# Important Variables and Correlations

leaf.pct.n leaf.pct.herb dbh.cm pct.urban nox.yr.2013 soil.no3.n soil.nh4.n

leaf.pct.n 1.00000 0.072780 0.1026402 -0.015126 0.01663 0.121587 0.079359

leaf.pct 0.07278 1.00000 -0.00146 0.238307 0.07993 0.10090 -0.066061

dbh.cm 0.10264 -0.001462 1.00000 0.230939 0.09267 -0.00804 0.059233

pct.urban -0.01511 0.238307 0.230939 1.000000 0.66300 -0.08524 -0.008298

nox.yr.2013 0.01663 0.079938 0.092679 0.663009 1.00000 -0.18935 -0.178795

soil.no3.n 0.12158 0.100907 -0.008044 -0.085248 -0.18935 1.00000 0.472040

soil.nh4.n 0.07935 -0.066061 0.059233 -0.008298 -0.17879 0.472040 1.000000

# Effects on Leaf N

* Log transformed all percent measurements – leaf.pct.n, pct.urban, leaf.pct.herb
* Did linear mixed effects model with site as random factor and nox.yr.2013, soil.no3.n, soil.nh4.n, pct.urban, dbh.cm, leaf.pct.herb as predictor variables
* Nothing significant (see lmer below)
* Attempted averaging by site and looking at relationships, and nothing significant
* Also split into urban/rural categories and still nothing significant

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom ['merModLmerTest']

Formula: leaf.pct.n ~ nox.yr.2013 + soil.no3.n + soil.nh4.n + pct.urban + dbh.cm + leaf.pct.herb + (1 | site)

Data: all.data

REML criterion at convergence: -2.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.6204 -0.4672 0.2279 0.6736 1.9753

Random effects:

Groups Name Variance Std.Dev.

site (Intercept) 0.002157 0.04644

Residual 0.021654 0.14715

Number of obs: 53, groups: site, 11

Fixed effects:

Estimate Std. Error df t value Pr(>|t|)

(Intercept) -4.204196 0.421654 13.070000 -9.971 1.77e-07 \*\*\*

nox.yr.2013 0.025209 0.030729 11.180000 0.820 0.429

soil.no3.n 0.003038 0.005765 43.060000 0.527 0.601

soil.nh4.n 0.005029 0.003862 45.800000 1.302 0.199

pct.urban -0.052831 0.066240 10.160000 -0.798 0.443

dbh.cm 0.001154 0.001653 33.420000 0.698 0.490

leaf.pct.herb 0.025034 0.015176 23.740000 1.650 0.112

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:

(Intr) n..201 sl.n3. sl.n4. pct.rb dbh.cm

nox.yr.2013 -0.958

soil.no3.n -0.113 -0.069

soil.nh4.n -0.267 0.322 -0.560

pct.urban 0.916 -0.932 0.062 -0.278

dbh.cm -0.655 0.535 -0.018 0.188 -0.514

lef.pct.hrb 0.080 0.085 -0.337 0.178 -0.103 0.037

# Effects on Leaf Herbivory

* Log transformed all percent measurements – leaf.pct.n, pct.urban, leaf.pct.herb
* Did linear mixed effects model with site as random factor and nox.yr.2013, soil.no3.n, soil.nh4.n, pct.urban, dbh.cm, leaf.pct.n as predictor variables
* soil.no3.n significant, but small slope
* soil.nh4.n marginally significant, but smaller slope
* leaf.pct.n not significant, but has the most influence on herbivory
* Also tried removing 5 most influential points using Cook’s distance, but it did not have an effect on the magnitude or direction of model coefficients, so I left them in

> summary(leaf.herb.i0)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom ['merModLmerTest']

Formula: leaf.pct.herb ~ nox.yr.2013 + soil.no3.n + soil.nh4.n + pct.urban + dbh.cm + leaf.pct.n + (1 | site)

Data: all.data

REML criterion at convergence: 187.7

Scaled residuals:

Min 1Q Median 3Q Max

-4.2025 -0.3915 0.1063 0.3295 2.3984

Random effects:

Groups Name Variance Std.Dev.

site (Intercept) 1.625 1.275

Residual 1.145 1.070

Number of obs: 53, groups: site, 11

Fixed effects:

Estimate Std. Error df t value Pr(>|t|)

(Intercept) 2.204246 7.253204 27.140000 0.304 0.76352

nox.yr.2013 -0.053748 0.443750 9.790000 -0.121 0.90604

soil.no3.n 0.148623 0.042856 40.760000 3.468 0.00125 \*\*

soil.nh4.n -0.054942 0.029934 41.000000 -1.835 0.07370 .

pct.urban 0.216469 0.981132 9.330000 0.221 0.83013

dbh.cm 0.007583 0.014419 44.630000 0.526 0.60159

leaf.pct.n 1.701369 1.120760 40.970000 1.518 0.13668

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:

(Intr) n..201 sl.n3. sl.n4. pct.rb dbh.cm

nox.yr.2013 -0.776

soil.no3.n -0.186 0.005

soil.nh4.n -0.237 0.200 -0.460

pct.urban 0.734 -0.912 -0.009 -0.170

dbh.cm -0.349 0.330 0.040 0.263 -0.308

leaf.pct.n 0.637 -0.032 -0.197 -0.116 0.027 -0.006