

How to Construct Taxonomic Classification for Metavist

Updated 10/14/2021

The Taxonomic Classification metadata element should contain a complete taxonomic hierarchy for each species in the data set. If you don't know the full structure or have many species to describe, ITIS can be useful. The simplest use of ITIS is available from its main page, where you can specify a common or scientific name and have ITIS return the taxonomic hierarchy. This has always been a great aid for working with Taxonomic Classification in Metavist.

Advanced Use of ITIS

At some point, constructing the tree manually gets either tedious or inefficient and you want a more automated approach. In the left-hand navigation bar at the ITIS site (<https://www.itis.gov>), you'll see a link to "Data Access and Tools", then choose "ITIS Tools" and "Compare Taxonomy/Nomenclature". Two things to be aware of when using this tool:

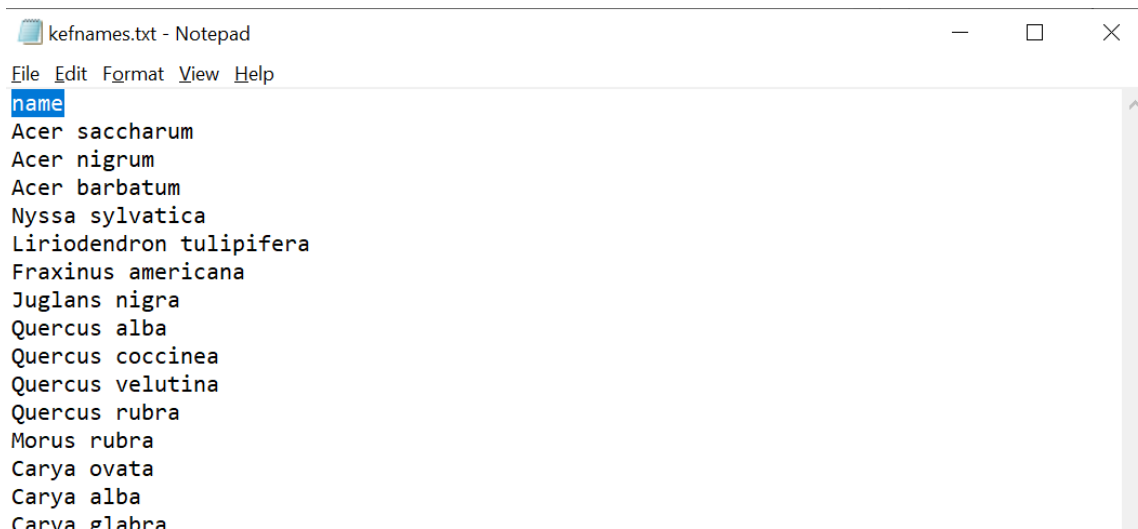
- It can only handle one Kingdom at a time
- It uses "SGML" (Standard Generalized Markup Language); XML is a subset of SGML, and for our purposes they are the same

Steps to Create Taxonomy

1. Create species list file

Create a list of scientific species names following the structure of this example file:

<http://www.fs.usda.gov/rds/archive/views/metavisthelp/kefnames.txt>. (Note that "name" must be in the first row, and ITIS will not accept extraneous information such as "sp." or "spp" in the scientific names). Simply provide basic scientific names.



```
kefnames.txt - Notepad
File Edit Format View Help
name
Acer saccharum
Acer nigrum
Acer barbatum
Nyssa sylvatica
Liriodendron tulipifera
Fraxinus americana
Juglans nigra
Quercus alba
Quercus coccinea
Quercus velutina
Quercus rubra
Morus rubra
Carya ovata
Carya alba
Carya glabra
```

2. Identify and Upload

Navigate to [ITIS - Taxamatch](http://www.itis.gov) (www.itis.gov -> Data Access and Tools -> ITIS Tools -> Compare Taxonomy/Nomenclature) and upload the file from step 1 to ITIS using the "Choose File" and "Upload File" buttons. You should get a new screen showing a successful upload. Press the "OK" button to return to the "Step 1" screen.



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Compare Taxonomy/Nomenclature

The Taxon Compare tool is used to compare a list of scientific names that you provide to the scientific names in ITIS.

Taxon Compare can be run as a simple name compare, or using the FGDC Biological Profile with optional SGML output.

Please review the following documents for guidance on using this tool.

[Compare taxonomy/nomenclature import format](#) provides information about the input file format.

[Compare Taxonomy/Nomenclature Use Guidelines](#) for more information about the simple name compare tool.

[ITIS Taxonomic Metadata Tool Use Guidelines](#) for more information about FGDC comparison and SGML output.

Step 1 - Identify and Upload File

- Choose the comparison file to upload from your system to the ITIS server:

File Name: No file chosen

- Confirm this file name is the correct file to be matched against ITIS. Update the name here only if it doesn't match the name you uploaded (this entry is case-sensitive, please enter the name exactly as you transferred it):

Compare File Name:

- Select the character delimiter used to separate the fields within the file:
- Click **Next** to continue or **Reset** to start over.

Confirm the file name and press the Next button. Note: in our example we only use the 'name' field, so the delimiter choice does not matter.

3. Compare Taxonomy/Nomenclature

- Optionally select "View Data File" to see if the file imported properly

Step 2 - View Data File (Optional)

Click to view the parsed data file from the server:

- Choose Options

- Select the appropriate Kingdom for your species list (for kefnames.txt this is Plantae).
- Compare species to ITIS taxon by selecting "Scientific Name"
- Check both boxes to view non-matches and matches.

Step 3 - Choose Options

Select the Kingdom you will be comparing your data to:

- Bacteria
- Protozoa
- Chromista
- Plantae
- Fungi
- Archaea
- Animalia

Compare to ITIS taxon records using:

- Scientific Name
- Scientific Name & Author
- Scientific Name, Author & Rank

Select report display options:

- View non-matches
- View matches

iii. Start Comparison

- Select "FGDC Compare"

Step 4. Start Comparison

Click **Taxon Compare** to start a standard taxon comparison, **FGDC Compare** to start the FGDC Biological Profile Report, or **Reset** to reset the selections on this page. Click the browser's **Back** button to start over.

Taxon Compare

FGDC Compare

Reset

4. Getting Results – FGDC Biological Profile Report

- Review the report, which has five sections:
 - i. Matches between ITIS and Input File- Valid/Accepted Names. These are all good entries- you don't need to do anything to them.

Matches between ITIS and Input File - Valid/Accepted Names

TSN	Scientific Name	Author	Rank Name	Credibility Rating
28732	Acer saccharum var. saccharum	Marsh.	Variety	Reviewed
182135	Acer nigrum	F. Michx.	Species	Reviewed
28731	Acer saccharum	Marsh.	Species	Reviewed
25110	Amelanchier arborea	(F. Michx.) Fernald	Species	Reviewed
19247	Carya tomentosa	(Lam. ex Poir.) Nutt.	Species	Reviewed
19231	Carya glabra	(Mill.) Sweet	Species	Reviewed
25782	Cercis canadensis	L.	Species	Reviewed
27806	Cornus florida	L.	Species	Reviewed
23855	Diospyros virginiana	L.	Species	Reviewed
19462	Fagus grandifolia	Fhrh	Species	Reviewed

- ii. Matches between ITIS and Input File- Invalid/Not Accepted Names. You should review these to see if you agree with the names it has selected. If you do not, you will have to edit the file later. Make a note of these in the metadata taxonomic citation section in Metavist.

Matches between ITIS and Input File - Invalid/Not Accepted Names

Valid/Accepted Name Will Replace Invalid/Not Accepted in SGML Output

TSN	Scientific Name	Author	Rank Name	Credibility Rating	Accepted TSN	Accepted Name
28759	Acer barbatum	Michx.	Species	Reviewed	28732	Acer saccharum var. saccharum
501306	Carya alba	(L.) Nutt.	Species	Reviewed	19247	Carya tomentosa

- iii. Non-matches between ITIS and Input File. These are probably misspelled. Check the spelling in a search engine and correct the mistakes. Then resubmit the text file with the corrections. This will be the case nine times out of ten. If they are not misspelled, check the [USDA PLANTS Database](#) and add manually later.

Non-matches between ITIS and Input File

Search Name	Search Author	Search Rank
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- iv. Duplicates in Input File. ITIS recognizes and excludes duplicates

Duplicates in Input File

Search Name	Search Author	Search Rank
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- v. Duplicates in ITIS. This is when there is more than one entry in ITIS. Checking the "Use" box will not actually include these in your document. You will have to add these by hand later

Duplicates in ITIS

TSN	Scientific Name	Author	Rank Name	Credibility Rating	Use*	Status Notes
19242	<i>Carya ovata</i>	(Mill.) K. Koch	Species	Reviewed	<input type="checkbox"/>	accepted
19243	<i>Carya ovata</i>	(Mill.) K. Koch	Species	Reviewed	<input type="checkbox"/>	not accepted - database artifact

- Download the file and save the *.txt.sgml file that is generated.

Generate SGML

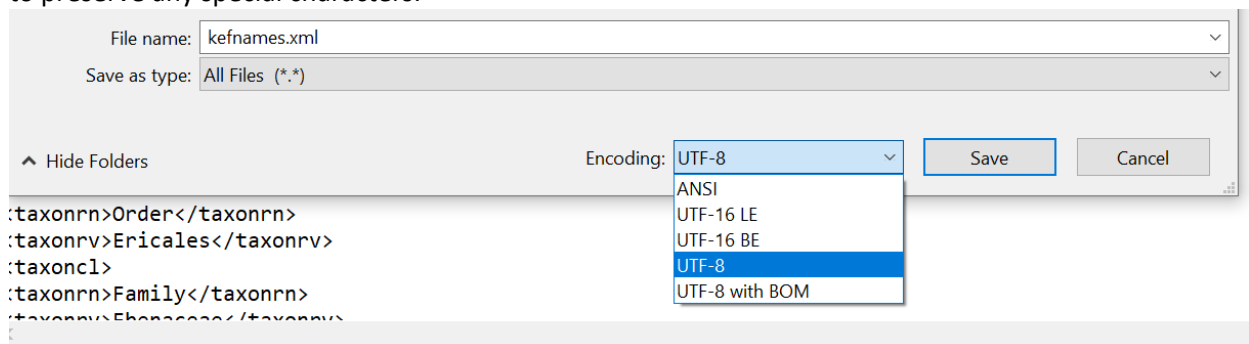
Use the following buttons to View or Download an SGML version of this report.

[View](#)

[Download](#)

5. Prepare the file for import into Metavist

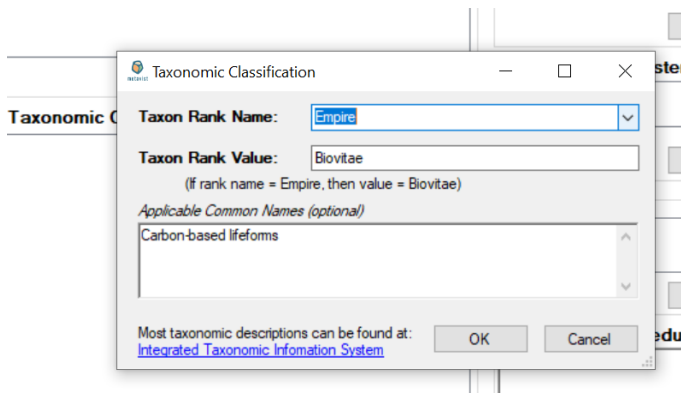
- This file has to be prepared for Metavist. (There are special characters in this file that will cause an attempt to import into Metavist to fail)
- Rename the file to have an *.xml extension (e.g. the filename should now be kefnames.xml)
- Open this new kefnames.xml file in Notepad and re-save it with the "Encoding" box set to "UTF-8" in order to preserve any special characters.



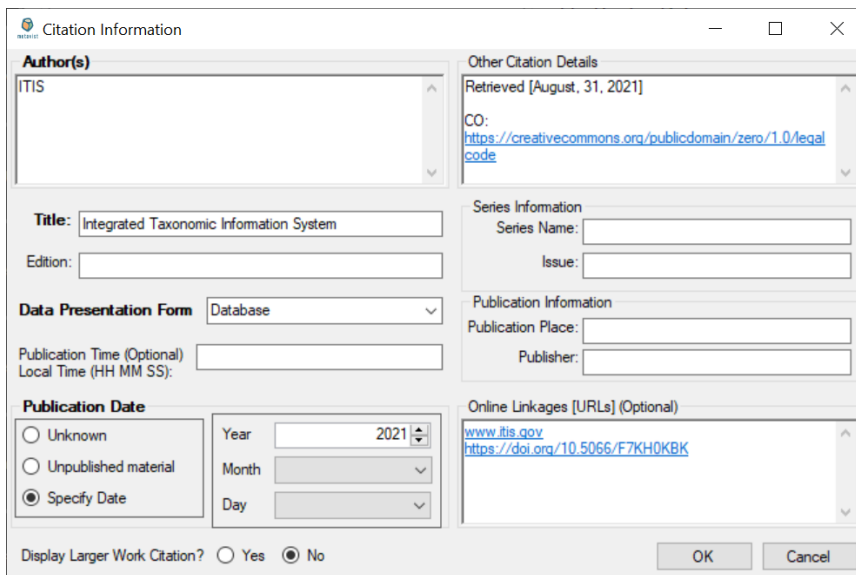
6. Import into Metavist

In the Taxonomy tab of the Identification section:

- Add taxonomy keywords from the pre-defined list
- Taxonomic Classification
 - i. If you need to import multiple Kingdoms, create the "Empire" level using Metavist, then click to select it and import each of your Kingdom files.



- ii. If there is no Taxonomic Classification in your metadata document, you can simply import the one you just saved.
- iii. The imported tree can then be edited as needed.
- Add a citation for ITIS with the following details (publication year is the year we retrieved the taxonomy and the 'Retrieved' date should be the actual date of retrieval from ITIS) :
 - i. Author(s): *ITIS*
 - ii. Publication_Date: *2021*
 - iii. Title: *Integrated Taxonomic Information System*
 - iv. Geospatial_Data_Presentation_Form: *Database*
 - v. Other_Citation_Details:
 - Retrieved [August, 31, 2021]*
 - CO: <https://creativecommons.org/publicdomain/zero/1.0/legalcode>*
 - vi. Online_Linkages:
 - <https://www.itis.gov>*
 - <https://doi.org/10.5066/F7KH0KBK>*



- note any changes you made to the ITIS results in the Modifications section

Classification System

Classification System Citation

ITIS; Integrated Taxonomic Information System

Classification System Modifications