Metadata visualizations

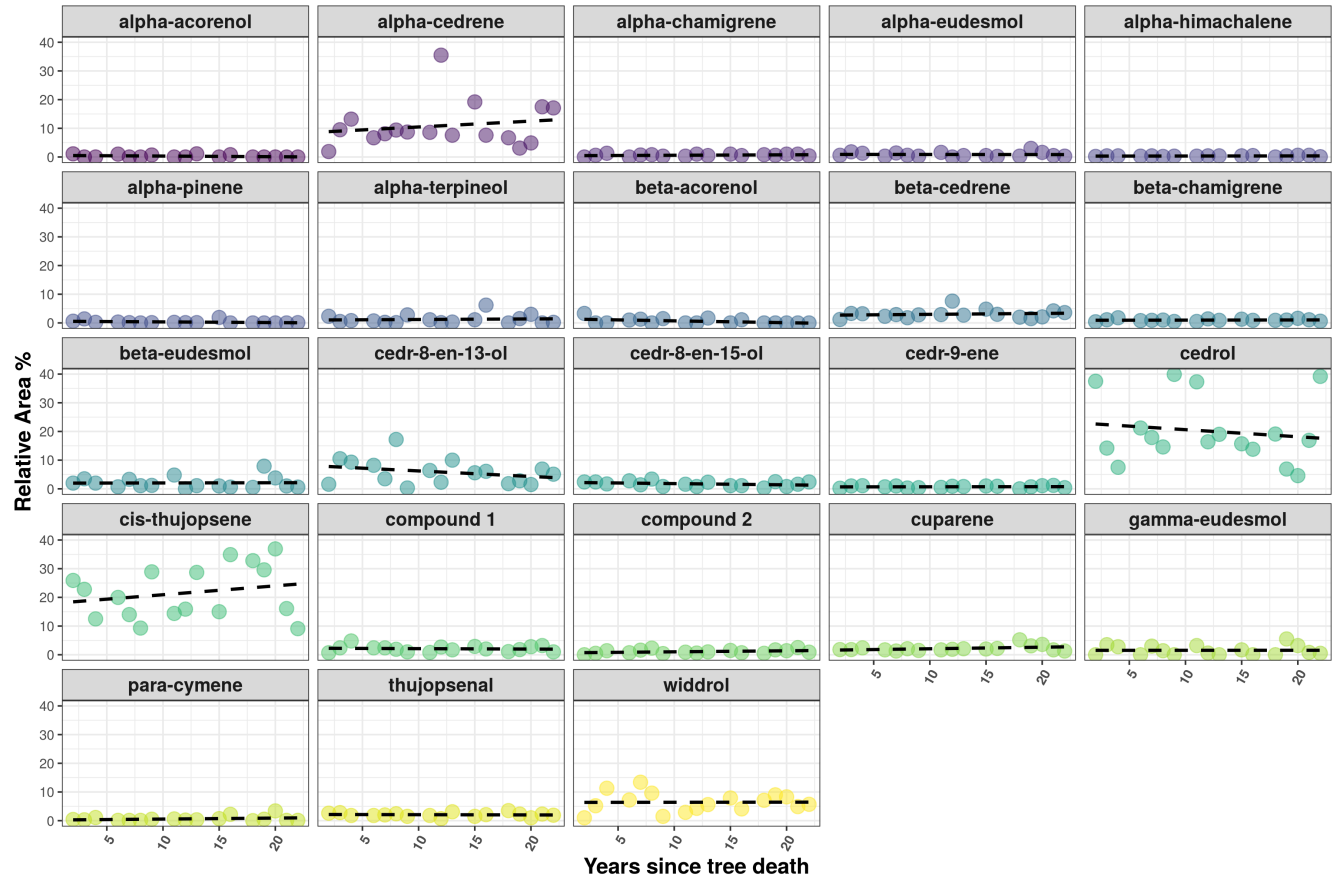## Geoff Zahn

2/27/2020

Quick glimpse of chemical and entomological data from the dead juniper logs.

Here are the variables we have to work with:

```
##  [1] "Sample_ID"               "Tree_Species"          "BurnYear"
##  [4] "Latitude"                "Longitude"             "Field_Office"
##  [7] "BLM_Fire_Name"           "Tracking_Number"       "alpha.pinene"
## [10] "para.cymene"             "alpha.terpineol"       "cedr.9.ene"
## [13] "alpha.cedrene"           "beta.cedrene"          "cis.thujopsene"
## [16] "alpha.himachalene"       "beta.chamigrene"       "cuparene"
## [19] "compound.1"              "alpha.chamigrene"      "widdrol"
## [22] "cedrol"                  "beta.acorenol"         "alpha.acorenol"
## [25] "gamma.eudesmol"          "beta.eudesmol"         "alpha.eudesmol"
## [28] "cedr.8.en.13.ol"         "cedr.8.en.15.ol"       "compound.2"
## [31] "thujopsenal"             "Yield_percent"         "Bolt_Surface_Area_cm2"
## [34] "Raw_Exit_Holes_per_cm2"  "Raw_Exit_Holes"        "Living_Larvae"
## [37] "ChemTotal"               "ChemMean"              "YearsSinceBurn"
```
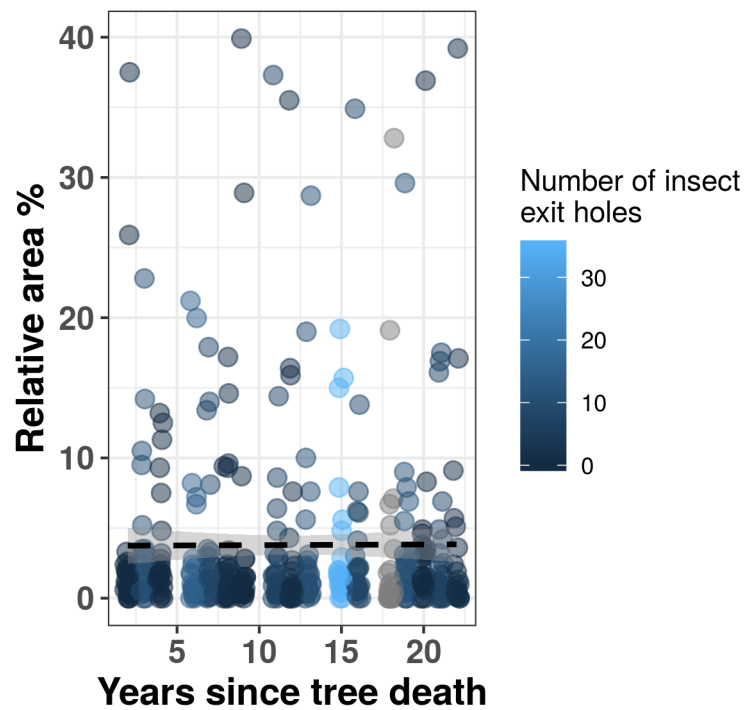
There were a total of 17 tree samples taken.

Here's a plot showing chemical compounds over time:
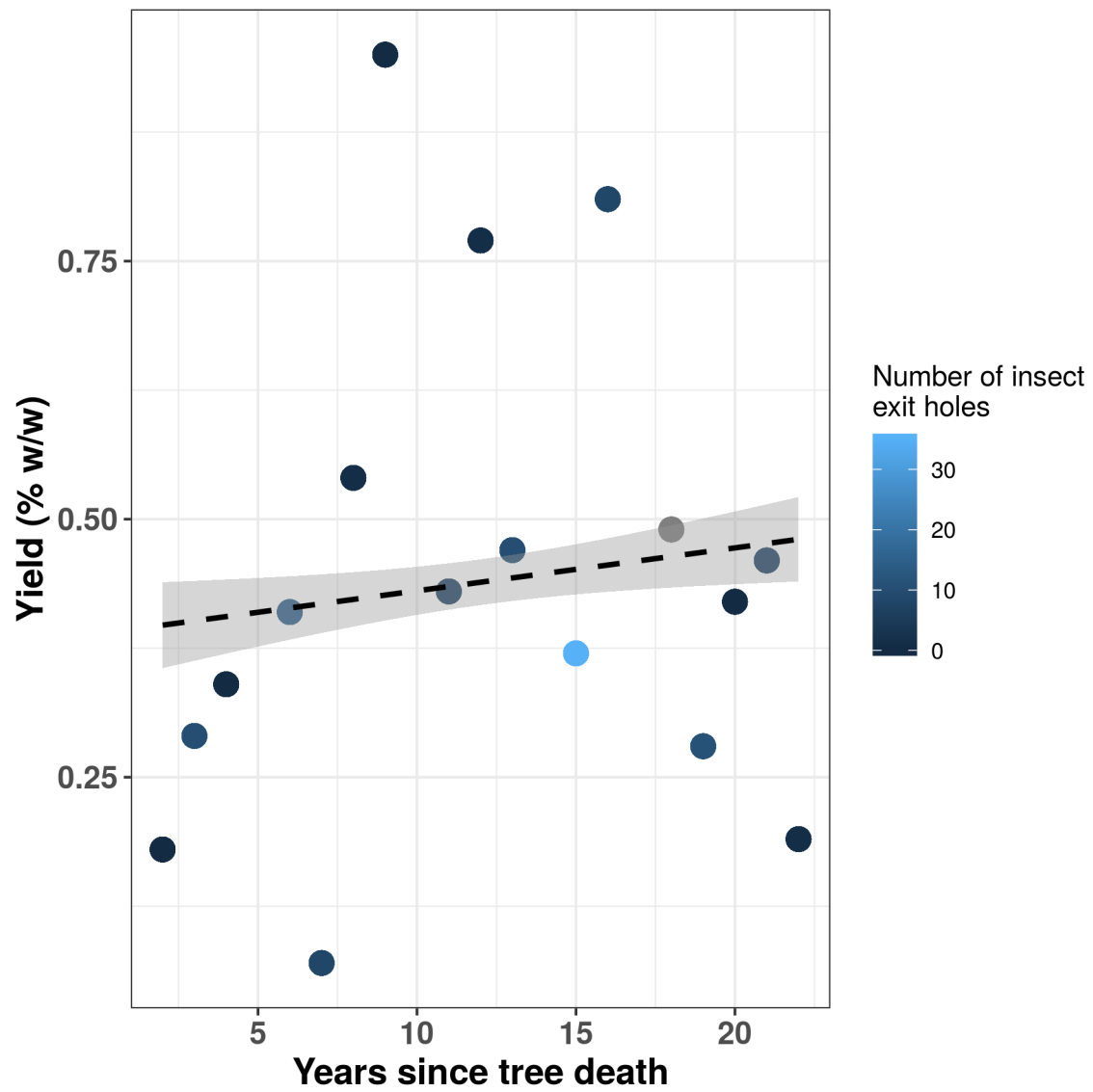
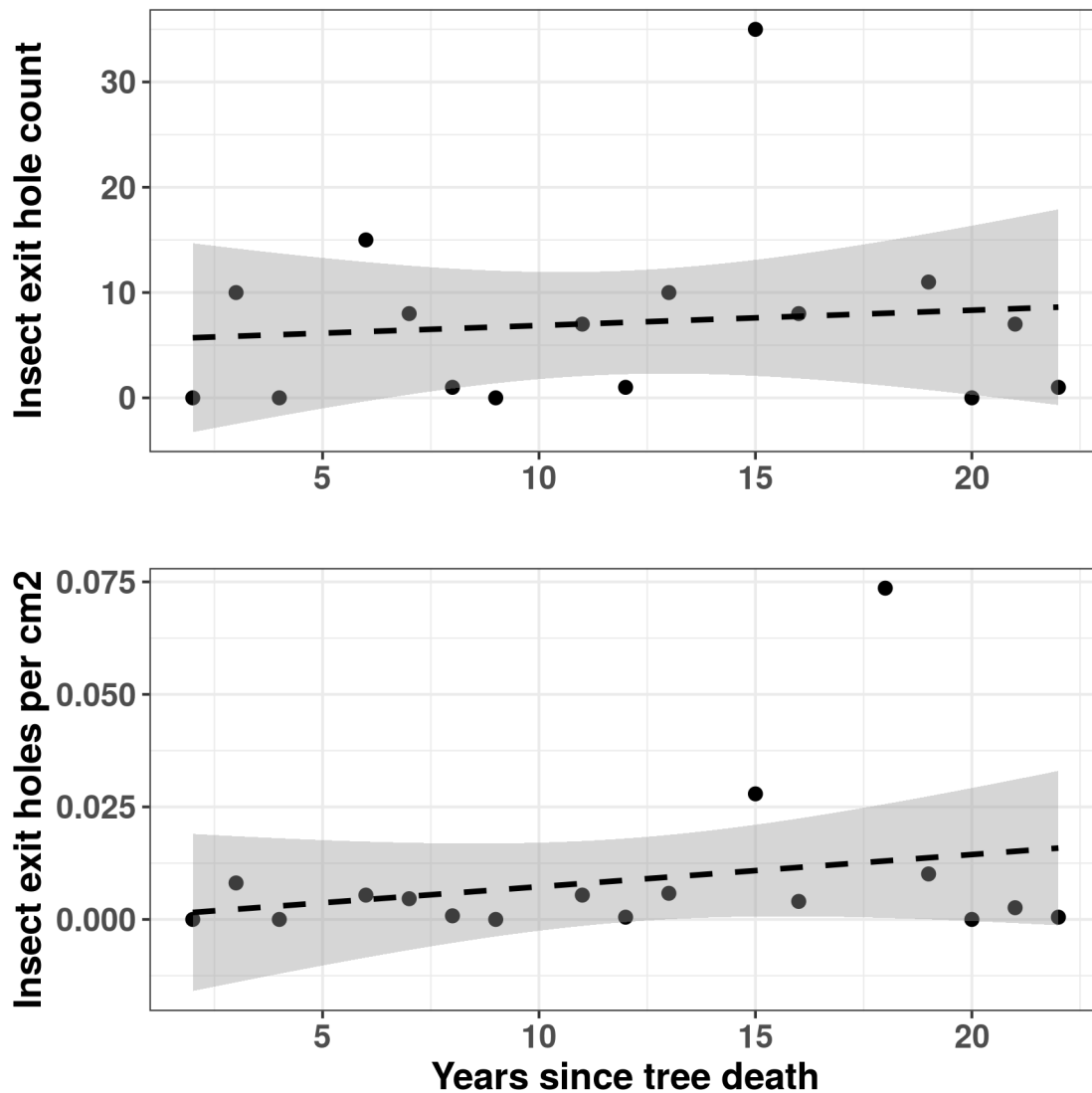Here's the same plot, but not split by compound, showing average VOC over time

tive area % shown for all chemical compounds

This shows percent yield (w/w) against time (years since area burned)

Here's the insect activity plotted against time since burn:

None of these observations are significantly affected by time.

Here's the stats table:

```
##  [1] ""
##  [2] "Call:"
##  [3] "glm(formula = Area ~ YearsSinceBurn * Compound, data = longmeta)"
##  [4] ""
##  [5] "Deviance Residuals: "
##  [6] "     Min        1Q     Median        3Q        Max  "
##  [7] "-15.5340   -0.6968   -0.1333    0.4338   24.6240  "
##  [8] ""
##  [9] "Coefficients:"
```

```
## [10] "                                       Estimate Std. Error t value Pr(>|t|)    "
## [11] "(Intercept)                            0.546972  1.994496   0.274  0.78406    "
## [12] "YearsSinceBurn                        -0.022323  0.145737  -0.153  0.87835    "
## [13] "Compoundalpha-cedrene                  7.881098  2.820643   2.794  0.00550 ** "
## [14] "Compoundalpha-chamigrene              -0.097195  2.820643  -0.034  0.97253    "
## [15] "Compoundalpha-eudesmol                 0.361341  2.820643   0.128  0.89814    "
## [16] "Compoundalpha-himachalene             -0.240541  2.820643  -0.085  0.93209    "
## [17] "Compoundalpha-pinene                   0.049025  2.820643   0.017  0.98614    "
## [18] "Compoundalpha-terpineol                0.445621  2.820643   0.158  0.87456    "
## [19] "Compoundbeta-acorenol                  0.829371  2.820643   0.294  0.76891    "
## [20] "Compoundbeta-cedrene                   2.118457  2.820643   0.751  0.45313    "
## [21] "Compoundbeta-chamigrene                0.366045  2.820643   0.130  0.89682    "
## [22] "Compoundbeta-eudesmol                  1.428395  2.820643   0.506  0.61289    "
## [23] "Compoundcedr-8-en-13-ol                7.619740  2.820643   2.701  0.00725 ** "
## [24] "Compoundcedr-8-en-15-ol                1.710281  2.820643   0.606  0.54469    "
## [25] "Compoundcedr-9-ene                     0.125488  2.820643   0.044  0.96454    "
## [26] "Compoundcedrol                        22.548238  2.820643   7.994 1.99e-14 ***"
## [27] "Compoundcis-thujopsene               17.277800  2.820643   6.125 2.46e-09 ***"
## [28] "Compoundcompound 1                     1.726651  2.820643   0.612  0.54084    "
## [29] "Compoundcompound 2                     0.115275  2.820643   0.041  0.96742    "
## [30] "Compoundcuparene                       0.987034  2.820643   0.350  0.72660    "
## [31] "Compoundgamma-eudesmol                 0.983322  2.820643   0.349  0.72759    "
## [32] "Compoundpara-cymene                   -0.330568  2.820643  -0.117  0.90677    "
## [33] "Compoundthujopsenal                    1.616918  2.820643   0.573  0.56685    "
## [34] "Compoundwiddrol                        5.815874  2.820643   2.062  0.03997 *  "
## [35] "YearsSinceBurn:Compoundalpha-cedrene   0.226317  0.206104   1.098  0.27294    "
## [36] "YearsSinceBurn:Compoundalpha-chamigrene 0.037633  0.206104   0.183  0.85523    "
## [37] "YearsSinceBurn:Compoundalpha-eudesmol  0.019210  0.206104   0.093  0.92580    "
## [38] "YearsSinceBurn:Compoundalpha-himachalene 0.025676  0.206104   0.125  0.90093    "
## [39] "YearsSinceBurn:Compoundalpha-pinene   -0.002104  0.206104  -0.010  0.99186    "
## [40] "YearsSinceBurn:Compoundalpha-terpineol 0.041866  0.206104   0.203  0.83915    "
## [41] "YearsSinceBurn:Compoundbeta-acorenol  -0.043200  0.206104  -0.210  0.83410    "
## [42] "YearsSinceBurn:Compoundbeta-cedrene    0.054302  0.206104   0.263  0.79235    "
## [43] "YearsSinceBurn:Compoundbeta-chamigrene 0.028045  0.206104   0.136  0.89184    "
## [44] "YearsSinceBurn:Compoundbeta-eudesmol   0.029696  0.206104   0.144  0.88552    "
## [45] "YearsSinceBurn:Compoundcedr-8-en-13-ol -0.170561  0.206104  -0.828  0.40850    "
## [46] "YearsSinceBurn:Compoundcedr-8-en-15-ol -0.021237  0.206104  -0.103  0.91799    "
## [47] "YearsSinceBurn:Compoundcedr-9-ene      0.026052  0.206104   0.126  0.89949    "
## [48] "YearsSinceBurn:Compoundcedrol         -0.224855  0.206104  -1.091  0.27604    "
## [49] "YearsSinceBurn:Compoundcis-thujopsene  0.331832  0.206104   1.610  0.10831    "
## [50] "YearsSinceBurn:Compoundcompound 1      0.007509  0.206104   0.036  0.97096    "
## [51] "YearsSinceBurn:Compoundcompound 2      0.057963  0.206104   0.281  0.77870    "
## [52] "YearsSinceBurn:Compoundcuparene        0.077284  0.206104   0.375  0.70791    "
## [53] "YearsSinceBurn:Compoundgamma-eudesmol  0.023221  0.206104   0.113  0.91036    "
## [54] "YearsSinceBurn:Compoundpara-cymene     0.056406  0.206104   0.274  0.78450    "
## [55] "YearsSinceBurn:Compoundthujopsenal     0.014138  0.206104   0.069  0.94535    "
## [56] "YearsSinceBurn:Compoundwiddrol         0.026360  0.206104   0.128  0.89831    "
## [57] "---"
## [58] "Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1"
## [59] ""
## [60] "(Dispersion parameter for gaussian family taken to be 14.60771)"
## [61] ""
## [62] "    Null deviance: 18325.8  on 390  degrees of freedom"
## [63] "Residual deviance: 5039.7  on 345  degrees of freedom"
```

```
## [64] "AIC: 2203.2"
## [65] ""
## [66] "Number of Fisher Scoring iterations: 2"
## [67] ""
```