

# Automatic camera trap data organization, storage, and analysis

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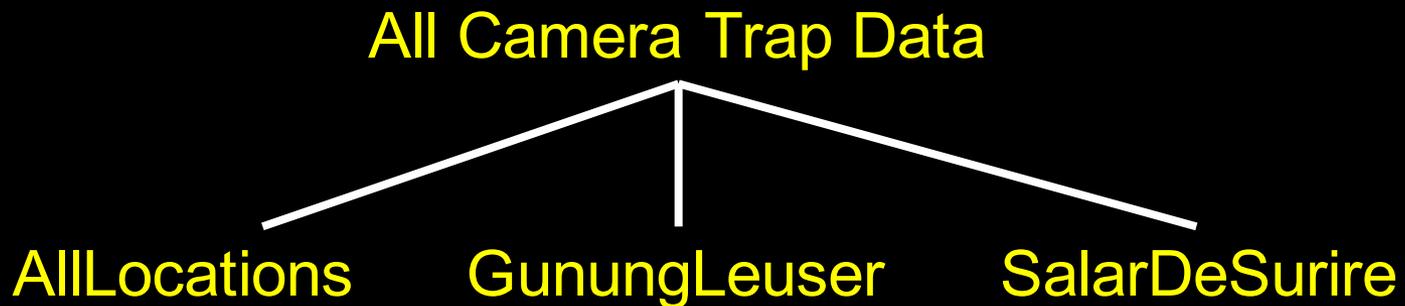
Small Wild Cat Conservation Foundation

How to relabel, organize, store, and analyze camera trap photographs without entering data by hand from a keyboard

# A few preliminary steps

Create a top level project folder of your choice. I will call this folder **All Camera Trap Data**

Folder **All Camera Trap Data** has **AllLocations** folder(s) and contain all the programs. Folder **AllLocations** can be any name but must be one word. There can be multiple **AllLocations** folders with different names if you have multiple areas with cameras.



Go to <http://www.smallcats.org/CTA-executables.html> and download all files to your folder **All Camera Trap Data**

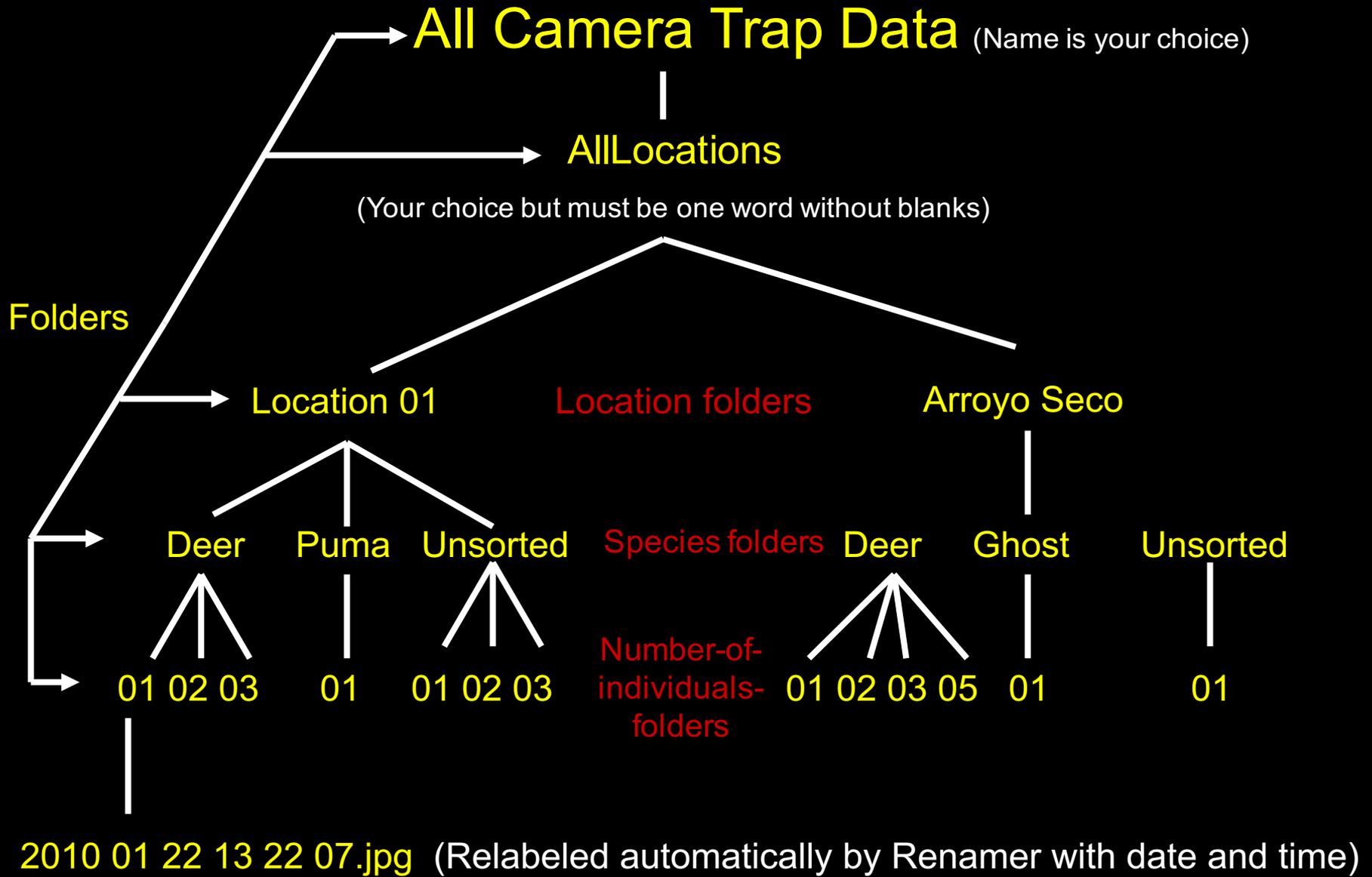
# CAMERA TRAP DATA STRUCTURE

The next three pages are about folder **AllLocations**.  
Briefly:

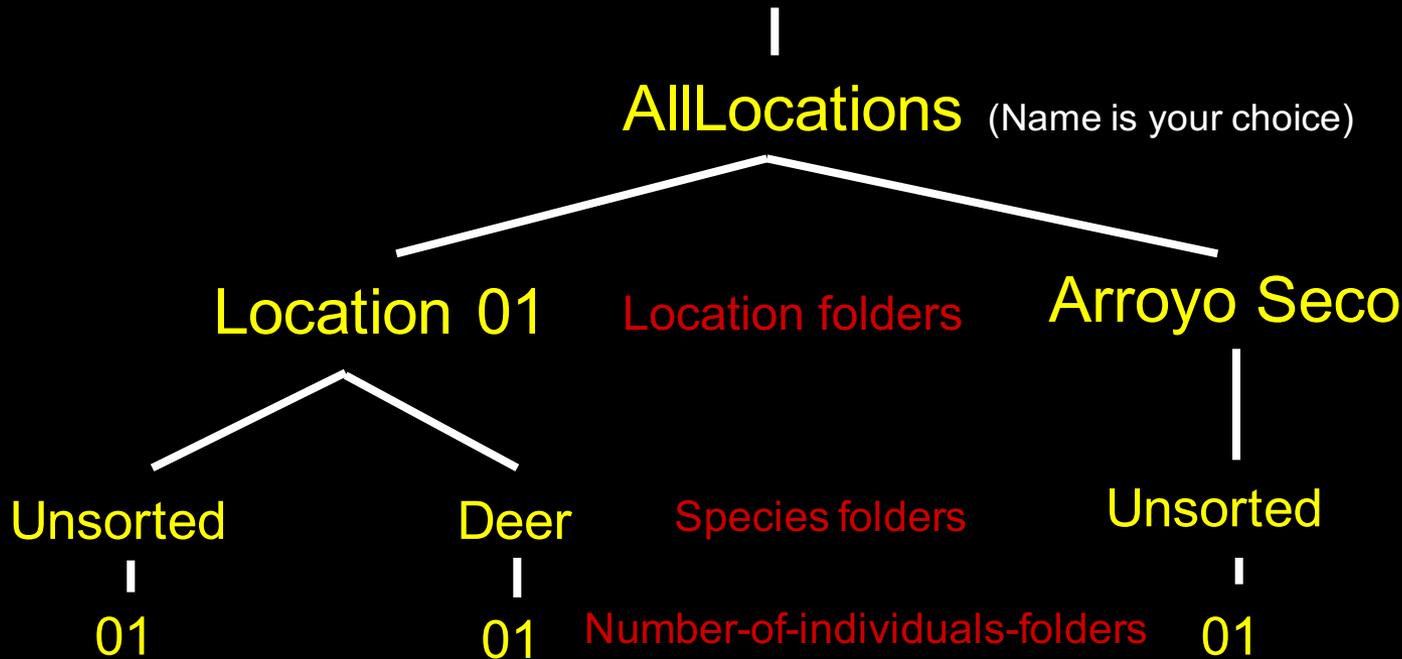
**AllLocations** contains all the camera trap pictures

New camera trap data is always downloaded into folders: **Location/Unsorted/01**, **Location/Unsorted/02**, etc.

The **Unsorted/01** folder contains all the unsorted pictures. Program Renamer is used to relabel all the pictures with their date and time and leave them in the **Unsorted/01** folder until they are sorted. Use **Unsorted/02** to hold more unsorted pictures.



# All Camera Trap Data (Name is your choice)



Visit a camera location, download the flash card to the **Location/Unsorted/#** folder; use program **Renamer** to relabel the jpg files with their date & time. If files are corrupted, copy program **SpecialRenamer** and **pg.dll** to folder **Unsorted** and run it to correct mislabeled jpg files. Then remove **SpecialRenamer** and **pg.dll**

# Using Renamer

- 1) Move Renamer folder to C:/ProgramFiles
- 2) Put a shortcut for **Renamer** on your Desktop
- 3) Open **ReNamer**
- 4) Examine three Preset rules

**One Preset rule correctly relabels the jpg files**

- 1) Load one jpg file and relabel it
- 2) Is the label the date & time picture was taken?

**If not, use another Preset rule**

# PROCEDURE

- 1) Visit camera trap at Arroyo Seco on 2011-05-01
- 2) Remove flash card
- 3) Move contents into temporary folder: **AllLocations/Arroyo Seco/Unsorted/01**
- 4) Run **Renamer** to relabel all jpg files in **Unsorted/01** simultaneously with date and time
- 5) Display extra-large icon, id species, count individuals
- 6) Drag-and-drop jpg file into permanent folder **AllLocations/Arroyo Seco/Species/#**

# QUESTIONS & ANSWERS

1) What if there is a picture of more than one species?

Copy and past jpg file into **species/# folders**;  
example: a picture of 1 Puma and 2 Mule deer  
goes into **Arroyo Seco/Puma/01** and **Arroyo  
Seco/Mule deer/02**

2) What if there are two pictures taken at the same  
location on the same date and time?

Right click properties, rename with date and time  
adding 5 seconds to duplicate file for instance:  
2011 05 12 04 20 05.jpg

# Step (1) Running DataOrganize

The bad news is that this is an iterative procedure because you have made data storage errors only you can fix. The good news is that once this step is complete the rest is easy.

If your data is properly organized and labeled **DataOrganize** creates two text files: **AllPictures.txt** and **InputTemp.txt**

If your data has an error **DataOrganize** produces **AllInfo.txt** and **AllFoldersFiles.txt** that are used to help you find your error.

Note that if there is an error, with 100% certainty your data is not properly organized. Perhaps a jpg file is not relabeled or has not been properly sorted.

# Step (1) Running DataOrganize

Double-click on **DataOrganize**, enter the folder name that is your analog of **AllLocations**, and watch the program run

When you see TERMINATING SUCCESSFULLY then the files **AllPictures.txt** and **InputTemp.txt** are created

If the above files are not created, open **AllInfo.txt**, go to the end of the file, and see the storage error, or incorrect form of a jpg file name. With 100% certainty if the above files were not created you have made a data storage error that you must correct. Correct the error and re-run **DataOrganize**.

# Editing InputTemp.txt

- 1) Open **InputTemp.txt** with WordPad or NotePad.
- 2) Edit the header adding the name of the site or study
- 3) Add the UTM and elevation in the 0000 0000 000 for each camera trap location
- 4) The start and stop dates are defaulted to the first and last pictures taken at the site. If these are known, change the dates. If multiple on-off times are known add them in list form. If there are 2 then:

2

2011 01 01 2011 01 31

2011 02 02 2011 02 28

# Editing InputTemp.txt continued

5) Edit the list of species to be used in the analysis.  
I use the following:

5 mammals

Armadillos

Black bear

Mule deer

Puma

Zebra

3 birds

Blackbird

Roadrunner

Redtailed hawk

Only the first list is used in the analysis. Here all mammals will be analyzed.

Save the edited version as **InputOld.txt** and **Input.txt**.

**Input.txt** will be used in the **DataAnalyze** program.

# Camera Trap Data Analysis

- 1) Make sure AllPictures.txt and Input.txt exist
- 2) Double-click on program **DataAnalyze**
- 3) Text file **Output.txt** is produced; open and inspect

**And there are more programs to help you**

Use program **UpdateInput** to automatically update new **Input.txt** files. **UpdateInput** merges UTM, elevation, new stop times, and species from **InputOld.txt** and **InputTemp.txt** produced by **DataOrganize** to create **InputNew.txt**

**SpecialRenamer** is a custom program that repairs the camera trap date and time when these have not be initialized or are corrupted. **SpecialRenamer** automatically adds 1 second to sequential jpg files to rename them. Enter the same date and time twice so the offset is zero.

**SpecialRenamer** and **pg.dll** are copied into an **Unsorted** folder and act on **01**, **02**, etc folders.

**OccupancyMatrix** creates occupancy matrices for program PRESENCE. **OccupancyMatrix** uses **AllPictures.txt** only. You enter the number of days in a camera trap occasion (the number of days during which a species is present (1) or absent (0)). This is any number.

Program **CreateInput** creates **InputTemp.txt** from **AllPictures.txt**. This is useful when the camera trap pictures are stored in Excel or a database. **AllPictures.txt** is generated from Excel or the database. Then **CreateInput** creates **InputTemp.txt** automatically. Edit **InputTemp.txt** and save as **Input.txt** for use in **DataAnalyze**.

## Help hints

- 1) **Input.txt** is edited to run an analysis. By omitting locations and/or species (and reducing the number of locations and/or species) these locations and/or species are omitted from the analysis. The start and stop dates can be edited to include only those pictures in the start-stop date window. All other pictures will be rejected.
- 2) The chances are that if you think of something special that you need, it is already done. There are many users world-wide.

Keep the cameras  
running!!