**Readme: PAWS Workflow**

This document and workflow is set to aid researchers to go from camera trap retrieval to preliminary results of their field effort in as little time as possible and to maintain best practices. The steps you have to follow are:

1. Organise your camera trap data
2. Upload your pictures onto the SLT PAWS dropbox folder
3. Sync the dropbox folder locally on to the SLT remote desktop
4. Tag the images using digiKam
5. Run the Shiny app
6. Unsync the folder from the server

The following sections elaborate on each of the following steps:

**Organise your camera trap data**

Once the camera’s and the data from the memory cards are retrieved. Ensure the following:

1. All the images from a single camera trap/station are located in a single unique folder named identifiably.
2. All folders with camera trap images pertaining to an area/site are placed in a single folder.
3. The above folder should contain a **single .csv** file, with the camera trap station information. While having the phrase ‘**trap\_info**’ in the file name is critical, it is advised for best practice that the file is named: “\*country\*.\*site\*.\*year\*.trap\_info.csv”. The **column headers** should be as mentioned below (*or the app can be run to generate a template for the trap\_info file, which can then be appropriately populated and uploaded onto the dropbox folder*):  
   1. **Area** – The larger area/site, where the camera trapping effort was carried out.
   2. **Station** – The name of the location where the camera was deployed, it is again critical that these names match the name of the folders that contain the images
   3. **Latitude** – The latitude (WGS84) of the location the camera was deployed
   4. **Longitude** – The longitude (WGS84) of the location the camera was deployed
   5. **Setup\_date** and **Retrieval\_date** (For best practice, advised to be entered as Setup\_day, Setup\_month, Setup\_year, Retrieval\_day,Retrieval\_month and Retrieval\_year)

**Upload your pictures onto the SLT PAWS dropbox folder**

1. Sign into the SLT dropbox folder
2. Open the PAWS folder. It can be located using the search tab or by clicking on ‘My Files’ on the left panel and scrolling down.
3. Within the All folder, create the recommended folder structure – **PAWS/All/Country/Site/Year**
4. If the folders don’t exist already, create new folders by clicking on the ‘New Folder’ button located on the right-hand side panel.
5. Upload the folders similarly by clicking on the ‘Upload folder’ button on the right-hand side panel.
6. If the data has been organised as suggested earlier, the folder containing all the data should be uploaded in the folder of the site/area it was conducted in. Rename the folder uploaded to the year the survey was conducted. The path for each image should therefore be: **PAWS/All/Country/Site/Year/Station/Image**

**Sync the dropbox folder locally on to the SLT remote desktop**

1. Log on to the server.
2. Click on the dropbox icon located on the right of your taskbar (the bar at the bottom of the screen). If it is not visible, open the tray by clicking the upward arrow.
3. On the panel that opens, click on the gear sign on the top right. This should generate a dropdown.
4. Click on preferences. This should open the ‘dropbox preferences’ window.
5. Click on the sync tab on the right
6. Click the button that says selective sync. This should open the ‘selective sync’ window, displaying the folder structure
7. Check the folders that you would like to sync. Click update, apply and close the window
8. Open file explorer
9. Open the dropbox folder by clicking on the icon located in the panel on the left.
10. Navigate to your folder and right click on it.
11. Under the smart sync option, click on ‘Local’

**Tag the images using digiKam**

1. Ensure the folders in which the pictures you want to tag are first **locally** synced on the server.
2. Open **digiKam**. The software has already been directed to read photos from the dropbox directory. digiKam will take a couple of minutes initially to process all the images. (If the images are synced as ‘online only’ then digiKam will force download all the images before processing and will therefore take much longer – please avoid this).
3. Click on the **‘Albums’** button located on the left tool bar and navigate to your desired folder containing images from a single station on the panel next to it.
4. All the pictures in the folder should now be displayed in the central panel
5. Click on the **‘Captions’** button located on the right-hand side tool bar and then click on the **‘Tags’** button located on top of the right-hand side panel. The tagging structure should now be visible.
6. For each image, check the appropriate tags on the right panel.
7. Please ensure that the established tagging structure is respected (deviations from this will cause errors in further analysis in the workflow). There are **four** master tags with sub tags in each:
   1. **People –** The people tag contains only the **Staff** tag inside it. All photos containing people should be tagged by checking the ‘people’ tag, while only those photos containing staff should be tagged as ‘staff’.
   2. **Species –** The species tag contains multiple species tags within it. The first letter of each word in the species name should be in uppercase, followed by lowercase letters. New species tags can be added within the species master tag if a tag is missing for an identified species. Pictures with an unidentifiable animal can be tagged as **Unidentified.** Ensure the ‘Species’ tag and the species’ name tag are both checked if the species is identified.
   3. **Individual –** The individual tag is for identifying Snow leopard individuals. Ideally individual codes should not be too long (more than four letters) and must be followed by a number. It is recommended that codes should be given to each profile indicating the location and individual number (example: USL11, where the site name is Upper Spiti Landscape (USL) and individual identification number is 11). If the snow leopard is unidentifiable, it can be tagged as **Unidentified.**
   4. **Flank –** The flank tag is also applicable only for Snow leopards. Tag the flank that is visible in the picture. If more than one flank is clearly visible in a photograph, tag all the applicable flanks used in identifying that individual profile.
8. To add a new tag, click on tag manager on the right panel and click on the ‘**+**’ sign next to the search bar. Please read the provided instructions in the dialogue box before creating tags. **Please refrain from deleting, renaming or moving existing tags**.
9. If the tagging is completed as recommended then there should be the following categories of images:
   1. **Empty** – These images are empty and do not have any tags checked.
   2. **People** – These images have people in them and have the ‘People’ tag checked
   3. **Staff** – These images have staff and have the ‘People’ tag and the ‘Staff’ sub-tag checked.
   4. **Species** – Apart from images containing Snow leopards, these images contain animals and should have **only two tags** - the ‘Species’ tag as well as the species name tag or the unidentified tag.
   5. **Snow Leopards** – These images have Snow leopards and should have at least 6 tags - the ‘Species’ tag, the ‘Snow Leopard’ sub-tag within Species, the ‘Individual’ tag, the individual name or unidentified sub-stag within Individuals, the ‘Flank’ tag and all the visible flanks tagged in the Flank sub-tags.

**Run the Shiny app**

If all the above criteria have been met, the app should run successfully or prompt you otherwise. The app script is located in **Desktop\PAWS\Scripts\PAWS\_DatabaseGen**. Open the script using R and click on the Run App button. This should deploy the app, after which the instructions are simply to be followed.

Once the app is run, it should generate:

1. A species capture history file within the same directory   
   named – “species.\*country\*.\*site\*.\*year\*.csv”
2. A separate folder containing only snow leopard images in the folder: PAWS/Snow Leopard Individuals/Country/Site/Year/Snow leopard
3. An individual capture history in the   
   directory – PAWS/Snow Leopard Individuals/Country/Site/Year/   
   named – “individuals.\*country\*.\*site\*.\*year\*.csv”
4. A downloadable report with basic species’ capture maps, time activity plots and a naïve SECR analysis. All the above are meant for checking data quality and possible errors. Please consult your programme coordinators before reporting these values outside SLT.

**Unsync the folder from the server**

Follow the first 6 steps under ‘Sync the dropbox folder locally on to the SLT remote desktop’ section. Check the folders that you would like to **unsync**. Click update, apply and close the window.