**Pepperwood Tree Stump Project**

Summer 2013

Suggested Protocols - David Ackerly (7/28/13)

The goals of our tree stump project are 1) to cut and store slabs from as many as is feasible of the stumps left by PG&E along the powerline, before they start to decay; 2) to determine if oaks have a clear climate signal in tree ring width variation; 3) to test if evergreen and deciduous oaks exhibit different sensitivity to climate; and 4) to look for differences within species between individuals on south vs. north-facing slopes. Of these, the last one may be the most difficult to achieve, due to limitations of sample size, available sites, and the power of the analyses to detect within site variation. Hopefully, #2 and #3 will be successful!

Preliminary analyses will be conducted courtesy of Andreas Hamann's research lab (Univ. of Alberta), and they have offered to send 30 disks to Germany for processing and analysis (thank you Andreas!). They recommend 15 slabs each from 2 species, collected from a single site that is as topograhically as homogeneous as possible to detect a climate signal and possible species differences. They also offer the following advice on sampling and storage:

A few notes:

· Recording slope aspect and the direction of tree lean is important. Compression/tension wood does compromise the climate signal, so we have to sample perpendicular to the slope/lean.

· Sampling at knee-height is fine, as long as we are not sampling parts of the root.

· North is really only needed to orient the samples with respect to lean and slope, otherwise not important.

· Disks should be labeled with pencils (heavy duty from construction industry, or specialty forestry supply). Markers fade too quickly on wood.

· If you do your own long-term storage of disks, the poor man’s solutions are shoe racks for disks and a couple shallow bins of crystal kitty litter to keep the moisture down.

Based on the preliminary sampling (Michael, Kristin, David and Andreas, 6/28/13), I recommend we focus sampling on three species (blue, Oregon and coast live oak), with a few samples from two others for comparison (madrone and black oak). The initial shipment processed in Germany should be 15 live oak and 15 blue oak, sampled from one or more sites that are relatively similar in slope aspect. Here is my suggestion for sampling, indicating which ones should be included in the initial shipment of 30 that will go to Germany for processing (bold, in parentheses). Site numbers were located on the Preserve map on two copies (one with David, one with Michael). These numbers are general guidelines. It will of course depend on how many trees are really available in the field, and the confidence in species identification. A range of sizes is useful. For the trees in the initial set of 30, let's shoot for > 50 years old to be sure they have good time series for climate correlations.

**Pepperwood Tree Stump Project -** approximate sample sizes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Site | Coast Live Oak | Blue Oak | Oregon Oak | Black Oak | Madrone | Notes |
| 1 | 6-8 **(5)** | - | - | - | - |  |
| 2 | 6-8 **(5)** | - | - | - | 2-4 |  |
| 3 | 6-8 **(5)** | - | - | - | - |  |
| 4 | 6-8 |  |  |  |  | steeper slope than sites 1-3 |
| 5 | 2 |  |  | 1 |  | few reps, but valuable aspect contrast with site 4 |
| 6 | 2-4? |  | 1? more? | 2? |  | mixed site, hard to identify trees; get any trees that can be identified with confidence |
| 7 | 2-4 |  | up to 10 if available |  |  |  |
| 8 | 2-4? | 6-8  **(3-5)** |  |  |  | IDs a bit uncertain |
| 9 |  | 6-8  **(3-5)** |  |  |  |  |
| 10 |  | 6-8  **(3-5)** |  |  |  | We did not visit sites 10 and up. I think 10-12 should be good for blues |
| 11 |  | 6-8  **(3-5)** |  |  |  |  |
| 12 |  | 6-8 |  |  |  | Not sure of the species mix here |
| 13 |  |  | ??? |  |  | Hard to access, not sure what species will be here; maybe visit and check at some point. Another Oregon oak site would be great! |
| TOTAL | 32-46? | 30-40 | 10+ | 2-3 | 2-4 |  |

TBC3 2.2 Vegetation Transition

Tree Stump Samples from PG&E Right-of-Way

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Sample Collector(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site # \_\_\_\_\_\_\_\_\_ GPS UTM E:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Species: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Tag # TS\_\_\_\_\_\_\_\_\_\_\_\_\_ # of Stems: \_\_\_\_\_\_\_\_\_\_\_

Slope: \_\_\_\_\_\_\_\_\_\_\_\_\_ Aspect: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lean direction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes:

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Sample Collector(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site # \_\_\_\_\_\_\_\_\_ GPS UTM E:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Species: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Tag # TS\_\_\_\_\_\_\_\_\_\_\_\_\_ # of Stems: \_\_\_\_\_\_\_\_\_\_\_

Slope: \_\_\_\_\_\_\_\_\_\_\_\_\_ Aspect: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lean direction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes:

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Sample Collector(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site # \_\_\_\_\_\_\_\_\_ GPS UTM E:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Site Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Species: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Tag # TS\_\_\_\_\_\_\_\_\_\_\_\_\_ # of Stems: \_\_\_\_\_\_\_\_\_\_\_

Slope: \_\_\_\_\_\_\_\_\_\_\_\_\_ Aspect: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lean direction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes: