



# Work Flow and Error Detection in a Paleontology (IMLS Silurian Reef) Digitization Project

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The **Field**  
Museum

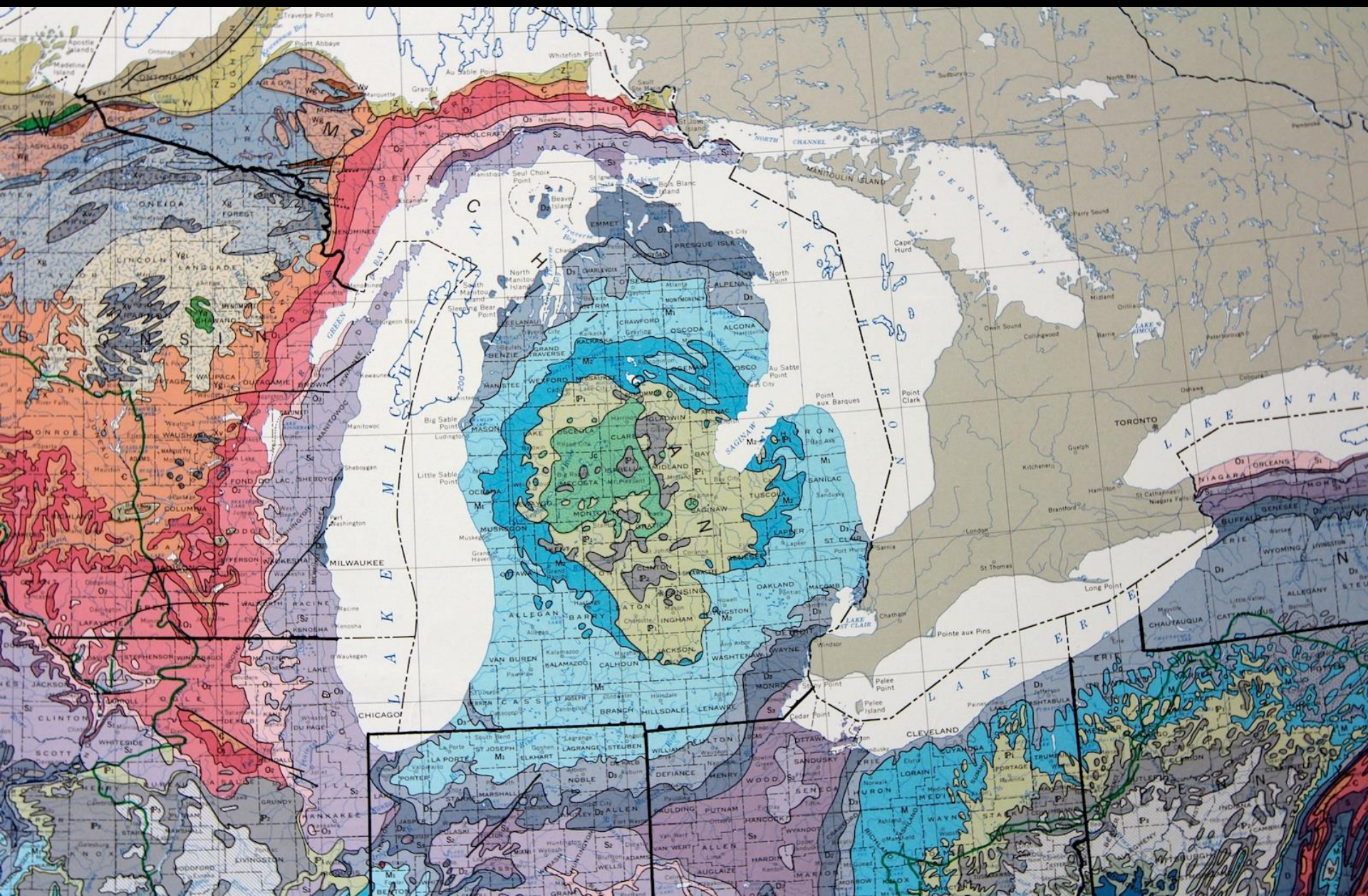


























# Silurian Reefs

Flank beds dipping from 100 meter tall Silurian Reef at  
Thornton Quarry, Illinois, USA











CSGEO8771 Copyright The Field Museum







# The Virtual Silurian Reef

## INTRODUCTION

**During the Silurian Period in earth history, 425 million years ago, when much of North America was covered by a shallow, tropical sea, reefs flourished in the area now occupied by Wisconsin and Illinois. This site uses these reefs as a vehicle for students to learn general principles, local details, and environmental significance of the study of the ancient past.**



*The Silurian reef diorama at the Milwaukee Public Museum, which serves as the focus for the pages that follow.*

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# Why Digitize the Silurian Reef Fossil Collection?

- Protection of Data
- Staff Efficiency and Knowledge Increases
- Research: Saves Time and Money
- Accessibility
- Update Collection





# Why Digitize the Silurian Reef Fossil Collection?

- Educational tool
  - Local Geology of Illinois and Wisconsin
  - Biodiversity
  - Climate and Environmental Change
  - Plate Tectonics
  - Extinction and Evolution
    - Document the recovery and diversification of reef and level bottom-communities following the end-Ordovician extinction event.
  - Modern vs. Paleozoic Reefs





# Workflow and Design

## IMLS Silurian Reef Project

Goal to digitize 15,000 Silurian specimens in three summers, with three interns per summer and share data with MPM thru online database.

## Intern Workflow

Interns selected fossil group, pull 6 drawers from collection, photograph labels, enter label data in KE EMu catalog module, then photograph fossils. Interns record their times for each task

## My Workflow

Edit images, batch upload images to KE EMu Multimedia module, then batch connect each Multimedia record to correct KE EMu catalog record.

## Data Inspection & Error Detection

Connecting multimedia records to catalog records is perfect time to check for errors. EMu generates error report for unconnected records, and I visual inspect catalog records in a tabular format, and multimedia records one at a time



# Digitizing the collection: Intern workflow





# IMLS Silurian Reef Digitization Project

**Each intern has a set of fossils that they cycle through the three work stations.**

**Goal: to digitize 31,000 Silurian reef fossil invertebrates from the FMNH and MPM collections.**



**2. Fossil  
Photography  
Station**

**3. KE EMu  
Data Entry  
Station**

**1. Label  
Photography  
Station**



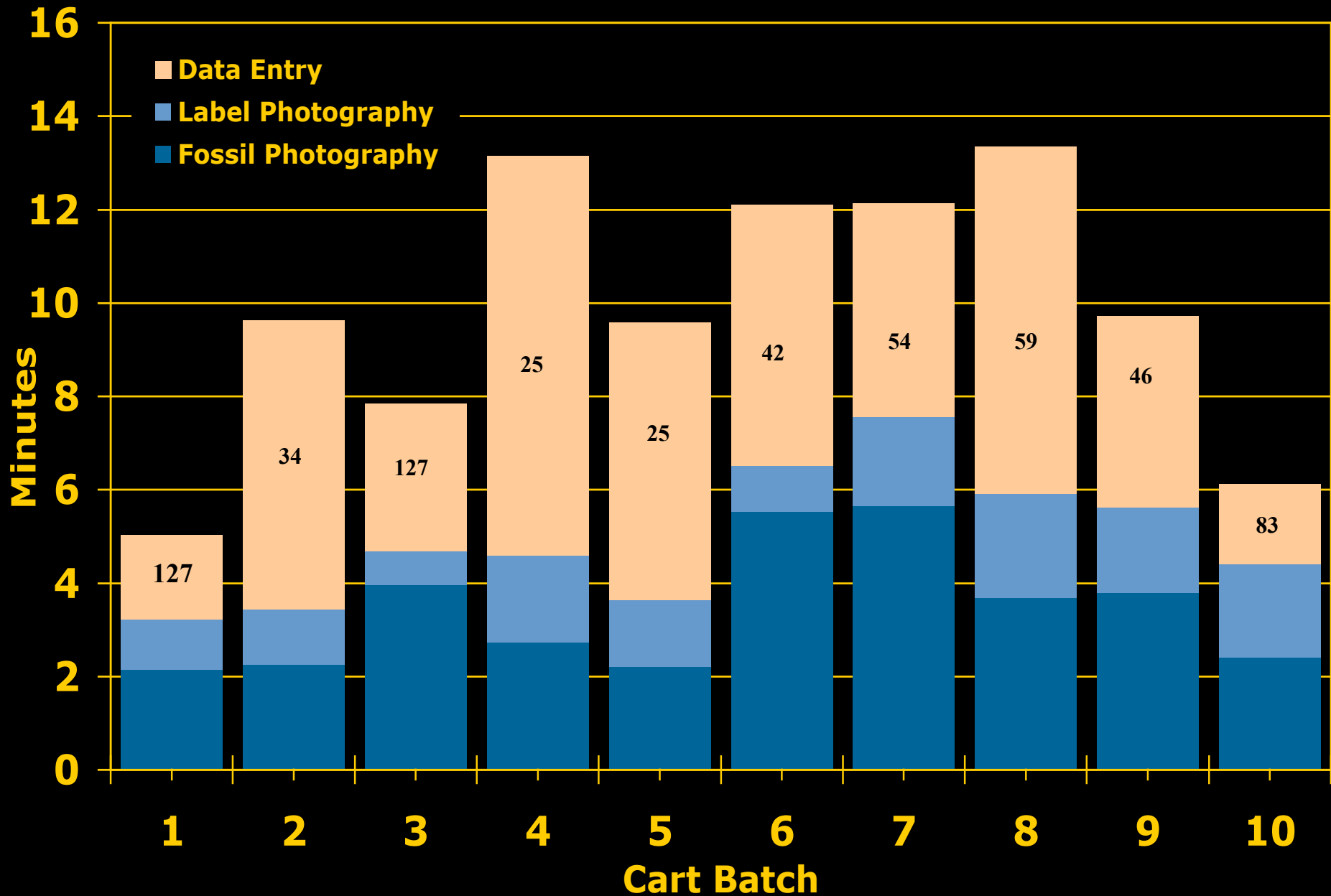




- One summer completed two to go
  - 5,225 Silurian specimen records in KE EMu
  - 7,785 Multimedia records entered

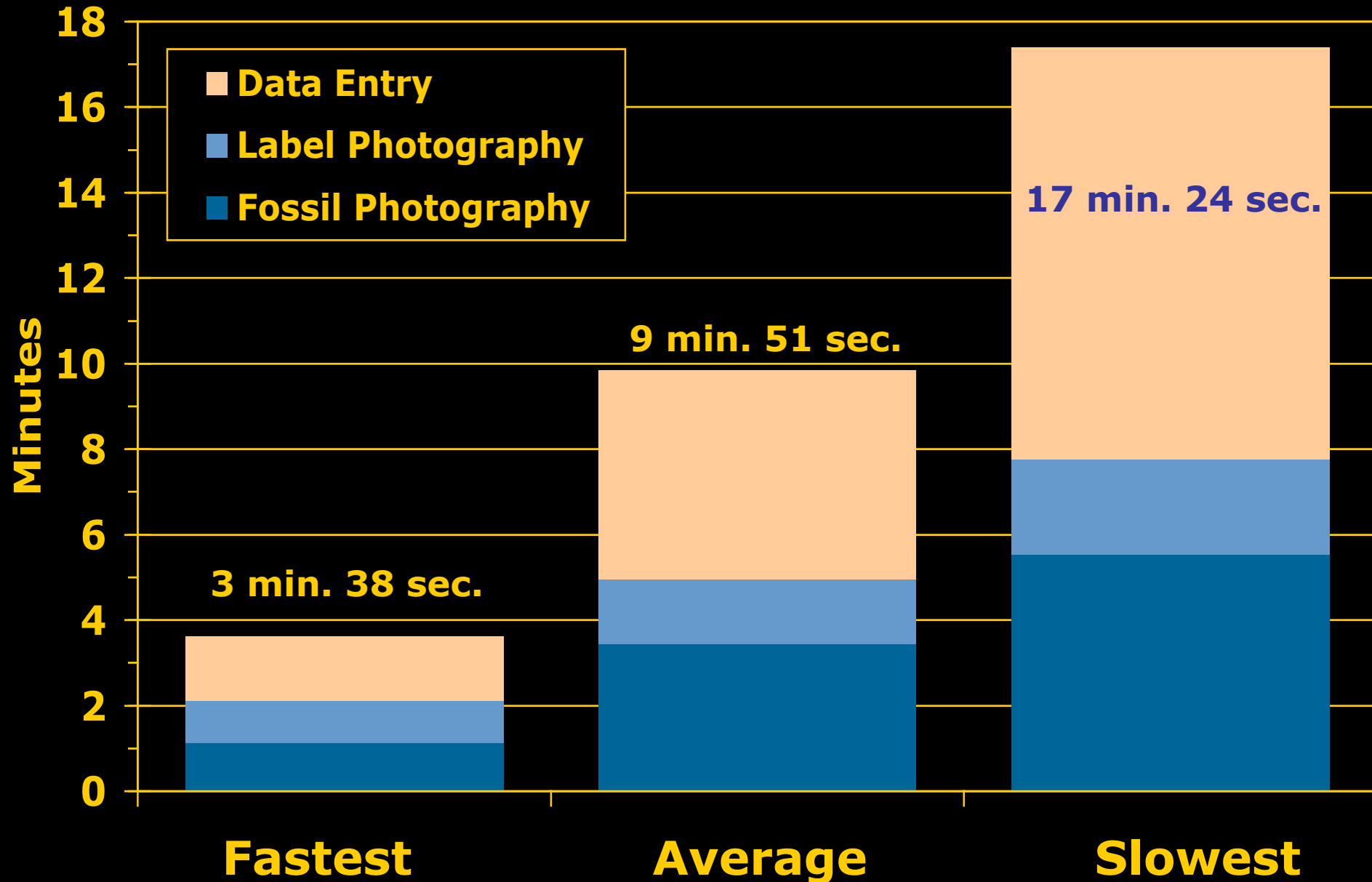


## Average # of minutes per specimen in each cart

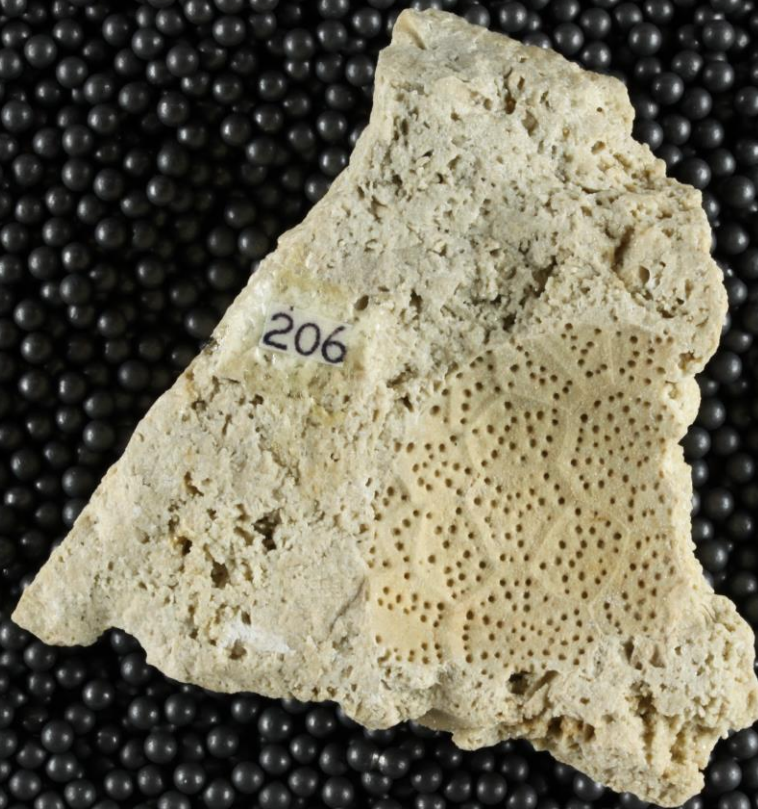




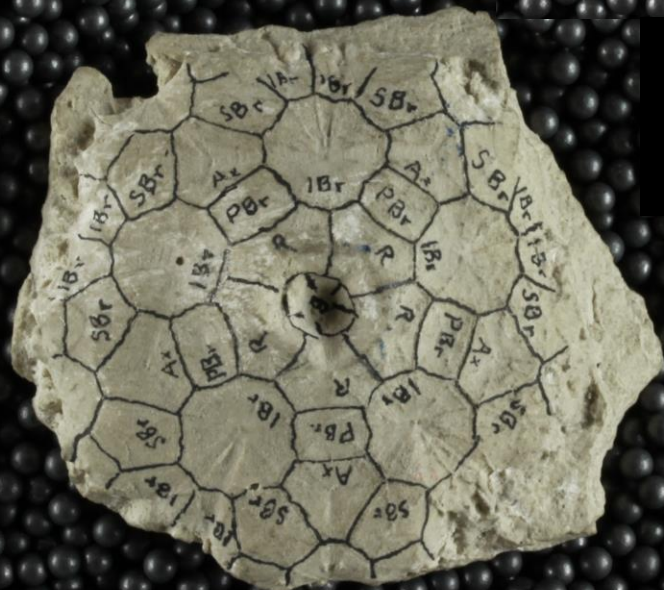
## Average # of minutes per specimen in each cart







**My Work Flow:**  
**Inserting images into the database**





[illegible]

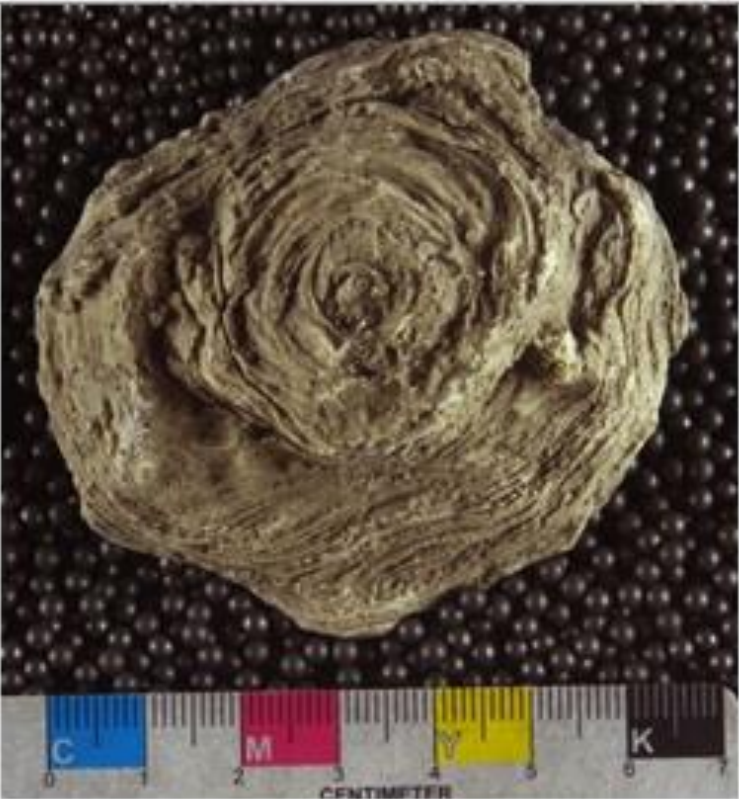


# Example of a KE EMu multimedia record

Multimedia (1) - Edit

File Edit Select View Tools Tabs Multimedia Window Help

P 11369 (image/jpeg) 616916



Resource Information

Title: P 11369

Creator: 1 Alex Layng

MIME Type: image MIME Format: jpeg

Identifier: P11369\_fossil.jpg

Description

IMLS Silurian Reef digitization Project 2013, image of fossil stromatoporoid specimen P 11369.

Multimedia Details Characteristics EXIF IPTC XMP Resolutions Supple

Edit Item 3 of 5 pmayer FossilInvertsMgr emufmnh



	A	B
1	MulMultiMediaRef	GeoSpecimenNo
2	622709	P 596
3	622710	P 596
4	622711	P 1458
5	622712	P 6358
6	622713	P 6358
7	622714	P 6881
8	622715	P 6881
9	622716	P 7546
10	622717	P 7546
11	622718	P 8172
12	622719	P 8172
13	622720	P 8173
14	622721	P 8173
15	622722	P 8173
16	622723	P 8173
17	622724	P 8174
18	622725	P 8174
19	622726	P 8175
20	622727	P 8175
21	622728	P 8175
22	622729	P 8175
23	622730	P 8200
24	622731	P 8200
25	622732	P 8631
26	622733	P 8631
27	622734	P 8917
28	622735	P 8917
29	622736	P 9191
30	622737	P 9191
31	622738	P 11520
32	622739	P 11520
33	622740	P 11526
34	622741	P 11526
35	622742	P 11573
36	622743	P 11573
37	622744	P 11574

## Next step

Upload a second .CSV file with the Multimedia IRN and the specimen's catalog number to the catalog module.


This links the image to the catalog entry.

# Example of a KE EMu catalog record with an attached multimedia record

Catalogue (1) - Display

File Edit Select View Tools Tabs Parts Multimedia Window Help

2365747  
UC 28805 [HS, M] *Callonema elevatum* Wing, 1925 Niagaran, United States of America, Illinois, Cook



Collection Details  
Catalog subset: Main Catalogue Object Kind: Hand Specimen No. of pieces: Lot Count:

Identification  
Taxon: *Callonema elevatum* Wing, 1925 Type Status:

Locality  
Locality: North America, USA, Illinois, Cook, Chicago: Bridgeport Quarry

Stratigraphic Interpretations

	Stratigraphy	Kind
1	Silurian, Niagaran. NAS	Chronostratigraphy
2		Lithostratigraphy

Accession Details

Indicators  
On Loan: P/C: MM: ☒ notes: ☒

Notes  
Collection Notes: Lithology:

Catalog Specimen Stratigraphy Identification Associations Preservation Loan History Condition Deaccession References

Display Object 7 of 2877 pmayer FossilInvertsMgr emufmnh



AL\_IMLS\_connect\_Aug05labels.log - Notepad

File Edit Format View Help

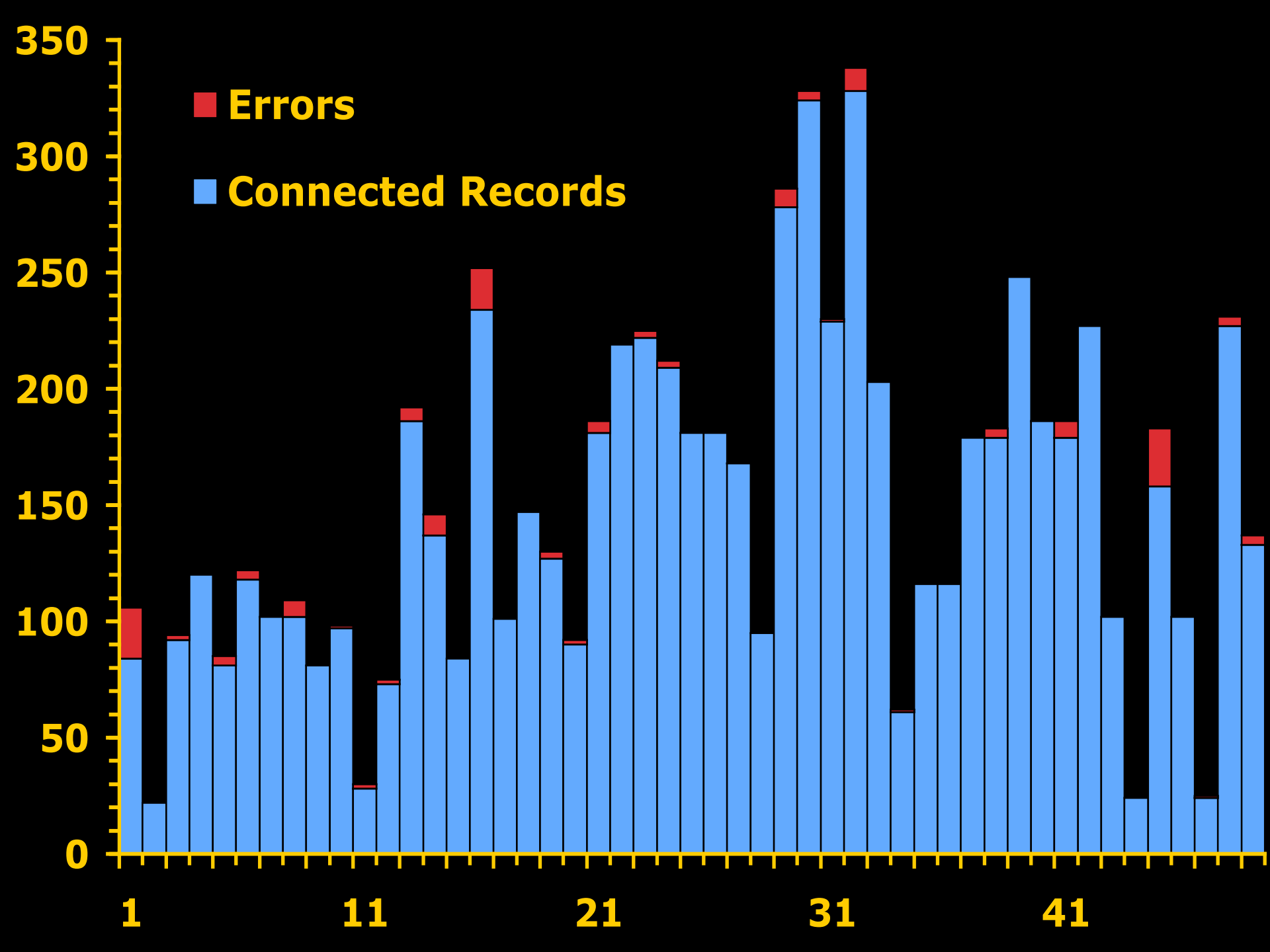
```
Import of C:\Users\pmayer\Desktop\AL_IMLS_connect_Aug05labels.csv started 25 Mar 2014 17:02:08
error: record 12, line 13: you do not have permission to insert into column "GeospecimenNo"
error: record 43, line 44: you do not have permission to insert into column "GeospecimenNo"
error: record 71, line 72: you do not have permission to insert into column "GeospecimenNo"
error: record 78, line 79: you do not have permission to insert into column "GeospecimenNo"
error: record 84, line 85: you do not have permission to insert into column "GeospecimenNo"
error: record 103, line 104: you do not have permission to insert into column "GeospecimenNo"
error: record 142, line 143: you do not have permission to insert into column "GeospecimenNo"
error: record 146, line 147: you do not have permission to insert into column "GeospecimenNo"
Import of C:\Users\pmayer\Desktop\AL_IMLS_connect_Aug05labels.csv finished 25 Mar 2014 17:10:52
```

Import Summary

Records Processed: 146  
Import Identifier: AL\_IMLS\_Aug05labels  
System Identifier: pmayer-140325-1702

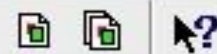
Module Summary

Catalogue (ecatalogue): 0 created, 138 updated, 0 attached, 8 error(s)  
Multimedia (emultimedia): 0 created, 0 updated, 146 attached, 0 error(s)





File Edit Select View Tools Tabs Parts Multimedia Window Help



2370618  
UC 13661 [HS, M] *Gypidula romeri* (Hall & Clarke, 1893) Niagaran, United States of America,  
Illinois, Cook



UC13661\_fos...



UC13661\_lab...



## Resource Information

Title:	UC13661_fossil	
Creator:	1	Alex P Layng
	2	IMLS Silurian Reef Digitization Project 2013
MIME Type:	image	MIME Format: jpeg
Identifier:	UC13661_fossil.JPG	

## Description

UC13661 fossil

Associations

Preservation

Loan History

Condition

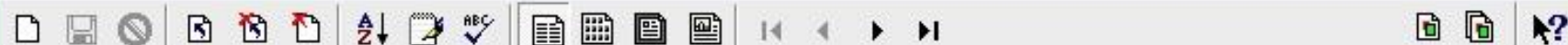
Deaccession

References

Multimedia

Notes

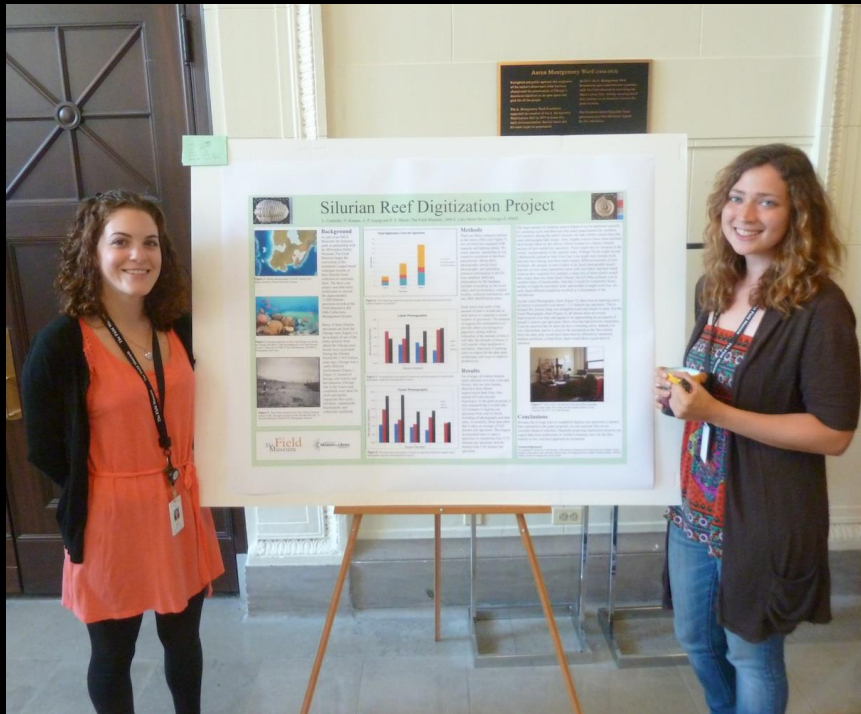




	Internal Record Number	Stratigraphy: (Stratigraphy Details)	Kind: (Stratigraphy Details)
1	2309208	Lockport Group, Guelph Dolomite	Chronostratigraphy
2	2309215		Chronostratigraphy
3	2309226		Chronostratigraphy
4	2309227		Chronostratigraphy
5	2309228		Chronostratigraphy
6	2476967	Silurian, Niagaran. NAS	Chronostratigraphy
7	2476489	Silurian, Niagaran. NAS	Chronostratigraphy
8	2476241	Silurian, Niagaran. NAS	Chronostratigraphy
9	2291484	Silurian, Wenlock - Ludlow. ICS/IUGS	Chronostratigraphy
10	2477010	Silurian, Niagaran. NAS	Chronostratigraphy
11	2476276	Silurian, Niagaran. NAS	Chronostratigraphy
12	2477011	Silurian, Niagaran. NAS	Chronostratigraphy
13	2476968	Silurian, Niagaran. NAS	Chronostratigraphy
14	2477012	Silurian, Niagaran. NAS	Chronostratigraphy
15	2476969	Silurian, Niagaran. NAS	Chronostratigraphy
16	2476970	Silurian, Niagaran. NAS	Chronostratigraphy
17	2477013	Silurian, Niagaran. NAS	Chronostratigraphy
18	2274719	Pennsylvanian, Middle Pennsylvanian, Mosco...	Chronostratigraphy
19	2276069	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
20	2276053	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
21	2276055	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
22	2276057	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
23	2276059	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
24	2276061	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
25	2276063	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
26	2276065	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
27	2276067	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy
28	2276071	Silurian, Late Silurian. ICS/IUGS	Chronostratigraphy



# Summary

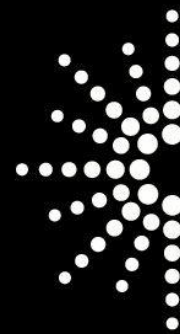


- 15,000 Silurian specimen to be digitized in 3 summers.
- Workflow and error detection designed around collection organization.
- Digitization rates averaging ~10 minutes per specimen
- Error rates less than 2%



# Acknowledgements

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