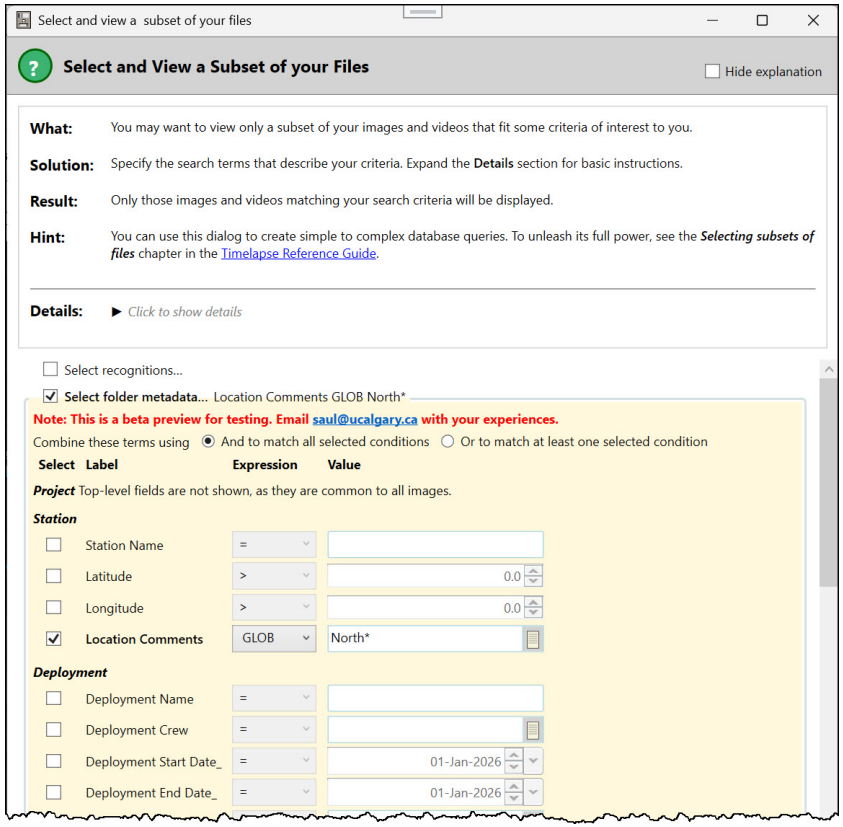
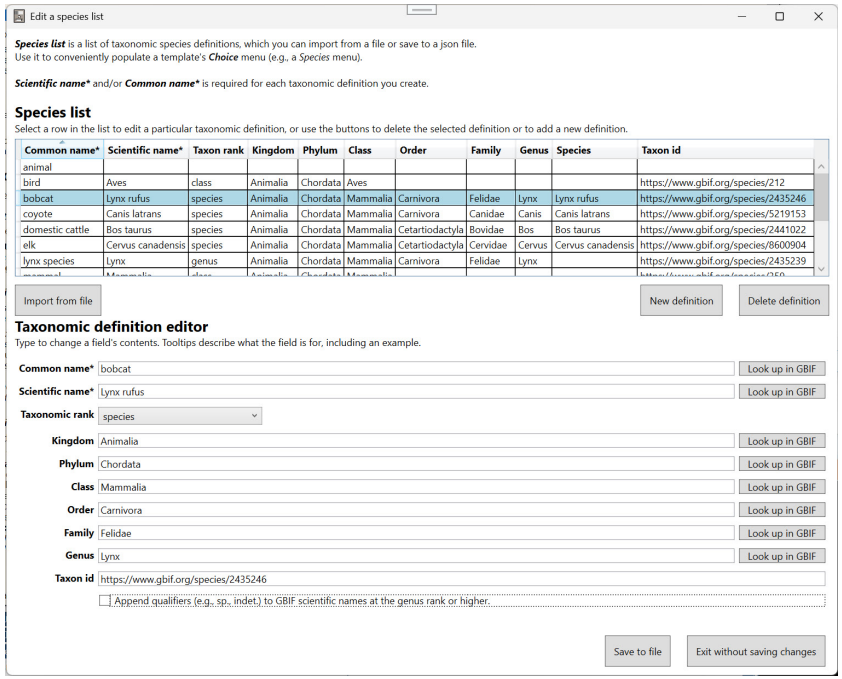
Timelapse Preview

A preview of two new facilities available in Timelapse for you to try and comment on



Custom selection on Folder Metadata



Species Editor

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What are we previewing?

This document provides a brief overview to two new Timelapse facilities for you to try and comment on (send email to saul@ucalgary.ca). Both are optional features.[1]

1. ***Custom selection on Folder Metadata***: extends custom selection to include matches to metadata field values.
2. ***Species editor.*** A utility where you can create a taxonomic list of your species of interest (including from recognition data), which you can then import into a choice menu and/or a CamtrapDP taxonomic list.

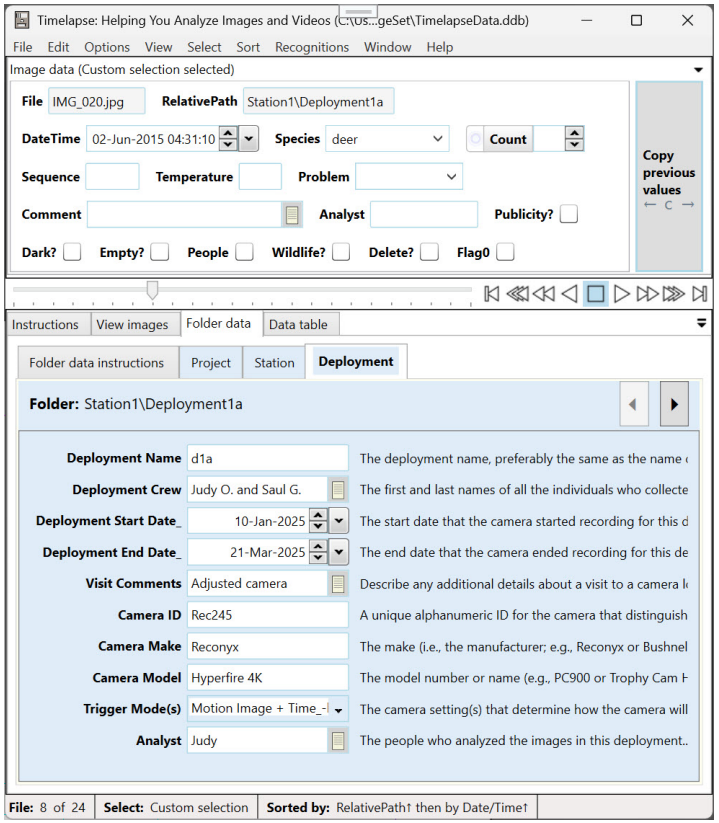
Custom selection on Folder Metadata

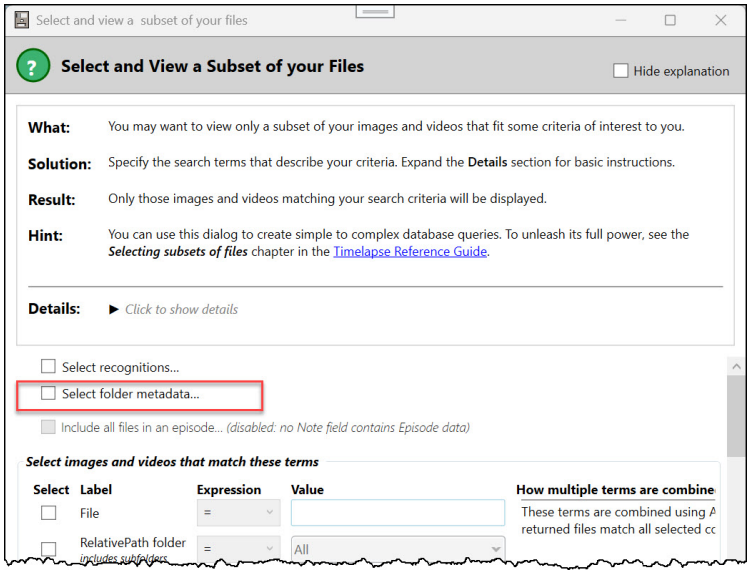
This section assumes you are familiar with the existing Timelapse Custom Selection feature. That feature currently lets you select a subset of your files that match particular image data field values, and - if you are using image recognition- recognition data.

Folder-level metadata was somewhat recently added to Timelapse, where you can create and fill in data fields that describe folders in your folder structure. In the practice image set, for example, folder levels are structured as a Project (the root folder), Stations (camera locations) and Deployments (SD card retrievals). Metadata fields add information at each folder level, for example a project name (at the Projecft level), station location i (at the Station level), the dates of the deployment and who analyzed the deployment images (at the Deployment level.) An example filled-in deployment is shown below.

Previously, there was no way to select images based on that metadata. For example, if you wanted to view only images analyzed by Judy, you couldn't do that.

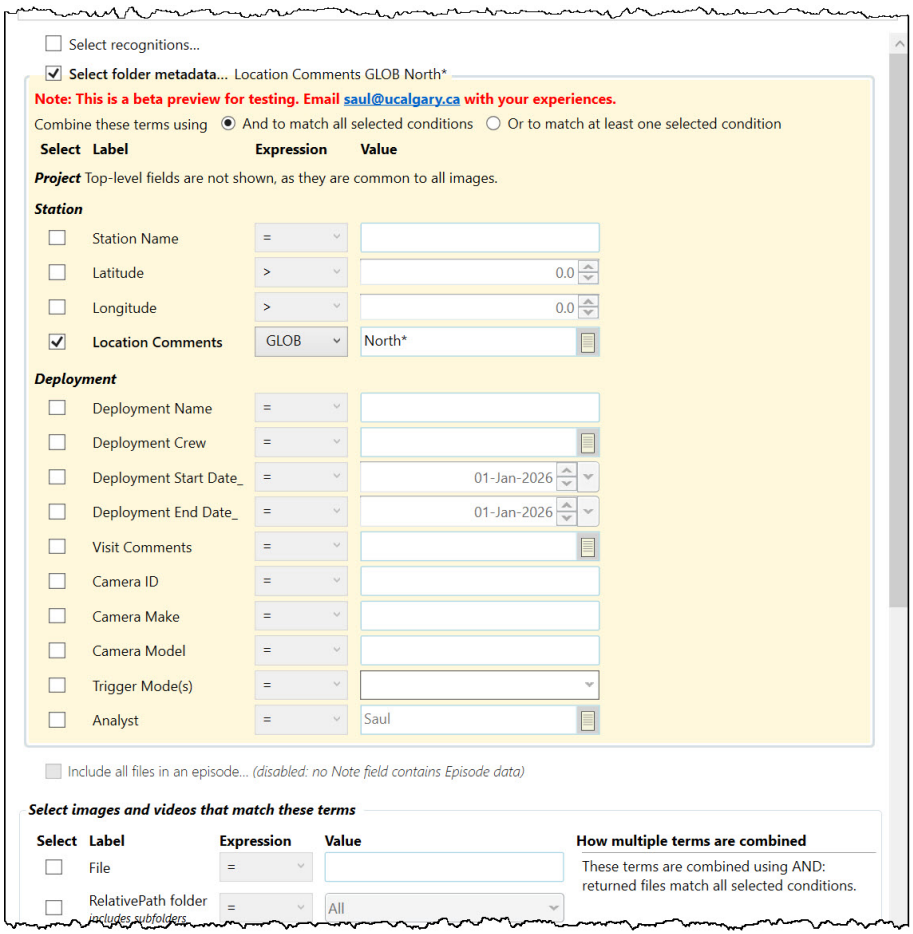
The Custom selection dialog has now been altered to include a new sub-panel called *Select folder metadata*. That sub-panel is normally collapsed (see 2nd image). If your image set includes metadata, you can open the panel by clicking its checkbox.





[1]What you see when you run Timelapse software may not exactly match the screen images in this guide, due to updates made in the software after these screen images were taken. These differences should not affect your general understanding.

An example of what that expanded panel looks like is shown below.

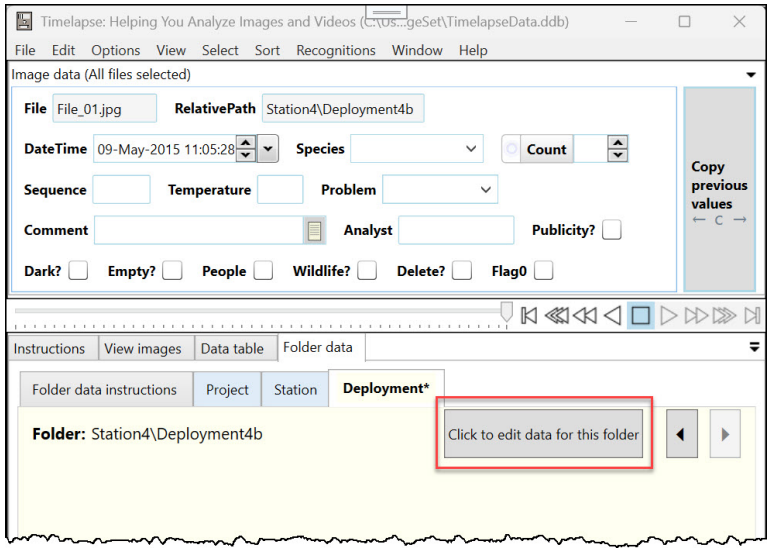


Selecting images based on metadata is done in the same way as in other custom selections. For example:

- to see all images analyzed by Saul: select the *Analyst* checkbox and fill in the Saul field.
- to see all images analyzed by Saul where the camera's station location is in the North area: as above, but also select *Location Comments* and have it pattern match on North.
- see all images ***either*** analyzed by Saul, ***or*** where the location is in the North area: as above but click the *Or* instead of the *And* button at the top.
- to see all images analyzed by Saul that contain a deer: as in the first selection, but also select species = deer from the image data selection area.

There are a few other things we should explain that will help you understand this new feature.

1. You can combine any of the search terms in the Custom select dialog to create a complex query.
2. Search terms selected from different subpanels (i.e., recognition data, folder metadata, image data) are *And*'ed together. That is, the selection must meet the criteria across those panels.
3. The top-level folder metadata is not shown. Because that metadata applies to all images, selecting that metadata would have no effect.
4. Folder metadata selection only applies to those metadata folders where you have actually instantiated them (done within the *folder data* tab, as illustrated below). If they are not instantiated, they are not included in the selection results.



Species Editor

Many camera trap projects are centered around species identification, which usually involves using a list of species of interest. Examples include

- generating a list of species of interest in the template editor, usually via a choice data field. That list prone to mis-spelling (especially for scientific names) and other inconsistencies.
- manualy tagging the species seen in an image (e.g., usually via a species list presented in a choice box, as described above),
- examining image recognition data, where bounding boxes atop of recognized animals include a species classification label,
- custom selection of a subset of your data by species, either from a data field's species tag or from its recognized classification,
- if using the CamtrapDP standard, specifying the taxonomic data required by that standard.

The problem is that there is no common species list. A species list as used in the template is independent of the list used by the image recognizer classifier, which is also independent of the taxonomic data required by CamtrapDP. Keeping all these consistent is difficult. As well, inconsistencies can be awkward to fix once analysts have started entering data.

The species list editor lets you build, check, and save your list of species, wehre you can also modify it after the fact. You can then use that list for various purposes. But first, a few explanations.

What is a species list?

At its simplest, a species list is just a list of labels. This can comprise common names (fox, skunk), or scientific names (vulpes vulpes, mephitidae) or a mix of both. However, a better species list is a set of taxonomic definitions, each recording a species' common name, scientific name, kingdom, phylum, class, order, family, genus, taxonomic rank, and even a taxon id.

Definitions need not be constrained to species. For example, a list can include broader groups, such as a genus or family, for images where the animal can't be identified further. For example, a bobcat is defined as:

» *Animalia|Chordata|Mammalia|Carnivora|Felidae|Lynx|Lynx rufus*

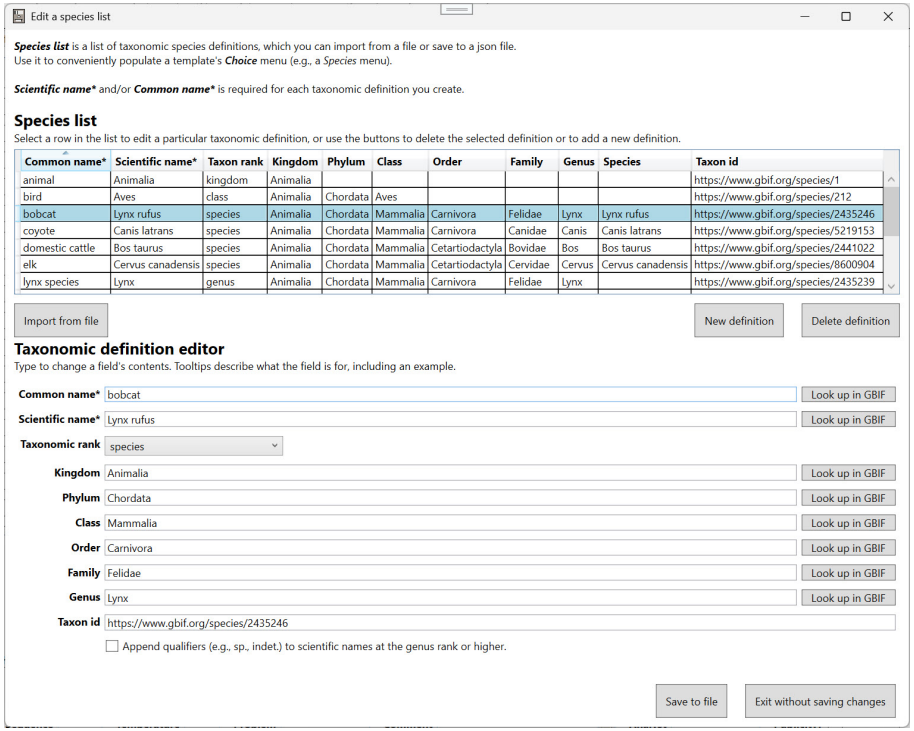
What is GBIF

GBIF is the Global Biodiversity Information Facility, an international network that provides free, open access to data about all types of life on Earth. One of its facilities lets software retrieve taxonomic information of interest. For example, if given a :

- *species scientific name* (eg..g, Lynx refus): returns the taxonomy for that species.
- *common name* (e.g, bobcat): returns a selectable list of possible matches.
- *family name* (e.g., Felidae): returns the taxonom to that family.
- *order name* (e.g., Carnivora): returns the taxonom to that order, and so on.

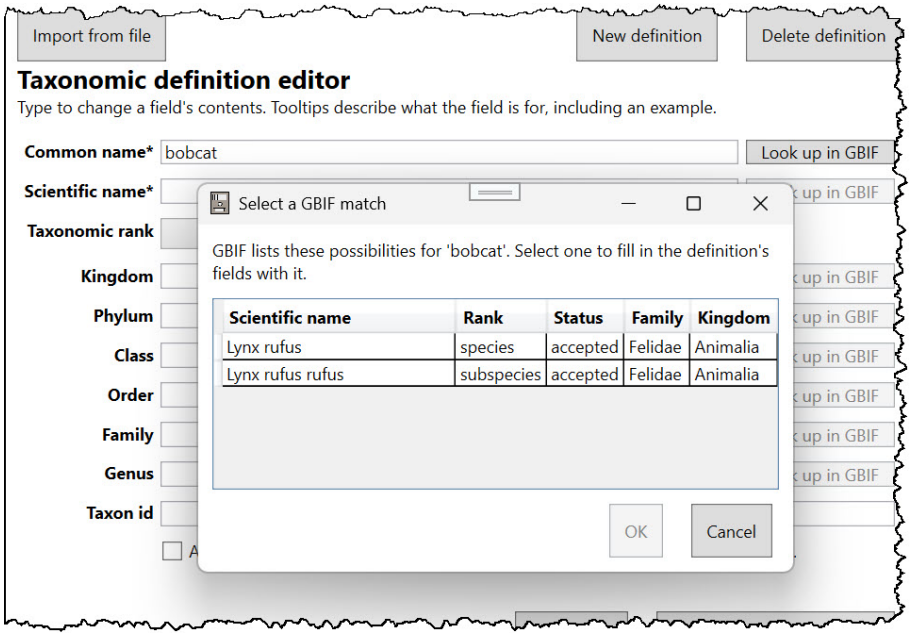
Creating a species list

The species editor is opened via the Timelapse template editor's ***File|Edit a species list*** menu. It is illustrated (filled in with some sample species) in the image below. The bobcat row is selected at the top, where its editable contents are seen in the bottom half.



It works as follows.

- ***New definition*** button: creates a new definition that you can fill inth
- ***Delete definition*** button: deletes the currently selected definition
- ***Basic form filling.*** You can fill in any or all fields at the bottom by typing.
- ***Using GBIF lookup***: Alternately, you can fill in a particular field and click the *Look up in GBIF button* at its right (internet connection required). Timelapse will fill in the other rows with GBIF's taxonomic information. If GBIF returns multiple possible results, it will display a selectable list. For example, a GBIF lookup on Bobcat in the Common name field will display this dialog, where you can click on the row you want:
- ***Append qualifiers checkbox*** will, if checked, append a .sp or .indeter to scientific names at the genus rank or higher. Its a standard optional way



to indicate that the scientific name is not at the species level.

Saving and importing your species definitions.

Definitions can be saved as a file, and imported from other files.

The ***Save to file*** button lets you name and save your definitions to a file in a location of your choice. This file is independent of Timelapse, but can be used by Timelapse as discussed later.

Import from file lets you import definitions from other files, which you can view or edit as desired. This is an important feature! Files include:

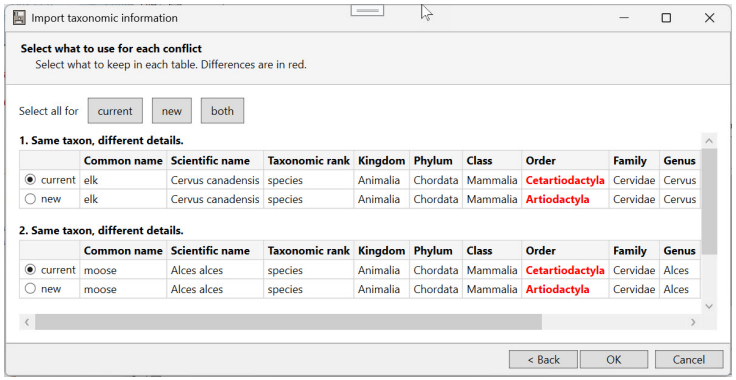
- *a previously saved definitions file:* is used to populate the editor.
- *a recognition file*, such as generated by AddaxAI. The editor is populated by the classification categories present in the recognition file. This is valuable, as it means you can generate a species list whose names match what your image recognition system uses to classify images.
- a *timelapse database (.ddb) file*. If you had previously imported recognition data into your image set, the editor is populated by the classification categories similar to the recognition file

Adding to species definitions

You can append an existing list of definitions with new definitions. To do this, populate the editor with some definitions (e.g., by importing an existing definitions file), and then importing from another file (as above).

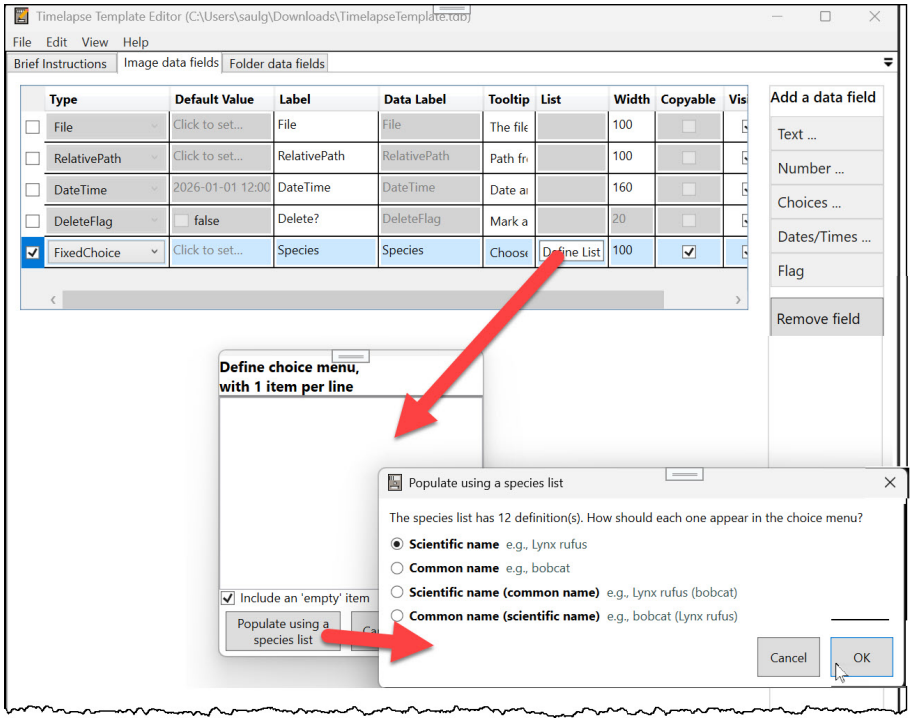
One use case arises when you use image recognition, where you want to keep those in sync with the data field you use to tag your images. The issue is that recognition files only contain classifications for species it had recognized in your image set. If you create definitions from a recognition file and later run the recognizer on a different set of images, the recognition file may include species absent from the previous file. To add those, all you have to do is import the definitions from the new recognition file.

When importing over existing definitions, Timelapse will ask if you want to replace those or add any new definitions. If you say add, Timelapse will merge the two, where duplicate entries are noticed and not added. Timelapse will also check for conflicting definitions, and will ask you to choose between them. For example:

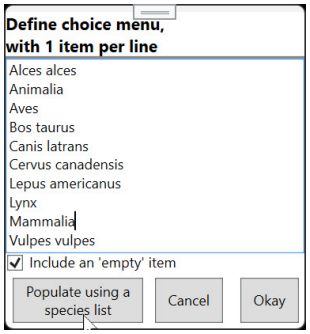


Using your species definitions.

Creating a data field's choice list. Timelapse users often create a species-specific data field via the Template editor. The analyst, when analyzing images, fills in that field with the species seen in the image. This is usually done as a ***Choice*** field (a drop-down menu) that lists the species of interest. The Timelapse Editor now includes the option to fill in that list from a species definition file, as shown below. You can also choose how a particular definition should appear, e.g., as its common name, its scientific name, or both.



The list is then filled in alphabetical order. If items were already there, the definitions are appended to the current list. The list can then be edited further if desired.



Filling in CamtrapDP's taxonomic data field's choice list. If you are using the CamtrapDP standard, its DataPackage has a required field called ***Taxonomic***. This is actually a set of fields that contains taxonomic definitions that should match all the distinct organisms identified in the project.

Timelapse presents the data package in the Folder data tab, and the taxonomic field as ***Taxonomic definitions*** button. When clicked, a form appears that resembles the species definition form. In previous versions, this was filled in manually, which was painful to do and was fraught with errors e.g., typos, misclassifications, etc.

In the current version, that form now contains a new ***Populate from a Species List file*** button, which you can use to import a previously created sepcies list.

Creating and using a species definition file is valuable for CamtrapDP user. If they use the same file to create a species choice list and to specify the taxonomic definitions, both will be in sync with one another.