Notes and Collaboration Ideas for Lisa Handford and Randy Swaty

Initiated May 16, 2024

## Overall:

Lisa and Randy have a record of collaboration, are in the same ‘academic family’ and share many interests including mycorrhizal-powered restoration, fire-ecology, climate change adaptation and empowering students.

As Fire-Freaking-Ecologist for THE Grand Canyon National Park (GCNP) Lisa has many opportunities/challenges/questions, including:

1. The GCNP has tons of fire monitoring data going back to 1993. This data, at the least, needs to be read into R, cleaned, and wrangled into a usable dataframe. Then it needs to be analyzed and visualized.
2. There are situations where disturbances may be so severe and/or frequent they are having unprecedented outcomes. For example, spruce-fir forests may rebound after one fire, but after two too close together they are transitioning to locusts mono-cultures. There is a need to learn from these observations and datasets, and to capture knowledge and hypotheses.
3. There are questions around mycorrhizal-powered restoration, changes in albedo and assisted migration. Can these be assessed in modeling software somehow?

Randy, as an ecologist for The Nature Conservancy’s LANDFIRE team is tasked with:

1. Assisting users with LANDFIRE Products
2. Collecting feedback
3. Ensuring plot datasets are submitted to LANDFIRE
4. Conducting LANDFIRE-based analyses

## Potential threads of collaboration

1. Wrangling, analyzing and leveraging plot data. Ideas include (some bad maybe):
   1. Find CDL member(s) to do some initial learning/wrangling for free, followed by paid analysis and visualization
   2. Using plot data to validate LANDFIRE datasets and models
2. Modeling. Use SyncroSim to better understand ecosystem dynamics, document knowledge and test management scenarios. Experiment with folding mycorrhiza into models.
   1. Refine historical models
   2. Build current models with new states as appropriate, modern disturbances
   3. Build future scenario models
3. Build and refine a web report for an area that better captures fire activity on the GCNP and perhaps Kaibab NF