cab	serva_mma_r r_mrUP_UP_000002_U_25_PTtax_Scaled.jpg		Canenia_mma_ri_HPLA_UP_000002_0_25_PMax_Scaled.pg	Llorsal	ulorsal	2	2 Arthro	poda insect	Laptera	Lachinidae	Lah
enamma - HHLA DP 0000002	PPICA_DP_000002	Lah	serva_mma_PT_PHPUP_0000002_F_C5_PMax_Scaled.pg		Canenia_mma_ri_rive_our_ouocod2_F_25_PMax_Scaled.jpg	Fronk	enterio	9	H Athro	spoga Insect	Lapoera	Lacrinidae	Cah
enamma - HPLAUP 000002	HPICA_DP_000002	Uah	verva_mma_PT_HPUH_UP_000002_Lb.jpg		Canenia_mma_PT_PMDA_DP_0000002_Lb.jpg	Label	Lapel	10	IU Arthro	poga insect	Laptera	Tacrinidae	Cah
N/A GIADOUS - HITLA LIP UUUUUU3	PACA_DP_000003	Heat	mya_diabolus_nit_HMUA_DIP_0000003_D_25_PMail_Scaled.jpg		Hermite_deboks_tvi_HmL4_UP_0000003_L_25_PMak_Scaled.jpg	Lateral	Lateral	1	1 Arthro	poda insect	Denera	Tachinidae	- rierr
N/A GIADONUS - HITLA LIP UUUUUUUU	PACA_OP_000003	Hein	mya_diabous_n1_HMLA_DP_0000003_E_28_DMar_Scaled.jpg		nermya_diaboks_nii_Hnit.a_UP_0000003_0_25_PMak_Scaled.jpg	Dorsal	Dorsal	2	2 Attrice 4 Aux	poda Insect	Diptera	Tachinidae	- rierr
ma diabona - HPLA DP 0000003	HMCA_DP_0000003	Hen	mys_diaboxs_n1_HMLA_DP_0000003_F_C5_MMax_boaled.jpg		nemya_cracoso_IVI_HVLA_DP_0000003_F_25_Priak_Scaled.jpg	Fronk Labor	venterio	3	4 Altho 10 Autou	poda insect	Captera Drawn	Technidae	- merr
Nya diabolus - HHCA DP 0000003	PACA_DP_000003	Pten	mya_daboxs_n1_mmcA_dm_0000003_Lb.pg		Hermina_chapters_htt_PMPLA_DEP_0000003_LB.pg	Laber	Label	1	ID Arthur	poos insect	Depres à	Technidae	1991
my distance - PMCA DP 0000004	RMCA_DP_0000004	Hen	mys_stateme_vt_https://www.goodcode_c_co_miss_coded.pg		Harmon distance MT_PMCA_DP_0000004_L_20_PMax_ocaled.pg	Descal	Descal	2	2 Anthro	Ande Paect	Distance	Tashisidas	- riett
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nya dalasima - miluk bir 0000004	DMCA_DID_000004	rien	mys_ansame_ar_prove_ar_anace_contents_contentpg		Hermine divisions NT_DMCA_DD_0000004_F_65_P168_Scaled [pg	Prore	Label	10	10 Anthre	group Insect	Deterra	Taskisidas	- Serr
manufactor of the second secon	DACA_DD_000004	rien	myseurophiese		Henry and NT DICA DD 0000000 1 70 DM- Secondaria	Laber	Laber	1	1 Antonio	groue insect	Deterio	Taskisidas	- intern
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municipal and a DMCA DIP 00000005	ENCA DE 000005	Hein	mus rates NT DMCA DD 0000005 F 25 DMay Scaled 5-		Harris alds NT DMCA DD 0000005 E 28 DMss Sad-41	Even	douse!	9	4 Autors	poole income	Desera	Taoloinida -	Here
nyaninga - Hinck DP 0000005	PMCA_DP_000005	Plein	mys_mios_m_mmcA_bP_0000005_r_20_Phate_boated.pg		Harming_https://www.chi.phi.co.co.co.co.co.co.co.co.co.co.co.co.co.	L sh -1	Labo?		10 Autors	poos insect	Denera	Tackinidae	- 1991F
mainle concerni - PMCA DIP 0000000	ENCA DE DOCCOS	Please	maintering and an DMCA DID 00000001 75 DML, Protection		Reserved a process of DMCA DID 0000006 1 25 DMu: Protection	Laber	Later."	1	1 Mc	puce reside	Denera	Taskinida -	D/ -
same point of Phila DP 000000	PMCA_DP_0000006	Bog	parent_poneroy_nt_nmcA_pr_0000000_c_c0_mmac_3cated.pg		Repairing conversion NT_PRCA_DP_0000005_C_25_PrintCScand.pg	Descal	Descal	2	2 Anthro	Ande Paect	Distance	Tashisidas	Dog
same point of a RMCA DR 0000000	PMCA_DIP_0000006	Bog	posese_ponercy_or_resce_ce_couldus_U_co_max_could pg		Repairing process NT DMCA DR 0000000 E 75 DMay Scaled inc	Europ	Doctail .		4 Annual	proce Protect	Deters	Techinidae	Dog
size point of a DACA DE 000000	DMCA_DID_000006	Bog	posese_porescy_or_nnon_en_conductco_resc_coared.pg		Repairing annews MT_DMCA_DD_000000001 Lister	Prore	Label	10	10 Anthre	group Insect	Deters	Taskisidas	000
a desidence - DMCA DID 0000007	DMCA_DD_0000007	009	portex_portex_port_respond_conduct_b.pg		Class deciders AT DMCA DD 00000071, 79 DMcs Scaleding	Laber	Laber	1	1 Antonio	groue insect	Deterio	Taskisidas	009

Figure 19 Example of excel with data

- Send media files to the server by FTP, in a directory called Import.
  - Add the mapping file to the import list

•

CACOLLECTIVEACCESS							NEW	/ 1	FIND MANAGE	IMPOF	RT HIST
IMPORTERS: 2 importers are defined	Filter:								0	Add im	porters
IMPORTER LIST	Name	\$	Code	¢	Туре	ф	Mapping	۰ ا	Last modified	\$	
	mapping_Anthropole	ogy_photos	mapping_Anthropology	_photos	objects		*		08/10/2020 at 16:18:54		Θ×
	mapping_Biology_p	hotos	mapping_Biology_phote	05	objects		*	(	08/31/2020 at 8:55:42		Θ×

Figure 20 Screen for template choice of data import

• Import data by running import Data

IMPORTERS: 2 importers are defined	Cancel
IMPORTER LIST	Importer
RUN IMPORT	mapping_Anthropology_photos (mapping_Anthropology_photos) 🔹
	Data format
	Excel XLS/XLSX
	Data file
	From a file Browse No file selected.     From the import directory
	Log level
	Debugging messages •
	Testing options
	Dry run
	Execute data import Cancel

Figure 21 Run import screen

To import media, a mapping file is not necessary : choose Import – Media. A form will open presenting a list of files present in directory Import and you have to finetune the parameters to your needs.

Batch import media	Execute media import Cancel
Server directory: /var/www /html/providence/import	Import target
	objects -
SETTINGS	
	Directory to import
	Papilionidae_draw
	Rapiliopidao draw
	✓ Include all sub-directories
	Import mode
	Import all media, matching with existing records where possible 🔹
	Туре
	Type used for newly created object Document
	Set
	O Add imported media to set 2D -
	Create set     with imported media
	O Do not associate imported media with a set
	Object identifier
	O Set object identifier to
	Set object identifier to file name
	Set object identifier to file name without extension     Set object identifier to directory and file name
	Statuc & accord

Figure 22 Import medias form

To import data from DaRWIN, more details about the preparation of the excel being imported in CA are given in paragraph 4.5.2.

## 4.2 Pawtucket

Pawtucket use the media imported via Providence to present them in various ways:

- 1. Browse facets
- 2. Advanced search, through customized form
- 3. Navigation in collections, galleries.
- 4. Possibility to register to save searches
- 5. Contact form

#### 4.2.1 Interface Pawtucket

Virtual Collections has been developed to present data easily, clearly and quickly.

CollectiveAccess comes with a default theme. This theme has been copied to a new one and adapted for V.C..

There are 4 main pages and a browse section. Main pages are : Welcome page, Advanced search, Collections and Contact, with a common header and footer.

#### 4.2.1.1 Header

Header contains the menu, a multi search field, an icon to register/login and 3 flags to change language (English, French, Dutch)





## 4.2.1.2 Footer

Footer contains a copyright notice and links to social networks.

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7	f
0	You Tube

Figure 24 Footer of Virtual Collections pages

#### 4.2.2 Welcome page

Welcome page contains 3 sections : a welcome word, news with links for more details and a banner presenting some specimens at random. A click on the specimens opens the detail form.

Welcome to Virtual collections!

You can browse through our digital collections and find detailed pictures, 3D models, sounds and videos of our collection items.

23/07/2020



#### LATEST NEWS!



#### How to digitize natural science collections?

Researchers from the Royal Belgian Institute of Natural Sciences and the Royal Museum for Central Africa have created a manual for the digitization of natural science collections. And it can be done literally in fifty different ways, with fifty more nuances. A guide.

By digitizing museum pieces in 2D and / or 3D and publishing them online, they are made accessible to researchers around the world. Thanks to the highresolution images, specimens no longer have to leave the museum's deposit with its ideal conservation conditions. In addition, they are not likely to be damaged by handling and transport.

More...





 $\bullet \circ \circ \circ$ 

Figure 25. Welcome screen

#### 4.2.3 Advanced search

Advanced search form allows to find objects according to their main metadata. Displayed fields depend on the chosen collection. If no collection is chosen, all fields are displayed.

An explanation to use the form is given on the right.

Types of media can also be chosen and a check in the Boxes field limits search to boxes.

### BBR/175/A3 NaturalHeritage: The Virtual Collection Module

AF RI Virtual C▲ Collections					Parcourir	Recherche av	vancée	Collections	Contact	Recherche	Q	1
RECHERCHE AVANCÉE SUR LES OBJETS Entrez vos termes de recherche dans les champs suivants. THÈME Zoology TITRE CLASSE CHERCHEMENT CLASSE UND TYPE DE MEDIA CLASSE CLASSE UND TYPE DE MEDIA CLASSE C	GRIDRE FAARL	MOT-CL ful b	É CEN	RE	tabler Re	cherche	AIDE Ce forr collecti realiser branch Sur la g grace la Les chai Les chai L	utualite vouus perm ions döği inventoa ouvez effecturer u iltine, ies motso' iltine, ies motso' iltine, ies motso' iltine, ies motso' iltine, ies motso' iltine, ies motso- ildifferens iltinez infiti des diffit eriptif des diffit eriptif eriptif des diffit eriptif eripti	het d'effectue riées. I une recherche des , les champ ur base de tei sis permettra et , etc. sis permettra et , etc. sis permettra et cetto et de la colle d'ennts cha de colle d'ennts cha de colle d'ennts cha de colle d'ennts cha de colle d'ennts cha de colle d'ennts cha de colle d'ennts cha si per et sis pers tavo sis mots du til mot avec un entiers (pas d unot avec un entiers (pas d unot avec un et Entrez uno sis prost suomo leur dans la lit de collecter de sis sis souhants sis souhants sis souhants d'accuments d documents d documents d documents d documents d colociments d	r une recherche avann e sur plusieurs champs is de taxonomie et les mes incompiets en ui de récupérer les entré et aufiner votre recher de la collection choisi action.	:ée au sein c simultaném dates, il est listant un as es contenan he dans un he dans un he dans un he dans un ction. echercher p pouvez éer sour de red ous pouvez (°) autorisé erche aus bit ver les aub tous is dont instrument instru	de nos ent. Par alleurs, possible de térisque (°). L'I e terme second temps utez voir tous artout. ire plusieurs herche ne également ) Entrez une ets ävec une ittes complètes s. Scenples: uments de cette es documents ngue).

Figure 26 Advanced search screen

Results of a search are presented in various displays:

- thumbnails,
- lists,
- tables,
- maps,
- timeline.

The choice of the display is done by clicking on the icons on the right, above the facets. Content of each element can be adapted, as well as content of the tables. On the right, results can be filtered by facets.



Figure 27 Results of a search in view "Thumbnails"



Figure 28 Results of a search in view "List"

#### 85 RESULTS 🍄

SEARCH: Type: Zoology; Keywords: arachn\*

ID		Title	Collection	Phylum	Class
RMO	CA_ARA_54259	Titanatemnus ugandanus - RMCA_ARA_54259	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_209260	Thoriosa spadicea - RMCA_ARA_209260	Arthropoda	Arthropoda	Arachn
RMO	CA_ARA_239916	Thomisus unidentatus - RMCA_ARA_239916	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_239914	Thomisus unidentatus - RMCA_ARA_239914	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_215886	Thaumastochilus termitomimus - RMCA_ARA_215886	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_174690	Thaumastochilus termitomimus - RMCA_ARA_174690	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_171953	Thaumastochilus martini - RMCA_ARA_171953	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_143319	Tetragnatha infuscata - RMCA_ARA_143319	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_245726M	Tarne dives - RMCA_ARA_245726M	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_245726F	Tarne dives - RMCA_ARA_245726F	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_245858	Synema viridisternum - RMCA_ARA_245858	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_114787	Solpuga upembana - RMCA_ARA_114787	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_245365	Selenops radiatus - RMCA_ARA_245365	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_233843	- RMCA_ARA_233843	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_134817	Ricinoides karschi - RMCA_ARA_ 134817	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_133729M	Psammoduon deserticola - RMCA_ARA_133729M	Arthropoda	Arthropoda	Arachn
RMC	CA_ARA_133729F	Psammoduon deserticola - RMCA_ARA_133729F	Arthropoda	Arthropoda	Arachn
BE_I	RMCA_INV_ARA.Ara.228612	Plexippus_minor_BE_RMCA_INV_ARA.Ara.228612	Arthropoda	Arthropoda	Arachn
BE_I	RMCA_INV_ARA.Ara.228611	Plexippus_minor_BE_RMCA_INV_ARA.Ara.228611	Arthropoda	Arthropoda	Arachn
BE_I	RMCA_INV_ARA.Ara.228610	Plexippus_minor_BE_RMCA_INV_ARA.Ara.228610	Arthropoda	Arthropoda	Arachn

ⅢⅢ∎∎⊙⊙ FILTER BY THEME Zoology (85) PERSON Jonathan Brecko (4) J. Fourmy (1) Arnaud Henrard (80) Aurore Mathys (1) A. Van Harten (3) Lourenço W.R. (1) Wesolowska & Van Harten (3) MEDIA 2D (85) COLLECTION Arachnids (85) TYPE Holotype (15) Paratype (16) PHYLUM Arthropoda (85) CLASS Arachnida (85) ORDER Araneae (69) Ixodida (1) Opiliones (1) Prostigmata (3)

#### Figure 29 Results of a search in view "Table"



Figure 30 Results of a search in view "Map"

85 RESULTS 🍄	
SEARCH: Type: Zoology; Keywords: arachn*	FILTER BY
	THEME Zoology (85)
MARCH 24 1948 Solpuga upembana - RMCA_ARA_114787 (RMCA_ARA_114787)	PERSON Jonathan Brecko (4) J. Fourmy (1) Arnaud Henrard (80) Aurore Malhys (1) A. Van Harten (3) Lourenço W.R. (1) Wesolowska & Van Harten (3)
	MEDIA 2D (85)
Image: Titanatema     Image: Solpuga up     Image: Amage: A	COLLECTION Arachnids (85) TYPE Holotype (15) Parabase (16)
1931 1934 1936 1939 1943 1946 1949 1953 1956 1959 1963 1966 19 ▶Trimelikieus	PHYLUM Arthropoda (85)

Figure 31 Results of a search in view "Timeline"

Presentation of the results can be adapted by the reader by clicking on the cogwheel on the right of the number of results.

In the menu that appears, you will see that results can be saved in a "lightbox" (if user is registered), sorted by title or identifier, or exported to a pdf or an excel.



Figure 32 Menu in search results

AutoSave 🚥 🖫 🍤 v 🖓 v 🖓	Export-32.slsx - Read-	Only - Excel			P s	earch								🛕 Jean-Marc	Herpers 🥥 🗉 📜	٥	×
File Home Insert Page Layout	Formulas Data Review View	Developer	Help												년 Share	🖓 Comme	nts
F2 • I × ✓ fx Pseu	udoscorpiones																v
A	B	с	D	ε	F	6	н		J	к	ι	м	N	0	P		
1 Image	Object	Description	Phylum	Class	Order	Family	Genus	Spesies	Subspecies	Туре	Sex	Life stage	Amount	Country of collect	Coordinates	D	uate
1 and	Trisoferno gadrus - PACA_ANA_9459 (PACA_ANA_9459)		Arthropoda	Araetekta	Pseudoscorpiones	Aremnidae	Titansterrous	Titanatornous ugandanus			Undefined	undetermined lifestage	3	Corgo, D. R	[14,30.43333]	Augus	z 6 19
2	Thoritos speakers - PMCA_ARA_201200 (PMCA_ARA_201200)		Arthropoda	Araohráda	Ar36930	Crecidae	Thoriosa	Thorioza spađena			Undefined	undetermined lifestage	1	Sao Tomé	[0.23223,4.72222]	Nover	nber
	Thomas administrative - TNOA, ARA_22016 (FMCA, ARA_22016)		Arthropoda	Aracteáda	Arare ao	Thomisidae	Tronices	Thomasus understatus		Paspo	Undelined	undetermined lifest age	з	Yemen	[15,412]	Decen	nber (
Ser.	Tronjeu urkeniste - PAOL, APA_2084 PPAOL, APA_2084)		Arthropoda	Aracheida	Aranaaa	Thomisidae	Thomises	Thomisus underfans		Pauge	Undefined	undetermined lifestage	1	Yemen		Augus	x 22 1
CollectionAcress									4								v
ConectiveAccess (+)									*1					E	I I I	+	64%

Figure 33 Excel file generated from search results

#### 4.2.4 Collections

A second way to find media after advanced search is "Collections".

A first screen presents the main themes according to which media are organized in V.C. A small presentation of the collection is given when the mouse passes over the photos.



Figure 34 Screen Collections

When we click on a theme, a hierarchical view of subcollections is given and a click on a subcollection goes further in the tree or opens the collection.

A pdf can be generated with a listing of all specimens of that level of collection.

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Figure 35 Hierarchical view of the collections

When a collection is opened, you see the results in thumbnails. Path with upper collection levels is given and the pdf download is still present.



Figure 36 Content of a collection

#### Arachnids

COLL\_NIV2, ARACHNIDS

PART OF: ZOOLOGY > INVERTEBRATES > ARACHNIDS

Collection Contents Arachnids (85 records)

Arachnomorpha (non-Acari): 380,000 specimens, 4,000 identified species, the majority in alcohol. Acari: 3,200 species preserved as: - 28,400 microscopic preparations (Acaridida, Actinedida, Mesostigmata, Ixodida) - 4,000 tubes (Oribatida, Ixodida)

Leptus bioristatus - RMCA\_ACA\_187050 Leptus similis - RMCA\_ACA\_187050 Solguga upembana - RMCA\_ACA\_187050 Solguga upembana - RMCA\_ACA\_114787 Solgumobisium quadrospinosum - RMCA\_ARA\_127850 Gymnobisium quadrospinosum - RMCA\_ARA\_127850 Cicynethus decoratus - RMCA\_ARA\_131806F Cicynethus decoratus - RMCA\_ARA\_131806F Cicynethus decoratus - RMCA\_ARA\_131806F Cicynethus decoratus - RMCA\_ARA\_131806 Heradida speculigera - RMCA\_ARA\_131806 Heradida speculigera - RMCA\_ARA\_131806 Cicynethus decoratus - RMCA\_ARA\_131806 Heradida speculigera - RMCA\_ARA\_132048 Ballomma haddadi - RMCA\_ARA\_132048 Cithaeron praedonius - RMCA\_ARA\_133728F Cithaeron praedonius - RMCA\_ARA\_133728F Cithaeron praedonius - RMCA\_ARA\_133728F Cithaeron praedonius - RMCA\_ARA\_133728F Chariobas cylindraceus - RMCA\_ARA\_1337653M Tetragnaths infuscata - RMCA\_ARA\_1537653M Tetragnaths infuscata - RMCA\_ARA\_1537653M Tetragnaths infuscata - RMCA\_ARA\_1537653M Tatagnaths infuscata - RMCA\_ARA\_154187 Mallinella bosmansi - RMCA\_ARA\_164183 Mallinella bosmansi - RMCA\_ARA\_171653 Cithaeron jocqueorum - RMCA\_ARA\_171653 Cithaeron jocqueorum - RMCA\_ARA\_171653 Cithaeron jocqueorum - RMCA\_ARA\_171653 Thaumastochilus mentimi - RMCA\_ARA\_171653 Thaumastochilus mentimis - RMCA\_ARA\_180036 Diskratrombium coineaui - RMCA\_ARA\_171653 Thaumastochilus mentimis - RMCA\_ARA\_180036 Diskratrombium coineaui - RMCA\_ARA\_180036 Diskratrombium coineaui - RMCA\_ARA\_171653 Thaumastochilus termitomimus - RMCA\_ARA\_117165 Nilus majungensis - RMCA\_ARA\_201138 Nigurus canescens - RMCA\_ARA\_201138 Nigurus canescens - RMCA\_ARA\_201138 Nigurus canescens - RMCA\_ARA\_201168 Nilus majungensis - RMCA\_ARA\_201176 Nilus majungensis - RMCA\_ARA\_220800 Cithaeron cointentum - RMCA\_ARA\_220800 Cithaeron cointentum - RMCA\_ARA\_220800 Cithaeron cointentum - RMCA\_ARA\_220806 Cithaeron cointentum - RMCA\_ARA\_220806 Cithaeron cointentum - RMCA\_

Figure 37 Export listing of a collection

#### 4.2.5 Contact

Contact page presents the institution (e.g. Royal Museum for Central Africa), a notice to know how to get high resolution pictures, contact information and maps.

A form allows also to send an email to the contact person defined in the parameters.

#### BBR/175/A3 NaturalHeritage: The Virtual Collection Module

#### CONTACT

#### ABOUT THE ROYAL MUSEUM FOR CENTRAL AFRICA

The Royal Museum for Central Africa must aspire to be a world centre of research and knowledge dissemination on past and present societies and natural environments of Africa, and in particular Central Africa, to foster - among the public at large and the scientific community - understanding of and interest in this area and, through partnerships, to contribute substantially to its sustainable development. Thus the core endeavours of this Africa-oriented institution consist of acquiring and managing collections, conducting scientific research, implementing the results of this research, disseminating knowledge, and mounting selected exhibitions of its collections.

The AfricaMuseum is a centre for knowledge and resources on Africa, in particular Central Africa, in an historical, contemporary, and global context. The museum exhibits unique collections. It is a place of memory on the colonial past and strives to be a dynamic platform for exchanges and dialogues between cultures and generations.

#### REQUEST FOR MEDIAS

For any request for a high resolution photo or other media, please use the contact form below or contact the curator concerned directly (Collections).



Figure 38 Screen Contact

#### 4.2.6 Browse

A third way to search media is Browse. Browse appears as an overlay above the opened screen. There are currently 3 tabs : all themes, zoology and anthropology. All themes show all the facets while the others show only the facets linked to the theme. With this interface, you can quickly reach the media you want without doing a search. You can also browse all media by clicking on the "Browse all".

AF RI Virtual C≜c Collections		Browse Advanced Sea	arch Collections Contact Ser	arch Q
ALL THEMES - ZOOLOGY -	ANTHROPOLOGY -			
Browse by Themes	Amphibians and Reptiles (7)	Anthropology (154)	Arachnids (85)	Birds (1)
People Media	Bivalves (50)	Cnidaria (3)	Coleoptera (348)	Dermaptera (1)
Collections Types Phyla	Diplopoda (4)	Diptera (429)	Ephemeroptera (1)	Fishes (3)
Classes Orders	Gastropoda (696)	Vertebrates (13)	Hemiptera (35)	Hymenoptera (95)
Families Genus	Insects (1060)	Invertebrates (1900)	Lepidoptera (135)	Malacostraca (2)
Object types	Mammals (2)	Mollusks (746)	Neuroptera (16)	Zoology (1913) ✓

Figure 39 Browse overlay screen

### 4.2.7 Details form

The details form presents all media linked to the specimen/object, with some info about it.

Media are shown below the left column with a thumbnail or an icon (for sound). When you click on one of these, it is displayed in a bigger format on top of the left column.

You can again click on that bigger picture to open it as full screen and zoom into it. Close that full screen by clicking on the cross at bottom right.

If there are other files than pictures, sounds, videos, they are displayed under "Related objects". A click on the link opens a window where you can download the file.

On the right are displayed information about the specimen/object : code, link to more details in the original database (click on  $\mathcal{P}$ ), related people and other info such as taxonomy, storage, amount, sampling.

Comments can be added if the user is logged in.



Figure 40 Form with details of an object



Figure 41 Zoom on a picture

## 4.3 Security

Several levels of security can be defined in Providence, with an impact on data displayed in Pawtucket. This protects data by creating groups and roles that are allowed to work on and see specific data.

Users, groups, roles are created and managed in Providence, under the menu Manage – Access control.

## 4.3.1 Users

First entry in the left menu of Access control is User logins. You have there a list of users, with info about email, last login and if it is active or not

CACOLLECTIVEACCESS						NEW	FIN	D MANAGE	IMPORT	HISTOR	(
USER LOGINS											
USER GROUPS	Filter:				Show public-access only	- users				• •	ew user
ACCESS ROLES					full-access						
	Public-a	cce	ess or	nly	us deleted						
	Login name	\$	Name	¢	Email \$	Active?	\$	Last login		\$	
	Jim		H, Jim		jimherp@hotmail.com	Yes		August 20 2020 a	t 15:41:15		<b>×</b>

Figure 42 User management : List of users

When you create or edit a user, you get this form where you can enter all info about the user and his permissions

lear name	
Jim	
liser class	
public-access only	
Password	
Change password	
Confirm password	
Confirm password	
First name	
Jim	
Last name	
Н	
ĉ-mail	
jimherp@hotmail.com	
SMS number	
Administrators (admin) Cataloguers (cataloguer) Import [mport] Researcher [researcher] User content moderator [moderator]	Groups Administrators [admin] Cataloguers [cataloguer] Import [Import]
Organization	×
Address 1	
Address 2	
City	
State/province	
Country	

Figure 43 Management form for a user

#### 4.3.2 Groups

Second entry is User groups. Groups are only there to gather users and give them common roles.

ER GROUPS	Save Cancel	🗶 De
IESS ROLES	Name Import Code Import Description Users allowed to import medias	
	Roles Administrators (admin) Cataloguers (cataloguer) Import Import Researcher (researcher) User content moderator (moderator)	Group members Jonathan Brecko Amaud Henrard Aurore Mathys Didler Van den Spiegel

Figure 44 Management form of user groups

#### 4.3.3 Roles

Access roles form contains tens of entries allowing to define very accurately the rights of users on objects and actions. These rights can be defined at different levels: actions, metadata, types of objects, sources, and users in Pawtucket can get different rights than in Providence.

ISER LOGINS					
ISER GROUPS	🕑 Save 🗖 O	ancel			🗙 Delete
CCESS ROLES					
	Name				
	Code				
	Import				
	Description				
	Role for import only				
	Actions Metadat	a Types Sources	Pawtucket		
	Svetem administrat	ion All/Alene			
	Is administrator	Set access control	□View logs	View own change logs	View change logs
	Configure user interfaces	Configure metadata elements	Configure relationship types	Configure import/export mappings	Configure locales
	View configuratio check	n Manage advanced search forms	Manage displays	Administrate sets	Initiate search reindexing
	Export Configurat	ion Manage user sorts	Can use plugin tool:	S	
	Library check out <u>AI</u> Can do library ch in	I <u>/None</u> eck Can do library check out	¢		
	Searching and brow	sing <u>All/None</u>			
	Media import <u>All/Nor</u> Batch import med	te dia ⊡Batch import data			
	Batch export <u>All/Non</u> Batch export metadata	<u> </u>			
	Personalization <u>All/h</u> Set preferences	Create advanced	Edit advanced searc	ch Delete advanced	Use advanced search
	Create displays	Edit displays	Delete displays	Use displays	Duplicate displays
	Set management All	/ <u>None</u> ps	Edit sets and set	Delete sets and set	Delete own sets and

Figure 45 Management form of access roles

These roles can be added to each element of Providence, objects, collections, fields,...

RESULTS (2/2)				
Editing Zoology:				
Location: RMCA → Papilionidae_0002	Global access			
Lépidoptères > Papilionidae -	Clobal access			
(Polydorus antenor_0002)	All groups and users can edit + delete this record, unless you create an exception	on		
	Functions con edit + delete			
100 ATT 100 ATT -	Everyone Can eux + delete			
XXXX				
XX X	Exceptions			
XX C	No access exceptions exist for this record			
	Group access			
👁 🗗 🖆 🖨	Group	Ļ	no access	- 8
In sets 2D, box, zzo	Add aroun accors			
Created	Add group docess			
6 days, 22 hours ago by CollectiveAccess Administrator	User access			
Last changed				
2 days, 22 hours ago by CollectiveAccess Administrator	User	+	no access 🔻	. 😆
	• Add user access		no access	
Export this zoology 🛃			can read	
BASIC INFO	Inherit access settings from collections?		can edit + delete	
ADMINISTRATIVE INFO	milent access settings nom conections?	l	can can · aciete	
MEDIA	Do not inherit access settings from related collections 🔹			
STORAGE				
SETS	Inherit item lovel access control actings from parent0			
RELATIONSHIPS	innent item-ievel access control settings from parent?			
KEYWORDS	Do not inherit item-level access control settings from parent 🔻			
BIOLOGY				
SUMMARY				
ACCESS				

Figure 46 Rights management on an object

#### 4.3.4 Registration

In Pawtucket, visitors can register to create a permanent account. By default a role "public user" gives him only the right to write comments and save searches in the lightbox but the administrator can change that role to give him for example a role which will allow him to see hidden objects or files.

To register, visitors have to click on icon of a person at left of the flags in the main menu.

REGISTER		8
FIRST NAME*		
LAST NAME*		
E-MAIL*		
ORGANIZATION		
ADDRESS 1		
ADDRESS 2		
CITY		
STATE/PROVINCE	~	
COUNTRY	Belgium	
POSTAL CODE		
PHONE		
SECURITY QUESTION*	7 + 2 =	
PASSWORD*		
RE-TYPE PASSWORD*		
Fields with a * are mandate	ory.	
Your data and privacy are i	mportant to us, and we are committed to ensuring	
its absolute protection. As	such, information we collect with this form is used	
in accordance with the gui	delines set out by the GDPR.	
	REGISTER	

Figure 47 Popup window for registration

## 4.4 The IIIF Image viewer

Pictures can be saved on CA in different formats and resolution high resolution pictures can be displayed C.A.. This can be done because CA is IIIF compatible. IIIF is an international standard to share high resolution pictures (<u>https://iiif.io/</u>). Pictures are tiled to avoid time consuming download and also to protect them from unwanted download at high resolution. CA uses 2 of the main important viewers to display them : UniversalViewer and Mirador. UniversalViewer has been developed for the British Library while Mirador has been developed by Stanford University and is maintained by many contributors, with among them Harvard University.

Photos stored on the IIIF server can be accessed through a manifest request, a json document containing metadata about the characteristics of the image and other information. This manifest was partially present in CollectiveAccess (integrated in an html page) and a development had to be done to complete it. This development consists of a PHP / cURL script correcting the syntax problems of the original manifest, and functioning as a proxy. The script generates a correct manifest, having the MIME type Json. This development made it possible to use Virtual Collections as a fully functional IIIF server, allowing in particular to display photos in DaRWIN. On the DaRWIN server, the Mirador viewer was chosen because the DaRWIN interface can be seen through an iframe and UniversalViewer already working with iframe, this caused viewing problems. Mirador did not present these problems. Mirador has also a more important community of developers. A test was also carried out to create an annotation server for the photos.

# 4.5 Establishing the links between CMS DaRWIN / Plone and CA

## 4.5.1 Collective Access as a stand alone picture server

Development has been done in C.A. to complete the compatibility by adding a IIIF service to retrieve pictures of an object with its UUID from a foreign website.

In RMCA,Collective Access is used with the front end part, Pawtucket but Providence can be installed alone to be a picture server for other applications.

RBINS will use CA only to store and display images with IIIF viewer but it will not be directly accessible by the public with an independent search interface.

## 4.5.2 DaRWIN

In CA, the link with DaRWIN is established using the CETAF stable identifier used by DaRWIN for each specimen or part of specimen. The UUID must be entered as metadata to enable the link with DaRWIN. If it's there, a link can be found on the detail page in the form of a chain icon. By clicking on it, public DaRWIN opens:

and the	GENERAL INFORMATION Mammals Tragelaphus scriptus RMCA_Man	n_5837	
	CODE: RMCA_Mam_5837 PERMANENT ID: a17a781-9215-42cb-8bb8-2014150294		Darwin public website (backbone)
	Schuttelen H. (collector) Schutelen H. (collector) Schwarz (identifier) LIFE STAGE SEX undefined Male	AMOUNT 1	Home Search Darwin Advanced interface Home > Darwin specimen
	TAXONOMY		Stable CETAF identifier (permalink): https://darwinweb.africamuseum.be/object/a17af78f-92t5-42cb-8bb8-2014150294a0
kin view	PHYLUM CHORDATA	GENUS Tragelaphus	Specimen number: RMCA_Mam_5837 Taxonomical name: Tragelaphus scriptus
<b>←</b> →	Mammalia ORDER	SPECIES Tragelaphus scriptus	Locatly: administrative area Country: R.D. Congo Municipatity: Kwamouth
🏓 🏊 💼	Artiodactyla FANLY Bovidae TYPE Holotype SAMPLING		Latitude 31067 Longitude 10 Bogin of collecting period End of collecting period Collectors Schouteden H Donator History of scientific identifications: • 1029-xxxxx Tragelliphus scriptus
			Zoological type:

Figure 48 DaRWIN External link edition widget

In the opposite direction, DaRWIN also has links toward CA.

It is now possible to define external links in DaRWIN redirecting to specific multimedia servers. The Picture (IIIF) option can link to the Collective Access image url and displays it directly in DaRWIN. All zooming options are activated in the DaRWIN widget. A link allows you to open the image in a separate window.

External Links		х
Url https://www.3dhop.net/demos/helm/index	Comment 3DHOP test	×
Type Others ▼ https://nagoya.naturalheritage.be/nagoyε	amphibiens-de-la-region-de-	*
Type Nagoya 🗸	kisangani	
http://collections.naturalsciences.be/	RBINS CMS	×
https://youtu.be/WbS0eYKbIOE	3D reconstruction video on Youtube	*
Type Video V		
https://sketchfab.com/3d-models/engrave	3D model on Sketchfab	×
		×
Type Picture (IIIF) V	ß	
		Add Url

Figure 49 DaRWIN External link edition widget



Figure 50 Embedded view of the CA image in DaRWIN widget

From DaRWIN, data can also be exported, to populate CA or to update it.

A special report has been created to easily export the specimens that have to be imported in CA. This report is similar to the other reports and generates a CSV file. Choose "Tab-delimited (Virtual Collections)" to get that report:

#### My saved searches



#### Figure 51 Report choice in DaRWIN

This CSV file can then be imported in an excel, to add media. This excel is simple and automatizes the filling of media filenames and infos for each specimen. It contains 3 tabs: a first one ("ImportDarwin") with only buttons, a second one ("temp") empty and a third one("Generate photo filename") to help to compose complex filenames:

File Home Insert Draw Page Layout Formulas Data Review View Developer Help 🖄 Share 🖓 Comment	s
SECURITY WARNING Macros have been disabled. Enable Content	×
A23 $-$ : $\times - f_x$	*
A	
1       1. Export data from Darwin : pin specimens, save search and create a report with "Tab-delimited (Virtual collections)"       Open DaRWIN	
2     3     2. Import file exported from Darwin :     Get Darwin export file       4     4	-
5 3. Verify data on sheet "temp" (pay attention to Date format MM/DD/YYYY, view and view order). Add description if you have and change media info if you want.	_
7     4. Save data in a new file for Virtual Collections:     Save data	
9 5. Send photos to V.C. Server: Send photos	
11     6. Import data in V.C.:     Open Import	-
ImportDarwin     temp     Generate photo filename     (+)     (+)	*

Figure 52 Excel template to import data from DaRWIN to Collective Access

The first tab contains actions to try to minimize the work of the user:

- 1. Open DaRWIN : to avoid searching for the link to DaRWIN, this button opens DaRWIN where the user can pin the specimens he wants, create the list and export the report as a CSV.
- 2. Get Darwin export file : Opens a window to get the CSV file and then opens a second window to enter the root path to the photos and the name of the collection in CA :

Complete these fields		×
Path to root folder of photos:	Choose	
Collection in Virtual Collections: (create it in V.C. if it doesn't exist)		
	OK Cancel	

Figure 53 Screen to enter path to photos and collection name.

The photos files must be in directories of which name must be exactly the code in DaRWIN. This code is indeed used by CA as the main code.

When OK is clicked, data from CSV are inserted in the excel, on tab "temp", and photo filenames are automatically also filled, with one filename by row. So, we get the same format as the template described in 4.1.4.

This is done without intervention of the user to fill any data, and therefore speeds the process and also avoids errors that can occur by typing again filenames in the excel.

No need also to copy manually data from DaRWIN: all is inserted automatically.

- 3. This step is there to verify data of tab "temp"
- 4. Save data : Tab "temp" is saved as a new excel file, ready to be imported in CA.
- 5. Send photos : opens filezilla to send the photos to the CA server. To avoid losing time, connection is automatically done. User has to drag and drop files to the server.
- 6. Open Import. This step is described in 4.1.4 to import the excel.

This excel template greatly speeds up the process of creation of the import file to CA, by minimizing the risk of errors.

The last tab is there to help to create the filenames of the photos, which can be complex. It's used independently of the rest of the excel template. It contains formulas to automatically create the name. If tab "temp" is already filled in, this tool can be used to generate the photo description by copying automatically the data with button "copy data from sheet 'temp'":



Figure 54 Tool to generate filename and description of the photos.

Since the installation of the new media server at RMCA, 4102 specimens/objects (3946 in zoology and 156 in anthropology) and 9561 photos have been imported. In the last months of the project were imported:

- 144 mammals,
- 26 amphibians and reptiles,
- 25 birds,
- 1895 boxes of Lepidoptera.

## 4.5.3 Plone

Plone can display the CA images in an iframe with zooming and annotations.

Testing demonstrated that the default IIIF viewer Universal Viewer of CA doesn't support the Iframe because it uses it already. The Mirador IIIF viewer is working fine both in Iframe and direct link. Mirador was therefore chosen for next development.

# 5. CONCLUSION

During the test of Collective Access, more than 4000 objects and 9000 pictures from the RMCA zoology and anthropology collections were imported with success.

The evaluation of the CA solution is very positive:

- The new public website Virtual collections presents media from Africa Museum in a clear and easy design.
- Various gates exist to explore the data, save them or export them.
- Registration allows us to protect some more sensible data from a general public view by restricting access to some registered people.

• The backend interface is an easy-to-use solution to manage the MySQL database, import data and media, edit metadata and interfaces.

The use of Collective Access will be extended in 2021-2022 to the RBINS Virtual collections allowing a better common policy and a common management of the infrastructures.

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