**Brazil adar mosquito ANOVAs for genetic variation and phenotypic plasticity**

Model for larvae development

Compared State and Locality level with all the data and then just the data within Amazonas state. The Locality level identifies (via difflsmeans) at which comparison (SJU-TPN) the State level identified as insignificant (Rio- Toc). I feel that the study design is most conducive to examining across states and within states, rather than across localities.

Larv\_mod=sLL~Temp\_let\*State+(1|Fam\_new) +(1|State:Temp\_let:Fam\_new)

anova(larv\_mod)

Analysis of Variance Table of type III with Satterthwaite

approximation for degrees of freedom

Sum Sq Mean Sq NumDF DenDF F.value Pr(>F)

Temp\_let 4699.3 2349.67 2 182.414 530.91 < 2.2e-16 \*\*\*

State 1332.8 444.26 3 84.321 100.38 < 2.2e-16 \*\*\*

Temp\_let:State 228.6 38.10 6 158.537 8.61 4.155e-08 \*\*\*

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

**Evidence of additive genetic variation, plasticity and genetic variance for plasticity of larvae development time by temperature and state.**

larv\_mod1<-lmer(sLL~Temp\_let\*Locality+(1|Fam\_new)+(1|Temp\_let:Locality:Fam\_new), data=adar\_adult)

anova(larv\_mod1)

Analysis of Variance Table of type III with Satterthwaite

approximation for degrees of freedom

Sum Sq Mean Sq NumDF DenDF F.value Pr(>F)

Temp\_let 4542.3 2271.13 2 175.609 513.47 < 2.2e-16 \*\*\*

Locality 1744.0 290.67 6 78.646 65.72 < 2.2e-16 \*\*\*

Temp\_let:Locality 305.5 25.46 12 146.561 5.76 4.335e-08 \*\*\*

**Evidence of additive genetic variation, plasticity and genetic variance for plasticity of larvae development time by temperature and locality.**

larv\_mod3<-lmer(sLL~Temp\_let\*Locality\*Sex+(1|Fam\_new)+(1|Temp\_let:Fam\_new), data=Amazonas\_all)

anova(larv\_mod3)

Analysis of Variance Table of type III with Satterthwaite

approximation for degrees of freedom

Sum Sq Mean Sq NumDF DenDF F.value Pr(>F)

Temp\_let 1965.42 982.71 2 45.03 322.03 < 2.2e-16 \*\*\*

Locality 29.30 29.30 1 23.09 9.60 0.005049 \*\*

Sex 19.23 19.23 1 935.70 6.30 0.012235 \*

Temp\_let:Locality 0.64 0.32 2 45.03 0.11 0.900213

Temp\_let:Sex 1.08 0.54 2 933.31 0.18 0.837380

Locality:Sex 2.00 2.00 1 935.70 0.66 0.417959

Temp\_let:Locality:Sex 25.32 12.66 2 933.31 4.15 0.016080 \*

**Evidence of additive genetic variation, plasticity and genetic variance for plasticity of larvae development time by temperature, sex and locality.**

larv\_mod4<-lmer(sLL~Temp\_let\*Locality+(1|Fam\_new)+(1|Temp\_let:Fam\_new), data=Amazonas\_all)

> anova(larv\_mod4)

Analysis of Variance Table of type III with Satterthwaite

approximation for degrees of freedom

Sum Sq Mean Sq NumDF DenDF F.value Pr(>F)

Temp\_let 2090.73 1045.36 2 44.346 338.70 < 2.2e-16 \*\*\*

Locality 31.23 31.23 1 23.027 10.12 0.004161 \*\*

Temp\_let:Locality 1.35 0.68 2 44.346 0.22 0.804161

**Evidence of additive genetic variation, plasticity but no genetic variance for plasticity of larvae development time by temperature and locality within Amazonas state.**