Supplementary Materials: Buffer-Mediated Effects of Clearcutting on In-Pool Amphibian Productivity:
Can Aquatic Processes Compensate for Terrestrial Habitat Disturbance?

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**Table S1.** Variance-covariance structure a of regression models.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **# Eggmasses b** | **# Metamorphs** | **SVL/SUL (mm) g** |
| ***Pre-cut Eggmass*** | ***Female Eggmass*** | ***Metamorph-Presence* d** | ***Metamorph-Count* e** |
| *Ambystoma maculatum* | varPower (fitted|year) | varExp (fitted|trt) c | NA | varExp (Cut.year f|trt); corAR1 () | varPower (#metamorphs); corARMA (*p* = 2) |
| *Lithobates sylvaticus* | varIdent (1|pool) | varIdent (1|pool) | varPower (# females|pool) | varExp (HydC h) |

a See Pinheiro and Bates (2000; p. 206–214) for descriptions of the possible variance-covariance structures. If no structure is listed, that component of the variance-covariance structure was not needed; b We developed two regression models to describe eggmass abundance for each species. The Pre-cut Eggmass model included eggmass data from 2003, the year preceding the clearcuts, but did not include breeding-female abundance as a predictor. The Female Eggmass model included breeding-female abundance as a predictor, but not the eggmass data from 2003; c Trt = buffer treatment, a categorical variable with three levels: reference, 30 m buffer, 100 m buffer; d For salamanders only; Metamorph-Presence = metamorph presence/absence model; e For salamanders only; Metamorph-Count = continuous model describing # of metamorphs produced, where production was greater than zero; f Cut.year = dummy variable representing the difference between the reference treatment and the two cut treatments, over the six study years; g SVL = snout-vent length; SUL = snout-urostyle length; h HydC = current-year hydroperiod.

**Table S2.** Generalized linear mixed regression results showing the relative impact of forestry treatment, hydroperiod, and study year on eggmass and metamorph abundance and metamorph length of spotted salamanders and wood frogs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Predictor d** | ***F* Value(df) o** | ***t* Value(df)** | **Coefficient ± SE** | **95% CI** |
| Spotted Salamander |
| *Eggmass Abundance* |
| Pre-cut Eggmass a | treatment (100 m) e × mean.hydro f | 3.06(2,68) • | 2.47(68) \* | 0.021 ± 0.009 | 0.0040, 0.0382 |
| cut.year g | 5.90(1,68) \* | −2.43(68) \* | −0.095 ± 0.039 | −0.1729, −0.0169 |
| sd.hydro h | 3.30(1,68) • | −1.82(68) • | −0.032 ± 0.017 | −0.0663, 0.0031 |
| intercept | 13.00(1,68) \*\* | 3.61(68) \*\* | 3.794 ± 1.052 | 1.6941, 5.8937 |
| Female Eggmass | treatment (100 m) × mean.hydro | 3.94(2,55)\* | 2.80(55) \* | 0.022 ± 0.008 | 0.0062, 0.0371 |
| treatment (100 m) | 2.88(2,55) • | −2.29(55) \* | −2.537 ± 1.109 | −4.7588, −0.3145 |
| # breeding females i | 3.56(1,55) • | 1.89(55) • | 0.005 ± 0.002 | −0.0003, 0.0094 |
| sd.hydro | 4.77(1,55) \* | −2.18(55) \* | −0.036 ± 0.016 | −0.0683, −0.0029 |
| intercept | 19.20(1,55) \*\*\* | 4.38(55) \*\* | 4.113 ± 0.939 | 2.2322, 5.9944 |
| *Metamorph Abundance* |
| Metamorph-Presence b | cut.year | 3.38(1,49) • | 1.84(49) • | 1.176 ± 0.639 | −0.1091, 2.4611 |
| hydC j | 15.60(1,49) \*\* | 3.95(49) \*\* | 0.072 ± 0.018 | 0.0352, 0.1081 |
| intercept | 11.47(1,49) \* | −3.39(49) \* | −11.202 ± 3.307 | −17.8480, −4.5567 |
| Metamorph-Count | treatment (30 m) k × hydC | 15.99(2,31) \*\*\* | −2.10(31) \* | −0.014 ± 0.007 | −0.0280, −0.0004 |
| treatment (30 m) | 17.41(2,31) \*\*\* | 1.81(31) • | 2.404 ± 1.326 | −0.3007, 5.1091 |
| 30 m.year l | 3.87(1,31) • | −1.97(31) • | −0.161 ± 0.082 | −0.3274, 0.0059 |
| hydC | 8.38(1,31) \* | 2.90(31) \* | 0.019 ± 0.006 | 0.0055, 0.0317 |
| # eggmasses m | 12.19(1,31) \* | 3.49(31) \* | 0.013 ± 0.004 | 0.0053, 0.0202 |
| *Metamorph SVL* c |
|  | treatment (cut) n × hydC | 2.78(2,2374) • | 2.31(2374) \* | 0.048 ± 0.021 | 0.0073, 0.0894 |
| cut.year | 4.85(1,2374) \* | 2.20(2374) \* | 0.241 ± 0.110 | 0.0264, 0.4564 |
| # metamorphs | 34.54(1,2374) \*\*\* | −5.88(2374) \*\*\* | −0.010 ± 0.002 | −0.0133, −0.0066 |
| intercept | 18.37(1, 2374) \*\*\* | 4.29(2374) \*\*\* | 21.760 ± 5.078 | 19.7594, 27.2247 |
| Wood Frog |
| *Eggmass Abundance* |
| Pre-cut eggmass | intercept | 9.86(1,70) \* | 3.14(70) \* | 2.875 ± 0.916 | 1.0486, 4.7016 |
| Female eggmass | # breeding females | 148.02(1,57) \*\*\* | 12.17(57) \*\*\* | 0.019 ± 0.002 | 0.0162, 0.0226 |
| sd.hydro | 6.66(1,57) \* | −2.58(57) \* | −0.020 ± 0.008 | −0.0358, −0.0045 |
| intercept | 69.66(1,57) \*\*\* | 8.35(57) \*\*\* | 3.081 ± 0.369 | 2.3417, 3.8201 |
| *Metamorph Abundance* |
|  | 30 m.year | 15.08(1,57) \*\* | 3.88(57) \*\* | 0.387 ± 0.100 | 0.1872, 0.5858 |
| hydC | 122.59(1,57) \*\*\* | 11.07(57) \*\*\* | 0.031 ± 0.003 | 0.0254, 0.0366 |
| *Metamorph SUL* y |
|  | treatment (100 m) × hydC | 160.66(2,14701) \*\*\* | −4.97(14701) \*\*\* | −0.010 ± 0.002 | −0.0145, −0.0063 |
| treatment (30 m) × hydC |  | −15.08(14701) \*\*\* | −0.031 ± 0.002 | −0.0347, −0.0267 |
| treatment (30 m) | 11.76(2,14701) \*\*\* | 4.47(14701) \*\*\* | 4.490 ± 1.005 | 2.5198, 6.4611 |
| cut.year | 91.57(1,14701) \*\*\* | 9.57(14701) \*\*\* | 0.365 ± 0.038 | 0.2904, 0.4401 |
| 30 m.year | 49.56(1,14701) \*\*\* | −7.04(14701) \*\*\* | −0.176 ± 0.025 | −0.2254, −0.1272 |
| hydC | 14.82(1,14701) \*\* | 3.85(14701) \*\* | 0.007 ± 0.002 | 0.0034, 0.0105 |
| # metamorphs | 8.27(1,14701) \* | −2.88(14701) \* | −7 × 10−5 ± 2.6 × 10−5 | −0.0001, −2.4 × 10−5 |
| intercept | 11.06(1,14701) \*\* | 3.33(14701) \*\* | 17.806 ± 5.354 | 7.3128, 28.3000 |

a We developed two models to describe eggmass abundance for each species. The Pre-cut Eggmass model included eggmass data from 2003, the year preceding the cuts, but did not include breeding-female abundance as a predictor. The Female Eggmass model included breeding-female abundance as a predictor, but not the eggmass data from 2003; b Because the salamander metamorph abundance data were zero-inflated, we developed two models for this data. The Metamorph-Presence model described whether any metamorphs were produced at a given pool in a given year. The Metamorph-Count model described metamorph abundance at pools that produced metamorphs; c SVL = snout-vent length; SUL = snout-urostyle length; d See text for a description of the predictors used in each model. Only significant fixed-effect results are shown; e Categorical variable, coded 0 = reference treatment and 1 = 100 m treatment; f Mean pool hydroperiod in days; g Dummy variable representing the difference between the reference treatment and the two cut treatments, over the six study years; h Standard deviation of pool hydroperiod in days; i Breeding-female abundance; j Current-year hydroperiod in days; k Categorical variable, coded 0 = reference treatment and 1 = 30 m treatment; l Dummy variable representing the marginal impact of the 30 m treatment over the six study years; m # of eggmasses produced during the current year; n Categorical variable, coded 0 = 30 m treatment and 1 = 100 m treatment; ° We used F tests to assess overall significance of each variable. We provide results just once for each categorical variable; p We used *t* tests to compare between individual levels of categorical predictors; \*\*\* *p* < 0.0001; \*\* *p* < 0.001; \* *p* < 0.05; • 0.05 ≤ *p* <0.1.