The Digital Archaeological Record – an Analytic Data Repository for Archaeology

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Digital Antiquity

Digital Humanities · Stanford

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Mission of Digital Antiquity

Devoted to enhancing preservation of and access to the digital records of archaeological investigations:

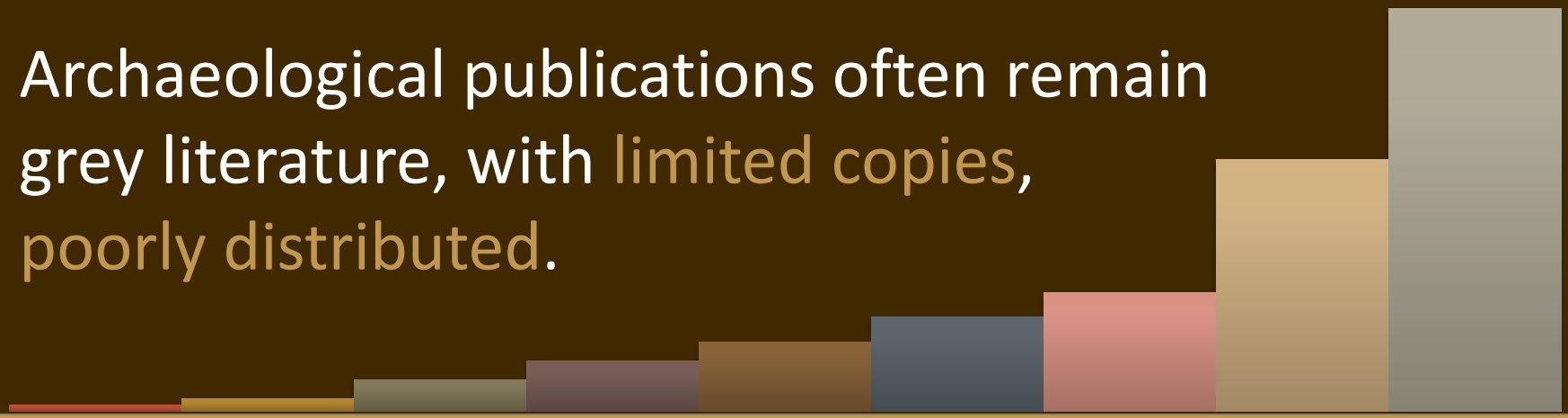
- enhance the management of archaeological resources;
- provide for the long-term preservation of irreplaceable archaeological records and broader, easier access;
- enable public interpretation and research that creates and communicates knowledge of the ancient and historic period human past.

History

- Multi-institutional effort
  - Arizona State U, U of Arkansas, Pennsylvania State U, SRI Foundation, Washington State U., U York (ADS)
- Start-up funding-Andrew W. Mellon Foundation
- Independent Board of Directors
- Broad-based Science Board
- A relatively small staff relying substantially on automated procedures
- Incubated as a University center at ASU

Challenges

- Excavation irreversibly changes a site – the process cannot be repeated.
- In the US, data often resides in physical archives, preserved on the shelf next to artifacts.
- Archaeological publications often remain grey literature, with limited copies, poorly distributed.



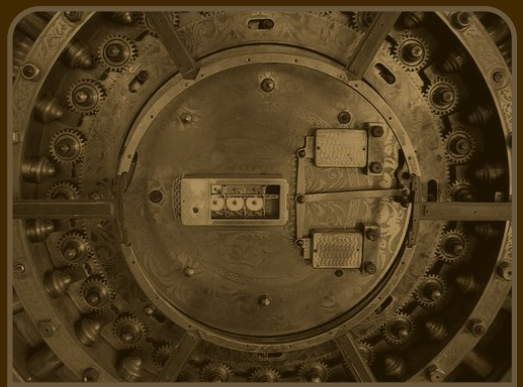
Introducing tDAR

To address these challenges, Digital Antiquity created:

the Digital Archaeological Record (tDAR)

About tDAR?

Information Access Tool



Preservation Repository

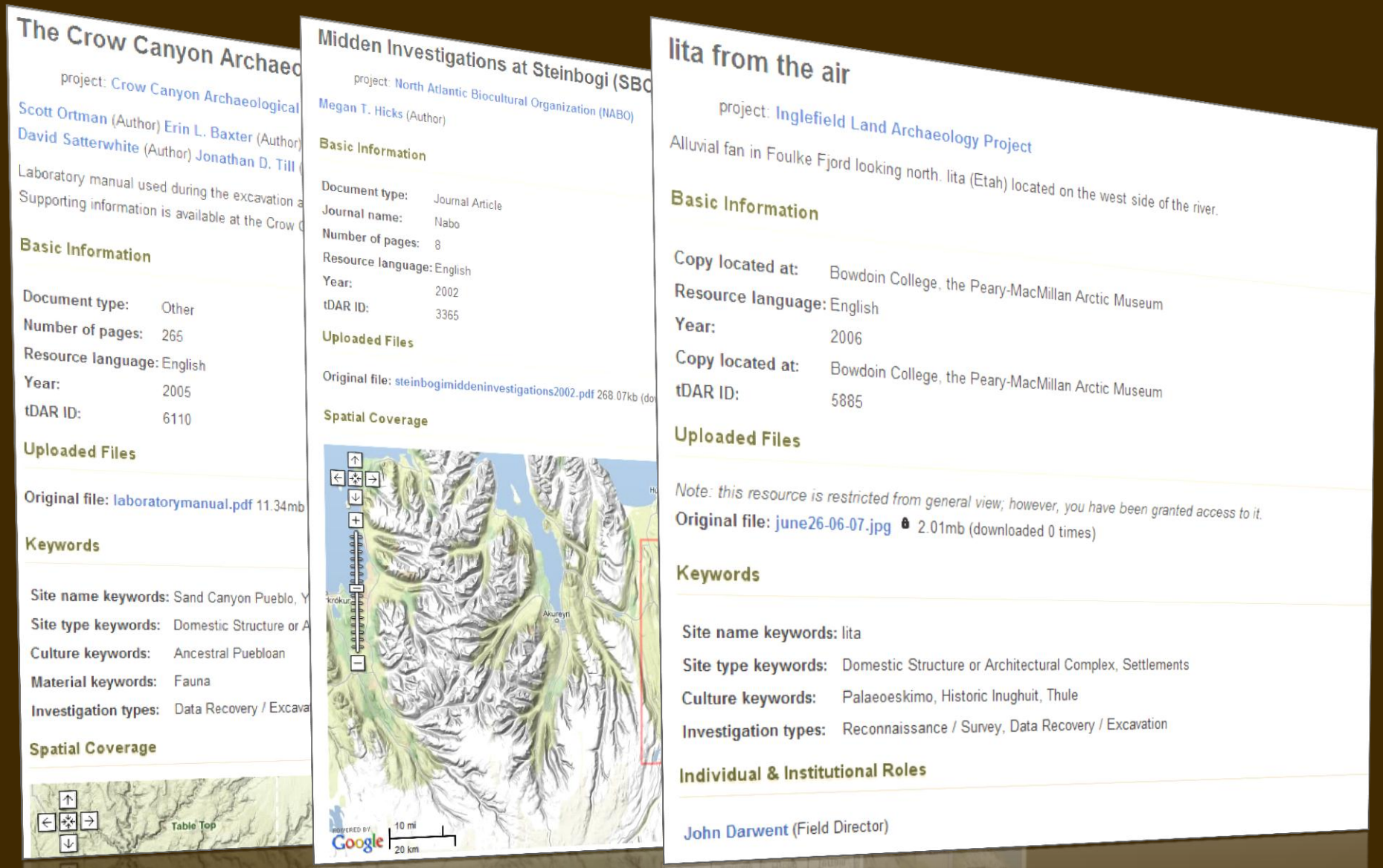
Research and Practice

What's in tDAR

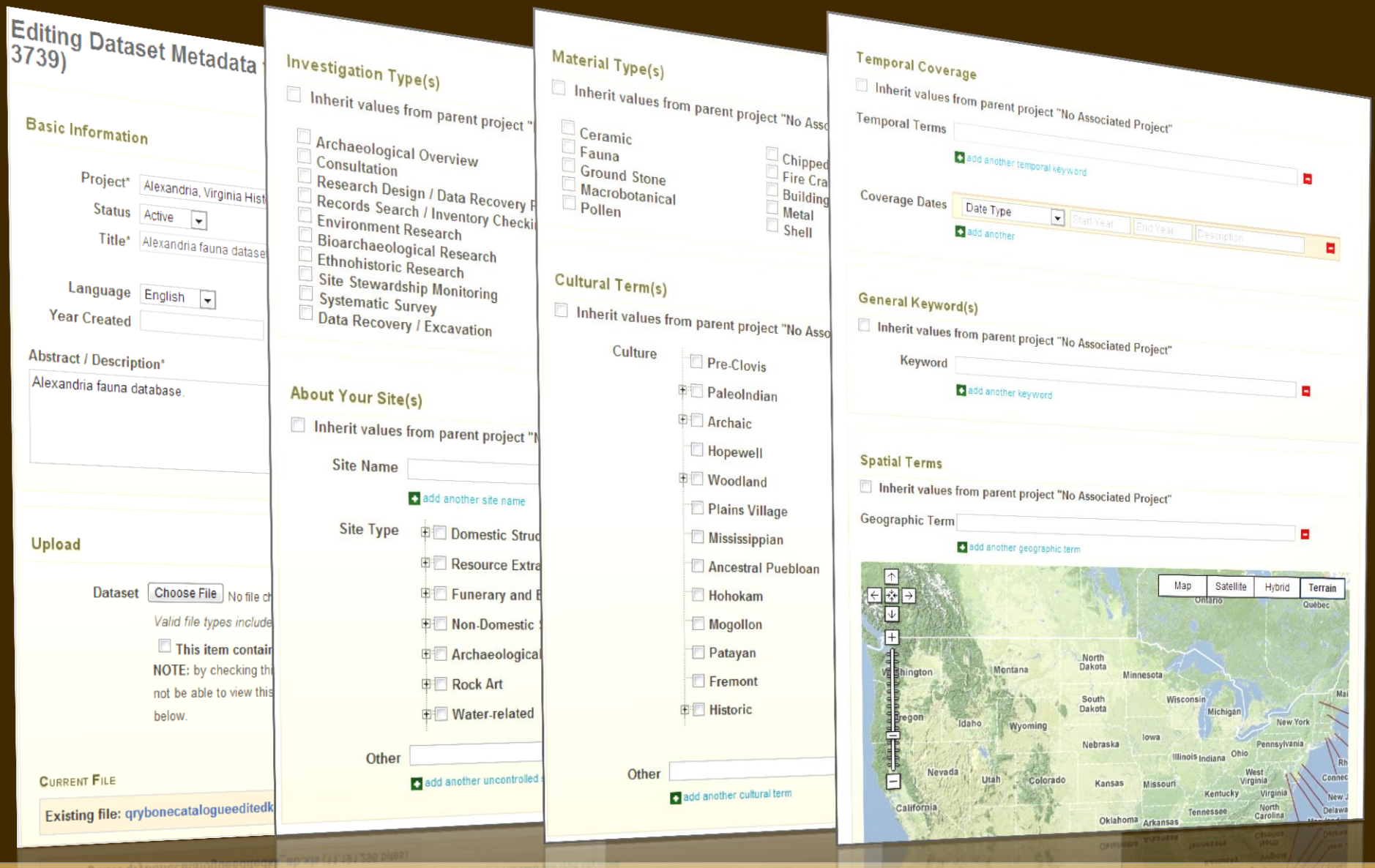
The results of archaeological excavations:

- Documents – Books, Chapters, Articles, Reports, and grey literature
- Images – artifact images, site photos, maps, etc.
- Sensory Data – 3-D scans
- Data Sets – the quantitative work-product of archaeological excavations

Records in tDAR



Data Entry


Editing Dataset Metadata
3739)
Basic Information
Project*
Alexandria, Virginia Hist
Status
Active
Title*
Alexandria fauna datase
Language
English
Year Created
Abstract / Description*
Alexandria fauna database.
Upload
Dataset
Choose File
No file ch
Valid file types include
This item contain
NOTE: by checking th
not be able to view this
below.
Current File
Existing file: qrybonecatalogueeditedk
Investigation Type(s)
Inherit values from parent project "
Archaeological Overview
Consultation
Research Design / Data Recovery
Records Search / Inventory Checki
Environment Research
Bioarchaeological Research
Ethnohistoric Research
Site Stewardship Monitoring
Systematic Survey
Data Recovery / Excavation
About Your Site(s)
Inherit values from parent project "
Site Name
add another site name
Site Type
Domestic Struc
Resource Extra
Funerary and
Non-Domestic
Archaeological
Rock Art
Water-related
Other
add another uncontrolled
Material Type(s)
Inherit values from parent project "No Asso
Ceramic
Fauna
Ground Stone
Macrobotanical
Pollen
Chipped
Fire Cra
Building
Metal
Shell
Cultural Term(s)
Inherit values from parent project "No Asso
Culture
Pre-Clovis
PaleoIndian
Archaic
Hopewell
Woodland
Plains Village
Mississippian
Ancestral Puebloan
Hohokam
Mogollon
Patayan
Fremont
Historic
Other
add another cultural term
Temporal Coverage
Inherit values from parent project "No Associated Project"
Temporal Terms
add another temporal keyword
Coverage Dates
Date Type
Start Year
End Year
Description
add another
General Keyword(s)
Inherit values from parent project "No Associated Project"
Keyword
add another keyword
Spatial Terms
Inherit values from parent project "No Associated Project"
Geographic Term
add another geographic term
Map
Satellite
Hybrid
Terrain
Ontario
Québec
Montana
North Dakota
Minnesota
South Dakota
Wisconsin
Michigan
Idaho
Wyoming
New York
Nebraska
Iowa
Pennsylvania
Illinois
Indiana
Ohio
Nevada
Utah
Colorado
Kansas
Missouri
West Virginia
Kentucky
Virginia
California
Oklahoma
Arkansas
Tennessee
North Carolina

Documenting Your Dataset

Side coding sheet fo fauna through 2008

project: Crow Canyon Archa

Jonathan Driver (Creator)

Coding sheet used by Jonathan Drive Center projects through 2008.

Basic Information

Year: 2005
tDAR ID: 6129
Category: Fauna
Subcategory: Side

Uploaded Files

Original file: ccac-side-codes.xlsx

Coding Rules

Code	Term
I	Irrelevant
L	Left
R	Right
U	Unknown

This Coding Sheet is used by the

1. 6157 - Sand Canyon Locali
2. 6156 - Woods Canyon Pueb
3. 6126 - Yellow Jacket Pueb

Fauna Element (Updated) - Default Onto

project: Fauna Ontology Drafts - NSF & NEH/JISC TAG Fau

Added fish elements & vomer & distinguished fbasiooccipital, Quadrat

Basic Information

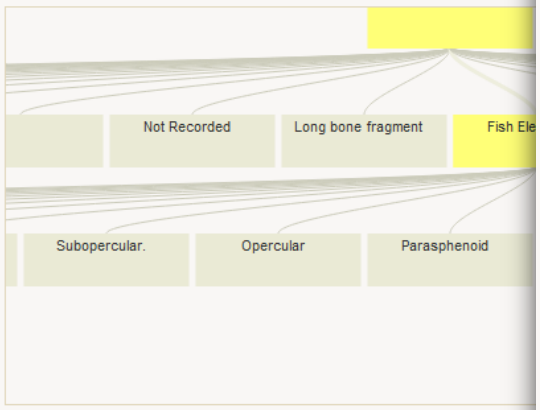
Year: Creation year not set.
tDAR ID: 5863

Uploaded Files

Original file: fauna-element-updated---default-ontology-draft.ow

Category: Fauna
Subcategory: Element

Ontology



click and drag to pan across the ontology, darker nodes contain more

Parsed Ontology Nodes

Label
Humerus
Sternum

Column: BELEMENT

Column Type: Text

Categorize the data to simplify integration:

Category: Fauna **Subcategory:** Element

Please describe the data in this column, how it was collected, tools used, screen size, etc.

Translate your data using a Coding Sheet or map it to an Ontology:

Ontology: Fauna Element (Updated) - Default Ontology Draft (tDAR ID:5863)

(create new ontology)

Column: BELEMENTID

Column Type: Coded Value

Categorize the data to simplify integration:

Category: N/A

Please describe the data in this column, how it was collected, tools used, screen size, etc.

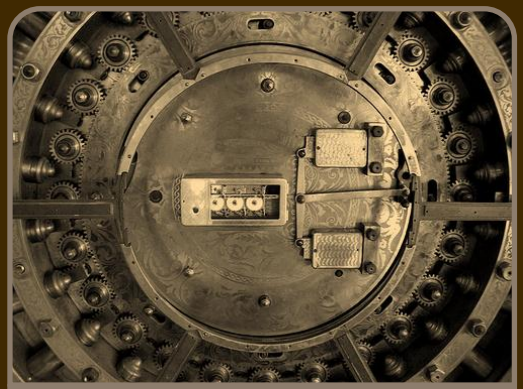
Translate your data using a Coding Sheet or map it to an Ontology:

Coding Sheet:

(create new coding sheet)

What is tDAR?

Information Access Tool



Preservation Repository

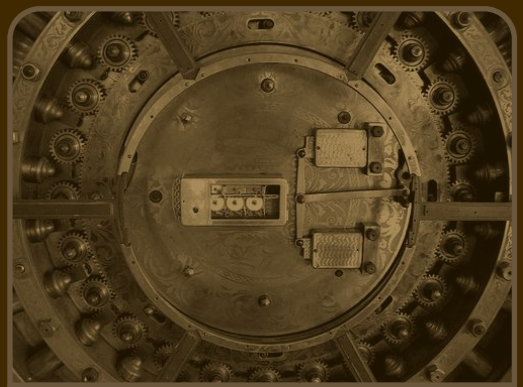
Research and Practice

Preservation & Stewardship

- Regularly Check Files
- Migrate File Formats as they Become Obsolete
- Plan for Obsolete Technology
- Maintain Files in Open & Preferable Formats
- Rich Descriptive Metadata Stored with Object

What is tDAR?

Information Access Tool



Preservation Repository

Research and Practice

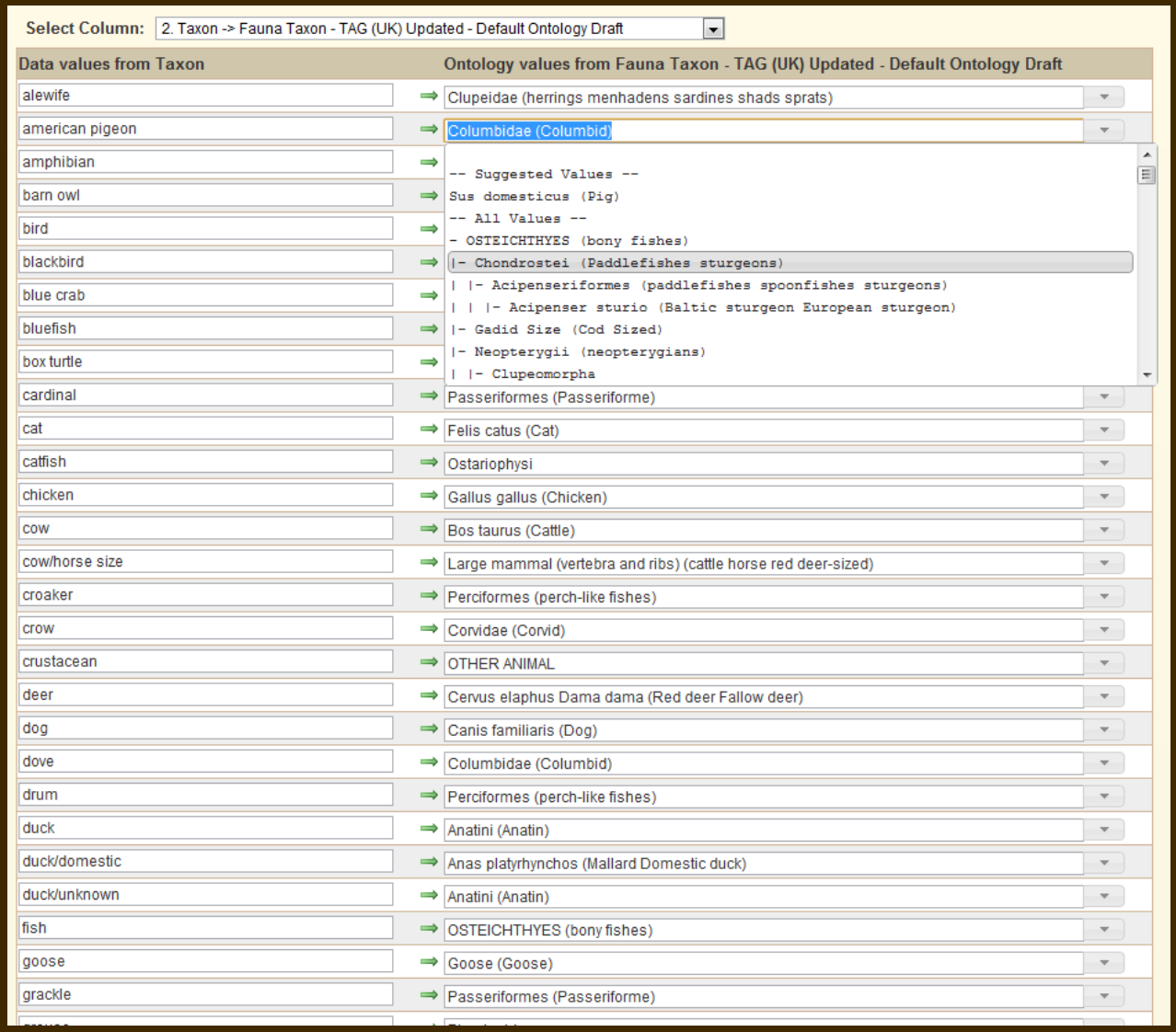
Research & Practice

- New tools to help compare and integrate multiple data sets
- Developing resources for communities of practice in archaeology
- Updating *Guides to Good Practice in Collecting, Documenting, and Preserving Digital Archaeological Data* with ADS

Tools

- Comparative Analysis & Data Integration.
- Tools to:
  - Document data sets
  - Map data sets to user-generated or shared ontologies
  - Integrate & compare preserved datasets

Data Values can be mapped to Ontologies



Select Data Tables to Use

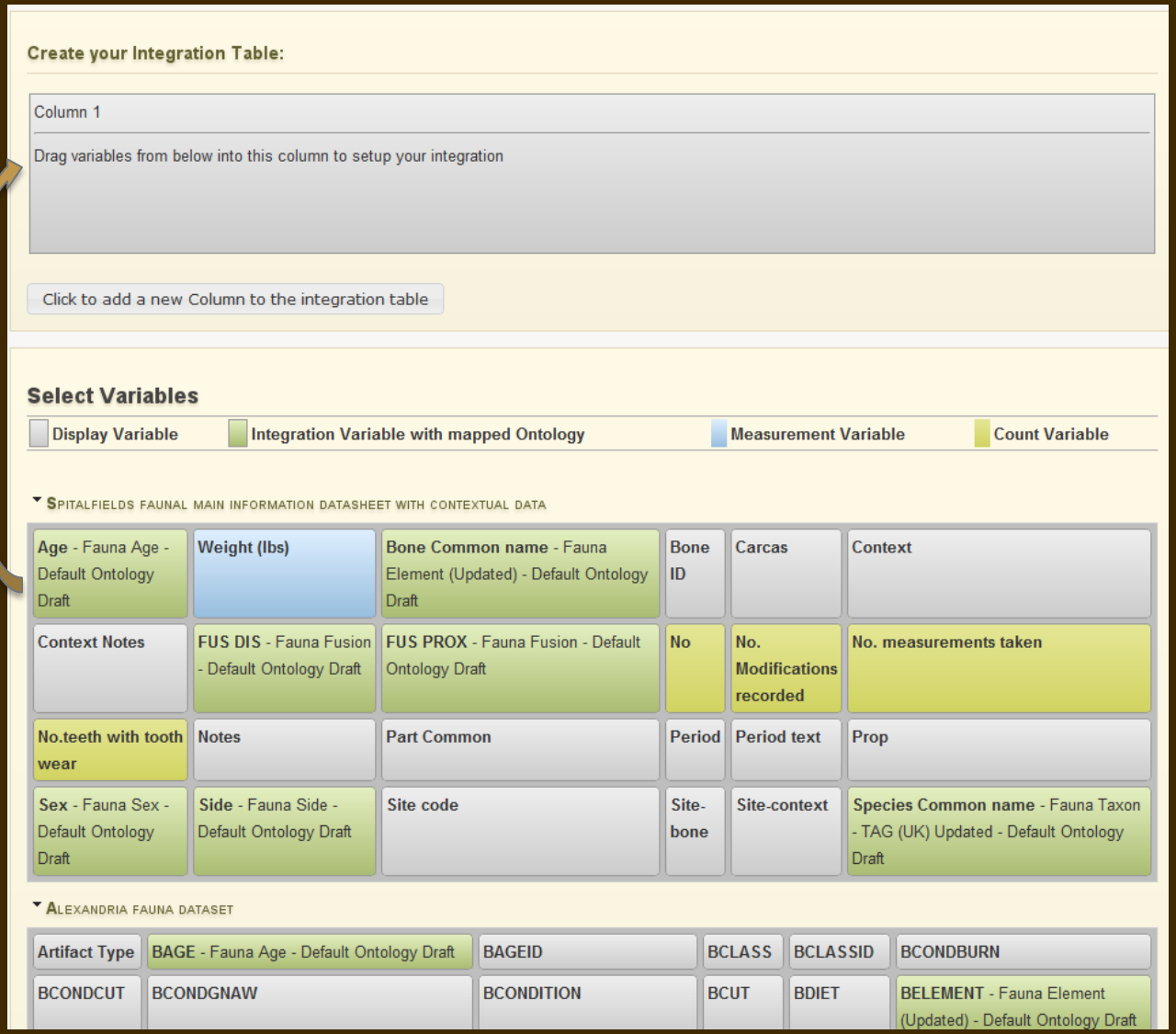
Data Integration: Select Tables

Step 1: Select Datasets to Integrate or Display

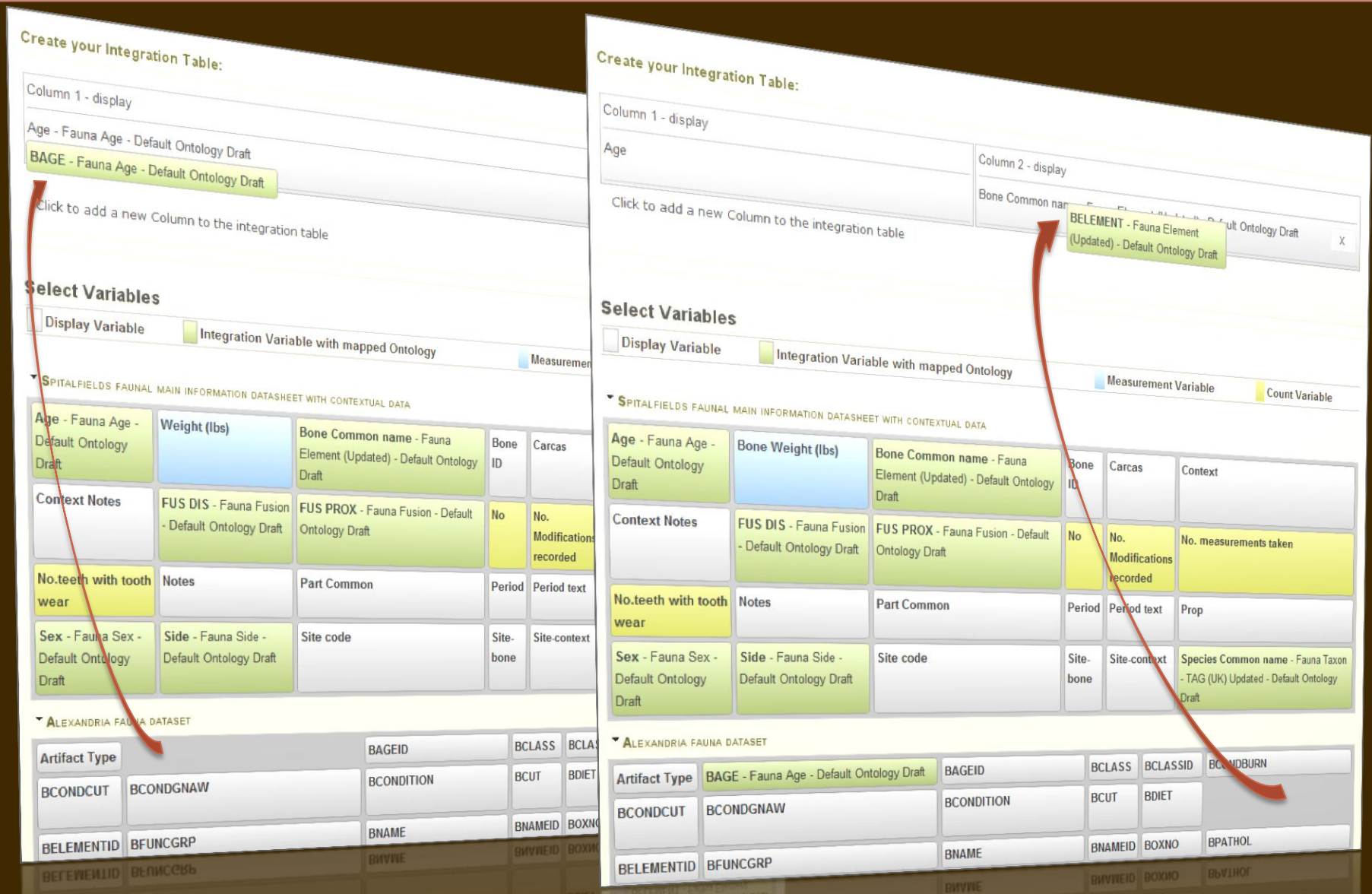
	Dataset	Table
☐	Upper Little Colorado Prehistory Project Faunal Database	e_501_llspfaun (show/hide columns)
☐	Newbridge Site and Carlin SIte Fauna Database	e_696_box01_11 (show/hide columns)
☐	Koster Site Fauna Dataset	dataset_2755_koster1a_koster1a (show/hide columns)
☐	HARP Fauna Database	dataset_1630_heshfaun_heshfaun (show/hide columns)
☐	Spitalfields Project Faunal Database - Total Number of Bones Per Period	e_3558_total_number_of_bones_per (show/hide columns)
☑	Spitalfields faunal main information datasheet with contextual data	e_3606_sheet1 (show/hide columns)
☑	Alexandria fauna dataset	e_3617_qrybone (show/hide columns)

Next: select columns

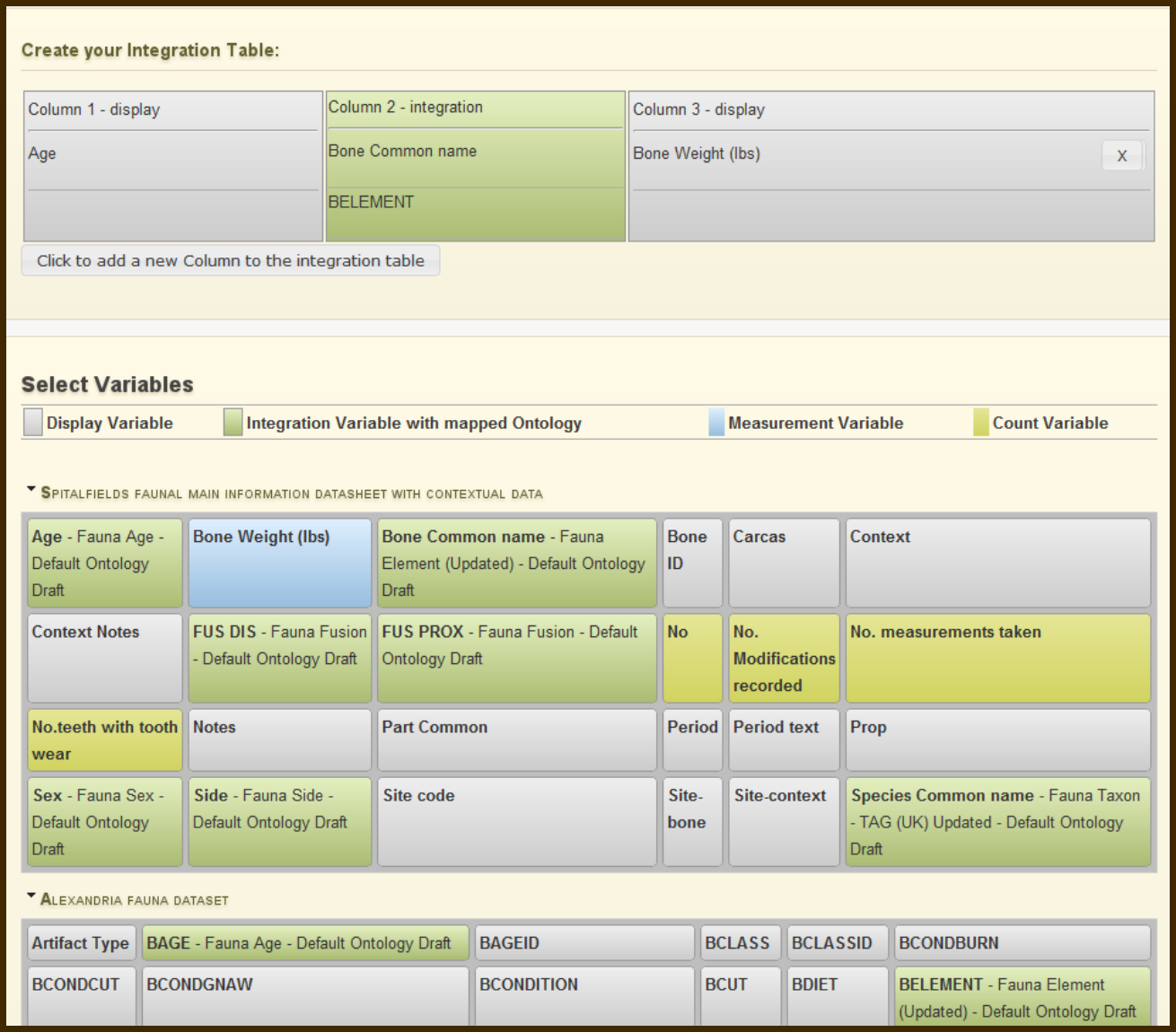
Integration Workspace



Build your Integration Table



Final Layout



Create your Integration Table:

Column 1 - display	Column 2 - integration	Column 3 - display
Age	Bone Common name	Bone Weight (lbs) X
	BELEMENT	

Click to add a new Column to the integration table

Select Variables

Display Variable | Integration Variable with mapped Ontology | Measurement Variable | Count Variable

▾ SPITALFIELDS FAUNAL MAIN INFORMATION DATASHEET WITH CONTEXTUAL DATA

Age - Fauna Age - Default Ontology Draft	**Bone Weight (lbs)**	**Bone Common name** - Fauna Element (Updated) - Default Ontology Draft	**Bone ID**	**Carcas**	**Context**
Context Notes	**FUS DIS** - Fauna Fusion - Default Ontology Draft	**FUS PROX** - Fauna Fusion - Default Ontology Draft	**No**	**No. Modifications recorded**	**No. measurements taken**
No.teeth with tooth wear	**Notes**	**Part Common**	**Period**	**Period text**	**Prop**
Sex - Fauna Sex - Default Ontology Draft	**Side** - Fauna Side - Default Ontology Draft	**Site code**	**Site-bone**	**Site-context**	**Species Common name** - Fauna Taxon - TAG (UK) Updated - Default Ontology Draft

▾ ALEXANDRIA FAUNA DATASET

Artifact Type	**BAGE** - Fauna Age - Default Ontology Draft	**BAGEID**	**BCLASS**	**BCLASSID**	**BCONDBURN**
BCONDCUT	**BCONDGNAW**	**BCONDITION**	**BCUT**	**BDIET**	**BELEMENT** - Fauna Element (Updated) - Default Ontology Draft

Use an Ontology to Normalize the Output

Filter Ontology Values

You can filter data values for the datasets listed below. Only checked values mapped to an ontology will be reported below. Select checkboxes next to the values that you would like to be included or aggregated to that level. Checkboxes are automatically checked if values are present in ALL datatables.
Indented unchecked values are aggregated to the next higher level that is checked. Unchecked values at the top (leftmost) level are ignored, along with any unchecked subdivision categories. Values that occur in each dataset are indicated with blue checks, absent values are indicated with red x's.

Ontology labels from Fauna Element (Updated) - Default Ontology Draft (Select All | Clear All)	Bone Common name (Spitalfields faunal main information datasheet with contextual data)	BELEMENT (Alexandria fauna dataset)
☑ Humerus	✓	✓
☐ Sternum	✓	✓
☐ Femur	✓	✓
☐ Pelvis (all | clear)	✓	✓
☐ Acetabulum	✗	✓
☐ Ilium	✗	✓
☐ Ischium	✗	✓
☐ Pubis	✗	✓
☑ Tarsal (all | clear)	✓	✓
☐ 1st cuneiform (1st tarsal)	✗	✓
☐ 2nd and 3rd cuneiform (2nd and 3rd tarsal)	✗	✗
☐ 2nd cuneiform (2nd tarsal)	✗	✗
☐ 3rd cuneiform (3rd tarsal)	✗	✗
☑ Astragalus	✓	✓
☐ Calcaneus	✓	✓
☐ Cuboid (4th tarsal)	✓	✓
☐ Lateral malleolus	✓	✗
☐ Navicular (Central)	✓	✓
☐ Navicular (Central) and cuboid (4th tarsal)	✗	✓
☐ Bird elements (all | clear)	✗	✗
☐ Beak	✗	✓
☐ Coracoid	✓	✓
☐ Eggshell	✗	✗
☐ Furculum	✓	✓
☐ Jugal	✗	✗

Results

Data Integration: Filtered results

The integrated data results are displayed below.
DOWNLOAD all results as an Excel file.

Table	Bone Common name, BELEMENT	Mapped ontology value for Bone Common name, BELEMENT	Age	Bone Weight (lbs)
Spitalfields faunal main information datasheet with contextual data	CALCANEUM	Tarsal	A	.2
Spitalfields faunal main information datasheet with contextual data	CALCANEUM	Tarsal	A	.2
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.3
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus	J	.2
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.4
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.1
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.2
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus	A	.2
Alexandria Faunal Database	Calcaneum	Tarsal		.2
Alexandria Faunal Database	HUMERUS	Humerus		.1
Alexandria Faunal Database	astragalus	Astragalus		.2
Alexandria Faunal Database	Calcaneum??	Tarsal	SA	.3
Spitalfields faunal main information datasheet with contextual data	CALCANEUM	Tarsal	SA	.2
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.5
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus		.3
Spitalfields faunal main information datasheet with contextual data	HUMERUS	Humerus	A	.2
Spitalfields faunal main information				

Acknowledgments

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- Digital Antiquity Board of Directors

NATIONAL ENDOWMENT FOR THE HUMANITIES

The Andrew W. Mellon Foundation

JISC

ARCHAEOLOGY DATA SERVICE

Questions?

http://www.digitalantiquity.org

http://www.tdar.org