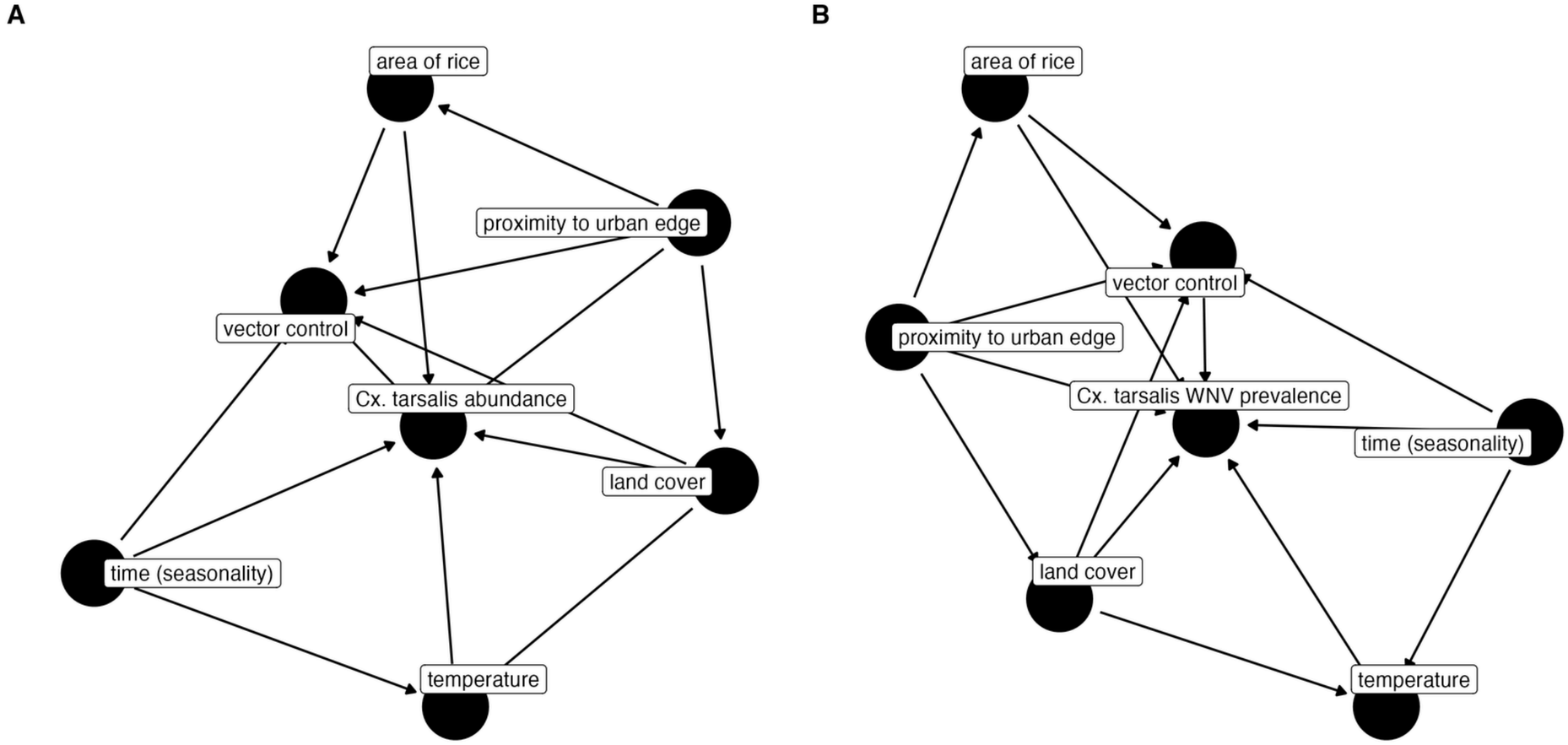
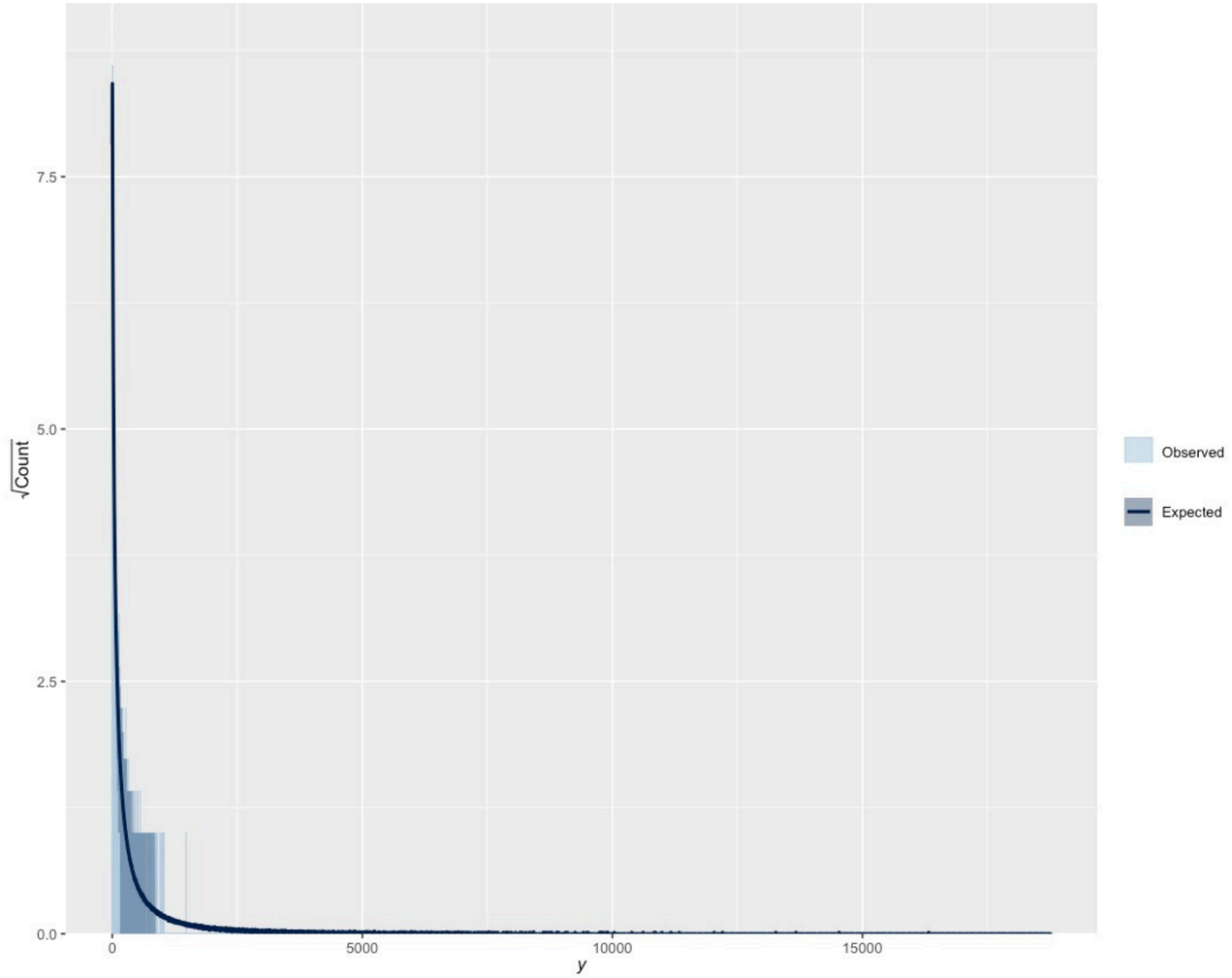
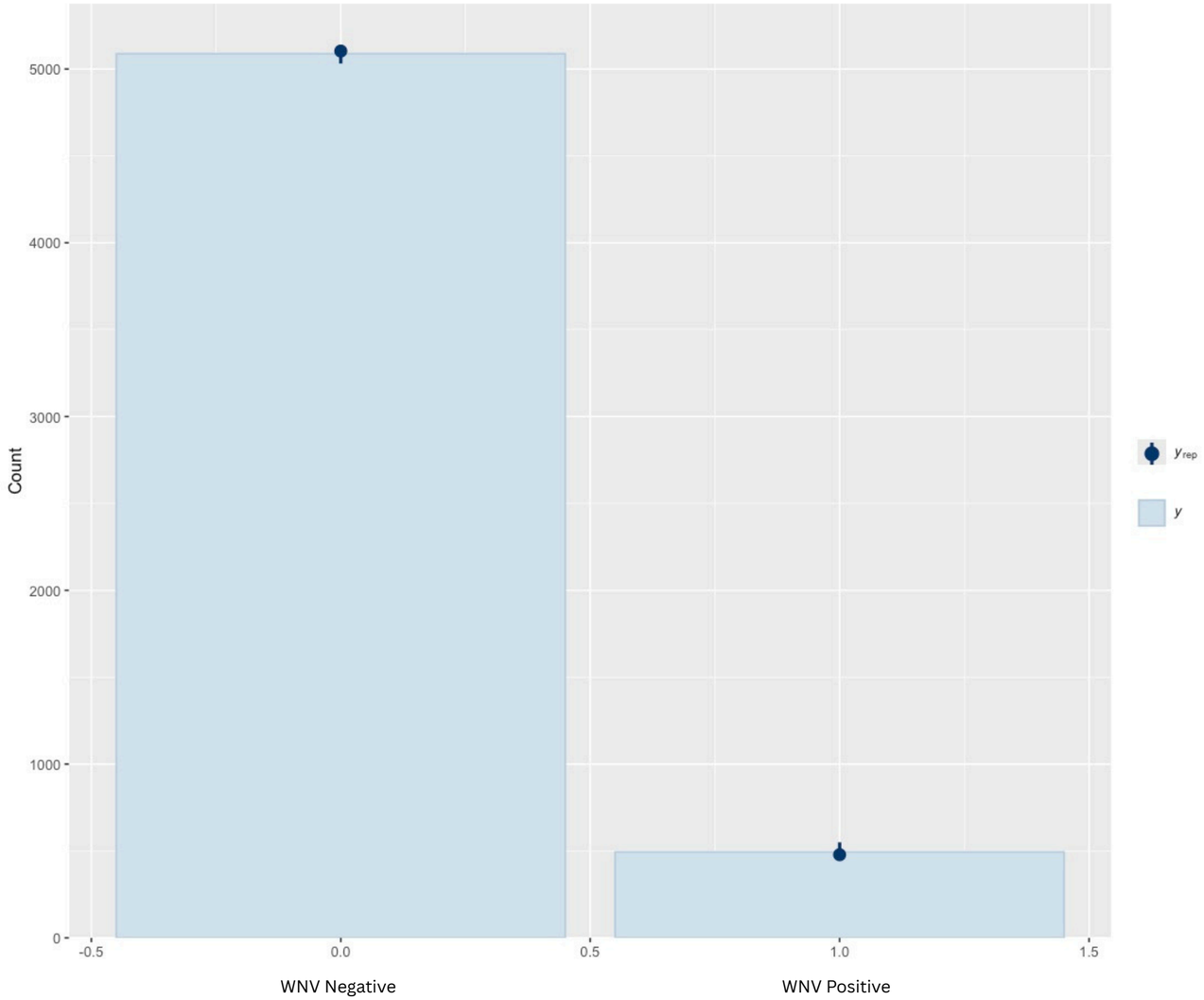
Additional file 2. Directed acyclic graphs for A) *Cx. tarsalis* abundance and B) *Cx. tarsalis* WNV prevalence



Additional file 3. Abundance model posterior predictive check - Rootogram

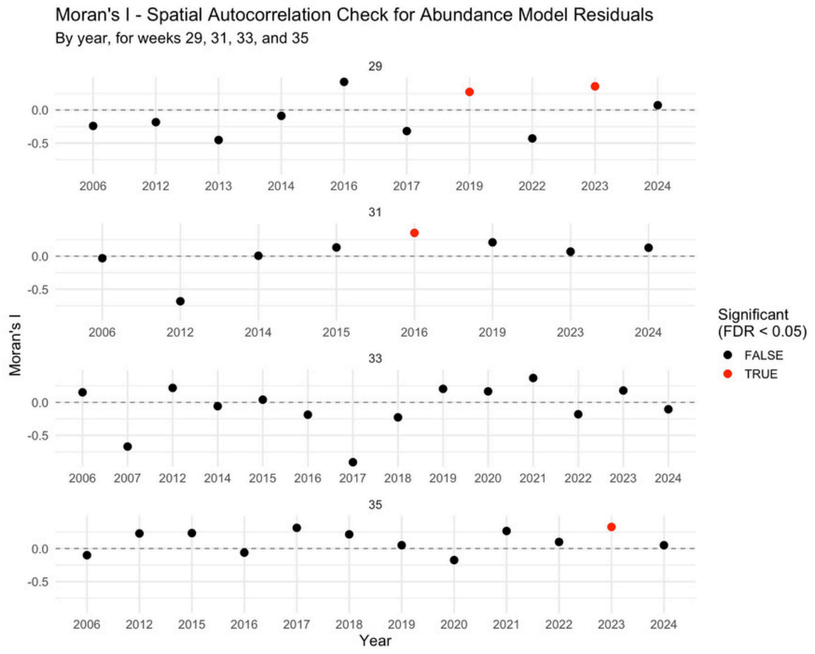


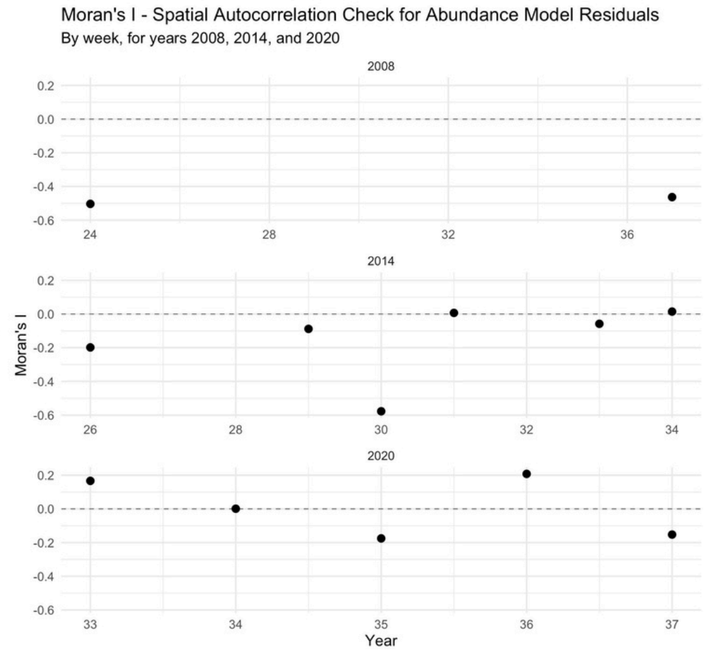
Additional File 4. Prevalence model posterior predictive check

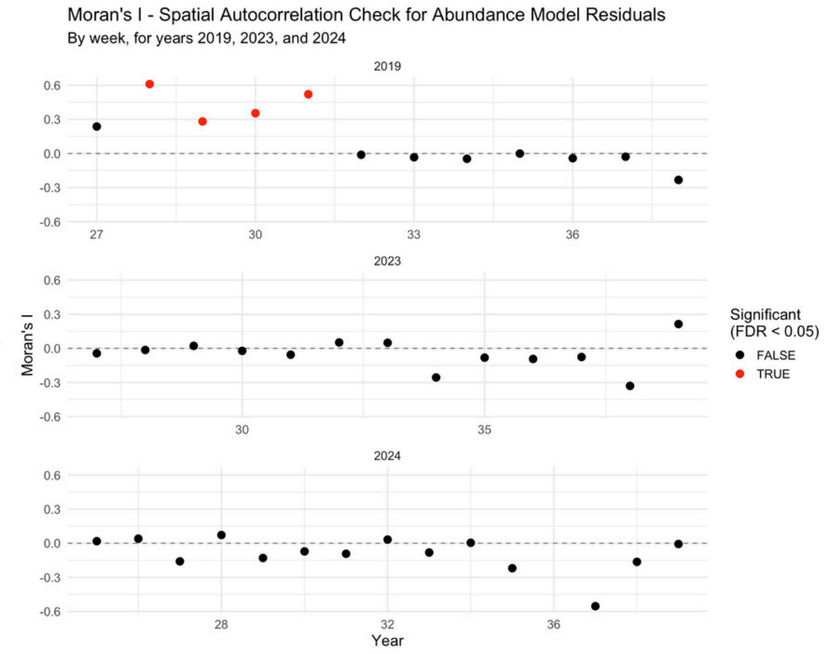


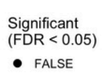
yrep = predicted count
y = observed count

Additional File 5. Spatial Residual Autocorrelation Checks
Abundance, stratified by year and week

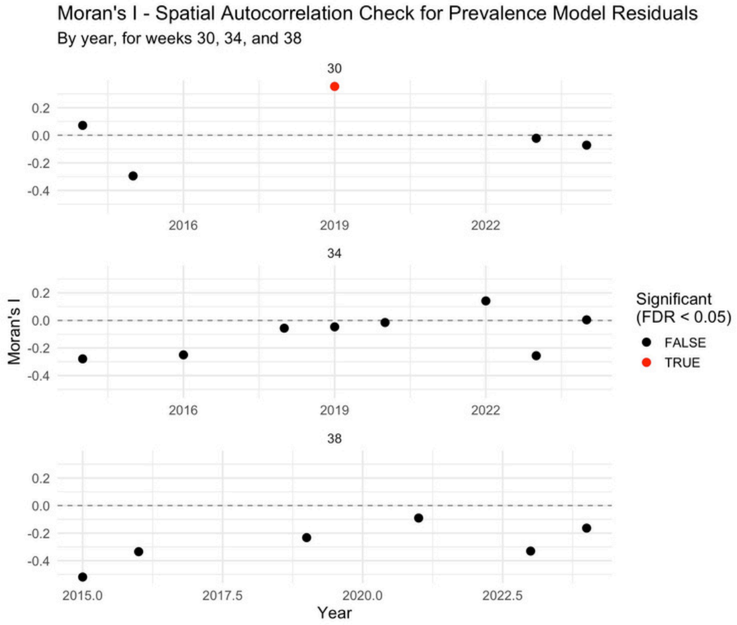


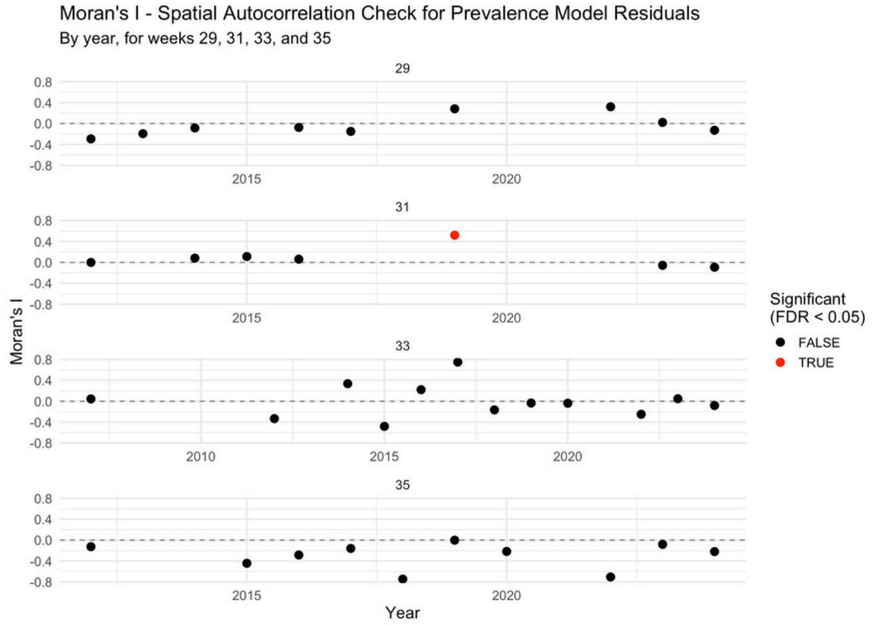


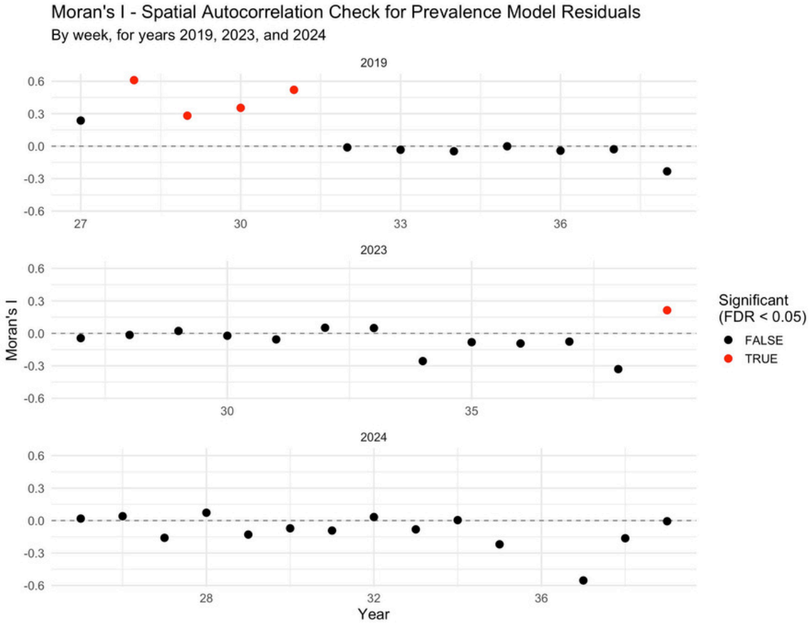




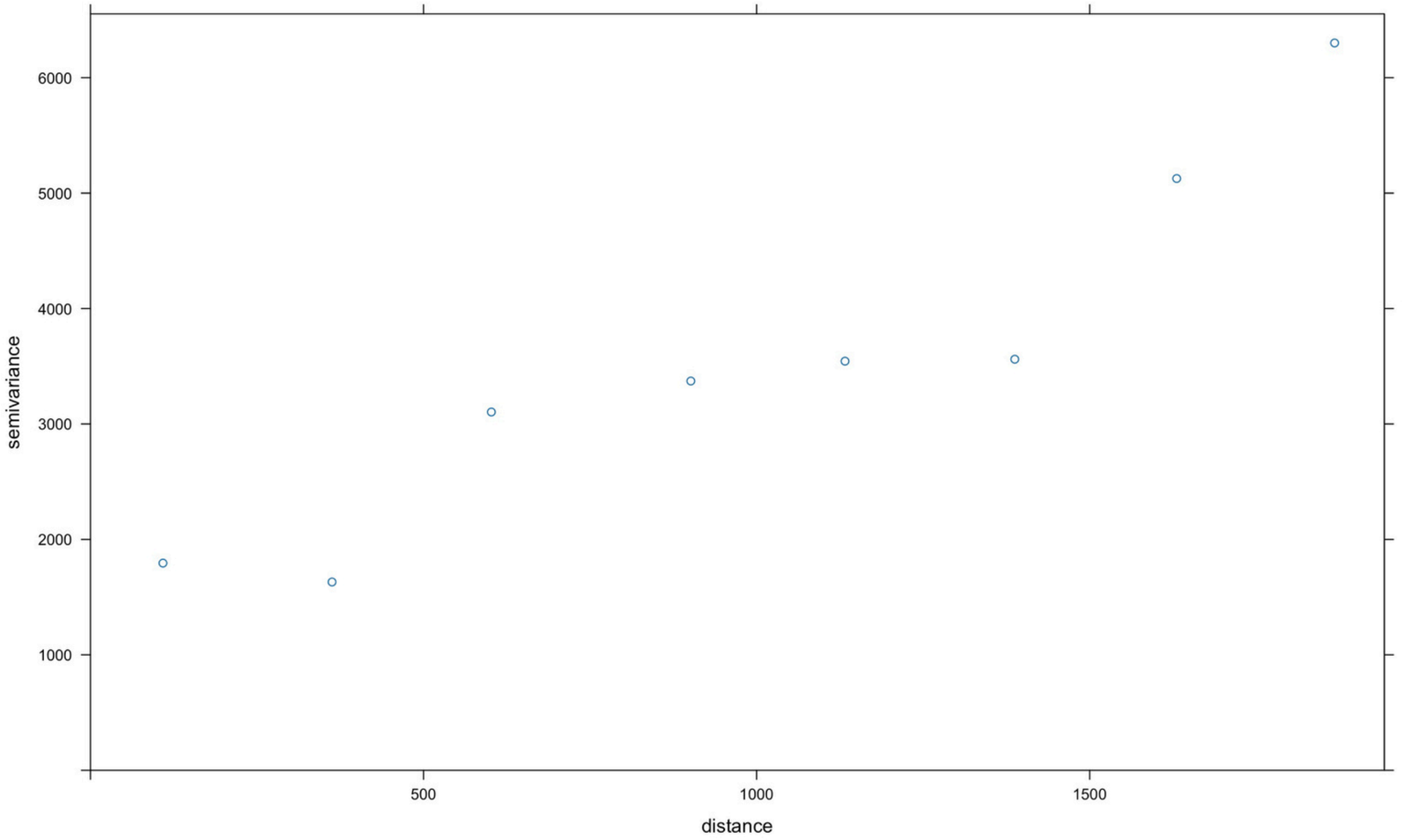
Additional File 6. Spatial Residual Autocorrelation Checks
Prevalence, stratified by year and week





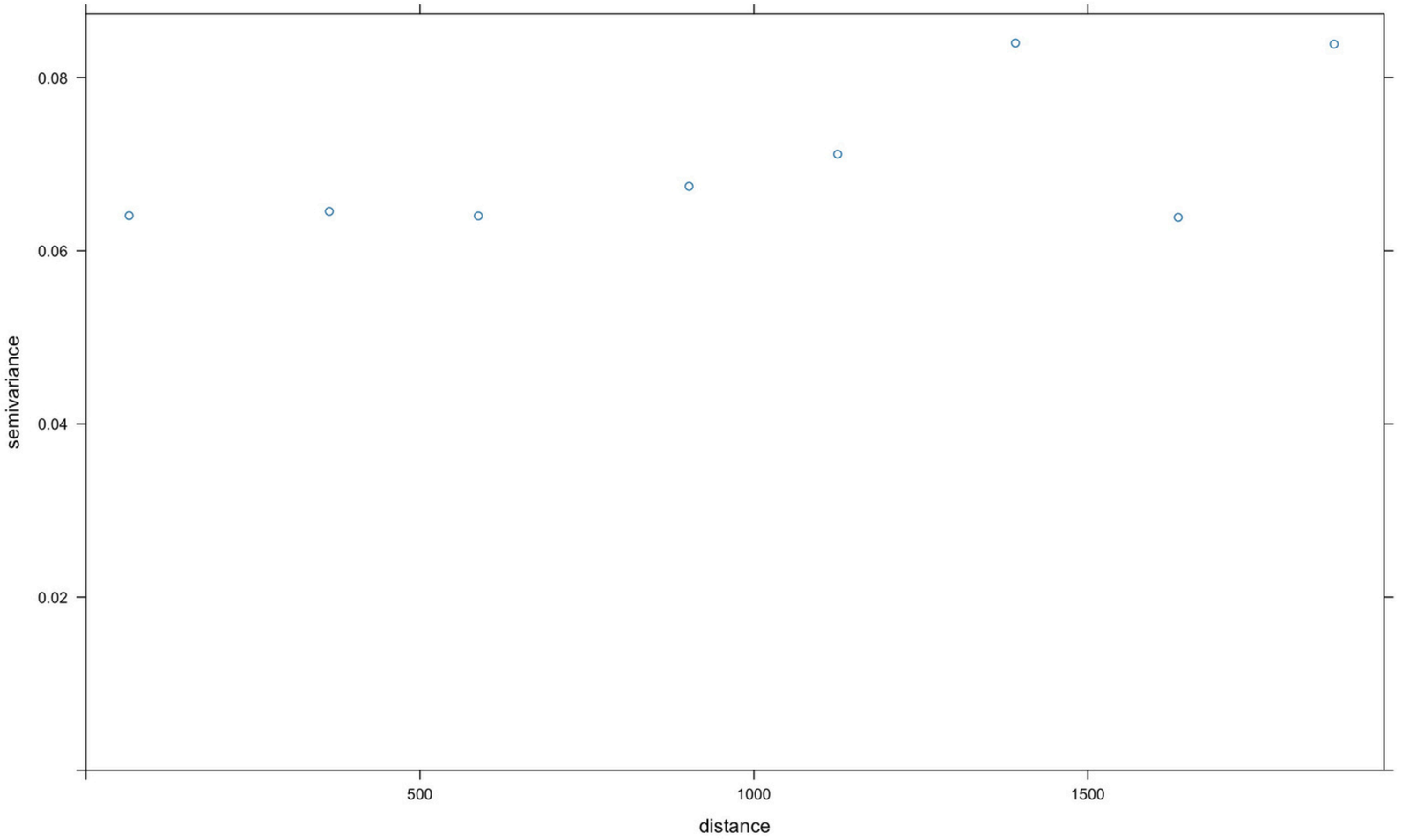


Additional File 7. Spatial Residual Autocorrelation Checks
Abundance, Semivariance Analysis - Full data (no stratification)



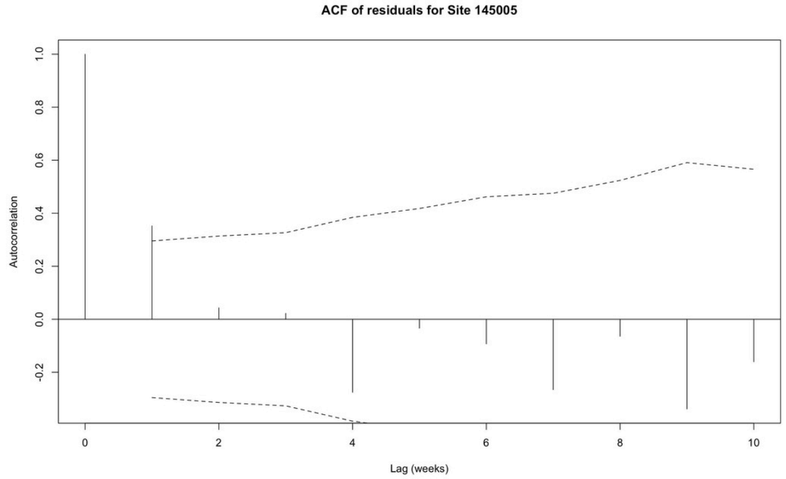
Monte-Carlo simulation of Moran II
Weights: linear
Number of simulations + 1 = 1000
Statistic = 0.38035, observed rank = 1000, p-value = 0.001
Alternative hypothesis: greater

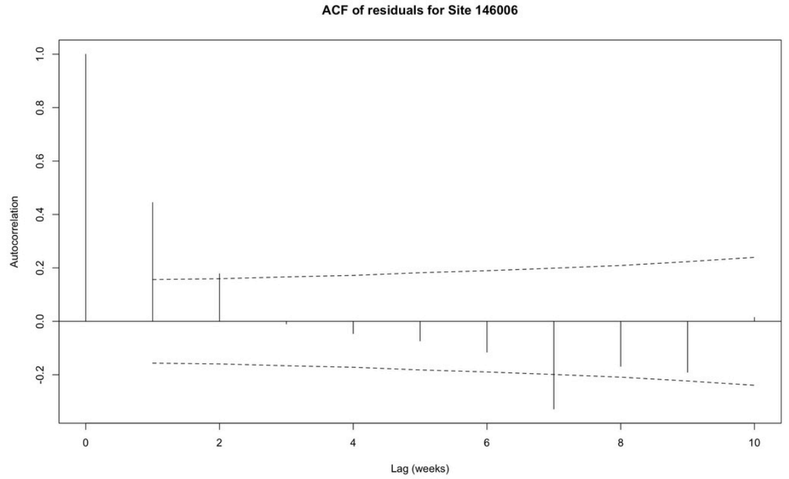
Additional File 8. Spatial Residual Autocorrelation Checks
Prevalence, Semivariance Analysis - Full data (no stratification)

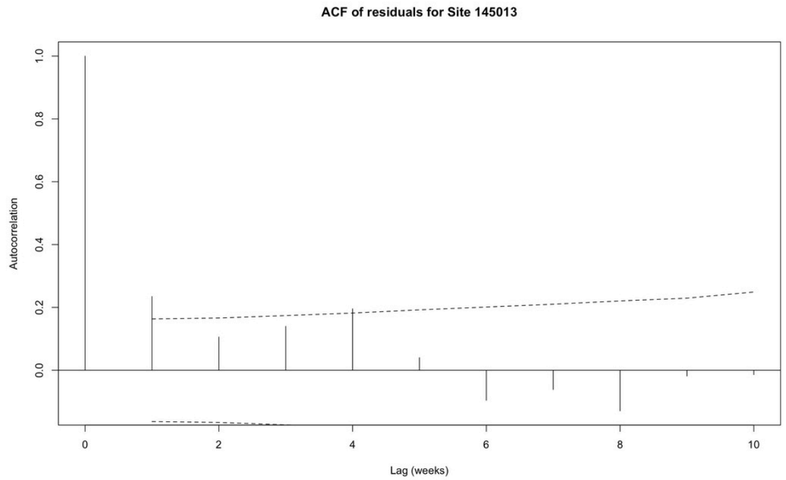


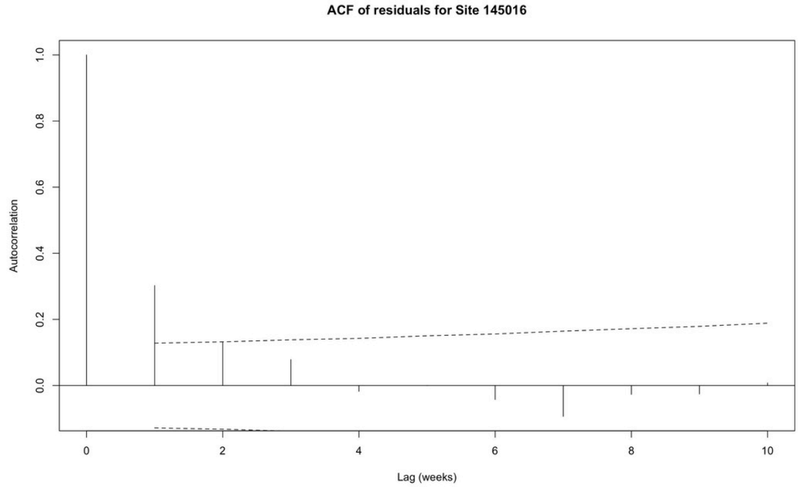
Monte-Carlo simulation of Moran II
Weights: linear
Number of simulations + 1 = 1000
Statistic = 0.032463, observed rank = 1000, p-value = 0.001
Alternative hypothesis: greater

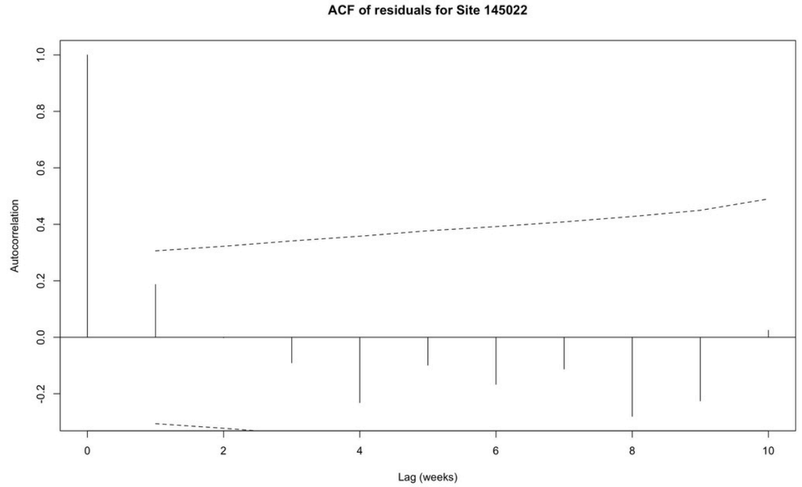
Additional File 9. Temporal Residual Autocorrelation by Site Abundance, Autocorrelation Function (ACF)



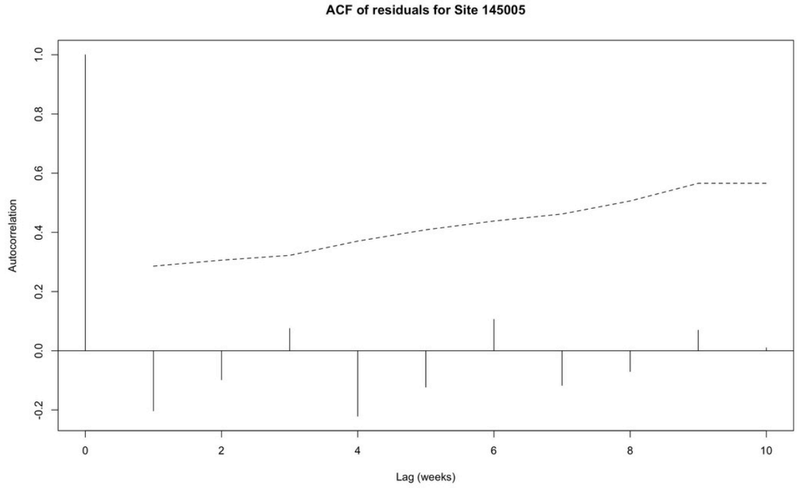


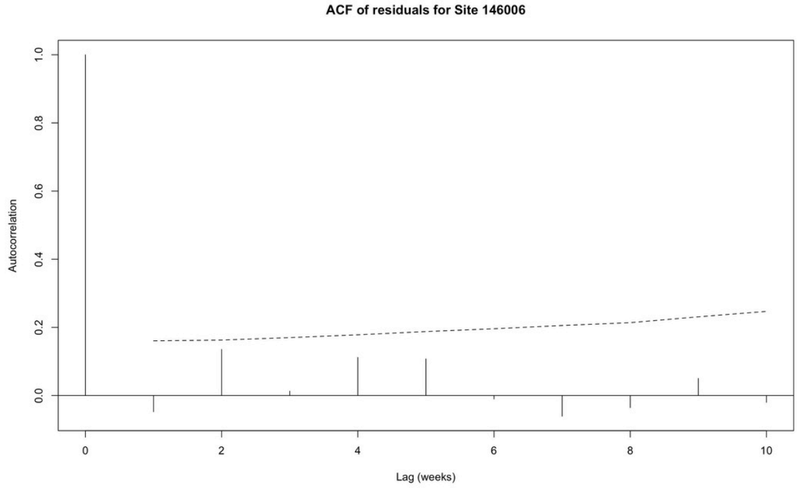


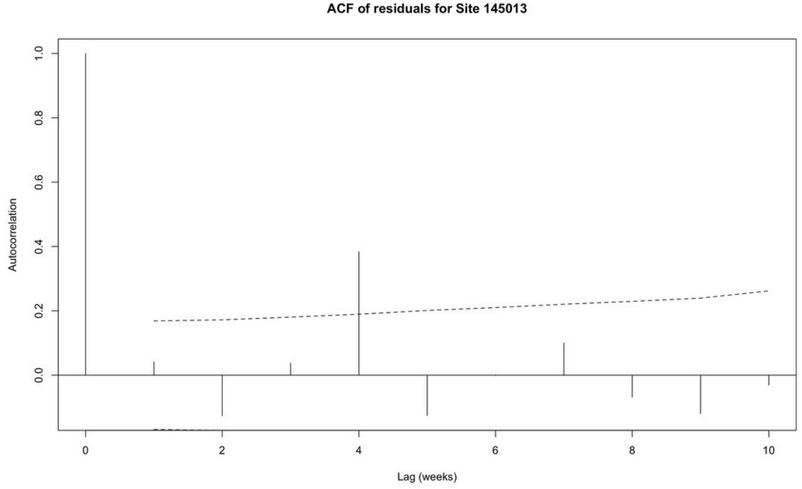


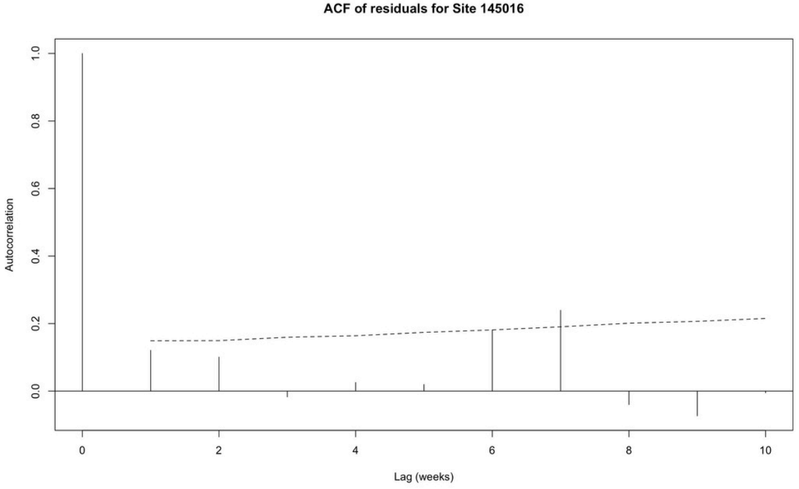


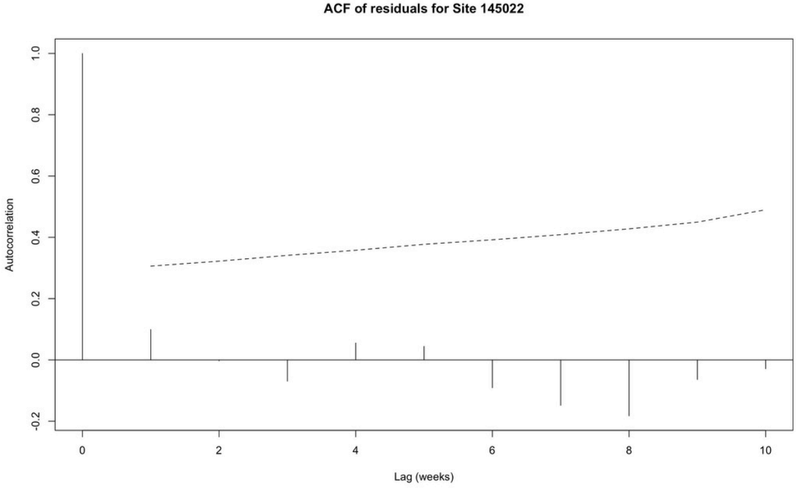
Additional File 10. Temporal Residual Autocorrelation by Site Prevalence, Autocorrelation Function (ACF)





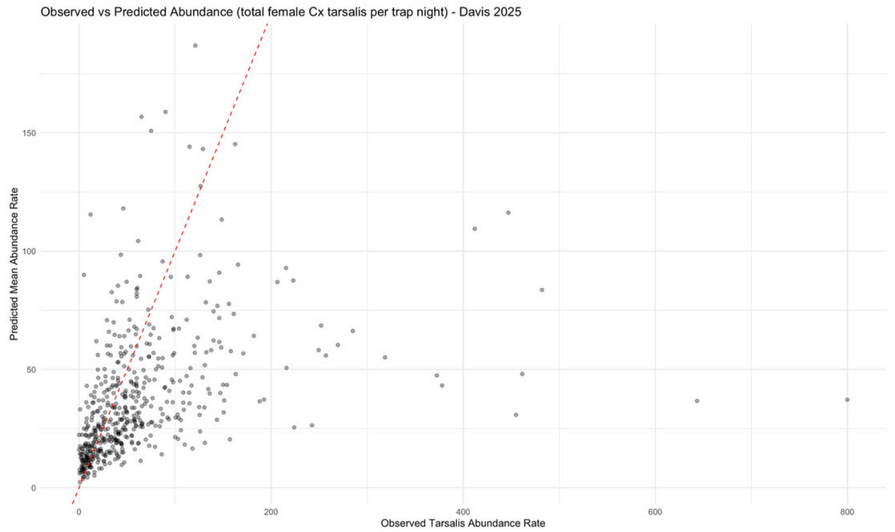




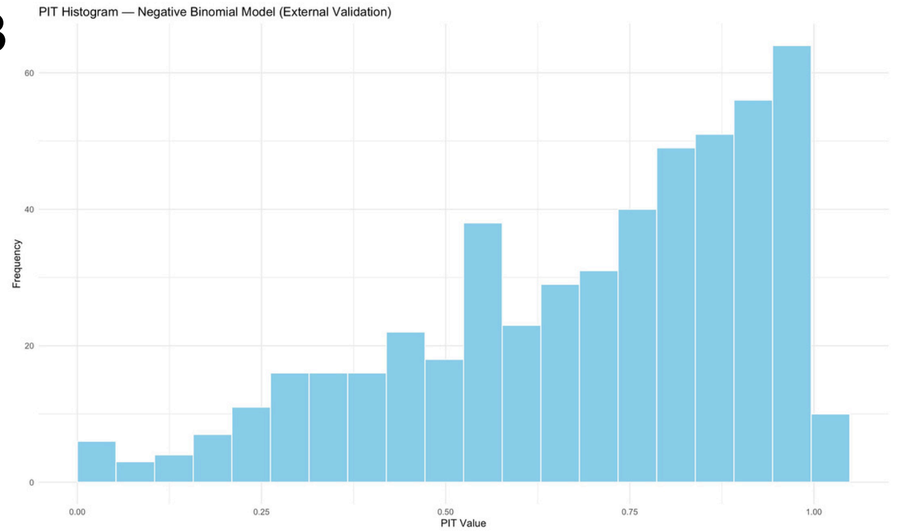


Additional File 11. Abundance Model - Predictive Performance

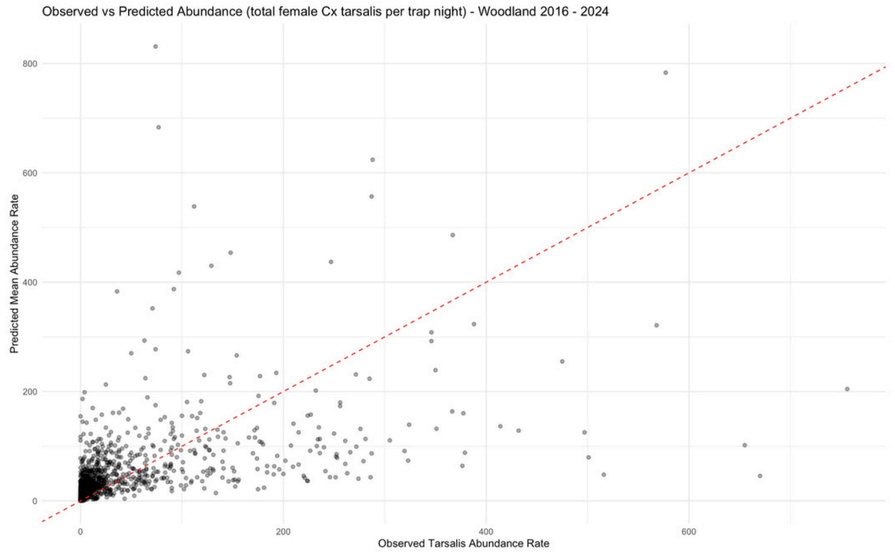
A



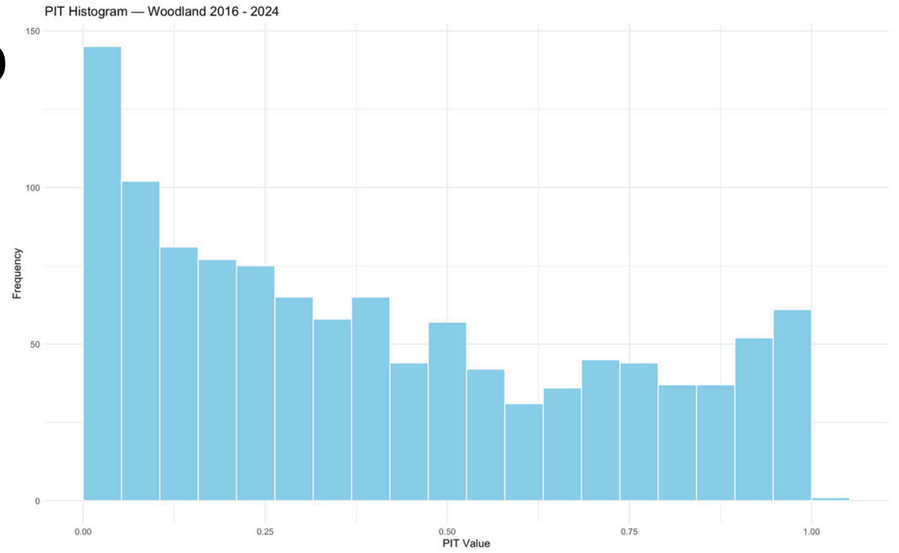
B



C

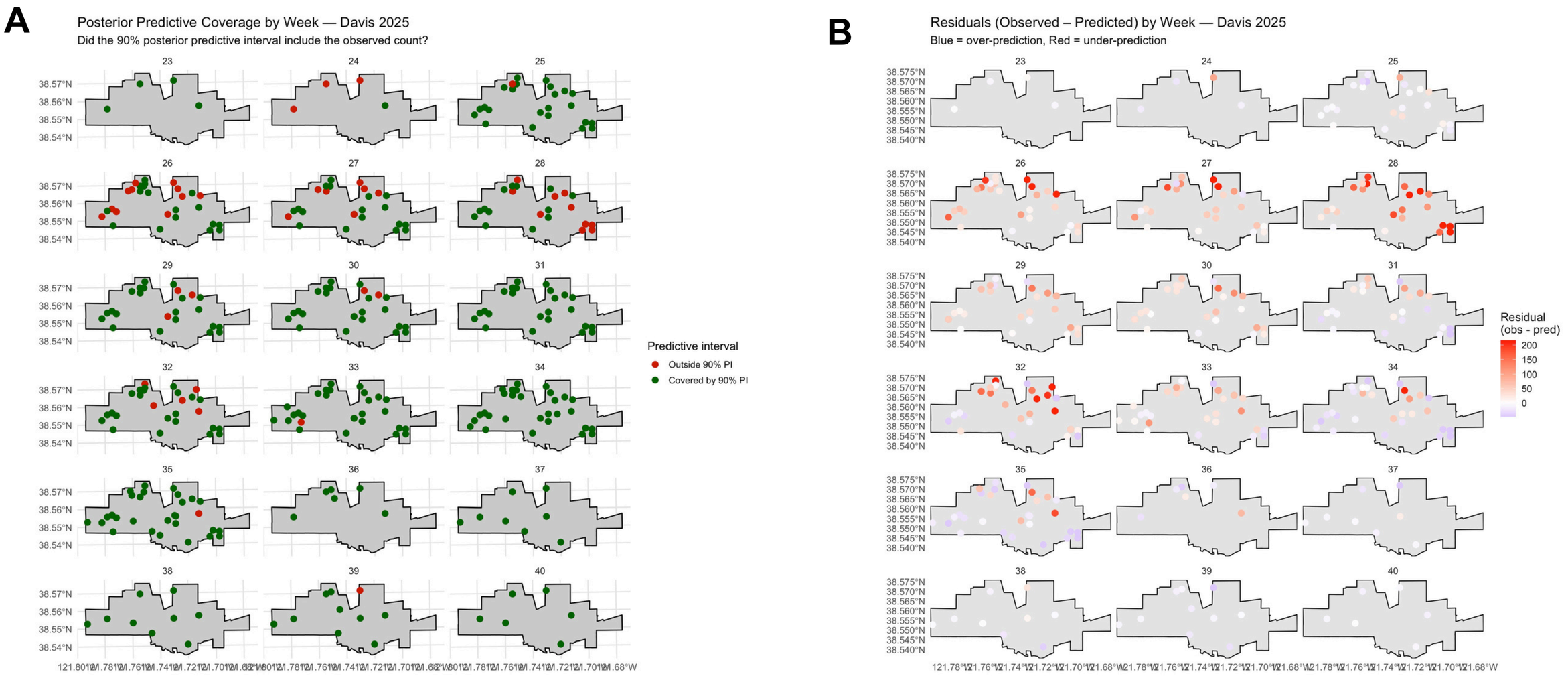


D



(A,B) Predictive performance against Davis 2025 dataset. **(A)** Scatterplot of observed vs predicted Cx. tarsalis per trap night. **(B)** Probability interval transform (PIT) histogram to assess calibration.
(C, D) Predictive performance against Woodland 2016 - 2024 dataset. **(C)** Scatterplot of observed vs predicted Cx. tarsalis per trap night. **(D)** Probability interval transform (PIT) histogram to assess calibration.

Additional File 12. Abundance Model - Predictive Performance



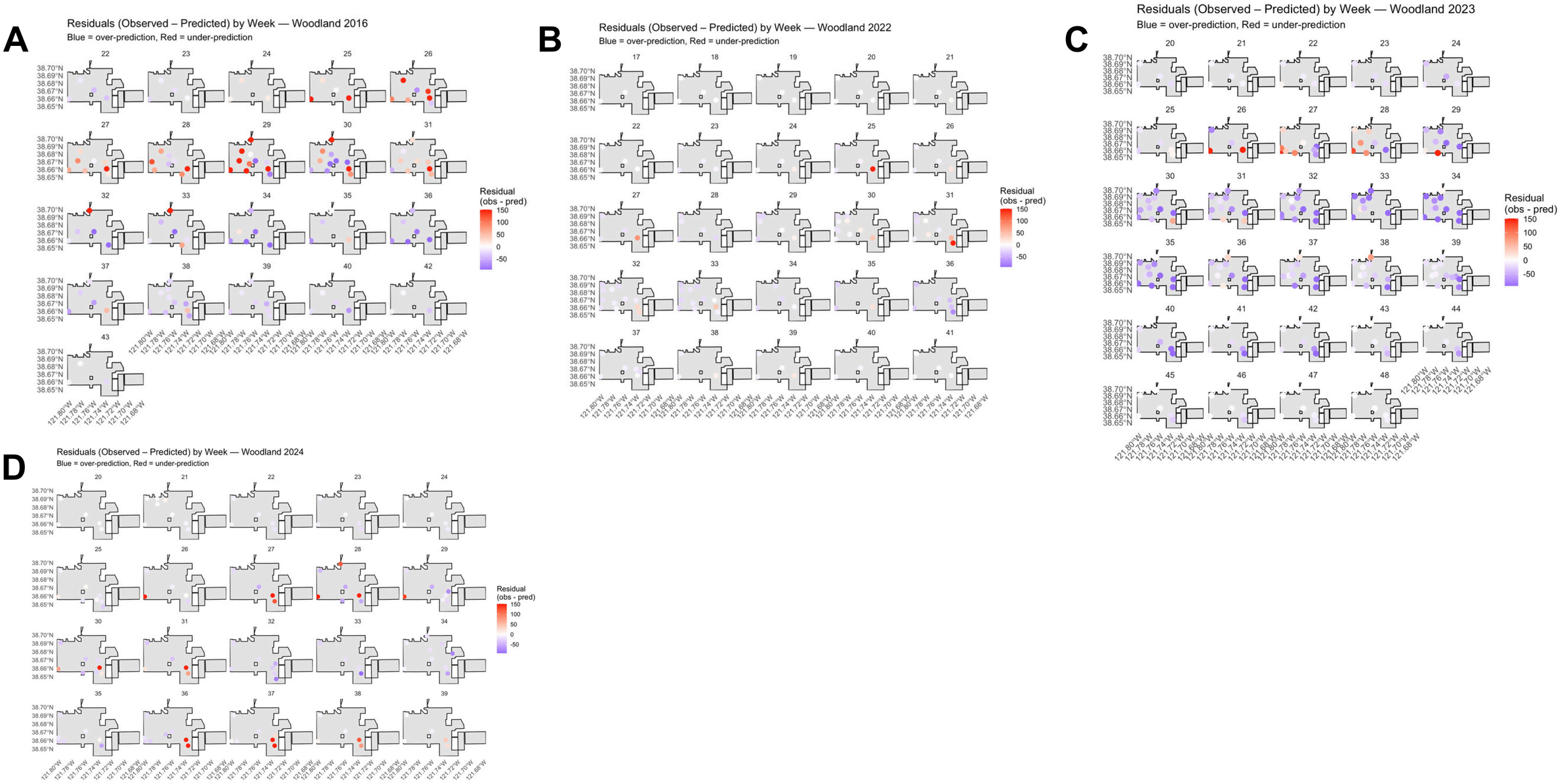
Predictive performance assessment for abundance model against Davis 2025 dataset. **(A)** Posterior predictive coverage mapped over Davis, stratified by week. **(B)** Residuals mapped over Davis, stratified by week.

Additional File 13. Abundance Model - Predictive Performance



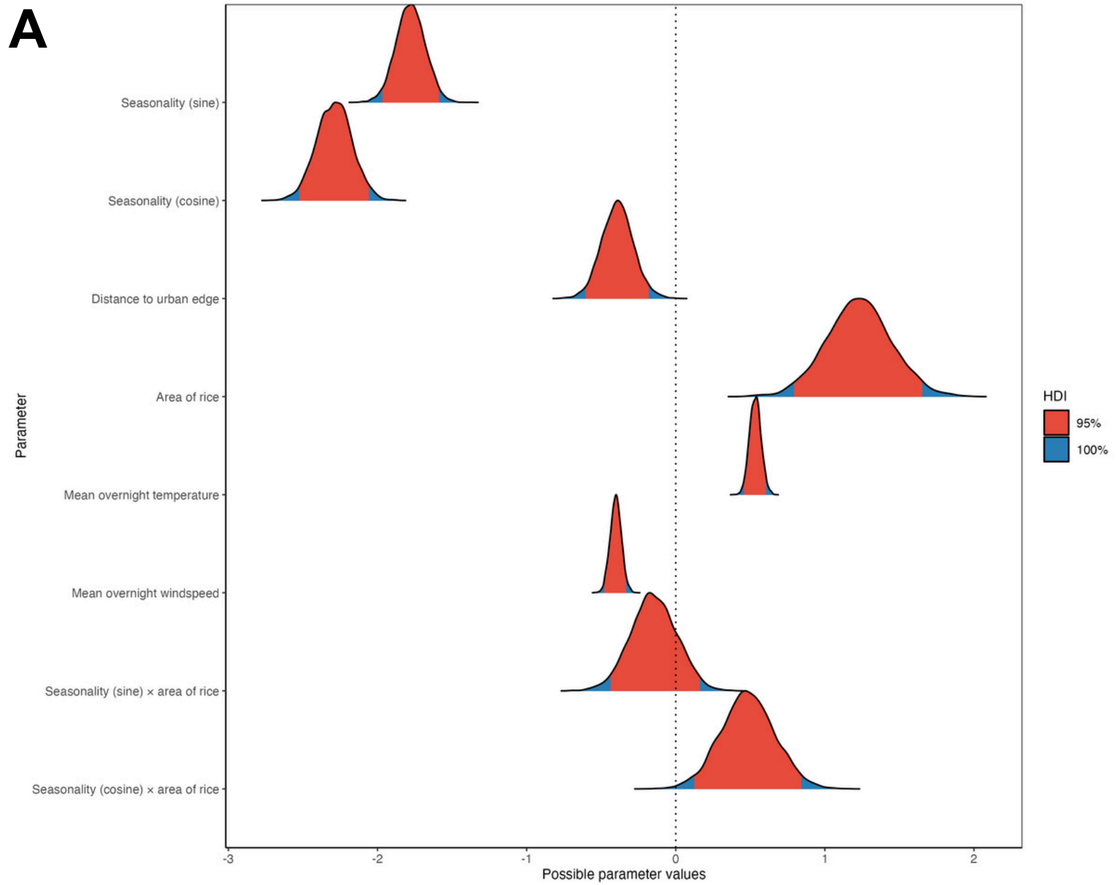
Predictive performance assessment for abundance model against Woodland 2016 - 2022 dataset. **(A - D)** Posterior predictive coverage mapped over Woodland for years with the most data (2016, 2022, 2023, 2024), stratified by week.

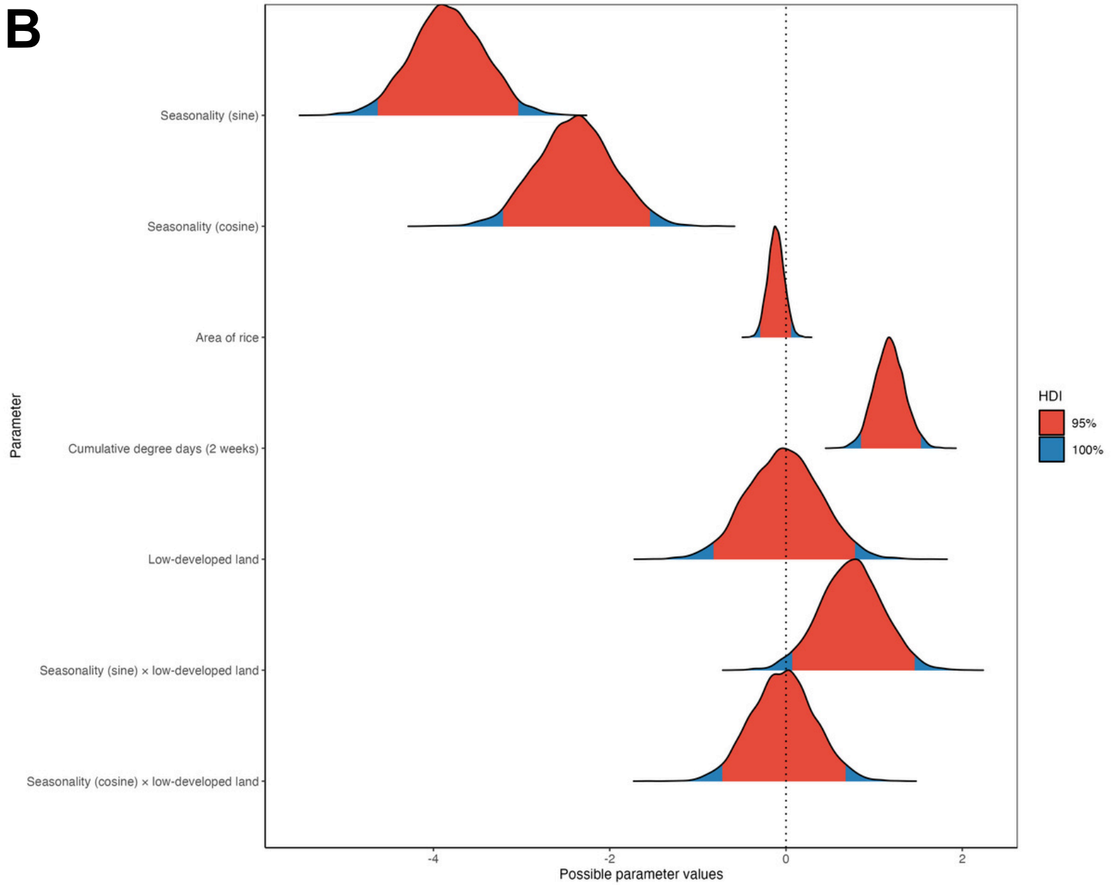
Additional File 14. Abundance Model - Predictive Performance



Predictive performance assessment for abundance model against Woodland 2016 - 2022 dataset. **(A - D)** Residuals mapped over Woodland for years with the most data (2016, 2022, 2023, 2024), stratified by week.

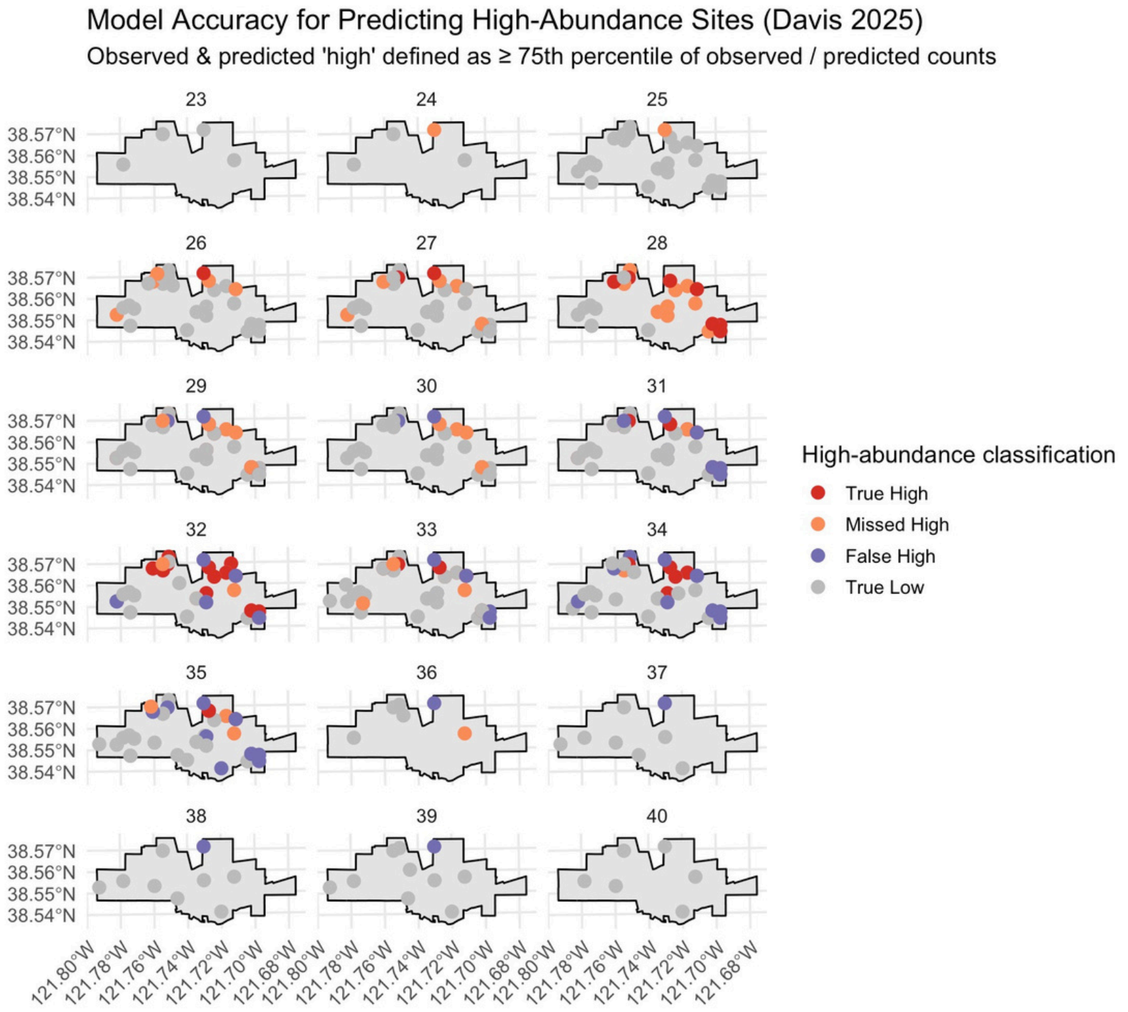
Additional File 15. Predictive Models - Posterior Parameter Distributions





High Density Interval (HDI) plots indicating the posterior distribution for predictor parameters for (A) abundance and (B) prevalence predictive modlels.

Additional File 17. Davis 2025 High Abundance Classification - Additional Weeks



Additional File 18. Seasonal association between low-developed land on WNV prevalence in *Cx. tarsalis*

