Field Experiment protocol

1. Questions
   1. How does winter rainfall variation affect population dynamics of species with different degrees of dormancy?
   2. Effects of thatch?
2. Experimental design
   1. Susan’s Experiment
      1. Serpentine
         1. 30 watered
         2. 30 control for watering
         3. 10 shelters
         4. 10 controls for shelters
      2. Nonserpentine
         1. 10 watered
         2. 10 control
   2. My subset, all on serpentine
      1. 40 plots (10 shelter + 10 control, 10 water + 10 control) with plot sizes at about 0.5 x 0.5 meters, one half of this will be used for aboveground seed planting (.25x.25) and the other half for burial of seedbags
   3. Species that I’ve collected enough seeds (~20,000)
      1. Agoseris
      2. Lasthenia
      3. Plantago
      4. Mimulus guttatus
      5. Triphyseria
      6. Clarkia
      7. Lupinus bicolor
      8. Hemizonia
      9. Holocarpha
   4. Still exploring correlations to figure out which to choose
3. Set up
   1. Aboveground: Seed addition
      1. 500 seeds/plot \* 40 plots = 20,000 seeds/species
      2. Bury 5 seeds per cell of .25 x .25 stringed quadrat (can either leave or weed out to one per cell if necessary)
   2. Below ground: Seed bags
      1. Compare aboveground seed addition numbers/germination to belowground seed addition/germination
      2. For each species, bury a known quantity (100?) of seeds mixed with sand in nylon mesh bags to measure seed mortality/germination on
         1. Bury a bag every year OR
         2. If strong enough mesh would be cool to bury a “line” of bags and dig one up each year
      3. Mesh options
         1. http://www.amazon.com/Organza-Drawstring-Pouches-Assorted-Colors/dp/B002HIL50C
         2. Buy small mesh and seal with Impulse sealer
4. Sampling
   1. Census germination, survival, flowering, and seed output (for a subset) every two weeks(?) from original starting population
   2. Census seedbank for background species number
   3. Dig up one bag at the end of each growing season and determine how many seeds germinated/how many are still viable