

# Catalyzing Collections Digitization & Research Using Comprehensive Specimen Inventories

**NATURAL  
HISTORY  
MUSEUM**  
LOS ANGELES COUNTY

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Natural History Museum of Los Angeles County  
Invertebrate Paleontology (LACMIP)

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# LACMIP 2015-19

## Current

1. EPICC
2. CSBR



## Pending

3. Fossil Insect PEN
4. ePANDDA (test case)



# LACMIP 2015-19

~5 million  
specimens

## Current

### 1. EPICC

~4,000,000 spms

828,000 spms (digitize)

### 2. CSBR

~1,200,000 spms (rehouse)

126,000 spms (digitize) from "Cretaceous Seas"

## Pending

3. Fossil Insect PEN ~17,000 spms (digitize)

# Goals

1. Document/quantify collections
2. Improve digitization efficiency
3. Facilitate potential research



# Strategy

## Whole-drawer assessment of stratigraphic collections:

### A CURATORIAL ASSESSMENT FOR STRATIGRAPHIC COLLECTIONS TO DETERMINE SUITABILITY FOR INCORPORATION INTO A SYSTEMATIC COLLECTION

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*Abstract.*—The Schuchert Collection of the Yale Peabody Museum, Division of Invertebrate Paleontology (YPM-IP) Schuchert Brachiopod Collection is one of the largest brachiopod collections in North America and is the most heavily used collection in the division. A recently completed project involved the incorporation of large portions of the YPM-IP stratigraphic collection into our systematic collection, including cataloging, georeferencing, photography, and improvement of long-term storage conditions. A significant development in this project was the creation of a curatorial assessment to inventory and prioritize those components of the collection better suited for incorporation into the division's systematic collection and to create a hierarchy for removal of this component.

The following factors were considered: presence/absence of specimen data (locality or accession), bulk content (graded on a continuum with 1.0 representing individual fossils free from matrix and 0 representing bulk rock), percentage brachiopods, percentage of specimens with taxonomic determinations, and percentage with specific locality information. The output of the survey rates individual drawers with scores ranging from 0 to 100: 100 represents drawers that were ideal candidates for incorporation into the systematic collection, and 0 represents material more suited to a stratigraphic arrangement. Although the equation was developed specifically for the particular needs of this project and the collection strengths of the YPM-IP division, it is easily customized for a wide range of cross-disciplinary and highly specific collection applications.

Butts et al., 2010, *Collection Forum*

Few published examples – please share!

Austin

EPICC

Katy

CSBR

Lindsay

2015

2016

2017

staff  
interns  
volunteers



# Whole-Drawer Data

Physical location

Curation status

Geologic context

Accession origin(s)

LACMIP

UCLA

California Institute of Technology

Cal State University Northridge

CATEGORY	SAMPLE ENTRY	
VITAL STATS	Collection Area	Cretaceous
	Cabinet	181
	Drawer	1-12
	New Curation	Y
	Age	Albian
	Country	United States
	State	California
	County	Shasta, Lake
	Unit	Budden Canyon, Paskenta
	Accn	LACM, UCLA, CIT, CSUN
	Loc. #	LACMIP 30095, 30096; UCLA 4370
	Coll. Type	ST

# Whole-Drawer Data

## Counting

# Lots

cataloged

uncataloged

loaned

# Specimens

CATEGORY		SAMPLE ENTRY
COUNTING	Lots	#
	Cat Lots	#
	Loan Lots	#
	Spms	#

1 lot = 1 box, vial, slide, or gel cap



# Whole-Drawer Data

Scoring 1-10 (10=ideal)

% bulk (sampling bias)

% with LACM loc. #

% sorting by taxon

% identified

% cataloged

% photo-worthy

CATEGORY		SAMPLE ENTRY
SCORING	Bulk	1-10
	Loc	0-10
	Sorted	0-10
	ID'd	0-10
	Cat	0-10
	Photo	0-10

# Whole-Drawer Data

## Other Needs (Y/N)

archival material  
outreach applications

## Comments

type specimens  
*Turritella*-dominated  
original aragonite

CATEGORY		SAMPLE ENTRY
CURATION NEEDS, etc.	Box	R/N/V
	Arch Mat	Y
	Label	Y
	Cleaning	D/W
	Damage	Y
	Bulk	Y
	>1000 spms	Y
	Count	#
	Exhibit	Y
	Comments	

# Whole-Drawer Data

Composition %

	ARTHROPODA	MOLLUSCA	ECHINODERMATA	
FORAMINIFERA				
ARCHAEOCYATHA				
PORIFERA				
ANTHOZOA (CORAL)				
BRYOZOA				
BRACHIOPODA				
ANNELIDA				
CHELICERATA				
CIRRIPIEDIA (BARNACLE)	40			
DECAPODA (CRAB)	100			
OSTRACODA				
HEXAPODA				
TRILOBITORMOPHA				
BIVALVIA	80			
CEPHALOPODA				
GASTROPODA		30		
POLYPLAC. (CHITON)		40		
SCAPHOPODA (TUSK SHELL)		50		
HYOLITHA		80		
ASTEROIDEA		30		
BLASTOIDEA		30		
CRINOIDEA		20		
ECHINOIDEA (URCHIN)			10	
EDRIOASTEROIDEA				
EOCRINOIDS				
HELOPLACOIDEA				
HOLOTHUROIDEA				
OPHUROIDEA				
RHOMBIFERA				
GRAPTOLITHINA				
ICHOFOSSIL				
VERTEBRATE				
TOTAL	100	100	100	100

# Progress

Phase	Description	% Progress	Staffing
1	Basic data	85	Interns/volunteers
2	Compositional data	20	Staff, interns/volunteers
3	Drawer photography	2	Interns/volunteers

# How many specimens?

6500 drawers (700 cabinets)

≈ 6-7 million



# Digitization Efficiency

Maximize expertise

- > ID backlog
- > "Digi Blitz"



# Digitization Efficiency

Maximize expertise  
High-grading

- ✓ IDs
  - ✓ Sorted
  - ✓ Locs
- ↓ \$1/Lot



# Digitization Efficiency

Maximize expertise

High-grading

- ✗ IDs
- ✗ Sorted
- ✗ Locs

↑ \$2/Lot





# Research

REQUEST:

Pleistocene

+ Scaphopods

+ Eastern Pacific

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257 drawers



# Research

LACMIP Locality 18579 Lot 1  
10 specimens  
*Balanus* De Costa, 1778  
Age: Zanclean - Piacenzian  
Unit: Jacalitos Formation  
Location: Fresno County, California, USA  
RJS 75-10-29  
Identified by: Robert J. Stanton, Jr., 2004-12-1  
NATURAL HISTORY MUSEUM  
OF LOS ANGELES COUNTY  
DEPARTMENT OF INVERTEBRATE PALEONTOLOGY  
6 Oct 2011



REQUEST:

Echinoids\*

+ Barnacles

+ Pliocene

+ Pleistocene

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63 drawers

\*mass accumulations

# Outreach

Events

Tours

Exhibits



## Inoceramid Clam

*Inoceramus* sp.

Late Cretaceous (25 million years old)  
California, United States

# Outreach

Events

Tours

Exhibits



# Funding

## CSBR & PEN

> workflow & timeline

Collection	Minimum # of Fossil Insects	# Type & Figured Specimens	Digitization Status		Minimum Identification Status <sup>a</sup>			
			Specimens in Computer Database	Insect Specimens Imaged	Order	Family	Genus	Sp.
Rott	4259	899	899	17	2862	2131	2106	1499
Barstow	4934	257	257	2	9657	6504	2219	1450
RLB	15684	504	504	0	1917	1871	1363	329
McKittrick	2795 <sup>b</sup>	92	83	1	3260	2590	1430	1413
Lynn Ck	278	67	67	0	106	80	69	68
<b>TOTAL</b>	<b>27950</b>	<b>1819</b>	<b>1810</b>	<b>20</b>	<b>64%</b>	<b>47%</b>	<b>26%</b>	<b>17%</b>

# Funding

CSBR & PEN  
Discovery tool



# Funding

CSBR & PEN

Discovery tool

Conservation needs



LACMIP locality 10679.		
UNIVERSITY OF CALIFORNIA, LOS ANGELES		
Field No.	BCA 1001	Permanent No. CIT 1580
LOCALITY Fossils in thick cobble cgl. lens on N bank of a small hollow, 1850'S, 1400'E of NW cor. sec.1, T11S, R9E, Volta quad., Merced Co., Calif.		
?=UCB A-3225		
Moreno Fm., Tierra Loma ss. (Quinto C of Bennison		
Collector: Adams & Popenoe	Date: May 1942	Notebook: CRETACEOUS Maestrichtian

Mehr Kopferbrechen wie der Flügel haben mir die Zikaderiche gemacht. Da wäre vorerst das Vieh Nr.1 mit dem Petaloccephala-Kopp. Meine jetzige Meinung geht dahin, daß es sich um einen Deltoccephalus handelt, den die fossilisierende Mutter Natur ein wenig mißhandelte. Was als blattartig vorgeschobener Scheitel erscheint, ist wohl weiter nichts als die am Scheitelrande abgelöste und demnach vorn gequetschte Gesichtseite, die nun mit ihrem Stirnteil (von innen gesehen) den Scheitelrand überragt. Der dunkle flache Bogen zwischen den Augen ist der durchgedrückte Vorderrand des unter dem Pronotum liegenden Scutum. Derselbe Bogen zeigt sich auch bei Nr.2, wo er sogar deutlicher zu sehen ist. Ich halte beide Stücke als zur selben Art gehörig. Das stark reponierte Stück Nr.3, sozusagen ohne Kopf und Kragen, scheint auch ein Deltoccephalus zu sein. Nichts Genaues sieht man aber nicht. Auf jeden Fall handelt es sich um eine Jusside

Der Befund an den Hotter vermeintlichen Ponacian ist ja merkwürdig. Wenn sich Herr Qökg nicht mal herrentraut, dann ist die Sache ein wenig bräglich. Hoffen wir das Beste. Jedenfall sind es keine Poprestiden. Böcke kommen wohl auch nicht in Frage. Also: „Was?“ Mir fällt da auf, daß Sie ebenso (wie es manch andere tun) „Skulpturierung“ schreiben. Warum? es genügt doch vollkommen, „Skulptierung“ zu schreiben, was sprachlich auch richtiger ist. Verzeihen Sie mir diesen Exkurs!

Im übrigen befinde ich mich verhältnismäßig und hoffe dasselbe auch bei Ihnen und Ihrer l.Pamilie. Die letzten 14 Tage mußte ich wieder Bestimmungskult funktionieren. Wenn ich Ihr Päckchen zurückerhalte, nehme ich noch 2 Pakete mit. Denn habe ich nur noch 2 Befunde an den Insekten der „Belgischen Congo-National-Parks“ liegen und verleiht mit ein paar Zeichnungen zu versehen. Ich werde ich wieder für mich selbst etwas tun. Uff!

Mit herzlichen Grüßen v.N.s.H.

Ihr

*H. Haupt*

# Future

Whole-drawer  
inventory linked to

- > photos
- > barcodes
- > EMu / web

[collections.nhm.org](http://collections.nhm.org)





# Final Thoughts

★ *Accelerate data discovery* ★



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Questions?

@FossilsofLA

