Comma Delimited (CSV) Import and Export Template Setup

FFI provides for comma delimited file (CSV) import and export functionality for the most popular FFI methods. This can simplify field data collection because FFI-Lite is not required – any device with a spreadsheet application (e.g., Excel or Google Sheets) can be used to collect data. Excel is used in these examples.

The CSV file format is unique to each method. Methods that include a species or item code dropdown list will need customization to allow linking of species symbols and species GUIDS (the FFI database only recognizes species GUIDs). CSV data is imported one method and sample event at a time.

Methods that allow CSV import and export (both English and metric versions)

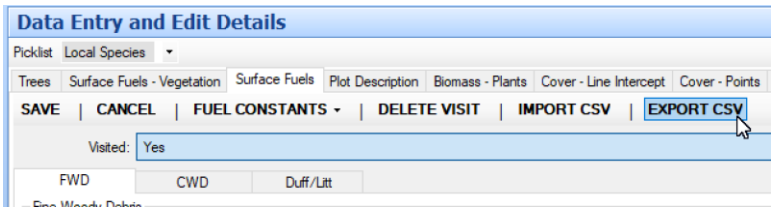
ARS Cover – Points	Cover - Species Composition	Post Burn Severity
Biomass -Fuels	Density - Belts	Rare Plant Species
Biomass – Plants	Density – Quadrats	Surface Fuels
Canopy Densiometer	Disturbance History	Surface Fuels – Piles
Cover - Frequency	FCCS	Surface Fuels – Vegetation
Surface Fuels – AK Duff/Litter	Cover – Line Intercept	Logs – Fixed-area
Trees	Cover – Points	Photoload
Trees – Variable Radius	Cover – Points by Transect	Pilot Sampling
Composite Burn index		

Methods that do not allow CSV import and export (both English and metric versions)

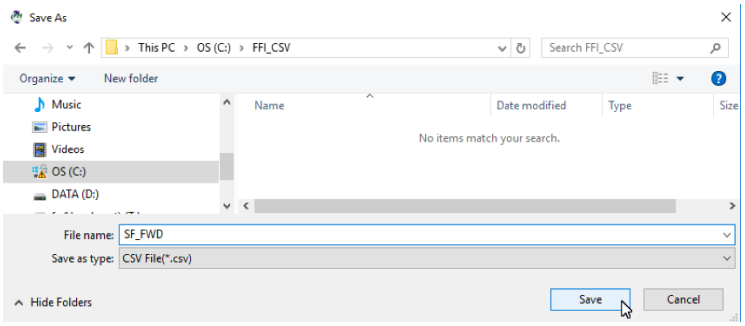
Fire Behavior
Photos
Plot Description

Example of using CSV import and export with a FFI method without a *Species* Field

The CSV file format is unique to the method. Create a CSV export file for any method to see the file format. Go to any sample event and click **Export CSV**. This example uses the *Surface Fuels – FWD* method.



Name the file and **Save** into the folder of your choice.



Navigate to the folder and open the CSV file. Note that only method attributes (data entered in the FFI data grids) are included in the CSV as column names. The sample attributes (number of transects and transect lengths, in this method) must be entered in FFI. If data are copied from a previous visit then the sample attributes will be copied already.

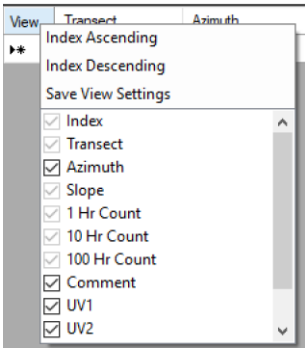
	A	B	C	D	E	F	G	H	I	J	K	L
1	Index	Transect	Azimuth	Slope	OneHr	TenHr	HunHr	FWDFuCo	Comment	UV1	UV2	UV3
2												

Enter data in the CSV file. The example has three intentional errors: 1) the *Index* filed in the first transect is blank, 2) a letter used as a transect number instead of a number and 3) the fuel constant set is misspelled in the second record (it is plural).

	A	B	C	D	E	F	G	H	I	J	K	L
1	Index	Transect	Azimuth	Slope	OneHr	TenHr	HunHr	FWDFuCo	Comment	UV1	UV2	UV3
2		A	0	0	10	5	2	Default				
3	2	2	90	0	6	3	2	Defaults				
4												

NOTES:

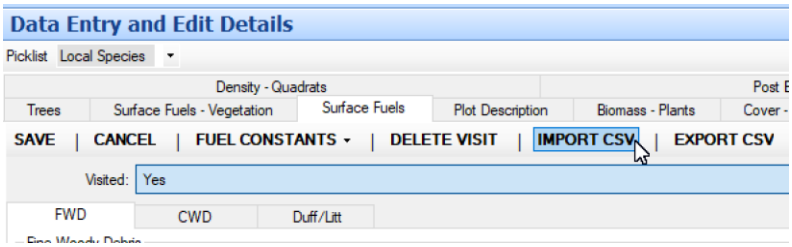
a) When importing CSV data, FFI will display errors if there are missing required fields, values are out of range or the incorrect data type. No data will be imported when FFI reports errors. Required fields are usually intuitive but can also be identified by checking the ***View*** *menu in the FFI data grid. Click* ***View*** *in the upper left of the grid; any fields that are grayed out are required. E.g., required fields for* Surface Fuels – FWD *method are:* Index, Transect, Slope, 1 Hr Count, 10 Hr Count and 100 Hr Count.



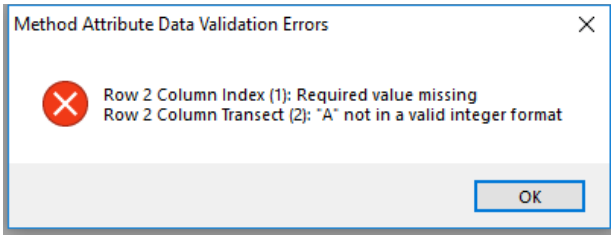
b) Index must be populated with a unique integer. Data will be saved and displayed in FFI based on the Index value. We recommend starting the index at 0 and incrementing by 1.

*c) The fuel constant set names must be included for the Surface Fuels methods that use them. If the database does not include any custom fuel constant sets enter **Default**. If a fuel constant set name in the CSV does not exist in the database, the fuel constant set field for that record will be blank in FFI after import.*

In FFI, go to the specific sample event and method you want to import the data into. Click **Import CSV**.



If errors are found, an error window will display with the validation issues. No data are imported until the issue are resolved.



The errors are resolved in the CSV file.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Index	Transect	Azimuth	Slope	OneHr	TenHr	HunHr	FWDFuCo	Comment	UV1	UV2	UV3
2	0	1	0	0	10	5	2	Default				
3	1	2	90	0	6	3	2	Defaults				
4												

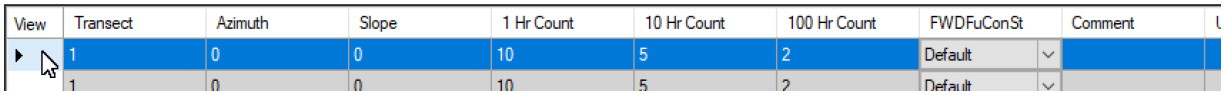
When the file is imported again the method attributes are imported without errors; however, *FWDFuConsSt* for the second record is blank because fuel constant set name was misspelled in the import file.

View	Transect	Azimuth	Slope	1 Hr Count	10 Hr Count	100 Hr Count	FWDFuConSt	Comment
▶	1	0	0	10	5	2	Default	
	2	90	0	6	3	2		
*								

The CSV import is not as sophisticated as the FFI XML file import functionality so imported records are simply added to the method attributes already in the method. With the fuel constant set name spelled correctly and the CSV data re-imported there are duplicate records.

View	Transect	Azimuth	Slope	1 Hr Count	10 Hr Count	100 Hr Count	FWDFuConSt	Comment
▶	1	0	0	10	5	2	Default	
	1	0	0	10	5	2	Default	
	2	90	0	6	3	2		
	2	90	0	6	3	2	Default	
✳								

Remove the extra records by clicking the gray area to the left of the row you want to delete and the hitting the **Delete** key on your keyboard.



The method attributes are as desired. **Save** the data in FFI.

View	Transect	Azimuth	Slope	1 Hr Count	10 Hr Count	100 Hr Count	FWDFuConSt	Comment
	1	0	0	10	5	2	Default	
▶	2	90	0	6	3	2	Default	
✳								

Creating a data entry spreadsheet template for methods with a *Species* or *Item Code* field

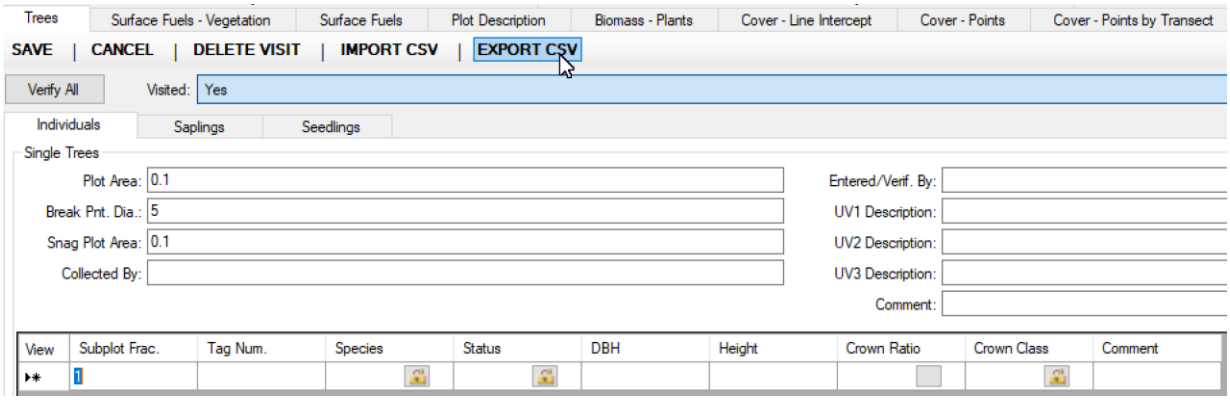
Using CSV import with methods that have a Species symbol or Item Code field requires creating a spreadsheet template that includes a function that links the symbol or code with the associated GUID that FFI recognizes. Species and Item Code GUIDS are unique to a database so the template you build must be database specific. Species and item GUIDs are not intuitive to the user but VLOOKUP functionality in the spreadsheet will link a symbol or code to the appropriate GUID. This example uses the *Trees – Individuals* method, which uses a species symbol field.

> *NOTE: The* Trees – Individuals *method has 44 data fields per record, but the CSV template you create for import only needs the fields you collect data for. The file may also include fields for values that will not be imported into FFI.*

The general procedure to add a symbol or item code GUID lookup field in a spreadsheet template is: 1) create a spreadsheet where the first tab is for data entry, 2) add a second tab for the GUID lookup table, 3) using the database you will be importing data into, export the species list from FFI, 4) copy the species list into the second tab of the spreadsheet and 5) enter the VLOOKUP formula to link the symbol or code entered on the first tab/data entry tab with the associated species GUIDs on the second tab.

Initial template setup

In FFI, export a CSV file of the *Trees – Individuals* method.



Open the CSV file and delete the column names for data that will not be collected. In this example only 11 of the 44 *Trees – Individuals* fields are to be recorded in FFI.

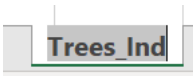
	A	B	C	D	E	F	G	H	I	J	K
1	Index	IsVerified	SubFrac	TagNo	Spp_GUID	Status	DBH	Ht	CrwnRto	CrwnCl	Comment
2											

Insert a column for *Symbol*. Click the column letter *F* above *Spp_GUID*, right-click and select **Insert**. Type *Symbol* in the first row. The *Symbol* field will be where you enter the species symbol of the species being sampled.

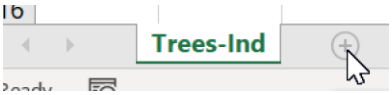
	A	B	C	D	E	F	G	H	I	J	K	L
1	Index	IsVerified	SubFrac	TagNo	Symbol	Spp_GUID	Status	DBH	Ht	CrwnRto	CrwnCl	Comment
2												

> *NOTE: For clarity the species* Symbol *and* Spp_GUID *fields are placed next to each other in this example; however, the* Spp_GUID *field is auto populated so, in actual template you create for data entry, it can be moved to the rightmost column so it doesn't need to be tabbed over during data entry.*

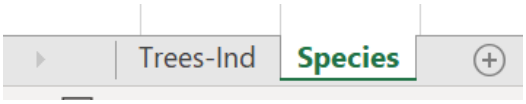
Rename the tab at the lower left to *Trees_Ind*. This will be the tab where you will do your data entry. Right-click on the tab, click **Rename,** type *Trees-Ind* in the tab and click Enter.



At the lower left of the grid, click the **+** sign to add a new sheet. The new sheet will be used for the list of species GUIDs and species symbols.

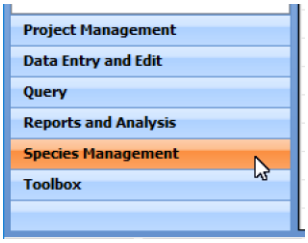


Right-click on the tab, select *Rename* and change the tab name to **Species**.

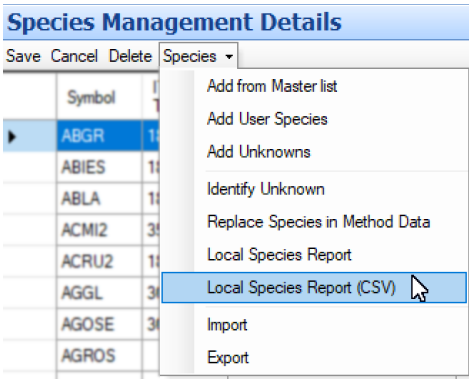


Export FFI Local Species List

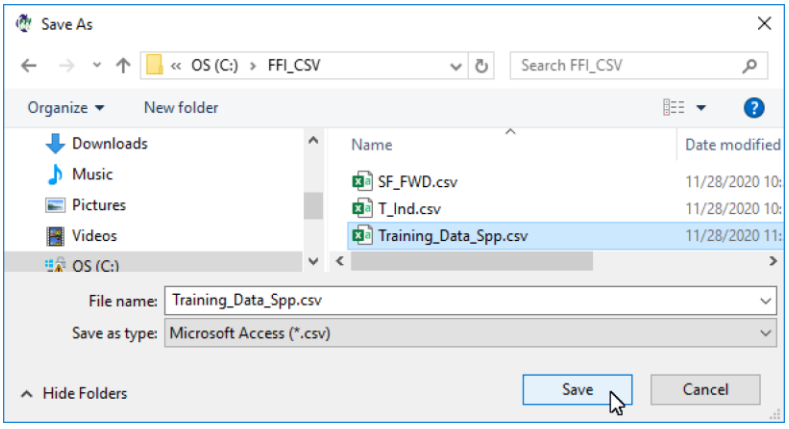
In FFI, select **Species Management** at the lower left.



Select *Species>Local Species Report (CSV).*

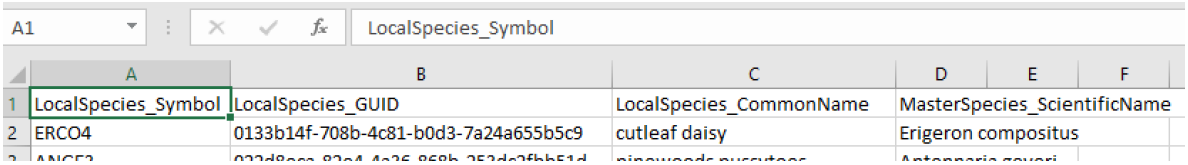


Save the species report with a name that will identify the database it came from.

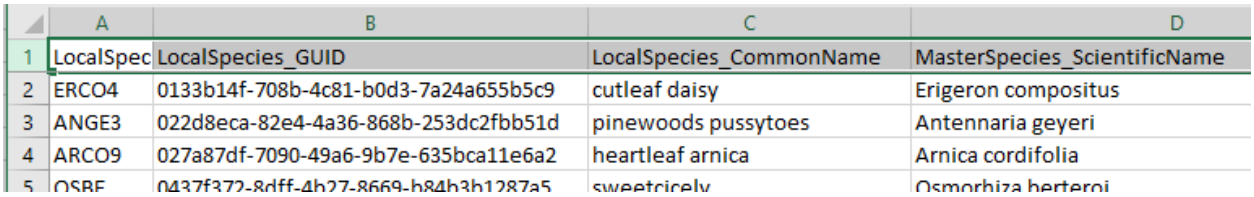


Open the species list CSV file. There are 22 columns of data but only two are required for the VLOOKUP formula:

LocalSpecies_Symbol and *LocalSpecies_GUID*. At your option you can delete some or all of the other columns. In this example, *LocalSpecies_CommonName* and *MasterSpecies_ScientificName* are the non-required fields that have been retained and the others deleted (click the letter above the column, right-click and select **Delete**).

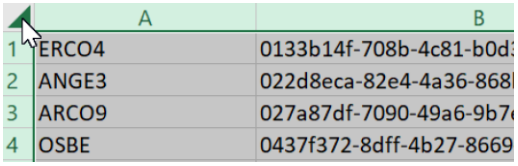


Delete row *1* to remove the labels from the sheet (click on row number 1 on the left to highlight the row, right-click and select **Delete)**.



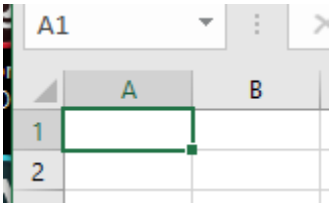
Create the Species table

The next five steps will copy the species records from the species export file into the *Species* tab in the *Tree – Individuals* template and create the species table referenced by the VLOOKUP function. Click the triangle at the upper left of the grid – above the row number *1* - to select all records in the local species list.



Hit **CNTRL + C** on your keyboard to copy the records.

Select the *Trees – Individuals* CSV spreadsheet and make sure the *Species* tab is selected at the lower left. Click your mouse in the upper left cell (A1).



Hit **CNTRL + V** on your keyboard to paste the records in the *Species* tab.

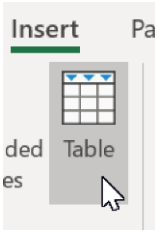
	A	B	C	D	E
1	ABGR	ef9421c6-5fb5-4946-aaa5-cb5c316958a6	grand fir	Abies grandis	
2	ABIES	ab2eaded-fd51-4994-9da3-1e14e5f0cf7b	fir	Abies	
3	ABLA	4d717c10-4b18-4f4a-83fd-45f0abc91173	subalpine fir	Abies lasiocarpa	
4	ACMI2	d5f944b5-df4e-411a-a50f-8c3a95b0fdf0	common yarrow	Achillea millefolium	
5	ACRU2	811a801f-f78a-4c1a-9cd6-5fa72d1ae216	red baneberry	Actaea rubra	

Put the species symbols and GUIDs on the *Species* tab in a named table. This will make it easier to modify the species list in the future when records are added or deleted.

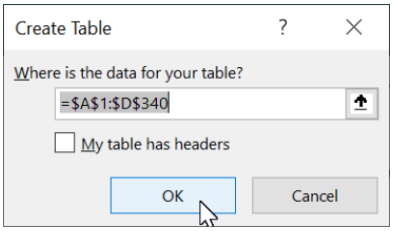
On the *Species* tab, click in the upper left cell (A1) and drag to the bottom right cell to highlight all the populated fields on the *Species* tab.

	A	B	C	D
1	ERCO4	0133b14f-708b-4c81-b0d3-7a24a655b5c9	cutleaf daisy	Erigeron compositus
2	ANGE3	022d8eca-82e4-4a36-868b-253dc2fbb51d	pinewoods pussytoes	Antennaria geyeri
3	ARCO9	027a87df-7090-49a6-9b7e-635bca11e6a2	heartleaf arnica	Arnica cordifolia
4	OSBE	0437f372-8dff-4b27-8669-b84b3b1287a5	sweetcicely	Osmorhiza berteroi
5	CYMO2	05ce6935-eaf4-4e76-9db7-870c3eb78dc5	mountain lady's slipper	Cypripedium montanum
6	ERIGE2	064af26c-eee4-47c6-9f78-9f123dcf05d1	fleabane	Erigeron
7	LIRU4	06cc00f5-d3fc-4c8d-ba03-d08a64b16abb	western stoneseed	Lithospermum ruderale
8	RUAC3	07523719-fbd8-4fee-9ba6-6a4d103cbcd5	common sheep sorrel	Rumex acetosella

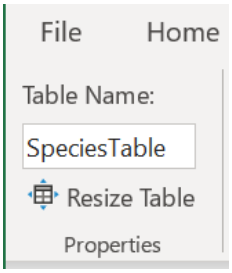
Click **Insert >Table**



Click **OK** to select the range.



In the **Table Name** field, rename the table to something intuitive.



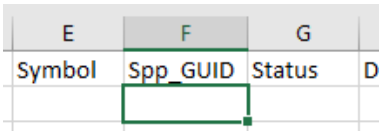
Add the VLOOKUP function

The VLOOKUP function is used to populate the *Spp_GUID* field when you enter a symbol in the *Species Symbol* field. The VLOOKUP function has the form:

> *VLOOKUP(cell reference of the species symbol, table name of species symbols and GUIDs, species table column number populated with GUIDs, Boolean to allow exact or approximate match)*.

When you type a symbol in the species field on the data entry tab, VLOOKUP will try to match the species symbol entered on the data entry tab with a record in the species table and populate the *Spp_GUID* field with the GUID in the *n*th column.

On the data entry tab of the *Trees – Individuals* spreadsheet, click in the cell in the row immediately below *Spp_GUID*.

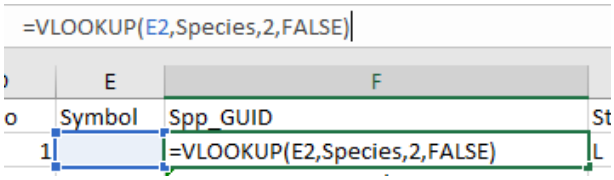


Type the VLOOKUP function in the field:

> *=VLOOKUP(E2, SpeciesTable, 2, FALSE)*

The **=** sign tells Excel this is a function. ***VLOOKUP*** is the function name, ***E2*** is the field the species symbol is entered in, ***SpeciesTable*** is the name of the table (on the *Species* tab) that will be searched for a matching species symbol, ***2*** is the column number in the *SpeciesTable* containing the species GUID and ***FALSE*** tells Excel to not display approximate matches.

> *IMPORTANT: Always use* FALSE *as the last argument or VLOOKUP may select the incorrect GUID for the entered species symbol.*



Make sure the VLOOKUP function is working correctly by typing a valid symbol in the *Species* field on the data entry tab and then comparing the symbol and GUID on the *Species* tab to. Be sure to test symbols at the top and bottom of the *SpeciesTable*. In the examples below *ERCO4* is the first symbol in the *SpeciesTable* and *DODEC* is the last symbol.

Data entry tab

E	F
Symbol	Spp_GUID
ERCO4	0133b14f-708b-4c81-b0d3-7a24a655b5c9

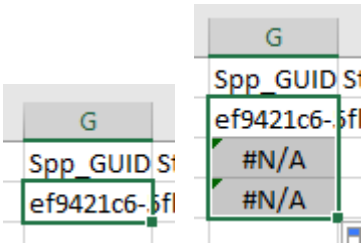
E	F
Symbol	Spp_GUID
DODEC	ffc8b711-743b-4529-9f24-eb1cfb64955a

SpeciesTable

	A	B	
1	Column1	Column2	Colum
2	ERCO4	0133b14f-708b-4c81-b0d3-7a24a655b5c9	cutleaf

340	ARENA	ffa15c2e-d512-4b28-8fee-2ddf98e429d9	sa
341	DODEC	ffc8b711-743b-4529-9f24-eb1cfb64955a	sl
342			

You can drag the function to new rows by putting your mouse cursor over the black square in the lower right of the *Spp_GUID* cell and pulling the formula down.



With the VLOOKUP function copied down the *Spp_GUID* column you can test other codes. The last species symbol in the example below is not a valid species symbol so the GUID is *#N/A*

Symbol	Spp_GUID
ERCO4	0133b14f-708b-4c81-b0d3-7a24a655b5c9
DODEC	ffc8b711-743b-4529-9f24-eb1cfb64955a
PIPO	a7223631-4518-459d-97e5-27e13720afd6
ABGR	ef9421c6-5fb5-4946-aaa5-cb5c316958a6
ABGA	#N/A

WARNINGS:

a) It is critical to check the symbol–GUID relationships are correct. The most common issue is not using the* FALSE *argument in the VLOOKUP function to return only exact matches.

b) Anytime you add a new species in the FFI local species list you will need to update your data collection template by exporting the local species list out of FFI and updating the species table in the template.

NOTE: If there are multiple instances of the same species symbol in the SpeciesTable *the GUID for the instance with the lowest row number will be entered for that species on the data entry tab.*

Test the template

Save the spreadsheet in a format that allows the function to be saved (e.g., XLSX). This will be the template you use to create all the CSV files. Use a temporary database to test the template and develop a process for naming CSV files and importing CSV data into FFI.

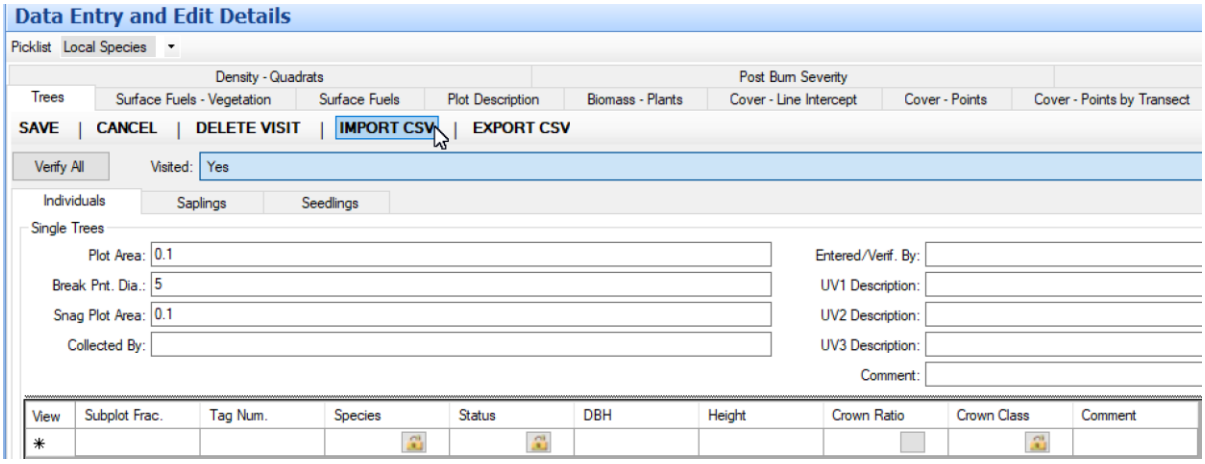
Enter data on the data entry tab of the spreadsheet.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Index	IsVerified	SubFrac	TagNo	Symbol	Spp_GUID	Status	DBH	Ht	CrwnRto	CrwnCl	Comment
2	1	TRUE	1	1	abgr	ef9421c6-5	L	10	50	80	C	
3	2	TRUE	1	2	abla	4d717c10-4	L	16	70	80	C	
4	3	TRUE	1	3	pico	25c88aa7-a	L	10	55	80	C	

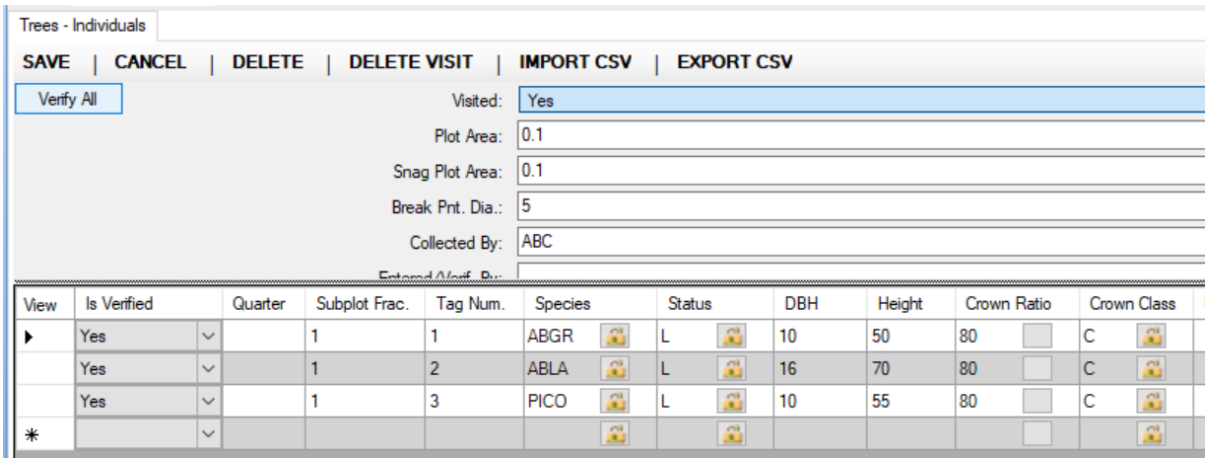
NOTE: In the Trees – Individuals *method, the* IsVerified, Status *and* CrwnCl *fields are limited to list so the values entered in the spreadsheet must be one of the options in the FFI dropdown list for those fields.* IsVerified *is* TRUE *or* FALSE *(not* Yes *or* No*).*

Save the spreadsheet as a CSV file so the data can be imported into FFI. **Close** the spreadsheet.

Open **FFI**, select the sample event you want the data imported into and click **Import CSV**.



The data are imported from the CSV file into FFI.

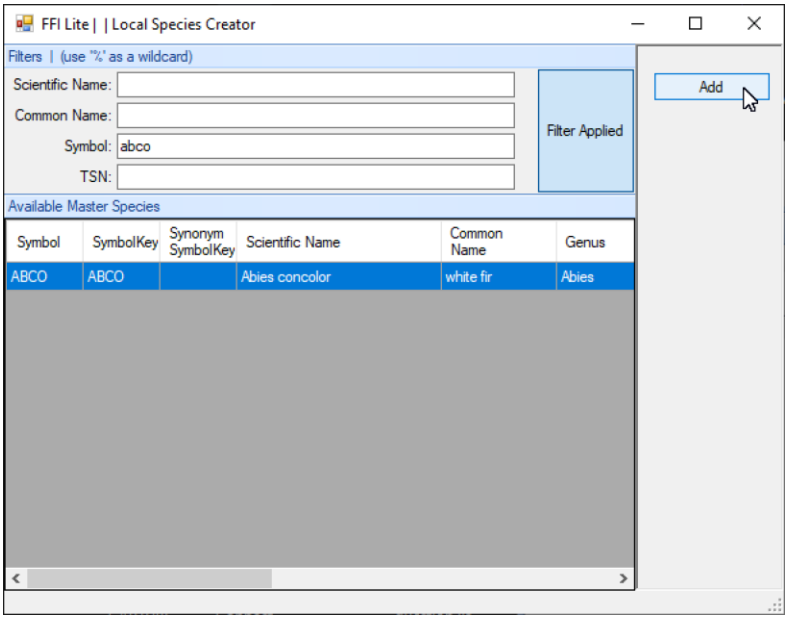


Updating the *SpeciesTable* to add or remove species records in the template

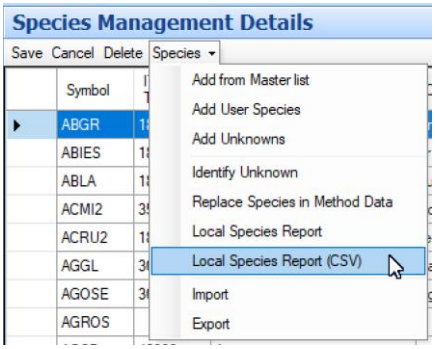
If the FFI local species list is modified then the species table in your template needs to be modified so the two species lists match.

Adding a new species record to the template's *SpeciesTable*

A new species is added in the FFI local species list: *ABCO - white fir*.



In FFI, export the local species list.

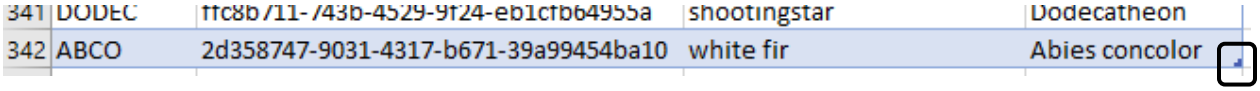


Open the exported file, search for the new symbol and copy (Ctrl+C) the record for the new species. Copy only the columns you use in the *SpeciesTable* in the template.

	A	B	C	D
1	LocalSpec	LocalSpecies_GUID	LocalSpecies_CommonName	MasterSpecies_ScientificName
55	ABCO	2d358747-9031-4317-b671-39a99454ba10	white fir	Abies concolor

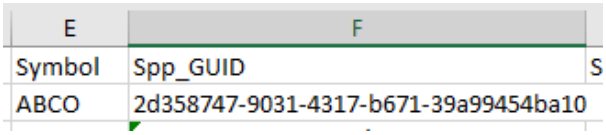
Go to the *Species* tab in your template and paste (Ctrl+V) the new record at the bottom of the *SpeciesTable*. If there is a small triangle in the lower right of the rightmost cell of the added row, then

the record has been added to the table and will available in the template. If the triangle is in the row directly above, click on triangle with your mouse and drag it down to include the new row.



341	DODEC	ffc8b711-743b-4529-9f24-eb1cfb64955a	shootingstar	Dodecatheon
342	ABCO	2d358747-9031-4317-b671-39a99454ba10	white fir	Abies concolor

On the data entry tab, test adding the new code and make sure the GUID is correct.

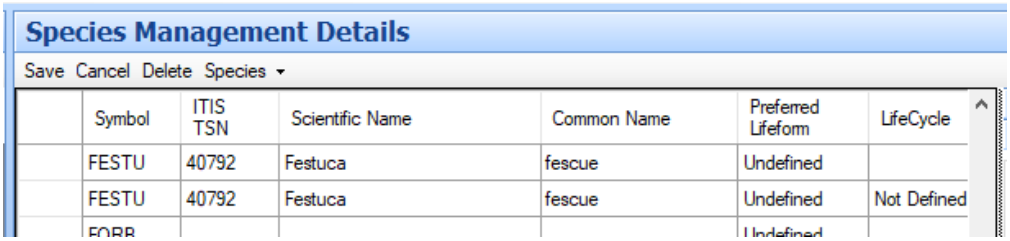


E	F	
Symbol	Spp_GUID	S
ABCO	2d358747-9031-4317-b671-39a99454ba10	

NOTE: If you add many species in the FFI local list it may be faster to update your template by replacing the SpeciesTable *data instead of adding records.*

Removing a species record from the template's *SpeciesTable*

The training database has duplicate species symbols for the genus Festuca.



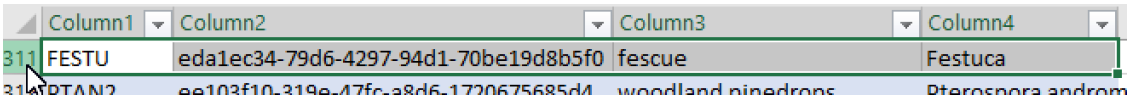
Species Management Details

Save Cancel Delete Species

	Symbol	ITIS TSN	Scientific Name	Common Name	Preferred Lifeform	LifeCycle
	FESTU	40792	Festuca	fescue	Undefined	
	FESTU	40792	Festuca	fescue	Undefined	Not Defined

After deleting the unused symbol in FFI, the symbol needs to be deleted from the template. Click the *Species* tab in the template and highlight the record to be deleted by clicking the row number to the left of the record.

NOTE: Make sure you are deleting the correct instance of the symbol or you will not be able to import the template data into FFI.

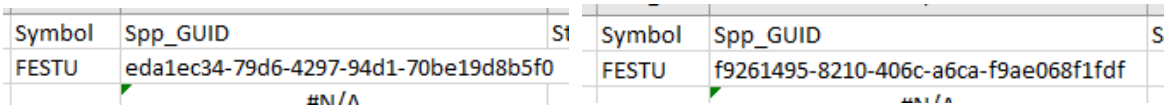


	Column1	Column2	Column3	Column4
311	FESTU	eda1ec34-79d6-4297-94d1-70be19d8b5f0	fescue	Festuca

Right-click and select **Delete** to delete the record from the *SpeciesTable*.

If data has been entered on the data entry tab, the VLOOKUP function will search for a symbol match. If there is no match, then *#N/A* will be displayed in the *Spp_GUID* field. If the symbol is found, then the *Spp_GUID* will automatically be updated on the data entry tab.

The screen shots show the different FESTU *Spp_GUID* on the data entry tab before and after the extra FESTU record was deleted from the *SpeciesTable*.

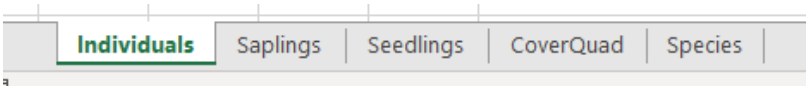


Symbol	Spp_GUID	S
FESTU	eda1ec34-79d6-4297-94d1-70be19d8b5f0	

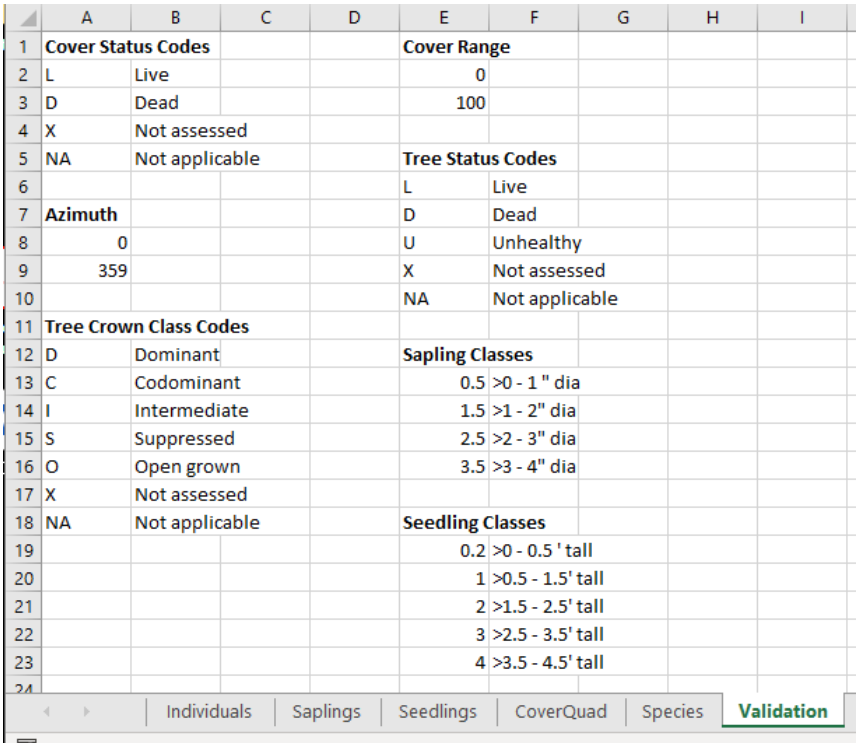
Symbol	Spp_GUID	S
FESTU	f9261495-8210-406c-a6ca-f9ae068f1fdf	

Additional template functionality

You can create a template with all the methods you sample – each method on a different tab - and associate the VLOOKUP function with one species table. The screen shot shows a template with the three tree methods and cover quadrats. You will need to export a CSV file for each method/tab separately. If your agency allows, you can write a VBA script to automatically create the CSV files (and other functionality like automatically adding new, preformatted data rows on the data entry sheets).



You can add validation values on a new tab and use the spreadsheet's **Data Validation** option to limit dropdown lists and data ranges. The screen shots show the validation data on the *Validation* tab, an example dropdown on the data entry tab and a warning for data entered out of range.



	A	B	C	D	E	F	G	H	I
1	**Cover Status Codes**				**Cover Range**				
2	L	Live			0				
3	D	Dead			100				
4	X	Not assessed							
5	NA	Not applicable			**Tree Status Codes**				
6					L	Live			
7	**Azimuth**				D	Dead			
8	0				U	Unhealthy			
9	359				X	Not assessed			
10					NA	Not applicable			
11	**Tree Crown Class Codes**								
12	D	Dominant			**Sapling Classes**				
13	C	Codominant			0.5	>0 - 1 " dia			
14	I	Intermediate			1.5	>1 - 2" dia			
15	S	Suppressed			2.5	>2 - 3" dia			
16	O	Open grown			3.5	>3 - 4" dia			
17	X	Not assessed							
18	NA	Not applicable			**Seedling Classes**				
19					0.2	>0 - 0.5 ' tall			
20					1	>0.5 - 1.5' tall			
21					2	>1.5 - 2.5' tall			
22					3	>2.5 - 3.5' tall			
23					4	>3.5 - 4.5' tall