

Implementation of the SPECIFY Collection Management System in the Geneva Museum

HISTORY, PROCEDURE, CURRENT SITUATION AND PROBLEMS

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CONTENTS

- What is a CMS?
- History of CMS in the Geneva Museum
- Specify 6 CMS
- Migrating our legacy data
- Conclusions



What is a CMS?

for **Natural History Collections:**

a software solution that permits museum curators primarily to

- inventourise the collection objects
- to know where they are stored
- document the object's history of acquisition and identifications
- manage loans
- print labels
- store and manage digital photos
- facilitate data exchange and provide a public access



History of the CMS used in the Geneva Museum

in the 1990, a few curators started to create their own CMS solutions, mostly using the application Filemaker

some curators had their databases designed by external enterprises, but they also lacked a correct underlying data model for collection management systems

FileMaker Pro - [mhn-inve (TARANIS)]

Fichier Edition Affichage Insertion Format Enregistrements Scripts Fenêtre Aide

Enregistrements 1 63922 Total (Non triés) Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier

Modèle : Saisie générale Format affichage : Prévisualisation

MHNG INVE 10000 status **Holotype** Ancien No 977.715 No prov. autr

***Petrosia capsa* Desqueyroux-Faundez, 1987**

Phylum	Porifera	Localité	Récif extérieur Gadgi, Ile des Pins, récif de l'Aventure	
Classe	Demospongiae	Lat. decim.	-022.5302 °	Long. decim. 167.4102 ° calcul
Ordre	Haplosclerida	Date récolte	04.01.1977 jj.mm.aaaa	
Ss ordre	Petrosina	Loc.étiquette		
Famille	Petrosiidae	Pays	Nouvelle-Calédonie, France	
Genre	<i>Petrosia</i>	Province	Province Sud	
Sous-genre		Altitude de	à m	
Espèce	<i>capsa</i>	Profondeur de	10 à 45 m	no station
Auteur, date	Desqueyroux-Faundez, 1987	meth. collect.	plongeur	
Sous-espèce		Zoogéographie	Prov marine Indo-Pacifique	
Age/Stade		Sexe		
Acquisition	Don Jean Vacelet	Mode	lame(s), alcool	
Collecteur	Laboute, Bargibant, Menou	Nb spéc.	1	ADN
Determinavit	R. Desqueyroux-Faundez	Qualité	Bon	
Collection	Nouvelle-Calédonie	Emplacement	S26: 22-45	
Prix achat				
classification ancienne	citations du spécimen			
Genre	Petrosia	<i>Petrosia capsa</i> Desqueyroux-Faundez, 1987: 192, figs 2a-2b, 20-23		
Sous-genre				

image(s) > Notes Paratypes a

Petrosia capsa 0.1 mm

History of the CMS used in the Geneva Museum

... the construction of the databases lacked professionalism; there was a low degree of control, resulting in a low quality of the data (numerous spelling errors, uncontrolled usage of geographical and taxonomical classifications, use of abbreviations and data that were only intelligible to the one user ...)

FileMaker Pro - [mhn-inve (TARANIS)]

Fichier Edition Affichage Insertion Format Enregistrements Scripts Fenêtre Aide

Enregistrements 1 63922 Total (Non triés) Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier

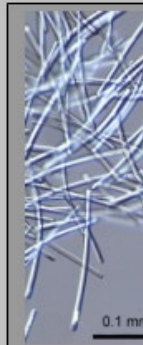
Modèle : Saisie générale Format affichage : Prévisualisation

MHNG INVE 10000 status **Holotype** Ancien No 977.715 No prov. autr

***Petrosia capsa* Desqueyroux-Faundez, 1987**

Phylum	Porifera	Localité	Récif extérieur Gadgi, Ile des Pins, récif de l'Aventure	
Classe	Demospongiae	Lat. decim.	-022.5302 °	Long. decim. 167.4102 ° <input type="button" value="calcul"/>
Ordre	Haplosclerida	Date récolte	04.01.1977 jj.mm.aaaa	
Ss ordre	Petrosina	Loc.étiquette		
Famille	Petrosiidae	Pays	Nouvelle-Calédonie, France	
Genre	<i>Petrosia</i>	Province	Province Sud	
Sous-genre		Altitude de	à m	
Espèce	<i>capsa</i>	Profondeur de	10 à 45 m no station	
Auteur, date	Desqueyroux-Faundez, 1987	meth. collect.	plongeur	
Sous-espèce		Zoogéographie	Prov marine Indo-Pacifique	
Age/Stade		Sexe		
Acquisition	Don Jean Vacelet	Mode	lame(s), alcool	
Collecteur	Laboute, Bargibant, Menou	Nb spéc.	1	<input type="button" value="ADN"/>
Determinavit	R. Desqueyroux-Faundez	Qualité	Bon	
Collection	Nouvelle-Calédonie	Emplacement	S26: 22-45	
Prix achat				
classification ancienne	citations du spécimen			
Genre	Petrosia	<i>Petrosia capsa</i> Desqueyroux-Faundez, 1987: 192, figs 2a-2b, 20-23		
Sous-genre				

image(s) > Notes Paratypes a



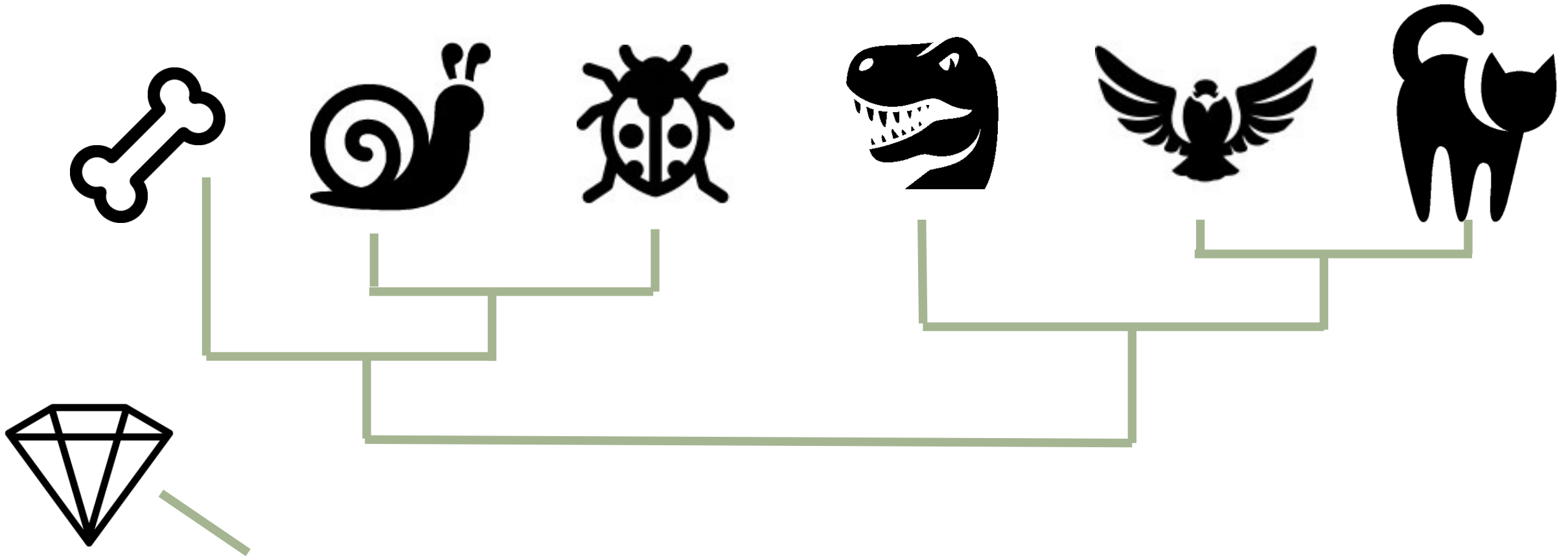
0.1 mm

Petrosia capsa

History of the CMS used in the Geneva Museum

so, an internal audit in 2017 concluded that the situation did not meet the criteria of a serious collection management.

There were about 14 separate databases that had quite diverged, comprising about 500 000 object records.



Specify 6 CMS

SPECIFY 6 is an open source client application that uses a standard MySQL type database engine. The development of the application is managed by a consortium in the US. Paying members get help and can make proposals for developments.

The underlying data model of SPECIFY is exemplary for managing natural history specimens of **biological origin** and is presented here in a simplified way.



<https://specifysoftware.org>

Specify 6 CMS

Specify is a **relational database**, something our old Filemaker bases were only very rudimentary

so based on different, linked table which reduces the redundancy of the data

Collection Object table



Catalog number
Field number
Entry book number

Collector 1

Collector 2

Address book

Smith, John

Doe, Joe

Hunter, Jane

Preparation 1: pinned

Preparation 2: slide

Preparation 3: DNA

Determination 1:

Coccinella venusta

Determination 2:

Coccinella pusilla

taxomic thesaurus

Coccinella venusta

Coccinella pusilla

Coccinella magnifica

Specify 6 CMS

the user interface (UI) had to be modified extensively, as the default one was not suitable for us

example: Invertebrate collection

Structure of the UI reflects the relational database structure

★ types OCT 2022

^ ✓ 🔊 🗨 FRA 08:21
07.12.202

Collection Object

accessions

MHNG - INVE - 0053642

Field number: 20070407a

Acquisition: Schuchert, Peter - récolte avril 2007

Confid. notes:

catalog number

acquisition data (summary)

Determinations

Taxon: Cnidaria Hydrozoa Moerisiidae • Odessia maeotica (Ostroumoff, 1896)

Accepted as: Cnidaria Hydrozoa Moerisiidae • Odessia maeotica (Ostroumoff, 1896)

Date deter.:

Type status:

host determination

host determination (several possible)

preparations (summary, table view)

preparations (summary)

Collecting information

Locality: Portiragnes Plage / France, Hérault / lat. 43.2

Verbatim loc.:

Date begin: 07.04.2007

Method:

Collecting trip:

Host data

Host taxon:

MNHG host:

Preparations

Prep. type	Sample	Stor. location	Storage tree	Number items	Is On Loan
ADN en TE	Hy-DNA 530	boîtes Hydrozoa ADN Hy06	Bat. Expo. / étage -1 / Local con...	1	No
ADN en TE	Hy-DNA 529	boîtes Hydrozoa ADN Hy06	Bat. Expo. / étage -1 / Local con...	1	No
ADN en TE	Hy-DNA 528	boîtes Hydrozoa ADN Hy06	Bat. Expo. / étage -1 / Local con...	1	No
alcool		AL103 bocal Capitata-3	Bat. Coll. / étage 0 / AL103 com...	10	No

images

Collection Object At

Odessia maeotica /

Object attributes

Sex:

DNA 6

Documentation

Reference Work: \$

Page and fig.: 4

Category: c

Remarks specimen

Form

Specify 6: window for Locality data

Determinations + -

Taxon: Cnidaria Hydrozoa Moerisiidae • Odessia maotica (Ostroumoff, 1896) Current

Accepted as: Cnidaria Hydrozoa Moerisiidae • Odessia mae

Date deter.: Full Date DD.MM.YYYY

Type status:

Collecting information

Locality: Portiragnes Plage / France, Hérault / lat. 43.28

Verbatim loc.:

Date begin: Full Date 07.04.2007

Method:

Collecting trip:

Host data + -

Host taxon:

MNHG host:

Preparations + -

Prep. type	Sample id.
ADN en TE	Hy-DNA 530
ADN en TE	Hy-DNA 529
ADN en TE	Hy-DNA 528
alcool	

Created By Agent: Schuchert, Peter

Locality

Locality name: Portiragnes Plage

Geography: France, Hérault

Decimal Degrees

Latitude: 43.28009 N 43.28009° N (Source)

Longitude: 3.367234 E 3.367234° E (Source)

Accuracy [m]: 10.0000000000 Verbatim accur.: point

Lat/Long method:

Altitude min.: Altitude max.: m

Locality code:

Loc. remarks:

Locality Details + -

Depth min.: Depth max.: 1.0000000000 m

Plugins

Display in Google Earth

Locality Citations + -

Reference Work:

Remarks:

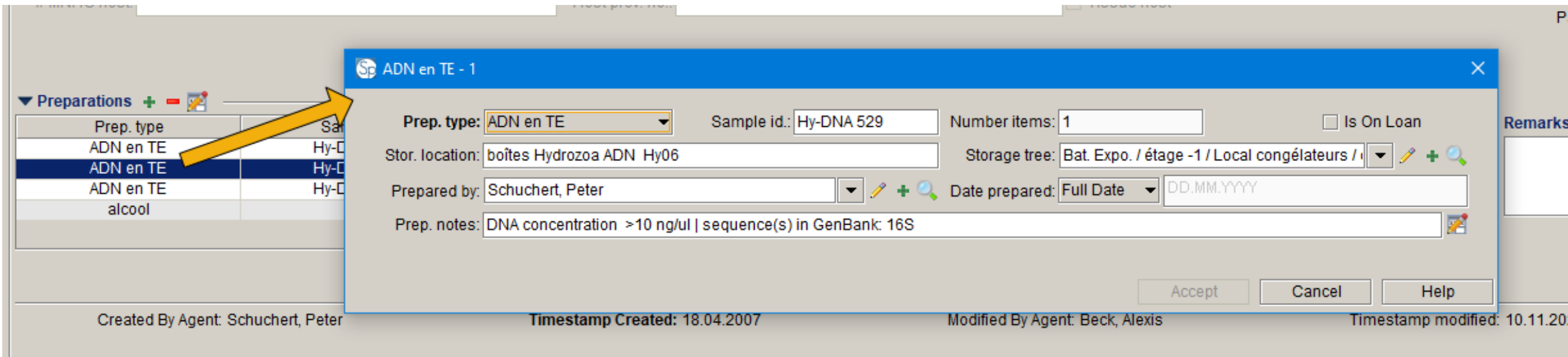
Attachments

0

use for photos, attach maps via locality citations

Save Cancel Help

Specify 6: popup window for preparation data



The screenshot displays a software interface with a 'Preparations' table and a 'Specify 6: popup window for preparation data' dialog box. The dialog box is titled 'ADN en TE - 1' and contains the following fields:

- Prep. type:** ADN en TE (dropdown menu)
- Sample id.:** Hy-DNA 529
- Number items:** 1
- Is On Loan:** ☐
- Stor. location:** boîtes Hydrozoa ADN Hy06
- Storage tree:** Bat. Expo. / étage -1 / Local congélateurs / (dropdown menu)
- Prepared by:** Schuchert, Peter (dropdown menu)
- Date prepared:** Full Date (dropdown menu) DD.MM.YYYY
- Prep. notes:** DNA concentration >10 ng/ul | sequence(s) in GenBank: 16S


The dialog box has 'Accept', 'Cancel', and 'Help' buttons at the bottom right. The background interface shows a 'Preparations' table with columns 'Prep. type' and 'Sample id.'. The table contains four rows: 'ADN en TE', 'ADN en TE', 'ADN en TE', and 'alcool'. A yellow arrow points from the 'Preparations' table to the dialog box.

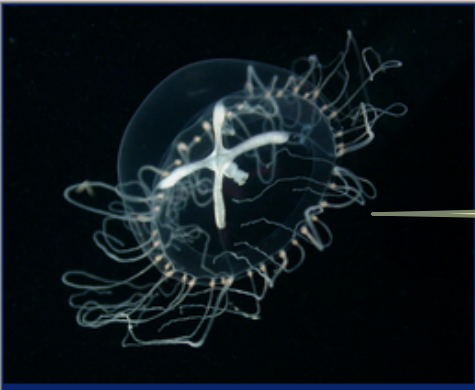
Prep. type	Sample id.
ADN en TE	Hy-D
ADN en TE	Hy-D
ADN en TE	Hy-D
alcool	

Created By Agent: Schuchert, Peter Timestamp Created: 18.04.2007 Modified By Agent: Beck, Alexis Timestamp modified: 10.11.20

Specify 6: right panel

images

Collection Object Attachments  Grid



Odessia maeotica / MHNG-INVE-0053642

Object attributes

Sex: Stage: méduse

DNA 6

Documentation

Reference Work: Schuchert P. 2010. The European...
Page and fig.: 456, fig. 58
Category: citation spécimen

Remarks specimen

photos

object data

DNA data

collection object
citations

remarks (expandable)

Specify 6: right panel

images

Collection Object Attachments

Grid

Current

Grid

Object attributes

Sex:

Dna 6

Remarks specimen

Form

DNA Sequence

Genbank Acc #: GQ424341

BOLD Barcode Id:

BOLD Sample Id:

Marker type: 18S

Sequencer: Schuchert, Peter

Gene Sequence:

DnaR 0

4 of 6

Close

DNA data (several sequences)

Primer & PCR data, ABI files etc

Create/Update

- Collection Object
- Agent
- Chronostratigraphy
- Lithostratigraphy
- Paleo Context
- Geography
- Locality
- Strunz
- More Forms
- Record Sets
- PETR tout
- record with image

Collection Object

Accessions

MHNG - **PETR** - 0000165 entry book no.: Pg 017.037
field number: other identifiers:
acquisition: PETR acquisition 1922
conf. remarks:

Determinations

identification: Grès
id. detail: Coquillier
structure: variety:
date det: determiner:

Collecting Event

locality: Woltton / Eurasie, Royaume-Uni, Pays de Galles
verbatim loc.:
paleo context: 000002, Caradocien, supérieur, Ordovicien, Paléozoïque
start date: end date:
method: expedition:

Preparations

prep. type	prep. id.	location	count	Is On Loan
échantillons		Roches sédimentaires	1	No

Remarks specimen

Le Caradocien est maintenant subdivisé en
- Hirnantien, le plus récent
- Katien
- Sandbien

Created By Agent: Beck, Alexis

Timestamp Created: 24.03.2011

Modified By Agent:



Trash

The mineral science collections (petrography, mineralogy, gems, and meteorites) needed a particular: paleo context, also used in paleontology, Chronostratigraphy organization was kept is a temporary solution

Specify 6: popup window for paleocontext

- chronostratigraphy selected from thesaurus

acquisition: PEIR acquisition 1922

conf. remarks:

▼ Determinations

identification: Grès ☒ is current

id. detail: Coquillier

structure: variety:

date det.: determiner:


1 of 1

Grid

▼ Collecting Event

locality: Wolton | Royaume-Uni, Pays de Galles

verbatim loc.:

paleo context: 000002 : Caradocien, Supérieur, Ordovicien, Paléozoïque 

start date: end date:

method:

▼ Preparations

prep. type	prep. id.
échantillons	

Remarks specimen

Paleo Context

identifier: 000002


chrono strat.: Caradocien, Supérieur, Ordovicien, Paléozoïque

litho strat.:

bio strat.:

remarks:

Close



20181002_110410

▼ Collection object attributes

weight [g]: 287.6

composition:

description: Abondance de fossiles (empreint

▼ Collection Object Properties

classes : g

Sédimentaires :

Sédimentaires

references

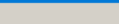
▼ Collection Object Citations

The screenshot displays the ChronoStratigraphy application interface. The main window shows a hierarchical tree of geological stages, organized into columns: Root, Erathem/Era, System/Period, Series/Epoch, and Stage/Age. The tree is currently expanded to show the 'Aptian' stage, which is highlighted in blue. A yellow arrow points from the 'Aptian' node in the tree to the 'Edit Node' dialog box.

The 'Edit Node' dialog box is open, showing the following fields:

- Parent:** Early Cretaceous, Cretaceous, Mesozoic
- Name:** Aptian
- Rank:** Stage/Age
- Start Period:** 125.0
- End Period:** 129.4
- Start Uncertainty:**
- End Uncertainty:**
- Remarks:**
- Child Nodes:** (Empty list)
- Full Name:**
- GUID:** 6d728c4a-9764-48fd-af81-196343a083db

The dialog box has 'Save', 'Cancel', and 'Help' buttons at the bottom right.

 **Edit Node** ✕


☐ Is BioStratigraphy

Parent: Early Cretaceous, Cretaceous, Mesozoic ?

Name: Aptian **Rank:** Stage/Age ▼

Start Period: 125.0 End Period: 129.4

Start Uncertainty: End Uncertainty:

Remarks: 

▼ **Child Nodes**

Full Name:

GUID: 6d728c4a-9764-48fd-af81-196343a083db

Save Cancel Help

Migrating our legacy data: the process

- so far about 99% of of 500K records migrated, modified most field names, user interfaces, and pick-lists in Specify
- created labels, loan forms
- export of data from Filemaker via Excel
- extensive cleaning and homogenisation needed, but not all could be done
- import in Specify, including all photos
- more than three years of intensive work was needed for migration alone
- expect to have rest of records migrated within the next two months

Migrating our legacy data: accessory work

- train the users (time consuming)
- providing help for users
- fine tuning and adapting labels, loan forms, and UI

Migrating our legacy data: to do

- preparation for upgrade to Specify 7, an Internet browser based version
- creating a dedicated mineral science addition (SwissCollNet)

Migrating our legacy data: conclusions

- migrating our legacy data was more difficult and much more time consuming than anticipated
- adapting the user interface cannot consider all wishes of the users; like any application, Specify has its constraints
- assistance and help service needed for users should not be underestimated
- high cost should not be underestimated either
- despite all the difficulties, the data migration was needed and we will be in a much better position for future developments