**Using XnViewMP to tag camera trap images**

**INSTALLING XnViewMP**

Download the appropriate installer for your operating system here:

<https://www.xnview.com/en/xnviewmp/>

Run the installer and follow the installation wizard, accepting default choices.

**INITIAL SETUP**

Before starting to tag images, it is essential to adjust the program settings to ensure that hierarchical tags are written to and can be read from image metadata. To do this:

Click Tools > Settings (or click the gear icon) > Metadata > IPTC & XMP tab > ensure that the following check boxes are ticked:

* Import XMP subject or IPTC keyword to Catalog’s Categories
* Update when a file is changed outside
* Export Catalog’s Category to XMP Subject and IPTC Keyword
* Create XMP Data
* Read hierarchical keywords
* Write hierarchical keywords

**BASIC PROCESSES**

The program displays images and associated information in resizable panes, each of which can have multiple tabs. The interface should look something like the image below at first. Key features labelled:

A: **Data pane**, with default tabs Folders, Favourites and Categories Filter.

B: **Thumbnail pane**, where image thumbnails will appear.

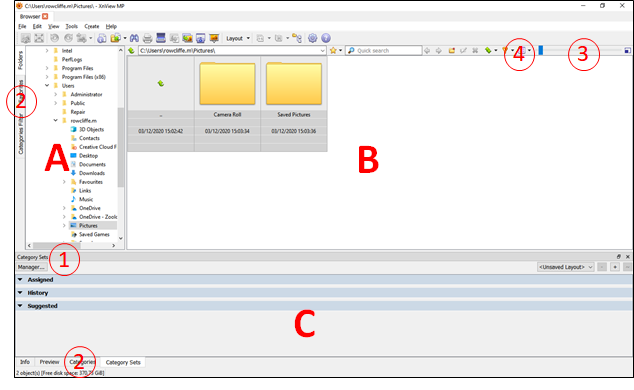
C: **Info pane**, with default tabs Info, Preview, Categories and Category Sets

1: **Pane header**

2: **Pane** **tabs**

3: **Thumbnail size slider**

4: **View As menu**



*Rearranging the workspace*

* **Selecting a pre-set layout:** View > Layout and select.
* **Adding/removing tabs from a pane:** right click on the pane header and select/deselect the desired options; OR View > Info Pane OR Data Pane > select/deselect
* **Moving a tab between info and data panes:** Click on the desired tab, click and drag the pane header into the destination pane until it turns blue then release.
* **Moving tab to a new pane:** drag the tab as above but release in the space between panes.
* **Making a tab free-floating:** drag the tab into the thumbnail pane.
* **Resizing panes:** hover over the pane boundary so that the cursor changes to a double arrow icon, then click and drag.

*Setting up tags (called categories/sub-categories in XnView)*

Basic tag management options:

* **Importing hierarchical tags:** 
  1. Use a text editor to make a list of tags, with each tag on a new line, top level category tags (e.g. species) un-indented, and sub-category tags (e.g. lion) beneath the relevant category and indented by one tab (see Appendix below for an example).
  2. Save the tag list as a text file (\*.txt).
  3. Import the file to XnView: Categories tab > Down arrow in top right corner > Categories Management > Import Categories File > Navigate and select the text file > Open.
* **Adding a new category within XnView:** Right click on any category in the Categories tab > New category > type the category name into the resulting text box.
* **Adding a new sub-category within XnView:** Right click on the relevant category in the Categories tab > New sub-category > type the sub-category name into the resulting text box.
* **Changing the hierarchical structure of existing tags:** You can drag and drop categories into others to group appropriately.
* **Assigning keyboard shortcuts to tags:** Right click the tag > Edit> In the resulting Properties dialogue, type the desired shortcut keystroke into the Shortcut box > OK.
* **Removing a tag from the Categories pane:** Highlight one or more tags and press Delete > OK.
* **Expand / collapse all tag categories:** Click the three dots (…) at the top of the Categories tab.
* **Expand / collapse a single tag category:** Click the arrow to the left of the category in the Categories tab.

Note that the above tag management options (apart from import) only work when a file in the Thumbnail pane is selected.

*Tagging Images*

* **Opening a folder of images:** In the Folders tab, navigate your directory tree to select the desired folder, and file/folder thumbnails will appear in the Thumbnail pane.
* **Viewing images from the subfolders of a given folder:** Having selected the top-level folder, View > Show Files in Subfolder.
* **Changing the information displayed with thumbnails:** Either View > View As OR click View As icon at the top of the Thumbnail pane (see image above). Thumbnail + … displays the indicated information next to each thumbnail. Thumbnail alone allows you to maximise the number of thumbnails visible on the pane, which can help with batch tagging (see below).
* **Resizing thumbnails:** Use the Slider at the top of the Thumbnail pane (see image above) to enlarge thumbnails (if you want to see them more clearly) or reduce thumbnails (if you want to get more of them on the page).
* **Moving through and highlighting images:** Click on an image to highlight it in the Thumbnails pane and use cursor and page keys to move forwards, backwards, up or down through the thumbnails. To highlight multiple images, the Shift key can be used in combination with cursors keys or clicking on images.
* **Inspecting images more closely:** Three options, having highlighted an image:
  + Drag the Info pane to enlarge the Preview tab.
  + Double click the thumbnail or preview image, or press Enter, to enter Edit mode. There are also tools for enhancing images in this mode, which may help where an animal is under-exposed. Most useful is probably Image > Adjust > Enhance Colours…, where contrast, brightness etc can be changed. Press Esc to leave Edit mode, and say No to saving the image when prompted.
  + View full screen: Right click on the thumbnail or image > Fullscreen, or press F11.
* **Adding/removing tags to/from images:** Highlight one or more images and EITHER tick/untick the relevant checkboxes in the Categories tab, OR press the relevant tag shortcut keys if you have defined these. Only use sub-category tags (the higher categories will be added automatically).

*Filtering to view images with specific tags*

In the Categories Filter tab:

* Click the arrow next to Categories to open the category tree. Click the arrows next to the other options to collapse them.
* At the top of the tab, click the arrow next to Match to select whether to filter within a single folder, a folder and its subdirectories (recursive) or globally up and down the tree; and whether to filter for all or any of the selected tags.
* Click on a category to select it, combined with Ctrl key to include tags, or Alt key to exclude.
* To stop filtering, right click any image > Open Containing Folder.

*Retrieving categories from previously tagged images*

When opening a new set of images, XnView does not automatically check for existing tags, so images tagged on another machine will not automatically display their tags in the categories pane. To show tags in this case, select all image > click View > Update catalog from files.

**SUGGESTED WORKFLOW**

*Set up the workspace*

* Select pre-set Layout 4
* Set up data pane as a narrow sidebar with tabs:
  + Folders
  + Categories
  + Categories Filter
* Info pane with tabs:
  + Info
  + Preview

*Set up tags*

IT’S ESSENTIAL TO GET THE BASIC STRUCTURE IN PLACE BEFORE YOU START TAGGING.

Additional tags can be added later, but existing tags cannot be modified without having to re-tag the affected images.

* Remove all the default categories that initially appear in the Categories tab.
* Create and import a text file listing all the tag categories and sub-categories you expected to need (more can be added within XnView or by modifying the tag list and re-importing as you go along if necessary). See Appendix below for a template tag list for REM purposes.

*Tag images*

* Process images placement-by-placement.
* On opening a folder, first open subfolders if necessary, then select all images (Edit > Select All OR Ctrl+A shortcut) and add the relevant placement tag.
* Step through images from start to finish, identifying and tagging species, counts and contacts. This can be done either image by image, or, where possible and time can be saved, in batches by highlighting multiple images. Resize panes and thumbnails to suit, and view and enhance full images as necessary to help with identification.
* Never tick more than one sub-category within the same category (e.g. two different species tags within the species category). XnView allows you to do this, but it creates ambiguity when matching with other category data (e.g. count). For images with multiple species, add numbers to the field names, as shown in the example in the Appendix.

*Filter images*

Having added tags, it may be useful to filter images to view and manipulate only those with given tags.

**Appendix**

**A tag file template for use when tagging for REM analysis**

There are four core categories (each followed by a few example categories for illustration):

* placement (used to indicate camera placement ID where the image was taken)
* species (used to indicate the species present in images)
* count (used to indicate the number of individual animals of a given species in each image)
* contact (used to indicate the number of animals of a given species in the image that are entering the detection zone for the first time)

Note that sub-categories for count and contact should be strictly numerical. The species2, count2 and contact2 categories may be needed for cases where more than one species needs to be recorded in an image. In the unlikely event that a third species is recorded in a single image, species3, count3 and possibly contact3 categories will be needed, and so on.

placement

P01

P02

P03

P04

P05

P06

P07

P08

P09

P10

species

lion

tiger

bear

count

1

2

3

contact

1

2

species2

lion

tiger

bear

count2

1

contact2

1

note

camera moved

good picture