

Engaging downstream users of paleocollections through iDigBio E&O (Education and Outreach)

Bruce J. MacFadden

Curator of Vertebrate Paleontology, FLMNH

iDigBio Director of Education & Outreach



UF UNIVERSITY of
FLORIDA



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Talk Outline

1. Rationale and background
2. Panama PIRE and California STEM Teacher Partnership
3. *Fossils in the Cloud* talks to fossil clubs
4. The FOSSIL project
5. Celebrating public participation--NAPC

1. Rationale

- Approx. 100 million fossil specimens are curated in non-federal natural history museums in the U.S.
- Once these are digitized into a Cloud, they become available for E&O to downstream users
- **Downstream User**—someone who uses digitized paleocollections other than for research
- Target audiences for this talk--
 - K12 teachers, students
 - Fossil club members
 - Paleontologists E&O



Late Miocene Gatun Formation, Panama

Background, progress, and plans

Paleocollections digitization activities

- Paleocollections Workshop, April 2012
- Paleo-related TCNs funded
 - 1st “Paleoniches” Bruce Lieberman, University of Kansas;
 - 2nd— paleo-insects funded 2013
- iDigBio Paleocollections Working Group formed 2012
- This Workshop
- Several upcoming paleocollections-related activities
 - iDigBio E&O Workshop Gainesville Jan 2014
 - NAPC Gainesville February 2014

2. Panama PIRE* Project



Block of 19-million-year-old fossils
Cucaracha Formation, Panama

California STEM Teachers--RET



Gatun,
Panama,
July 2012



Gatun,
Panama
July 2013

PIRE/iDigBio--Digital learning resources



Gatun, Panama, July 2013

In the Classroom: PIRE-iDigBio K12 E&O

- Develop
 - New curricula aligned to the NGSS
 - On-line atlas of digitized specimens for the CSTP (California STEM Teachers Partnership)*



Harbor High School (Santa Cruz CA)
AP Biology, Dec. 2012

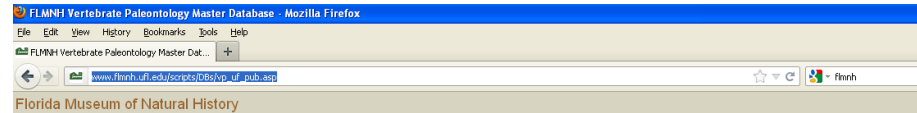
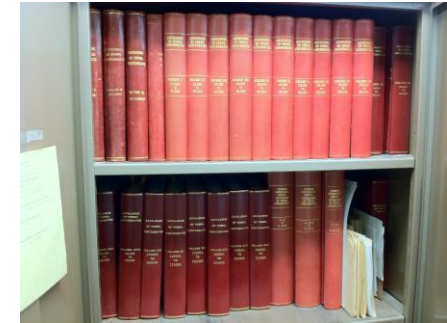
BUT--Challenges of the digital divide in K12 education

3. "Fossils in the Cloud": Talks about paleocollections digitization to fossil clubs



CATALOGUE OF FOSSIL VERTEBRATES FLORIDA STATE

Number	Name	Locality	Age	Specimens	Illustrations
102575	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102577	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102579	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102580	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102581	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102582	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102583	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102584	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102585	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102586	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102587	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102588	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102589	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102590	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
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102596	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102597	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000
102598	Wagner, Thomas P.	Wagner Quarry, Pinal Co., Arizona	1	1000	1000



Search the Vertebrate Paleontology Master Database
285,301 Lots - 443,723 Specimens

"Fossils in the Cloud" talk
—SW Florida Fossil Club



- For printing of output, select Report Style
- Selecting a search type of "Wildcard" will allow for wildcard searching on all search fields
- Selecting a search type of "Exact" or not selecting one will cause all search fields to require exact input

Return <input type="text" value="50"/> Records:	Class <input type="text"/>	Order <input type="text"/>	Family <input type="text"/>	Genus <input type="text"/>
Style: <input type="text" value="Table"/>	Species <input type="text"/>	Nature of Specimen <input type="text"/>	Site Key <input type="text"/>	Site <input type="text"/>
Sort: <input type="text" value="Catalog Number - Default"/>	Country <input type="text"/>	State <input type="text"/>	County <input type="text"/>	Epoch <input type="text"/>
Search Type: <input type="text" value="- Select Type -"/>	Land Mammal Age <input type="text"/>	Formation <input type="text"/>	Catalogue Number <input type="text"/>	Data Source <input type="text" value="Entire Database"/>
<input type="button" value="Query Database"/>	<input type="button" value="Reset"/>			

Collection Database Page | Vertebrate Paleontology Home | Search other Databases | FLMNH Home



Digital Imaging of fossil collections

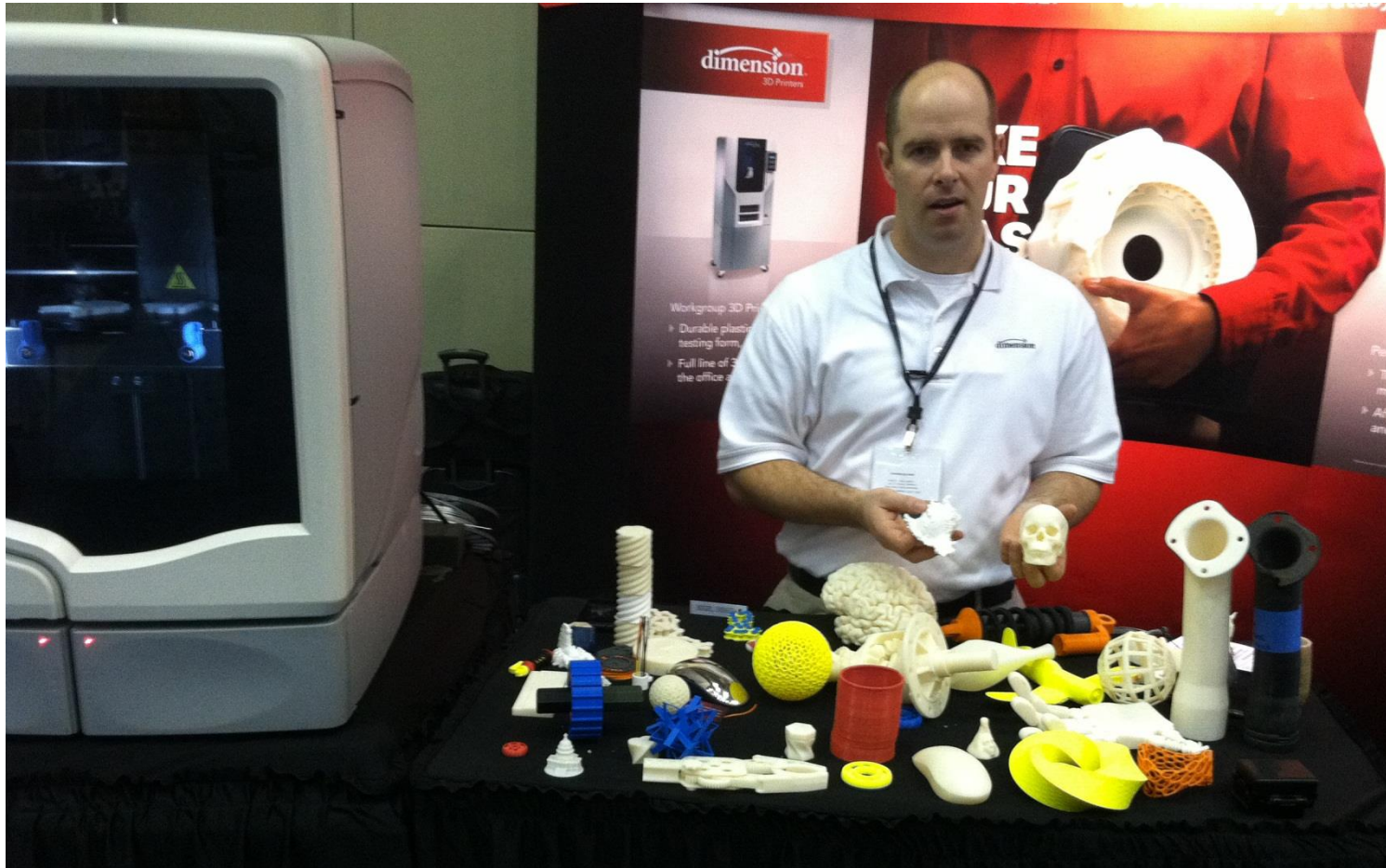
- 2 dimensional—relatively easy, digital photo



- 3 dimensional—more advanced technology

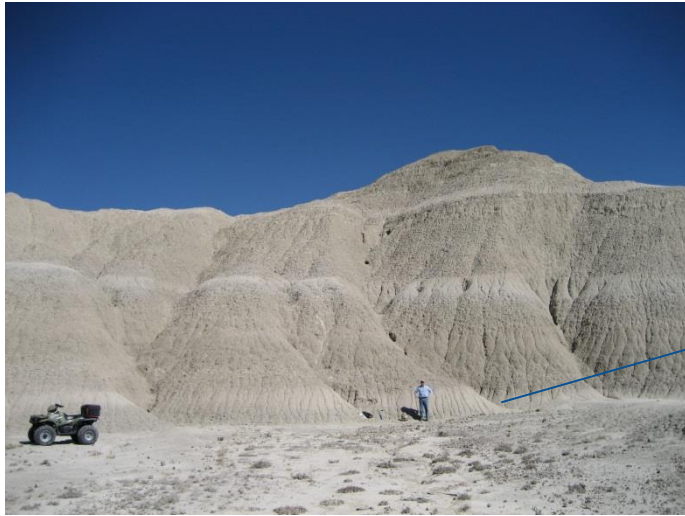


3-D Printer technology



The potential applications and access to *Fossils in the Cloud* are astounding!

An example: How will this might work for fossils?



Nebraska badlands



How will this work for fossils?



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- Selecting a search type of "Exact" or not selecting one will cause all search fields to require exact input

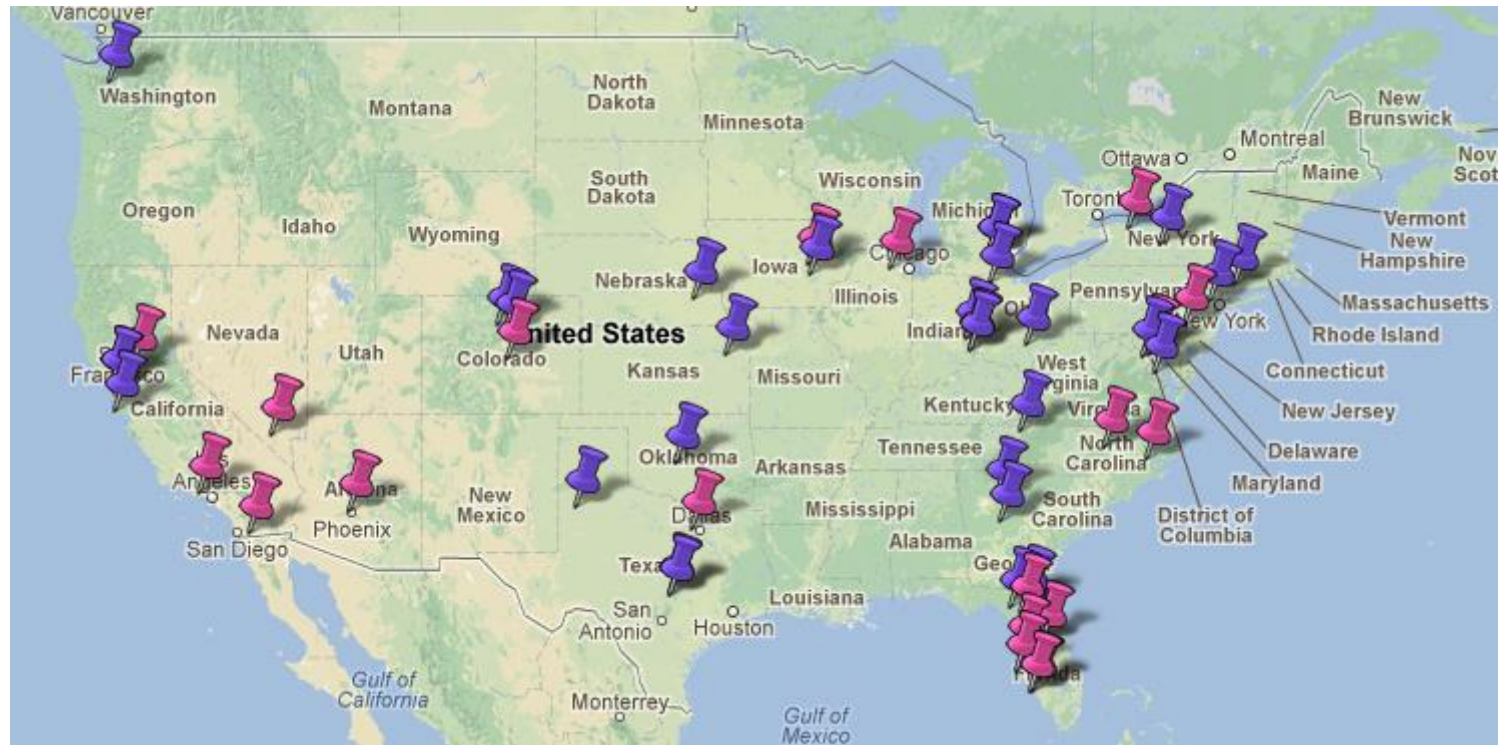
Return: 50 Records:	Class	Order	Family	Genus
Style: Table	Species	Nature of Specimen	Site Key	Site
Sort: Catalog Number - Default	Country	State	County	Epoch
Search Type: - Select Type - Query Database	Land Mammal Age	Formation	Catalogue Number	Data Source: Entire Database
Reset				



- Feedback indicates high degree of interest among amateur paleontologists
- Willingness to be trained and volunteer to help curator digitize collections.

5. FOSSIL project*

(Fostering Opportunities for Synergistic STEM with Informal Learners)

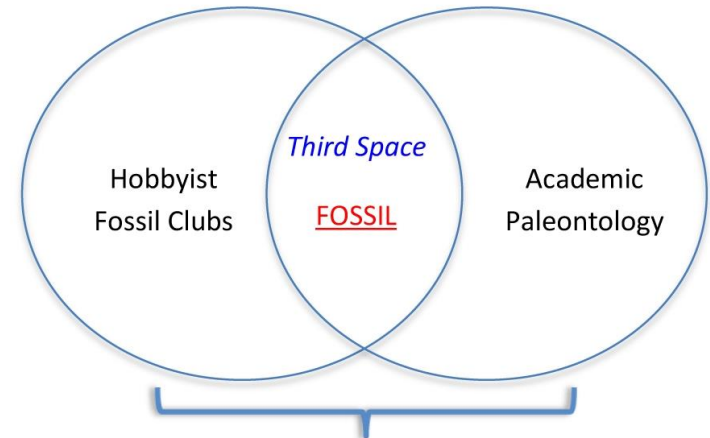


- Networked between fossil clubs (red) and professional paleontologists (purple)
- More added recently

*NSF DRL (EHR) 1322725

FOSSIL Project team & Target Audiences

- 5 PIs
- Coordinators, webmaster, editor
- Graduate students
- **Fossil clubs**
- **Professional paleontologists**
- You (if this appeals to you)!



Cyberenabled Community of Practice

Fossil club characteristics: Front-end research

- About 50 clubs in the U.S.
- Most frequent activity is monthly meeting, oftentimes with speaker; field trips important
- Some have academic ties and sponsor, others do not
- 90 % use web resources and email
- Demographics
 - Lifelong learners (kids through retirees)
 - Few underrepresented minorities, except in some urban areas (e.g., Latinos)
- Motivation for participation
 - Learn about fossils, paleontology
 - Authentic experiences
 - their collections
 - Social aspect very important

Additional Fossil Club feedback

- Preferred reference is “amateur”
- Little (no) contact between (among) fossil clubs outside of local region; but desire to do so
- Very different from other natural history clubs such as birdwatchers and star-gazers.
- High motivation to network with:
 - Other clubs, especially members of like interests
 - Professional paleontologists
- Want to digitize collections
- Keen to learn via web and myFOSSIL

FOSSIL Activities

- The two target audiences will collaborate in cyberenabled learning
- Fossil club members will be trained about digitization
 - To help professionals with collections
 - Some will digitize their own fossil collections
- Activities will be mediated by myFOSSIL Community of Practice (CoP)

The screenshot shows the myFOSSIL website. At the top, there is a header with the myFOSSIL logo and a navigation menu. Below the header is a main content area with a large image of people in a museum setting. The main content area includes a section titled "A space to collaborate, learn and engage in the science of paleontology." with social media links (Facebook, Twitter, YouTube, LinkedIn) and a sign-up form. Below this is a section for announcements, featuring a poster for "TITAN BOA MONSTER SNAKE" and a calendar. The footer contains logos for the Florida Museum of Natural History, the University of Florida, and iDigBio, along with contact information and a copyright notice.

Other FOSSIL project activities

- Annual meeting
- E-Newsletter
- Joint activities
 - fossil field trips
- Cyberenabled talks, webinars, and “amateur” development
- Facebook, Twitter, Blogs, etc.
- TBD, based on formative input from clubs

Summary of Intended outcomes for FOSSIL project:

Better informed and trained amateurs and clubs ready to partner with professionals to advance the science of paleontology

E & O Wrap-up: Intended outcomes

- Bring digitized paleocollections to downstream users
- K12 outreach—formal education
- Lifelong learning in fossil clubs
- Feedback loop—these target audiences can become citizen scientists helping with national digitization effort

Overarching strategic goal:

“Downstream Users” and the general public better understand the value (to society) of digitized collections in the 21st century.

10th **NORTH AMERICAN PALEONTOLOGICAL CONVENTION**



FLORIDA MUSEUM OF NATURAL HISTORY

February 15 - 18, 2014 | Gainesville, FL

Symposium: Celebrating public participation in paleontology