Multispecies Monitoring Report Creator

# Operating Instructions

## Prior to opening any R scripts

* Save entire “MMMM Report Development” folder to any location
* Data must be saved as a .csv file, in the format of the data template
* If there is text that you would like to add into the report, save it in a .txt file in any location, do not include any headers in the text file
* Any track logs that will be added to the maps and reports will need to all be saved in one folder and each track log should be named with the corresponding ‘Survey Name’ in the .csv data file. Any track logs whose file names do not have a matching row of data in the .csv file will not be included in the reports and maps. A list of such tracklogs will get created during the report creation.

## R Script

1. Open “00\_mmmm\_report\_development”
   1. If opened in a current session RStudio will confirm that you want to open the project, select “yes”
2. Run the full script
   1. The script with have a series of prompts that come up as the script runs, they should explain within themselves what to do with each one.
   2. Data will not be included in the report if it was flagged, but it will be in the data CSV that goes with the report.

## Outputs

* Output folder: depending on the region/forest(s)/ranger district(s) selected a folder will be saved to the location selected. The folder’s name will correspond to the region/forest(s)/ranger district(s) selected. If one ranger district is selected, the folder name will be that of the forest and ranger district. If multiple ranger districts from one forest are selected, the folder name will be that of the forest. If multiple forests are selected, the folder name will be that of the region of the forests. Depending on the total number of ranger districts selected the folder will contain three files, for a singular ranger district, or two files and one folder, for multiple ranger districts:
  + Data CSV – A CSV of the entire dataset for the selected forest(s)/ranger district(s). This will be named the same as the folder it is housed in.
  + Report PDF – Report PDF for the selected forest(s)/ranger district(s). This will be named the same as the folder it is housed in.
  + Map image **OR** Maps folder –
    - If a singular ranger district was selected: Map JPEG for the selected ranger district. This will be named the same as the folder it is housed in
    - If multiple ranger districts were selected: A folder containing a map JPEG for each ranger district. Each map will be named by forest and ranger district
* Flagged\_data – this is a CSV file of only the flagged data from when the data is cleaned by the script. If there is no flagged data this file is not created. This will be saved in the main folder.
* Temp files (located in data -> temp\_data):
  + Map images – A map JPEG is created for every ranger district in the dataset when the script is run. These are named by forest and ranger district.
  + Temp\_txt\_add\_on – This is a temporary file if the option to add an additional section onto the report is selected

# Current known warnings

* Format\_spatial\_data:
  + Attribute variables are assumed to be spatially constant throughout all geometries
* Create\_maps:
  + In RGEOSUnaryPredFunction(spgeom, byid, “rgeos\_invalid”): Self-intersection at or near point ####
  + In RGEOSUnaryPredFunction(spgeom, byid, “rgeos\_invalid”): Holes are nested at or near point ####

# Version Log

## 1.0 – Vanilla (2/9/22)

Only ran one camera worth of data, only read and cleaned data

### 1.1 – Beans (2/14/22)

Added on format the data for spatial use

### 1.2 – Extract (2/16/22)

Added in create maps and format report script with an .Rmd file for creating PDFs

### 1.3 – Pods (2/17/22)

Added prompts for opening/saving data, target species, adding text section to report

#### 1.3.1 – Madagascar (2/18/22)

Added labels to maps

Added saved csv file of the cleaned data

### 1.4 – Orchid (2/25/22)

Increased capability to full year of camera data, added labels to maps, switched to ggplot of maps

Added track plate data capability

## 2.0 – Yogurt (3/2/22)

* Implemented version log
* All Jody’s data is able to be processed through script
* Clean\_data:
  + minor bug repairs
  + Flagged csv only includes flagged data
* Format\_spatial\_data:
  + remove the nonUSFS land option, these points that off USFS land are instead handled by expanding the ranger district boundaries by 500m and then finding want ranger district the point falls in. This process is only done for points off USFS land and should not affect other points
* Create\_maps:
  + error handling for ranger districts with ‘holes’, this eliminates some warnings but not all
  + remove the nonUSFS options (handled in format\_spatial\_data)
  + set up and use survey units for labeling rather than each individual station
  + minor adjustments to how the labels are displayed on maps
* format\_report:
  + remove the nonUSFS options (handled in format\_spatial\_data)
  + add new params for target species list
  + add flag column to data table if there isn’t any flagged data
* Rmd file:
  + Simplified table formatting
  + Add target species footnote to flextables of results
* Known warnings on version:
  + Create\_maps:
    - In RGEOSUnaryPredFunction(spgeom, byid, “rgeos\_invalid”): Self-intersection at or near point ####
    - In RGEOSUnaryPredFunction(spgeom, byid, “rgeos\_invalid”): Holes are nested at or near point ####

### 2.1 – Granola (3/7/22)

Formatted report tables to only show if there is that type of survey in the district;

Formatted tables to stay within page margins even if target species list is long

### 2.2 – Greek (3/8/22)

Minor bug repairs;

Fix formatting problems with extra text for reports;

Minor formatting changes to final report;

Change map labels to be above each unit;

Add functionality for bait stations from Jessie’s data

## 3.0 Bread (3/11/22)

* Rmd file:
  + Changed the way that the results tables get made so that it is looped through for each type of survey
    - For some reason this actually slowed the render function down drastically for districts with A LOT of surveys (i.e. all years of the High Sierra Ranger District on the Sierra National Forest). Run time is still <15 minutes though.
  + Looped the effort table to also run through all survey types rather than having to updated it every time a survey type is added.
* Added compatibility for track log data (any new survey types now just have 2 lines in the clean\_data script that get updated)
* Track logs can now get processed and added to the maps
  + Survey lengths are calculated from the track logs rather than being provided from the data
* Other bug fixes:
  + Clean data script groups and assigns site\_ids regardless of coordinates in order to accommodate ‘linear’ surveys were samples will have different coordinates even though they are along the same survey.
  + Updated template to reflect survey type option changes and to include a note about linear surveys

### 3.1 Sourdough (3/18/22)

Implemented a project\_name column in the data template and for grouping the unit names;

Implemented a date range option when creating maps and reports

## 4.0 Coffee (3/24/22)

* Major updates:
  + Added compatibility to select multiple Ranger Districts or Forests; script will still output singular report in a folder named differently depending on the choices selected
  + Added a “Choose Region” prompt
  + Added/edited comments to better explain script and each step within it
* Rmd file:
  + Fixed a few typos/bugs
  + Still having trouble running on Brad’s computer for some reason, in process of fixing this
  + Changed format for creating survey result tables, set up functions to speed up rendering time a little
* Clean data:
  + Implemented a survey category to signify either point or linear
  + Set up the ability for samples along a track log to have different coordinates for each sample but still be considered part of the same site\_id
* Minor bug fixes
  + Fixed error with creating report if no track logs are added, likely to be more of these type errors for when certain areas or options are empty but fixed as many as were found

### 4.1 Cold Brew (3/29/22)

Change all references of “site name” or “site id” to “survey name” or “survey id”, respectively, in order to be more consistent with the linear and point type surveys

Changed map labels to label all units, not just those with target species detected

Changed maps to color linear surveys based on whether or not a target was detected on the survey

Changed the way surveys are assigned to Regions by pulling the region number from the ranger district map; this eliminated labeling forests in regions where they do not exist from linear surveys overlapping boundaries

Changed calculation of map bounding box so that tracklogs do not run off the edge of the basemap

Minor bug fixes

### 4.2 Americano (4/25/22)

Bug fixes after testing with Brad and Caleb

### 4.2 Espresso (4/24/22)

Added datum column to template

Reworked formatting of spatial data to incorporate different datums coming in. Currently only NAD27, NAD83 and WGS84 are available as options for data coming in.