**Model #1 Effect of date and total density of the patch on Mac density with Mac log transformed**

**(this is a mixed model ANCOVA (?) with a random effect of tag)**

MODEL6\_NLME <- lme(log(Mac+1) ~ Date \* Total, data = NPC, random=~1|Tag)

> Anova(MODEL6\_NLME)

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Analysis of Deviance Table (Type II tests)

Response: log(Mac + 1)

Chisq Df Pr(>Chisq)

Date 32.5036 1 1.19e-08 \*\*\*

Total 10.4483 1 0.001228 \*\*

Date:Total 6.9424 1 0.008418 \*\*

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> summary(MODEL6\_NLME)

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Linear mixed-effects model fit by REML

Data: NPC

AIC BIC logLik

151.8848 166.3251 -69.9424

Random effects:

Formula: ~1 | Tag

(Intercept) Residual

StdDev: 0.8692745 0.2188856

Fixed effects: log(Mac + 1) ~ Date \* Total

Value Std.Error DF t-value p-value

(Intercept) 2.1258794 0.18402952 53 11.551839 0.0000

Date -0.0038491 0.00062851 53 -6.124250 0.0000

Total 0.0057710 0.00151891 53 3.799422 0.0004

Date:Total 0.0000272 0.00001032 53 2.634834 0.0110

Correlation:

(Intr) Date Total

Date -0.172

Total -0.476 0.228

Date:Total -0.133 -0.610 0.256

Standardized Within-Group Residuals:

Min Q1 Med Q3 Max

-2.56910589 -0.44870328 0.00905862 0.44497317 2.41761437

Number of Observations: 86

Number of Groups: 30

**Model #2 Effect of date and mac density on prop change in Mac density**

**(proportional change was calculated incorrectly in previous analyses!)**

> MODEL8\_NLME <- lme(PropMac ~ Date \* Mac, data = NPC,

+ random=~1|Tag)

> Anova(MODEL8\_NLME)

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Analysis of Deviance Table (Type II tests)

Response: PropMac

Chisq Df Pr(>Chisq)

Date 49.4406 1 2.045e-12 \*\*\*

Mac 0.1990 1 0.6555

Date:Mac 0.1333 1 0.7151

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summary(MODEL8\_NLME)

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Linear mixed-effects model fit by REML

Data: NPC

AIC BIC logLik

761.3804 775.8207 -374.6902

Random effects:

Formula: ~1 | Tag

(Intercept) Residual

StdDev: 0.001104088 17.42496

Fixed effects: PropMac ~ Date \* Mac

Value Std.Error DF t-value p-value

(Intercept) 1.9145058 2.8483557 53 0.672144 0.5044

Date -0.2286507 0.0369023 53 -6.196105 0.0000

Mac 0.0106548 0.0663645 53 0.160549 0.8731

Date:Mac 0.0003974 0.0010886 53 0.365063 0.7165

Correlation:

(Intr) Date Mac

Date -0.628

Mac -0.510 0.338

Date:Mac 0.261 -0.520 -0.567

Standardized Within-Group Residuals:

Min Q1 Med Q3 Max

-3.4262925 -0.1166233 -0.0983351 0.4433616 3.4203502

Number of Observations: 86

Number of Groups: 30

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**Model #3 Effect of date and total density in patches on prop change in Mac**

**(proportional change was calculated incorrectly in previous analyses!)**

MODEL9\_NLME <- lme(PropMac ~ Date \* Total, data = NPC,

+ random=~1|Tag)

> Anova(MODEL9\_NLME)

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Analysis of Deviance Table (Type II tests)

Response: PropMac

Chisq Df Pr(>Chisq)

Date 49.7793 1 1.721e-12 \*\*\*

Total 0.4011 1 0.5265

Date:Total 1.2737 1 0.2591

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> summary(MODEL9\_NLME)

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Linear mixed-effects model fit by REML

Data: NPC

AIC BIC logLik

761.9779 776.4182 -374.989

Random effects:

Formula: ~1 | Tag

(Intercept) Residual

StdDev: 0.001076732 17.28461

Fixed effects: PropMac ~ Date \* Total

Value Std.Error DF t-value p-value

(Intercept) 2.3665178 3.323588 53 0.712037 0.4796

Date -0.2573132 0.044951 53 -5.724246 0.0000

Total -0.0050358 0.040372 53 -0.124735 0.9012

Date:Total 0.0007622 0.000675 53 1.128580 0.2642

Correlation:

(Intr) Date Total

Date -0.621

Total -0.682 0.456

Date:Total 0.367 -0.718 -0.571

Standardized Within-Group Residuals:

Min Q1 Med Q3 Max

-3.41832346 -0.11957085 -0.07653346 0.43028104 3.48190957

Number of Observations: 86

Number of Groups: 30

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