



# A Basic Fossil Database

- Using a Spreadsheet to Document Your Collection
- Michael K. Smith, PhD, PE (inactive)

# You Need to Do Some Version of This

- Your collection is of no value without data, other than as garden rocks or decorator items.
- Paper labels with the specimens are useful but they suffer from getting mixed up. And once your collection ends up in the garage or a storage unit they are subject to fading or bug munching.
- You may want to return to where you found a specimen. But you will forget where that was. Guaranteed.
- When you are identifying something, it can be super helpful to review what was collected from this particular spot on previous visits.
- If you ever want to dispose of your collection either by selling it or donating it, discussions will be much simpler with consistent, shareable documentation.

# GOALS

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Simple **and** robust

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Capable - searchable, sortable, maintainable

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No special database knowledge required

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Not dependent on special software

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Not dependent on a particular operating system

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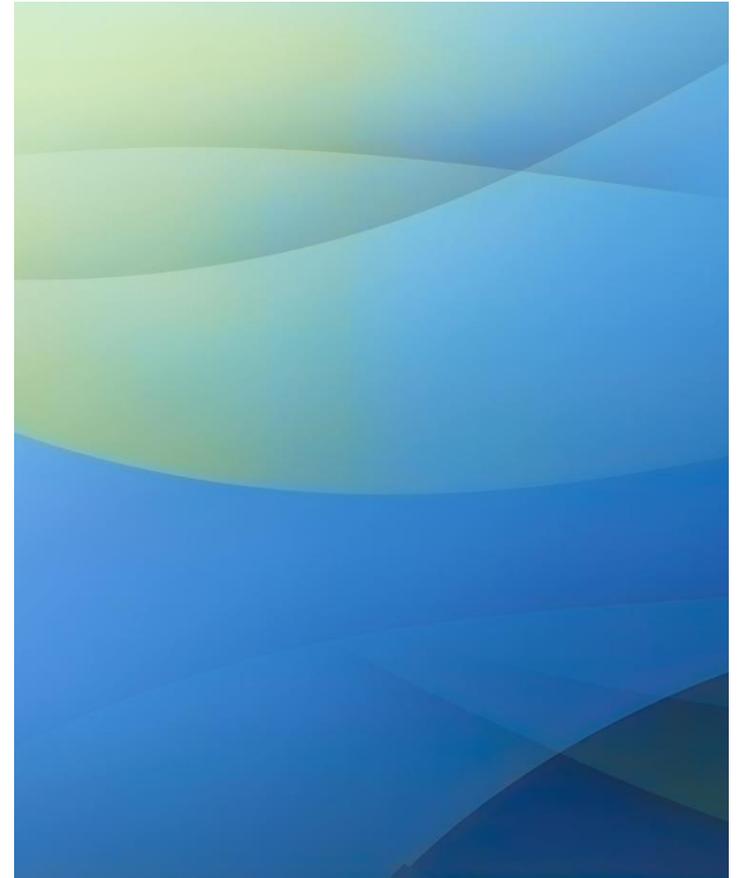
Not dependent on a specific vendor.

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Sharable

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Extensible – see Label Printing and Advanced Reports



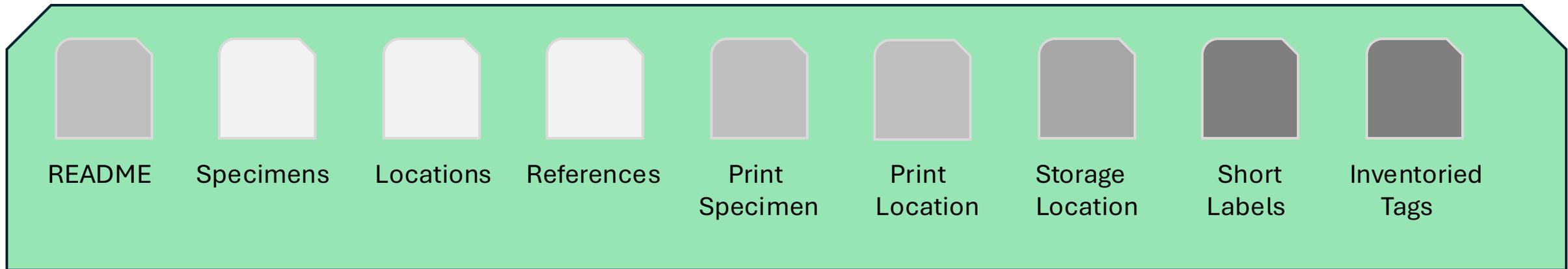
# Excel or Numbers or Open Office or...

- I began with a loose-leaf notebook, one page per field trip. After a few years I realized that was insufficient. I looked around for a tool specialized to fossils. There were none at the time for Windows or Mac.
- So I started using Excel way back. Excel 95 was limited to 16,000 rows and 256 columns.
- Now the limits are well past anything an amateur collector would need for their collection.
- 1,048,575 rows and 16,384 columns!
- You are not going to run out of space.
- Libre Office has similar limits.
- Numbers for Mac is limited to only 1,000,000 rows 😊

# Simple

I kept this completely simple - it is a set of worksheets in a single Excel document.

The flip side is that it is not a database. While specimens are tied to locations and references, it is by using standard naming conventions, not real database links.



FossilCollection.xlsx

# All Worksheets

- README - Documentation
- ***Specimens***
- ***Locations***
- ***References***
- Print Specimen – Copy specimen rows here to print labels
- Print Location – Copy location rows here to print locations
- Storage Locations – Documents your storage locations & their names
- Short Labels – A set of new labels with a loc ID and a sequence of numbers. E.g. 

WI1	59	8-Oct-2021
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 ... 

WI1	79	8-Oct-2021
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- Inventoried Tags – Slips to add to a drawer when inventoried 

Inventoried	2024
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# Capable, Sharable, ...

- For a collection the size of mine (5,200 entries for 15,000 specimens) Excel is fast, searchable, and provides filters to effectively support queries. E.g. ‘Show all gastropods from Mineral Wells’.
- Excel’s .xlsx format is read by all the spreadsheet programs I am aware of, including free ones like Libre Office.
- Excel has lots of commands - it is possible to mis-type something that turns into a command that messes up your data.
- So, I periodically save a dated backup file, e.g. *FossilDatabase-2024-11-14.xlsx*.

# No Special Knowledge or Software

- You don't need to know SQL or learn some proprietary database.
- If you don't already have basic spreadsheet knowledge, you still don't. For this application you don't even need to know how to write an Excel formula in a cell. Its just data. Though you should be able to copy, paste, and search.
- I know folks who went all in on PC-based database software, only to find their databases corrupted or unable to be maintained because no new software updates were forthcoming for their operating systems. Or there were unexpected price increases in order to maintain that upward compatibility. **Though, see the caveat on next slide.**
- Excel is not free, but Libre Office is. If a bit less polished.

# Caveat - *Trilobase*

Jamie has had good luck with *Trilobase*  
[www.trilobase.com](http://www.trilobase.com)

## Pros

- It has most of the capability that my spreadsheet solution has plus a number that mine does not, for a cost of \$10!
- It's built on a real database, so specimens are linked to locations. And the user doesn't need to deal with database details.
- Specifying varied formats for labels may be easier than with mine. See Jamie's specimen sheets.
- It has support for both specimen and location photos.
- Specimen photos can be included as part of labels.
- Built in taxon hierarchy and time scale (with thumbnails of plates).
- Support for minerals and artifacts.

## Cons

- Windows only.
- One person has produced and currently maintains this.
- Only sharable if both users have *Trilobase*.
- Does seem to expect to have one entry for each specimen. Can that be true? You could always record a count in the notes.
- Is it extensible? E.g. see my index printing. Depends on the flexibility of its export capability. Under 'Print labels' it will export to CSV and XLSX. Not clear on whether that can be used to export everything.
- Upgrading to a new machine and creating backups is slightly more complicated.

*I think this could be a good solution,  
especially if spreadsheets are foreign to you.*



# Unique Identifiers

Locations, Specimens, References

Every specimen is labeled with a unique ID, either on the specimen or its container.



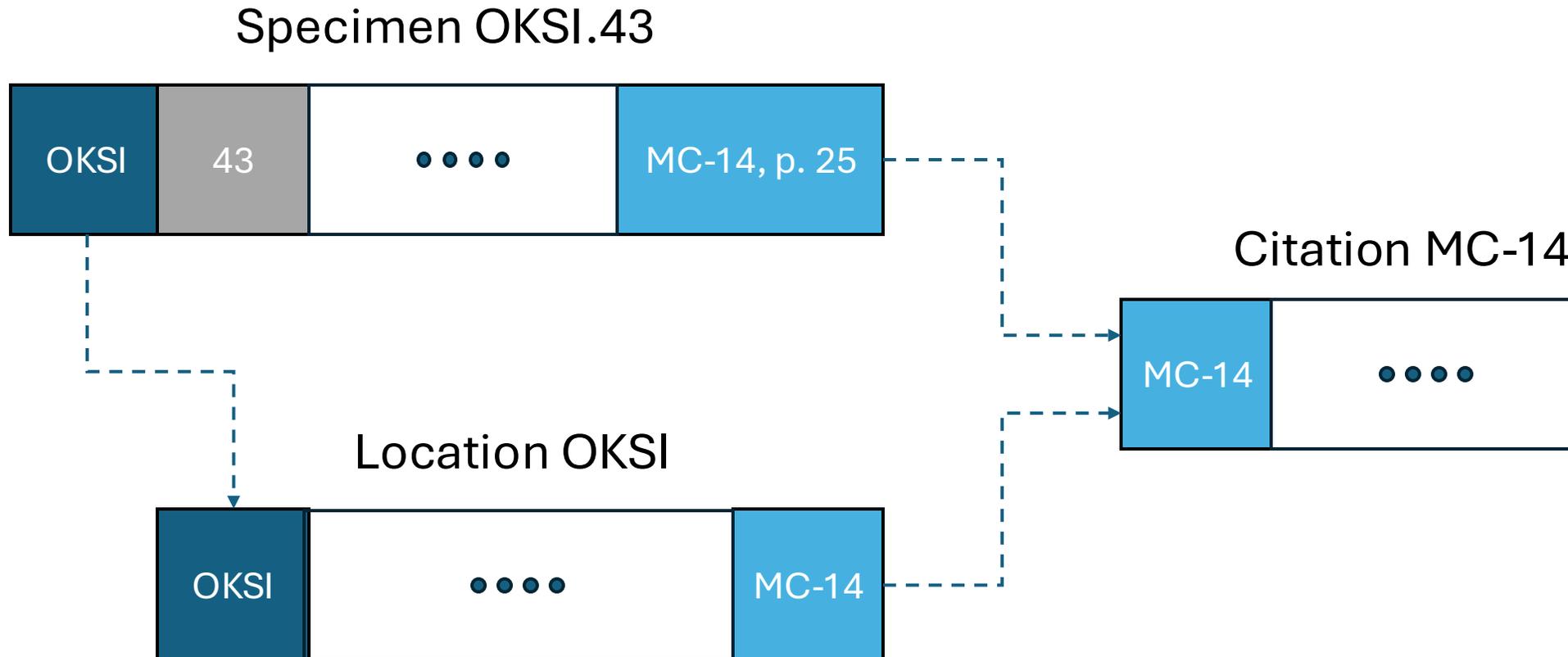
# Specimens IDs

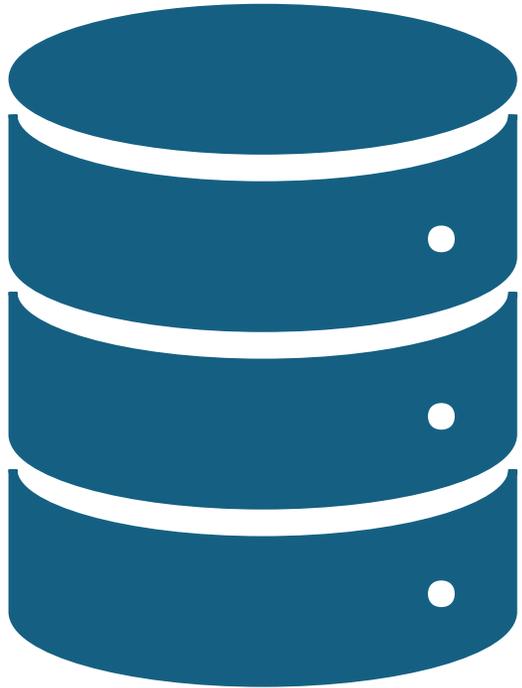
- Every fossils or set of fossils should have a unique identifier.
- Different folks have different theories as to how to do this.
- My convention is that each specimen ID consists of a location ID followed by a unique number (one more than the last).
  - LJ.23 (Lake Jacksboro location, 23<sup>rd</sup> specimen).
- If I pick up 8 specimens of the identical species, I put them in a bag with a unique ID and record a **Count** of 8.
- Sometimes you will find that you created duplicate identifiers. In which case I add an 'a', 'b', etc. to distinguish items that had been mis-numbered. I also use this where I have multiple species on one slab. E.g. T1.1a and T1.1b.

# Unique Identifiers

- Locations have unique IDs that you assign
  - AB - Abereiddi Bay, Wales
  - OKSI - Silurian Site (Amsden's P-7), OK
- References have unique IDs that you assign
  - FI-89 - Finsley, C., *A Field Guide to Fossils of Texas*, 1989
  - MC-14 - Mark G. McKinzie, *Oklahoma Fossil Localities*, 2014
- Specimens have a unique ID that begins with a Location ID followed by a sequence number that you assign (1,2,3,4,...).
  - AB.1 - *Didymograptus murchisoni*, Graptolite
  - ADA1.2 - *Pisocrinus parvus*, Crinoid cup
  - Pur.66 - *Paralegoceras evolutum*, Ammonite

# Relation Between Unique IDs





## Table Details

# Specimens

The basic elements are

- IDs and counts
- taxonomy as far as known plus common name
- location in terms of city, county, state, country, GPS
- age and stratigraphy
- date collected or purchased, cost if purchased
- storage location (stored / container)
- notes
- reference(s) used for identification, sometimes with page number
- column 1 (UID) contains sequential numbers, so that I can always re-sort rows back to the original order that records were entered in.

# Redundancy

- In the next slide you will see that some of the data from the location table is duplicated in the specimen table.
- I made the decision to replicate for two reasons.
  - This makes it easy to create labels using Word and Libre Office that include location and geology.
  - It allows me to enter data about an item I did not collect without creating a new location in the **Location** table
- Sometimes this means things can be out of date. For example, if I find that the original formation associated with a site was incorrect, it's easy to fix that in the **Location** table, but more work to fix all of the existing entries from that location in the **Specimen** table. Though, with filters it is not hard.

A	B	C	D	E	F	G	H	I	J	K
UID	Loc-Id	ID-#	Count	Type	Phylum	Class	SubClass	Order	Genus species	Common name
602	OKSI	1	1	Invertebrate	Bryozoa					Bryozoan slab
603	OKTB	1	1	Invertebrate	Arthropoda	Trilobita			<i>Calymene clavacula</i>	Trilobite
604	KL3	1.1	1	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Oxytropidoceras sp.</i>	Ammonite

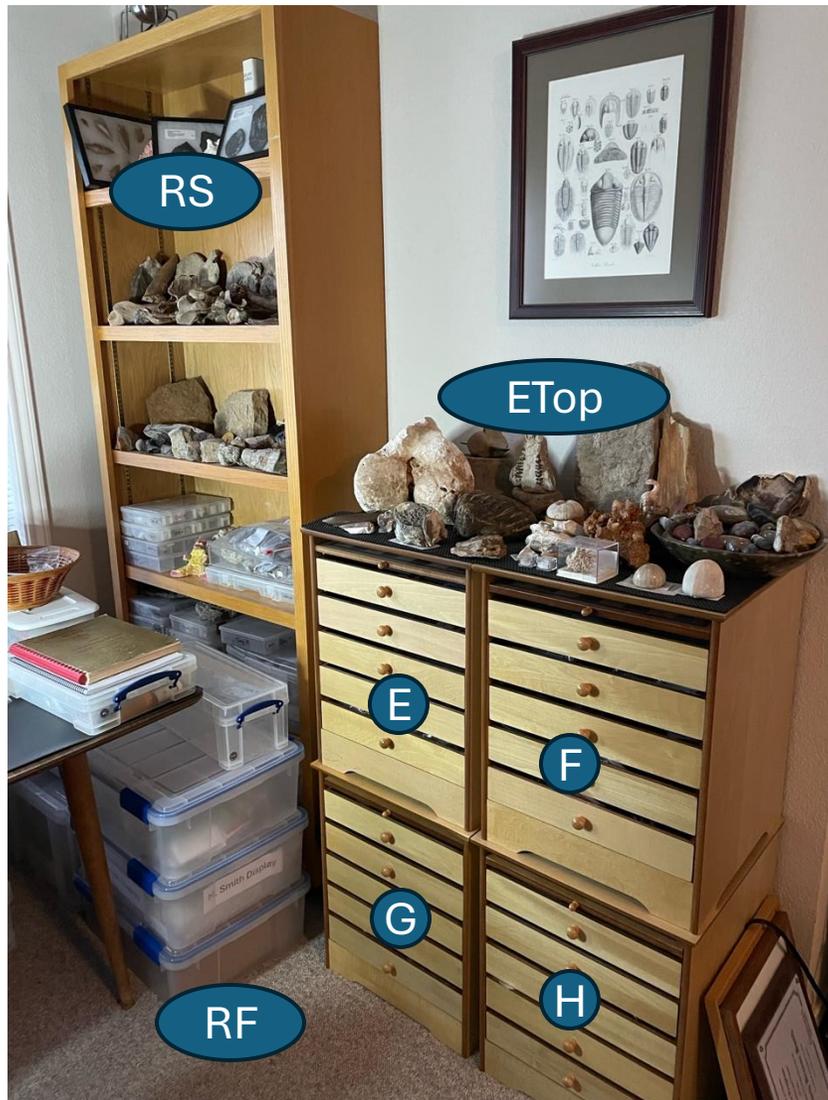
L	M	N	O	P	Q	R
Location	City	County	State	Country	Lat	Lng
Silurian Site (Amsden's P-7)	Ada	Pontotoc	OK	US	34.682699	-96.70516
Yellow Bluff	Ada	Pontotoc	OK	US	34.657039	-96.66256
Business 190	Killeen	Bell	TX	US	31.092026	-97.67058

# Specimen Table Fields

S	T	U	V	W	X	Y
System / Period	Series / Epoch	Age / Stage	MYA	Group	Formation	Member
Silurian				Hunton	Henryhouse	
Silurian				Hunton	Henryhouse	
Cretaceous					Walnut	

Z	AA	AB	AC	AD	AE	AF
Date	Cost	Stored	Container	Notes	Reference	Disposition
25-Jun-11		H4		Fenestrate. Plus either coral or encrusting bryozoan		
25-Jun-11		LS2 Riker		Prepared for me by Scott Rongey		
22-Jan-18	January 2025	A Top		PSA Field Trip (center rebuilt)	EM-02, p. 110	

# Storage Key: Where are my specimens?



<i>Right side of Table (South)</i>		
E		F
E Top		F Top
1	Austin / Littig Pit	1 Lake Jacksboro
2	McKinney Falls	2 Lake Jacksboro / Wizard Wells
3	Brazos (Eocene)	3 Lake Jacksboro
4	Canyon Lake	4 Brownwood, Wilson Clay Pit
5	Canyon Lake / Bandera	5 Brownwood, Wilson Clay Pit
G		H
1	Union Hill	1 Brownwood / Goldthwaite
2	Lake Waco / FW1	2 Brownwood / Lake Sealy / Santa Anna
3	TXI Quarry	3 Ada OK
4	Lake Texoma	4 Ada OK / Silurian / Holcim Quarry
5	San Augustine / Lake Nacogdoches	5 Calarita, OK
<i>Plus the shelves, work table, etc.</i>		
<b>Left Shelves (LS), Right Shelves (RS)</b>		As you face the window. Shelves #'d top down
<b>Left Floor (LF), Right Floor (RF)</b>		As you face the window, under the table.
<b>Top of Trunk (ToT)</b>		
<b>Glass Case (GC)</b>		Above filing cabinet behind computer screen
<b>Dining Room Shelves (DR)</b>		
<b>Back Porch (BP)</b>		

# Locations

The basic elements are

- unique ID
- expanded name for location
- city, county, state, country, GPS
- period, epoch, stage
- stratigraphy - group, formation, member
- detail - instructions to site (esp. if no GPS), contacts, misc.
- link to images. A fairly recent addition for Theodolite images
- citation, dates visited.

A	B	C	D	E	F	G	H
ID	Location	City	County	State	Country	Lat	Lng
KL3	Business 190	Killeen	Bell	TX	US	31.09202573	-97.67058
OKSI	Silurian Site (Amsden's P-7)	Ada	Pontotoc	OK	US	34.68269923	-96.70516
OKYB	Yellow Bluff	Ada	Pontotoc	OK	US	34.65703945	-96.66256

I	J	K	L	M	N	O
System / Period	Series / Epoch	Age / Stage	MYA	Group	Formation	Member
Cretaceous				Fredericksburg	Walnut	
Silurian				Hunton	Henryhouse	
Silurian				Hunton	Henryhouse	

P	Q	R	S
Detail	Theodolite	Citation	Dates Visited
Parking lot E. of the Barn Drive Thru, below Dragon Lady Tattoo. Though the Tattoo parlor has moved across the street (2023). Owner over fence who did not permit us to cross fence: Mike Mapp. Note that Amsden asserts no overlap between Henryhouse and Harragan brachiopods. See p. 147 of AM-58. Fee \$5. Was originally thought to be Bois d'Arc fm, Hunton group, Devonian. But Silurian trilobite suggests otherwise. 377 south to 1620, turn right. At T, turn left. Gate ahead where road turns right.		Trip 10, Stop P-7 in [SC OK] p. 16	Many, 2/2014 6/12/2004, 6/25/2011, 6/2012, 5/2015, 21 May 2022 4/24/2016 and at least 6 previous, 21 May 2022

# Location Table Fields

# References

The basic elements are the usual elements of a reference plus some context.

- unique ID
- author, title
- publisher, journal, date, page
- notes
- locality, species, age. If this publication is focused on one or more of these it can be useful to document.

# Reference Table Fields

A	B	C	D
<b>Ref</b>	<b>Author</b>	<b>Title</b>	<b>Publisher</b>
EM-02	Barbara L. Emerson, John H. Emerson, Rosemary E. Akers, and Thomas J. Akers	Texas Cretaceous Ammonites and Nautiloids. Texas Paleontology Series, Publication Number 5	Paleontology Section, Houston Gem and Mineral Society
FI-89	Finsley, C.	A Field Guide to Fossils of Texas	A Field Guide to Fossils of Texas, Charles Finsley, Texas Monthly Press, 1989
NE-02	Nemen, R. L., Schulte, D and Johnston, D.	<i>Guidebook for Geological Field Trips in South-Central Oklahoma,</i>	<i>Arbuckle Geosciences, Ada, OK</i>
RH-13	Rhenberg, Elizabeth C. and Kammer, Thomas W.	Camerate Crinoids from the Nunn Member of the Lower Mississippian Lake Valley Formation, New Mexico	

E	F	G	H	I	J	K
<b>Journal</b>	<b>Date</b>	<b>Page(s)</b>	<b>Notes</b>	<b>Locality</b>	<b>Family/Speci</b>	<b>Age</b>
	1994					Cretaceous
				TX		
	2002			OK		
Journal of Paleontology, 87(2), 2013, p. 312–340	2013	312-340	<a href="http://pages.geo.wvu.edu/~kammer/reprints/LakeValleyCamerates.pdf">http://pages.geo.wvu.edu/~kammer/reprints/LakeValleyCamerates.pdf</a>	NM	Crinoidea	Mississippian

# Type, Phylum, Class, SubClass, Order, Genus species

- The **Type** column separates vertebrate, invertebrate, plant, trace fossils and minerals.
- As we get more cladistic, the other column choices fit less well.
- I chose to include **SubClass** to be able to carve out Ammonoidea
- Note that various sources can disagree. An example are corals of subclass Rugosa.
  - In Wikipedia, they are shown as Class Hexacorallia, Phylum Cnidaria.
  - But the Rugose corals in GBIF are in Class Anthozoa.
  - In Wikipedia, Anthozoa is a Subphylum.
- The choice of what elements to include in your hierarchy are up to you. It's a matter of adding or deleting columns. If you do that and use the label printing templates, they will require tweaking.



# Purchases, Filters, Frozen Panes

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# Purchased, Traded, Gifted, ...

- I've purchased a fair number of fossils over the years.
- The location ID 'Pur' is reserved for purchased, gifted or otherwise obtained specimens. (I.e. not collected by M. Smith). I indicate in the **Notes** where or who it came from and, if bought, the price in the **Cost** column.
- Some may have a collector in the **Notes** column (e.g. 'Ed Elliott').
- These will often have a location, just not one corresponding to an entry on the **Locations** table. Another reason to replicate many of the **Locations** columns with specimens.
- Many of these Pur specimens only have country or state location data – thus they may not have GPS coordinates.

# Purchased Examples

A	B	C	D	E	F	G	H	I	J	K
UID	Loc-Id	ID-#	Count	Type	Phylum	Class	SubClass	Order	Genus species	Common name
609	Pur	197	1	Plant						Petrified Wood
610	Pur	198	1	Invertebrate	Mollusca	Bivalvia			<i>Arcinella arcinella</i>	Oyster

L	M	N	O	P	Q	R
Location	City	County	State	Country	Lat	Lng
	Holbrook	Navaho?	AZ	US		
		Columbus	NC	US		

S	T	U	V	W	X	Y
System / Period	Series / Epoch	Age / Stage	MYA	Group	Formation	Member
Triassic						
Pliocene-Pleistocene			1.5-2		Waccamaw	

Z	AA	AB	AC	AD	AE	AF
Date	Cost	Stored	Container	Notes	Reference	Disposition
23-Oct-11	220.00	DR		Bookends - Monarch Minerals		
27-Oct-11	7.00	D1		Fossilmania purchase		

# Filters

- I use these a lot. The example Excel document that I provide has them defined.
- They are easy to create and make this very usable as a sort of database.
- To create them in Excel you select the header row, find the 'Sort & Filter' item in the toolbar and select 'Filter'.
- Quirk – When Excel encounters a blank row it assumes the entries are complete. So don't insert completely blank rows. At least have an entry in the UID column.



# Filter Example: Cephalopods from Jacksboro

Below I have selected 'Cephalopoda' from the **Class** column and 'Jacksboro' from the **City** column by clicking on the filter icon.

Loc-Id	Id-#	Sub-#	Min-#	Count	Type	Phylum	Class	SubClass	Order	Genus species	Common name	Location	City	County	State
LJ	21			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Nautilus w/ Bryozoan	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ1	15			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Unknown nautiloid	Lake Jacksboro Pit	Jacksboro	Jack	TX
LJ1	17			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Brachycycloceras normale</i>	Straight nautilus	Lake Jacksboro Pit	Jacksboro	Jack	TX
LJ1	34			3	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Pseudorthoceras sp.</i>	Nautiloid	Lake Jacksboro Pit	Jacksboro	Jack	TX
LJ	25			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Preschumardites sp.</i>	Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	37			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Texanoceras jacksboroensis</i>	Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	39			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	46			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Poterioceras sp.</i>	Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	47			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	48			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Nautiloid	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	66			2	Invertebrate	Mollusca	Cephalopoda	Nautiloidea			Nautilus	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	69			1	Invertebrate	Mollusca	Cephalopoda	Nautiloidea		<i>Texanoceras jacksboroensis</i>	Nautilus	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	70			1	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Peritrochia ganti</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	71			1	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Metacoceras sp.</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	72			1	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Eothalassoceras caddoense</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	73			3	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Eoasianites sp.</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	74			3	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Gonioloceras goniolobum</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX
LJ	75			1	Invertebrate	Mollusca	Cephalopoda	Ammonoidea		<i>Tainoceras ? sp.</i>	Ammonite	Lost Creek Reservoir	Jacksboro	Jack	TX

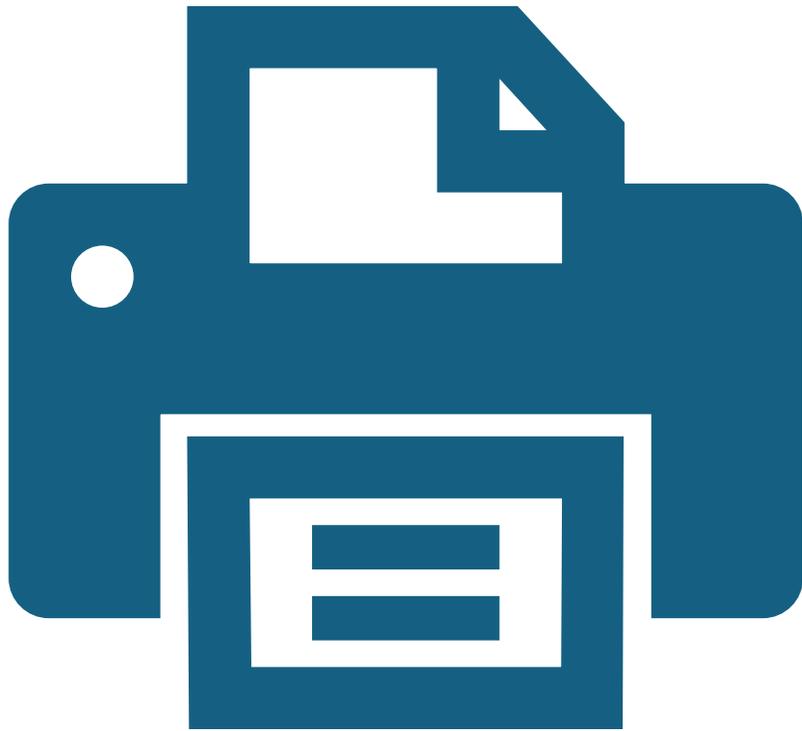
# Frozen Panes

- The tables are wider than most screens, unless you make the font microscopic.
- The panes are frozen so that the header and the leftmost data remains visible while you scroll left and right and up and down. You can un-freeze and reset this to your taste.
- Thus, to see further to the right you need to scroll or tab over.

A	B	C	D	E	F	G	H	I	J	K	L	M
UID	Loc-Id	ID-#	Count	Type	Phylum	Class	SubClass	Order	Genus species	Common name	Location	City
1	BR3	1	1	Vertebrate	Chordata	Mammalia			<i>Equus sp.</i>	Horse tooth	Brazos River	
2	LJ	1.1	11	Invertebrate	Brachiopoda				<i>Composita sp.</i>	Brachiopod	Lost Creek Reservoir	Jacksboro
3	LJ	1.2	1	Invertebrate	Mollusca	Gastropoda			<i>Treospira discoidalis</i>	Snail	Lost Creek Reservoir	Jacksboro
4	LJ	1.3	17	Invertebrate	Mollusca	Gastropoda			<i>Worthenia sp.</i>	Snail	Lost Creek Reservoir	Jacksboro

↓ Scroll right

A	B	C	D	E	F	G	H	I	J	K	Y	Z	AA	AB
UID	Loc-Id	ID-#	Count	Type	Phylum	Class	SubClass	Order	Genus species	Common name	Member	Date	Cost	Stored
1	BR3	1	1	Vertebrate	Chordata	Mammalia			<i>Equus sp.</i>	Horse tooth		3-Sep-97		K2
2	LJ	1.1	11	Invertebrate	Brachiopoda				<i>Composita sp.</i>	Brachiopod	Finis Shale			F3
3	LJ	1.2	1	Invertebrate	Mollusca	Gastropoda			<i>Treospira discoidalis</i>	Snail	Finis Shale			
4	LJ	1.3	17	Invertebrate	Mollusca	Gastropoda			<i>Worthenia sp.</i>	Snail	Finis Shale			F3



# Printing Labels

# Using Word to Print labels

- Microsoft Word makes it fairly easy to create and format labels from a spreadsheet.
- Libre Office can also do this, and while more complicated to set up, easier to use.
- There are two worksheets that have already been mentioned – ***Print Specimen*** and ***Print Location***.
- For each of these worksheets there are mail merge documents that use their content to print labels.

# Label Output Examples

<p><b>Composita sp.</b> Brachiopod Graham fm. Finis Shale mbr. Killeen, Jack Cty. Having trouble telling C. species apart.</p>	<p>LJ.1.1 Pennsylvanian  TX, US # 11</p>	<p><i>Treospira discoidalis</i> Snail Graham fm. Finis Shale mbr. Lost Creek Reservoir, Jack Cty.</p>	<p>LJ.1.2 Pennsylvanian  TX, US 1</p>
<p><i>Phyllacanthus sp.</i> Sea urchin spine and plate Weno, Paw Paw, Goodland? fm. Russwood, Grayson Cty.</p>	<p>TX4.1.2 Cretaceous  TX, US 1</p>	<p><i>Porocystis globularis</i> Algal fruiting body (seaweed seed) Glen Rose fm. Canyon Lake, Comal Cty.</p>	<p>CL.???. Cretaceous  TX, US</p>
<p>Fossil Fish Santana do Cariri, CTPS Auction. From the collection of Quinten Martin</p>	<p>Pur.89 Cretaceous Ceara, Brazil  1</p>	<p><i>Calycoceras tarrantense (subgenus Conlinoceras)</i> Woodbine fm. upper mbr. Arlington, Tarrant Cty. CTPS Auction. Given away at Xmas party.</p>	<p>Pur.90. Cretaceous  TX, US</p>
<p><i>Alaltheus pleuroceras</i>  CTPS Auction, Jean Wallace. Monarch Mineral &amp; Fossil 20-Apr-92</p>	<p>Pur.92 Early Jurassic Germany  1</p>	<p><i>Linoproductus sp.</i>  Unknown (poss. England) CTPS Auction</p>	<p>Pur.93. Carboniferous</p>

Cimarron **CIM**  
Cimarron, Colfax Co., NM, US  
Pierre Shale fm.  
Cretaceous 36.52494, -104.891466  
Going NE out of Cimarron. Large grey roadcuts on the  
both sides.

Science Museum trail - See AL2 **NMA**  
Alamogordo, Otero Co., NM, US  
Gobbler fm.  
Pennsylvanian 32.92022295, -105.9148014  
Take nature trail out of east parking lot. Winds  
around a bunch. My best collecting seemed to be  
near where it ended. June, 2003. Note uncertainty re  
fm. The Gobbler, Beeman, and Holder are all possible  
formations.

Abereiddi Bay **AB**  
St. Davids, Pembrokeshire Co., Wales  
Ordovician 51.935689, -5.205806  
Shale on the beach. Mid-Ordovician graptolites.  
Didymograptus murchisoni

# Initial Steps

- Start by copying whatever subset of items you want printed into the Print Specimens or Print Locations worksheets.
- I am going to walk through how to do this with Word, but Libre Office is similar. It is actually easier, once you have created the label printing .odt files (which is significantly harder).
- For Libre you just open the label file, say `PrintGenusSpecies.odt`, and tell it to print. If the **FossilCollection.xlsx** file is in the same directory it should just work.
- Word is a little more picky about the source, so I'm choosing that one to demonstrate.

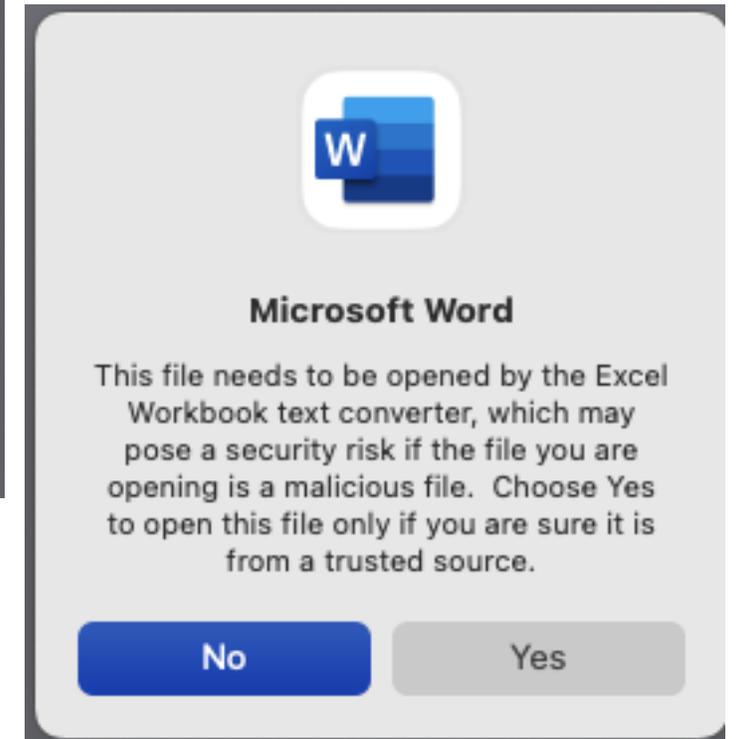
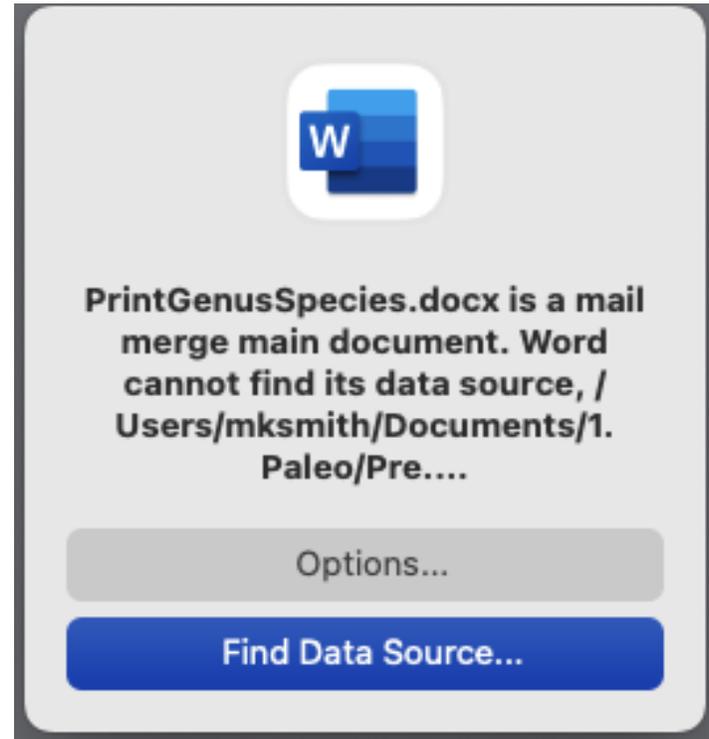
# Initial Use (example)

Open

`PrintGenusSpecies.docx`

Initially it won't find your Excel file because Microsoft has the path to the one on my machine wired in.

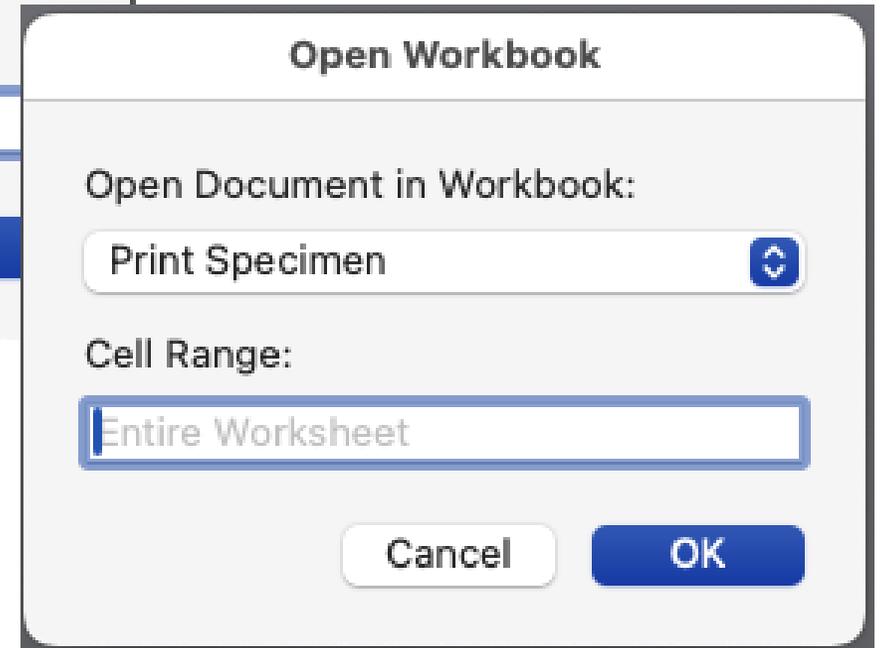
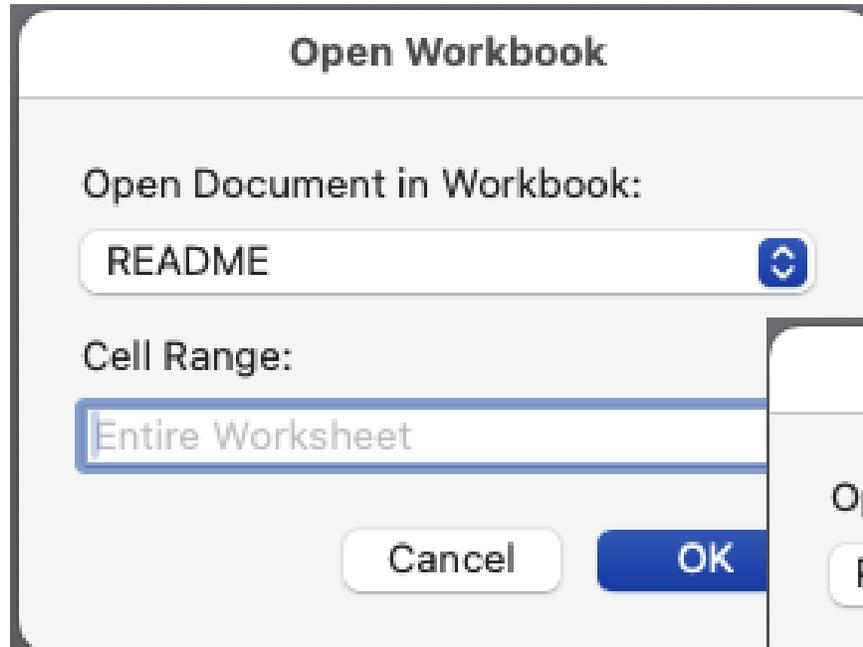
Click on 'Find Data Source' and point it at your version. Then in the next dialog click 'Yes'



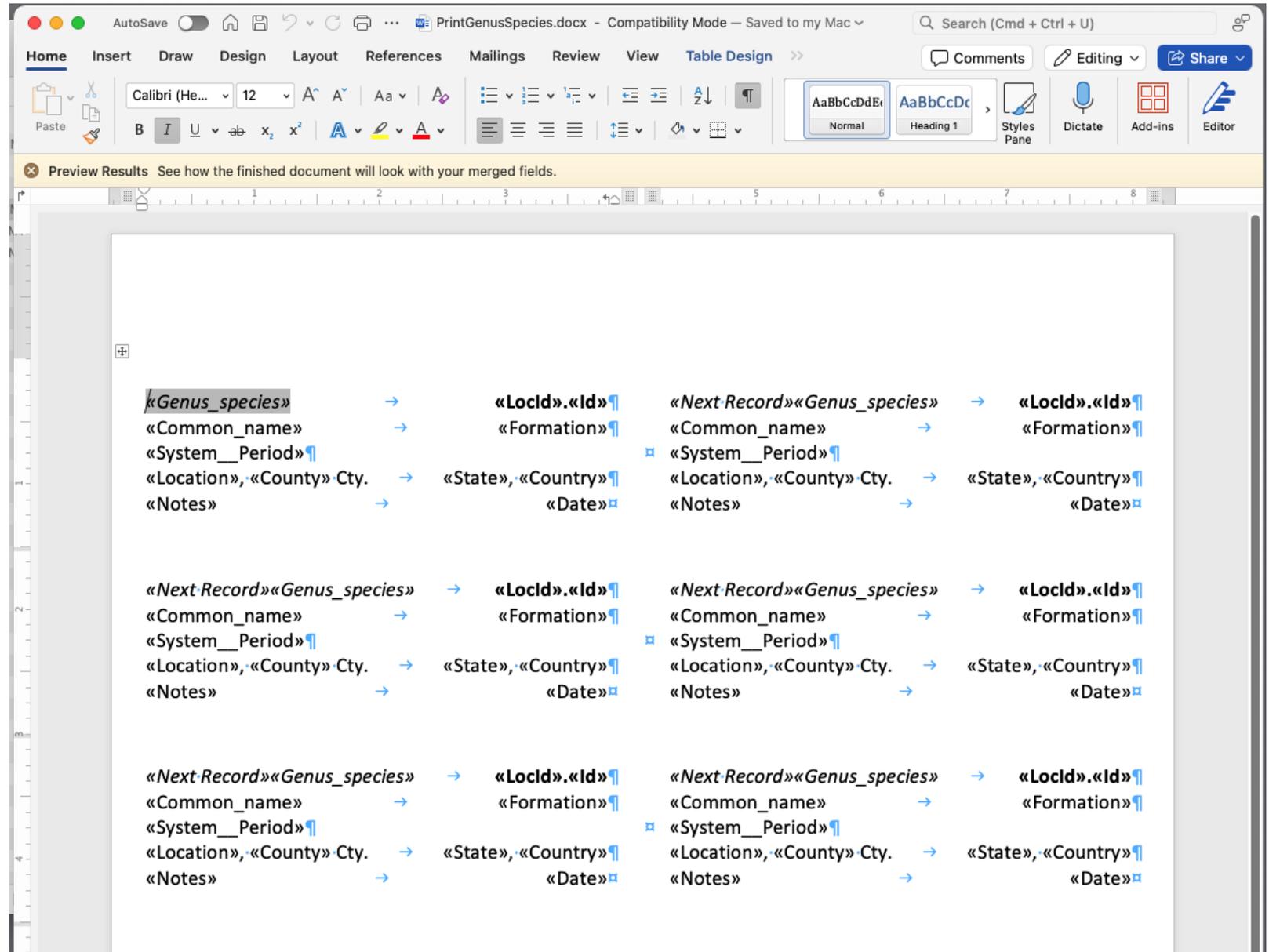
# Direct Word to the Correct worksheet

Word defaults to the first worksheet in the Excel Workbook.

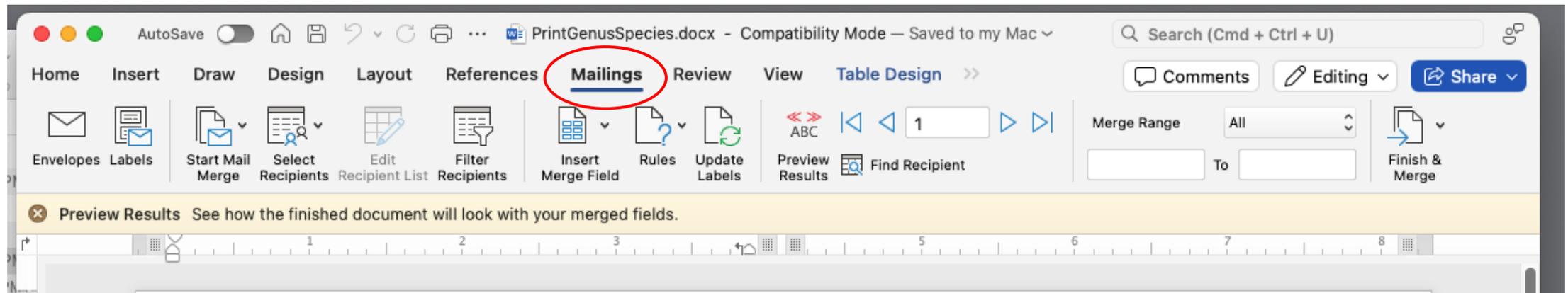
Use the pulldown to select 'Print Specimen' and then click 'OK'



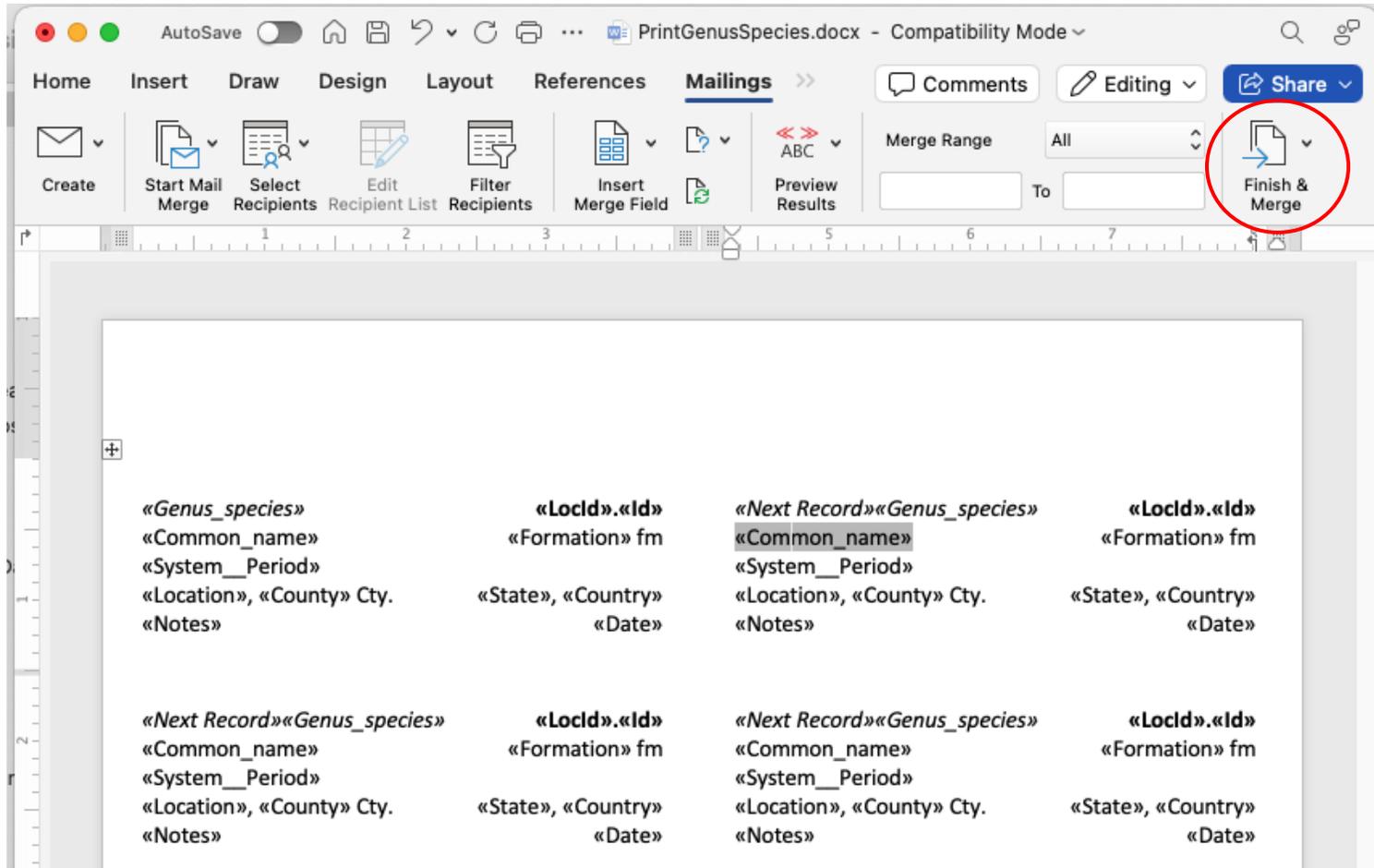
You will see this template.



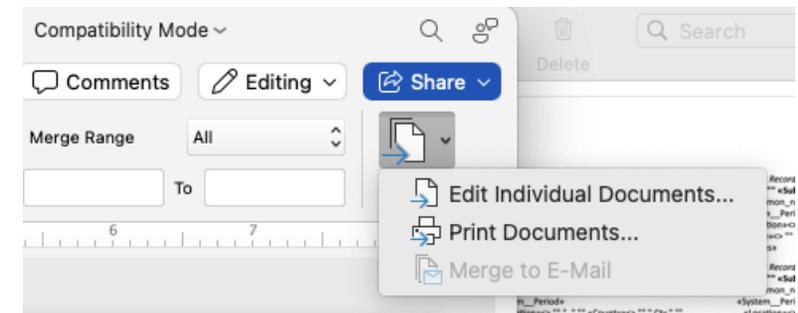
# Select Mailings from the Toolbar.



# You only have to worry about the details of Mail Merge if you want to change label formats.



Click on the 'Finish & Merge' pulldown and select 'Edit Individual Documents'



And then you  
have your  
labels. You  
can edit them  
if you need to.

*Composita sp.* **U.1.1**  
Brachiopod Graham fm  
Pennsylvanian  
Lost Creek Reservoir, Jack Cty. TX, US  
Having trouble telling C. species apart.

*Athleta petrosus* **TLB.1.b**  
Snail - Conch-like Cook Mountain fm  
Cretaceous  
Little Brazos, Brazos Cty. TX, US

**BW.1**  
Crinoid Colony Creek fm  
Pennsylvanian  
Lake Brownwood, Brown Cty. TX, US

# Available on the Austin Paleo Website

Go to <https://www.austinpaleo.org/papers.html>. You will find the file

**FossilCollection.zip** that includes:

- This slide deck as a pdf - **FossilCollection.pdf**
- The database file - **FossilCollection.xlsx**
- Word Docs
  - Print specimen labels
    - **PrintGenusSpecies.docx** (3x4 inch labels)
    - **PrintGenusSpeciesSmall.docx** (2x3 inch labels)
  - Print location labels
    - **PrintLocationsWnotes.docx**
- Libre Docs
  - Print specimen labels
    - **PrintGenusSpeciesLibre.odt** (3x4 inch labels)
    - **PrintGenusSpeciesSmallLibre.odt** (2x3 inch labels)
  - Print location labels
    - **PrintLocationsWnotesLibre.odt**



# Advanced Reports

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Requires Python and LaTeX. And probably some programming experience.

# Most real databases provide a reporting capability

- I have not played with any of the databases that provide reporting, primarily for the reasons already discussed – I started this a long time ago, I'm cheap, and I wanted to be future proofed.
- But at some point, I decided I wanted reports sorted in various ways.
- And I am a retired computer scientist.
- So I built that capability.

# Reports of the Complete Collection

Requires: Python & LaTeX installed

Process: A Python program pulls the Specimens worksheet from the Excel file and produces LaTeX input.

Then that is run through LaTeX to create reports (based on **Specimens**) with a *table of contents* and a *bibliography* (based on **References**)

Reports: Produces reports for all specimens:

- Sorted by genus,
- Sorted by collecting location, or
- Sorted by storage location

# Sample Report

Note that this storage report is 340 pages, which is what happens when you have 5,000+ specimens.

## Index to Specimen Storage

Michael K. Smith

December 6, 2023

This document sorts specimens according to storage, location, and id. Note that for some of these specimens I have provided a reference to the document used to identify them. These references are documented in the Bibliography.

### Storage

1	Storage "ToT, garage" . . . . .	5	29	Storage Box 4, T	
2	Storage A Top . . . . .	7	30	Storage Box 4, T	
3	Storage A1 . . . . .	9	31	Storage Box 4, T	
4	Storage A2 . . . . .	11	32	Storage Box 4, T	
5	Storage A3 . . . . .	15	33	Storage Box 4, T	
6	Storage A3, Box 2 . . . . .	17	34	Storage Box 4, T	
7	Storage A4 . . . . .	19	35	Storage Box 4, T	
8	Storage A5 . . . . .	22	36	Storage Box 4, T	
			37	Storage Box 5 . . . . .	
			38	Storage C1 . . . . .	
			39	Storage C2 . . . . .	

18 January 2025

## 5 Storage A3

Location: Bee Caves & 360, Austin, Travis Co., TX  
GPS: 30.298405, -97.827623  
Formation: Fredericksburg gp., Walnut fm., Bee Caves mbr. Age: Cretaceous

BC.4 *Pedinopsis* sp. (Sea urchin (rare))  
Phylum: Echinodermata, Class: Echinoidea  
Acquired: 17-Oct-96

BC.8 *Coenholectypus* sp. (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Acquired: 17-Oct-96

BC.31 *Coenholectypus* sp. (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: With shrimp claw  
Acquired: 17-Oct-96

Location: Bexar? Co., TX  
Age: Cretaceous

Pur.292.a *Mecaster texanus* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: High graded from FF Spinning Wheel  
Reference: MO-15, p. 138  
Acquired: 16-Nov-14

Location: Boat ramp?, Comal Co., TX  
Formation: Trinity gp., Glen Rose fm. Age: Cretaceous, (108 MYA)

Pur.222 *Hyposalenia phillipsae* (Whitney & Kellum) (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: PSA Xmas Party. Riker w/ SAG3-1  
Acquired: 8-Dec-12

Location: Cambridge Shores, Grayson Co., TX  
GPS: 33.81887524, -96.72569275  
Formation: Duck Creek fm. fm. Age: Cretaceous

CAM1.2.1 *Holaster simplex* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: With spines on the bottom. May be *H. laevis*  
Acquired: 24-Oct-11

CAM1.2.2 *Holaster simplex* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: May be *H. laevis*  
Acquired: 24-Oct-11

CAM1.2.3 *Holaster simplex* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: May be *H. laevis*  
Acquired: 24-Oct-11

CAM1.6 *Holaster simplex* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: Not as rounded as a simplex should be. May be *H. laevis* (per

GO3.2 *Heteraster texanus* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Acquired: 15-Jan-06

Location: East of Kent, TX  
Formation: Boquilles fm. Age: Cretaceous

Pur.291 *Leiostomaster bosei* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: Gift of Kevin Durney  
Acquired: 1-Jul-06

Pur.292 *Hemiaster jacksoni* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: Gift of Kevin Durney  
Acquired: 1-Jul-06

Pur.293.a *Holectypus* sp. (Sea urchin. Undescribed Holectypus)  
Phylum: Echinodermata, Class: Echinoidea, Order: Holectypoida  
Notes: Gift of Kevin Durney  
Acquired: 1-Jul-06

Location: FL  
Formation: Tanawa fm. Age: Miocene

Pur.21 *Eupatagus moorei* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: CTPS Xmas Party  
Acquired: 1-Dec-93

Location: Far West Blvd, Austin, Travis Co., TX  
GPS: 30.346479, -97.751781  
Formation: Fredericksburg gp., Walnut fm. Age: Cretaceous

FW.1 *Coenholectypus planatus* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: Now built over  
Acquired: 13-Jun-91

FW.2 *Loriolia whitneyi* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: Now built over  
Acquired: 13-Jun-91

Location: Fort Worth, Tarrant Co., TX  
Formation: Goodland fm. Age: Cretaceous

Pur.291.a *Leptosalenia mexicana* (Sea urchin)  
Phylum: Echinodermata, Class: Echinoidea  
Notes: CTPS Field trip. Gift?  
Acquired: 20-Jul-96

Location: Gatesville, Gatesville, Coryell Co., TX  
GPS: 31.392411, -97.545927  
Formation: Fredericksburg gp., Walnut fm. Age: Cretaceous

GA1.23 *Heteraster texanus* (Sea urchin) [3]  
Phylum: Echinodermata, Class: Echinoidea  
Acquired: 15-Mar-05

# Sample Report

## 32 *Elcokenia eporecta*, *Corvina gemma*

**Location:** Whiskey Bridge, Burleson Co., TX

**GPS:** 30.627451, -96.545715

**Formation:** Cook Mountain fm. **Age:** Eocene

T1.1.18 *Elcokenia eporecta*, *Corvina gemma* (Otoliths (fish ear bone))  
[40]

Phylum: Chordata

Eocene Cook Mountain fm.

Stored: E3

Reference: EM-01

T1.1.39 *Elcokenia eporecta*, *Corvina gemma* (Otoliths (fish ear bone))  
[45]

Phylum: Chordata

Eocene Cook Mountain fm.

Stored: E3

Reference: EM-01

T1.14 *Elcokenia eporecta*, *Corvina gemma* (Otolith slab)

Phylum: Chordata

Eocene Cook Mountain fm.

Stored: E3

Notes: Otolith slab (3 fish ear bone), w/ gastropod

Reference: EM-01, p. 60

## 33 Fish bones, vertebrae

**Location:** Hill Co., Itasca, Hill Co., TX

**GPS:** 32.104551, -97.136286

**Formation:** Eagle Ford fm. **Age:** Cretaceous, (86 MYA)

HC2.1.c (Fish bones, vertebrae)

Phylum: Chordata

Cretaceous, (86 MYA) Eagle Ford fm.

Stored: J3

Notes: HC2.1 all on one slab

Acquired: 1-Oct-93

## Specimens Sorted by Genus

Michael K. Smith

December 6, 2023

This document sorts specimens in a sort order according to genus, species, and common name. Note that for some of these specimens I have provided a reference to the document used to identify them. These references are documented in the Bibliography.

### Genus, Species, Common Name

1	Shrinkwood	31
2	Bone - mosasaur, fish?	31
3	Bone, likely reptile	31
4	Bone, probably bison	31
5	Bryozoan, branching	31
6	Bryozoan, coral-like	31
7	Bryozoan, fan like	31
8	Burrow, bryozoan, É.	31
9	Ceratosrean sp., small oystres, tiny gastropod fragment	31
10	Clam, crinoid	31
11	Clam, misc.	32
12	Clam?, brachiopod?, crinoid	32
13	Clams, Neithea & snail	32
14	Clams. Neithea, É	32
15	Closing valve, burrow, mystery	32
16	Cone shape, toothy vert.	32
17	Conglomerate w/ shark teeth, otolihs, etc.	32
18	Coprolite, e.g. Shark poop	32
19	Coral, worm tube, ??	32

28	Crinoid plates, spines	33
29	Crinoid slab w/ columns, cup parts	33
30	Crinoid stems, arms	34
31	Crinoid? Slab with small plates, columnals	34
32	<i>Elcokenia eporecta</i> , <i>Corvina gemma</i>	34
33	Fish bones, vertebrae	34
34	Fish scale, gar?	34
35	Fish teeth, jaw parts	34
36	Fish tooth, Shark vertabrae	34
37	Fish tteeth, vertebrae	34
38	Fish vertebrae, spinal processes	34
39	Fossil bone, Turtle?	34
40	Fossil leaves - laurel, oak, willow	34
41	Gastropod, rudists, bivalves in block	35
42	Hash of crinoid, rhombiferan, É	35
43	Hash slab. Crinoid, clam, gastropod, bryozoan.	35
44	Inoceramus, drilled shell	35
45	Leaf impressions, oak?	35
46	Lepidophloios, Calamites, Pecopteris, Stigmaria ?	35
47	Limpets, snails, clams, very large worm tubes?	35
48	Mesolobus sp., Rhombophora sp.	35
49	Mics. Fish teeth, jaws, vertebrae	35
50	Misc. Coral, sponge, and ???	36

Reports include a  
Bibliography based on  
References.

Less automated.  
Requires massaging a  
.csv export of the  
Reference sheet into  
LaTeX.

## 142 BIBLIOGRAPHY

- AK-02 Akers, R. E. and Akers T. J. *Texas Cretaceous Bivalves 2*. Texas Paleontology Series, Publication Number 7, Paleontology Section, Houston Gem and Mineral Society, 2002.
- AK-97 Akers, R. E. and Akers T. J. *Texas Cretaceous Gastropods*. Texas Paleontology Series, Publication Number 6, Paleontology Section, Houston Gem and Mineral Society, 1997.
- AL-73 Albestadt, Leonard P. *Articulate Brachiopods of the Viola Formation (Ordovician) in the Arbuckle Mountains, Oklahoma*, Oklahoma Geological Survey, Bulletin 117. 1973.
- AM-58 Amsden, Thomas W. and Boucot, Arthur J. *Stratigraphy and Paleontology of the Hunton Group in the Arbuckle Mountain Region*, Oklahoma Geological Survey, Bulletin 78. June 27, 1958
- AM-58-2 Amsden, Thomas W. *Stratigraphy and Paleontology of the Hunton Group in the Arbuckle Mountain Region, Part V - Bois d'arc Articulate Brachiopod*, Oklahoma Geological Survey, Bulletin 82. December 10, 1958
- AM-51 Amsden, Thomas W. *Brachiopods of the Henryhouse Formation (Silurian) of Oklahoma*, Journal of Paleontology, Vol. 25, No. 1, 1951, pp. 69-96.
- AM-63 Amsden, Thomas W. *Early Devonian brachiopods of Oklahoma. Part I. Articulate brachiopods of the Frisco Formation (Devonian)*, by Thomas W. Amsden and W. P. S. Ventress. *Part II. Articulate*

# LaTeX markup for References.

```
\begin{reference}
```

```
AK-02\quad Akers, R. E. and Akers T. J. {\em Texas Cretaceous  
Bivalves 2}. Texas Paleontology Series, Publication Number 7,  
Paleontology Section, Houston Gem and Mineral Society, 2002.
```

```
\end{reference}
```

If anyone is really interested, the production of this reference text could be automated based on the content of the References tab.

# Questions?

A photograph of a white shelving unit filled with numerous colorful ring binders. The binders are arranged in neat rows and columns, creating a grid-like pattern. The colors include green, blue, yellow, black, red, and dark blue. Each binder has a white label area at the top and a circular hole at the bottom. The word "Archive" is overlaid in the center in a white, sans-serif font.

# Archive

Specimen Table	
Field	Example
Loc-Id	LJ1
ID#	27
Count	1
Type	Invertebrate
Phylum	Mollusca
Class	Cephalopoda
SubClass	Ammonoidea
Order	
Family	
Genus species	<i>Gonioloboceras goniolobum</i>
Common name	ammonite
<Copy of location and formation data>	
Date	
Cost	
Stored	<i>Cabinet, drawer, box, ...</i>
Notes	
Reference	<i>Citation, page used to ID</i>
Disposition	<i>if traded, sold, donated</i>

Location Table	
Field	Example
Loc-ID	LJ1
Location	Mineral Wells Fossil Park
City	Mineral Wells
County	Palo Pinto
State	TX
Country	US
Lat	32.825818
Lng	-98.19045
System / Period	Pennsylvanian
Series / Epoch	
Age / Stage	
MYA	
Group	Strawn
Formation	Mineral Wells
Member	Salesville Shale
Detail	
Theodolite	
Citation	MC-03
Dates Visited	

Reference Table	
Field	Example
Ref	MC-03
Alt Refs	
Author	M. McKenzie & J. McLeod
Title	<i>Pennsylvanian Fossils of North Texas</i>
Publisher	Dallas Paleontological Society
Journal	Occasional Papers of the DPS, Vol 6, Spring 2003.
Date	2003
Page(s)	
Notes	
Locality	TX
Family/Species	
Age	Pennsylvanian

# More than you want to know

- I started out more complicated. Originally the format of these was **Location Prefix.Trip #.Specimen #**  
E.g. "LJ.1.23".
- But along the way the "Trip #" has kind of gone by the wayside. It is essentially captured by the collecting date anyway.
- So currently they are just **Location Prefix.Specimen #**