

Supplementary Information for

Domestic Cat Density is Generally Not Associated with Variation in Avian Risk Assessment in a Mega-City

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Supplementary Tables

Table S1 Table showing effect sizes of predictors for each species' data subset. The larger FID dataset was split into subsets by species; only subsets with a sample size (n) > 10 across at least two sites were included.

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Anas platyrhynchos</i>	Initial Behavior: Foraging	-0.067 [-15.373, 196.574]	28	7
<i>Anas platyrhynchos</i>	Initial Behavior: Other	0.059 [-0.487, 21.381]	28	7
<i>Anas platyrhynchos</i>	Cat Density (Log transformed + Scaled)	-0.049 [-0.734, 0.185]	28	7
<i>Anas platyrhynchos</i>	Human Population (Log transformed + Scaled)	-0.043 [-111.081, 0.166]	28	7
<i>Anas platyrhynchos</i>	Starting Distance (Log transformed and Scaled)	0.122 [-1.26, 0.481]	28	7
<i>Anas platyrhynchos</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.024 [-0.286, 0.192]	28	7
<i>Anas platyrhynchos</i>	On Ground Status	-0.189 [-435.711, 0.295]	28	7
<i>Anas platyrhynchos</i>	Time of Day: Cosine	-1.301 [-3768.464, 6.066]	28	7
<i>Anas platyrhynchos</i>	Time of Day: Sine	1.82 [-9.162, 5979.734]	28	7
<i>Branta canadensis</i>	Initial Behavior: Foraging	-1200592.448 [-1560329827.492, 242052017.659]	9	3
<i>Branta canadensis</i>	Cat Density (Log transformed + Scaled)	-1420378.918 [-198554142.938, 32194367.023]	9	3
<i>Branta canadensis</i>	Human Population (Log transformed + Scaled)	-936739.987 [-345354898.005, 62965933.932]	9	3
<i>Branta canadensis</i>	Starting Distance (Log transformed and Scaled)	-13518.297 [-538724838.806, 65315956.749]	9	3

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Branta canadensis</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	60601.606 [-717541505.927, 402552386.922]	9	3
<i>Branta canadensis</i>	On Ground Status	116523.2 [-214149903.291, 3156610202.506]	9	3
<i>Branta canadensis</i>	Time of Day: Cosine	6295488.895 [-504716711.321, 1785469122.468]	9	3
<i>Branta canadensis</i>	Time of Day: Sine	-2991805.902 [-1333438511.994, 8329516726.046]	9	3
<i>Calypste anna</i>	Initial Behavior: Foraging	-7450133.741 [-18916475256.548, 3003648779.287]	13	4
<i>Calypste anna</i>	Cat Density (Log transformed + Scaled)	-6570306.709 [-3886442811.371, 48402821.797]	13	4
<i>Calypste anna</i>	Human Population (Log transformed + Scaled)	8568813.472 [-841730858.401, 1419968743.425]	13	4
<i>Calypste anna</i>	Starting Distance (Log transformed and Scaled)	-6340126.534 [-340003709.974, 1961719237.883]	13	4
<i>Calypste anna</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	6613758.704 [-2869995348.062, 1599293931.084]	13	4
<i>Calypste anna</i>	On Ground Status	20873654.516 [-661663926.393, 3597359127.504]	13	4
<i>Calypste anna</i>	Time of Day: Cosine	14489658.969 [-989645579.867, 10860744275.385]	13	4

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Calypste anna</i>	Time of Day: Sine	-3956521.718 [-218911743.231, 3933893609.985]	13	4
<i>Carduelis psaltria</i>	Initial Behavior: Foraging	-214336.022 [-5093570968.304, 7313951272.262]	10	6
<i>Carduelis psaltria</i>	Initial Behavior: Other	385708.819 [-94410875.123, 7997041818.317]	10	6
<i>Carduelis psaltria</i>	Cat Density (Log transformed + Scaled)	147136.751 [-1939291371.113, 780173582.427]	10	6
<i>Carduelis psaltria</i>	Human Population (Log transformed + Scaled)	1110930.303 [-114556103.357, 3749367927.775]	10	6
<i>Carduelis psaltria</i>	Starting Distance (Log transformed and Scaled)	-69574.525 [-1295136572.947, 760728367.914]	10	6
<i>Carduelis psaltria</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-288866.367 [-2411581182.452, 275733750.866]	10	6
<i>Carduelis psaltria</i>	On Ground Status	42238.207 [-1098060683.7, 6230562533.401]	10	6
<i>Carduelis psaltria</i>	Time of Day: Cosine	389029.54 [-2807812991.8, 3093992985.503]	10	6
<i>Carduelis psaltria</i>	Time of Day: Sine	-322034.057 [-650787096.977, 590479906.512]	10	6
<i>Carpodacus mexicanus</i>	Initial Behavior: Foraging	-0.003 [-0.174, 0.165]	134	11
<i>Carpodacus mexicanus</i>	Initial Behavior: Other	0.059 [-0.131, 0.237]	134	11
<i>Carpodacus mexicanus</i>	Cat Density (Log transformed + Scaled)	-0.045 [-0.151, 0.044]	134	11

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Carpodacus mexicanus</i>	Human Population (Log transformed + Scaled)	0.065 [0.008, 0.132]	134	11
<i>Carpodacus mexicanus</i>	Starting Distance (Log transformed and Scaled)	0.113 [0.028, 0.194]	134	11
<i>Carpodacus mexicanus</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.006 [-0.095, 0.078]	134	11
<i>Carpodacus mexicanus</i>	On Ground Status	-0.07 [-0.221, 0.066]	134	11
<i>Carpodacus mexicanus</i>	Time of Day: Cosine	0.048 [-0.633, 0.563]	134	11
<i>Carpodacus mexicanus</i>	Time of Day: Sine	0.139 [-0.245, 0.913]	134	11
<i>Columba livia</i>	Initial Behavior: Foraging	-0.298 [-0.538, -0.077]	69	11
<i>Columba livia</i>	Cat Density (Log transformed + Scaled)	-0.116 [-0.296, 0.076]	69	11
<i>Columba livia</i>	Human Population (Log transformed + Scaled)	0.041 [-0.044, 0.129]	69	11
<i>Columba livia</i>	Starting Distance (Log transformed and Scaled)	0.265 [0.165, 0.37]	69	11
<i>Columba livia</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	0.044 [-0.057, 0.153]	69	11
<i>Columba livia</i>	On Ground Status	-0.104 [-0.323, 0.115]	69	11
<i>Columba livia</i>	Time of Day: Cosine	0.213 [-0.549, 0.88]	69	11
<i>Columba livia</i>	Time of Day: Sine	-0.273 [-0.599, 0.364]	69	11
<i>Corvus brachyrhynchos</i>	Initial Behavior: Foraging	0.008 [-0.208, 0.239]	62	11
<i>Corvus brachyrhynchos</i>	Initial Behavior: Other	-0.081 [-0.501, 0.278]	62	11
<i>Corvus brachyrhynchos</i>	Cat Density (Log transformed + Scaled)	-0.093 [-0.239, 0.06]	62	11
<i>Corvus brachyrhynchos</i>	Human Population (Log transformed + Scaled)	0.05 [-0.027, 0.14]	62	11

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Corvus brachyrhynchos</i>	Starting Distance (Log transformed and Scaled)	0.229 [0.128, 0.338]	62	11
<i>Corvus brachyrhynchos</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	0.059 [-0.058, 0.177]	62	11
<i>Corvus brachyrhynchos</i>	On Ground Status	-0.414 [-0.662, -0.147]	62	11
<i>Corvus brachyrhynchos</i>	Time of Day: Cosine	-3.644 [-6.757, -1.155]	62	11
<i>Corvus brachyrhynchos</i>	Time of Day: Sine	4.782 [1.681, 8.767]	62	11
<i>Corvus corax</i>	Initial Behavior: Foraging	-56723.937 [-74308798.603, 2585512.92]	25	8
<i>Corvus corax</i>	Initial Behavior: Other	-29197.905 [-2653312.038, 56200627.932]	25	8
<i>Corvus corax</i>	Cat Density (Log transformed + Scaled)	-19846.227 [-38361381.944, 9748830.251]	25	8
<i>Corvus corax</i>	Human Population (Log transformed + Scaled)	-11703.446 [-39915610.625, 141601355.045]	25	8
<i>Corvus corax</i>	Starting Distance (Log transformed and Scaled)	-3759.03 [-34412448.687, 12098391.177]	25	8
<i>Corvus corax</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-9813.26 [-35078927.537, 12187921.134]	25	8
<i>Corvus corax</i>	On Ground Status	13973.871 [-13178339.538, 94886815.508]	25	8
<i>Corvus corax</i>	Time of Day: Cosine	-11141.255 [-201334471.895, 40795348.86]	25	8
<i>Corvus corax</i>	Time of Day: Sine	44361.748 [-9290727.434, 183050679.67]	25	8

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Euphagus cyanocephalus</i>	Initial Behavior: Foraging	8643135.206 [-394846001.898, 9691096185.668]	21	6
<i>Euphagus cyanocephalus</i>	Initial Behavior: Other	-1458945.299 [-7218041516.154, 24610704843.705]	21	6
<i>Euphagus cyanocephalus</i>	Cat Density (Log transformed + Scaled)	2450305.665 [-4547153178.374, 4016042445.231]	21	6
<i>Euphagus cyanocephalus</i>	Human Population (Log transformed + Scaled)	-6013927.169 [-6969658263.193, 10006020944.383]	21	6
<i>Euphagus cyanocephalus</i>	Starting Distance (Log transformed and Scaled)	4482231.583 [-2408398634.387, 11685856768.808]	21	6
<i>Euphagus cyanocephalus</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-514733.052 [-1940668177.535, 2135411103.522]	21	6
<i>Euphagus cyanocephalus</i>	On Ground Status	150675.779 [-7932404049.811, 2943218129.473]	21	6
<i>Euphagus cyanocephalus</i>	Time of Day: Cosine	42978553.006 [-2446163030.002, 33933631463.943]	21	6
<i>Euphagus cyanocephalus</i>	Time of Day: Sine	11779413.921 [-37378748967.962, 23077910613.375]	21	6
<i>Junco hyemalis</i>	Initial Behavior: Foraging	-0.038 [-0.389, 0.353]	67	11
<i>Junco hyemalis</i>	Initial Behavior: Other	-0.121 [-0.836, 0.694]	67	11
<i>Junco hyemalis</i>	Cat Density (Log transformed + Scaled)	0.024 [-0.209, 0.249]	67	11
<i>Junco hyemalis</i>	Human Population (Log transformed + Scaled)	0.104 [-0.113, 0.402]	67	11
<i>Junco hyemalis</i>	Starting Distance (Log transformed and Scaled)	0.147 [0.036, 0.27]	67	11

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Junco hyemalis</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.133 [-0.442, 0.168]	67	11
<i>Junco hyemalis</i>	On Ground Status	-0.037 [-0.353, 0.265]	67	11
<i>Junco hyemalis</i>	Time of Day: Cosine	-0.854 [-5.226, 3.5]	67	11
<i>Junco hyemalis</i>	Time of Day: Sine	1.302 [-3.723, 6.491]	67	11
<i>Melospiza melodia</i>	Initial Behavior: Foraging	-0.126 [-0.366, 0.108]	37	7
<i>Melospiza melodia</i>	Initial Behavior: Other	0.064 [-0.393, 0.435]	37	7
<i>Melospiza melodia</i>	Cat Density (Log transformed + Scaled)	0.083 [-0.066, 0.255]	37	7
<i>Melospiza melodia</i>	Human Population (Log transformed + Scaled)	0.04 [-0.06, 0.142]	37	7
<i>Melospiza melodia</i>	Starting Distance (Log transformed and Scaled)	0.193 [0.041, 0.379]	37	7
<i>Melospiza melodia</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	0.09 [-0.197, 0.346]	37	7
<i>Melospiza melodia</i>	On Ground Status	0.013 [-0.245, 0.236]	37	7
<i>Melospiza melodia</i>	Time of Day: Cosine	-0.774 [-3.503, 1.711]	37	7
<i>Melospiza melodia</i>	Time of Day: Sine	0.801 [-2.486, 4.508]	37	7
<i>Mimus polyglottos</i>	Initial Behavior: Foraging	0.252 [-6015563.728, 35303218.035]	56	7
<i>Mimus polyglottos</i>	Initial Behavior: Other	-0.132 [-90091048.732, 35233586.471]	56	7
<i>Mimus polyglottos</i>	Cat Density (Log transformed + Scaled)	-0.247 [-24861821.371, 55282297.057]	56	7
<i>Mimus polyglottos</i>	Human Population (Log transformed + Scaled)	0.132 [-6266076.177, 36295536.191]	56	7
<i>Mimus polyglottos</i>	Starting Distance (Log transformed and Scaled)	0.427 [-12888697.646, 49100494.273]	56	7

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Mimus polyglottos</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.176 [-43804597.761, 25654068.14]	56	7
<i>Mimus polyglottos</i>	On Ground Status	-0.329 [-42476116.093, 33780753.749]	56	7
<i>Mimus polyglottos</i>	Time of Day: Cosine	-1.577 [-58460714.629, 102116288.34]	56	7
<i>Mimus polyglottos</i>	Time of Day: Sine	2.141 [-75957999.033, 67271838.718]	56	7
<i>Passer domesticus</i>	Initial Behavior: Foraging	-0.069 [-0.167, 0.024]	301	11
<i>Passer domesticus</i>	Initial Behavior: Other	-0.068 [-0.399, 0.198]	301	11
<i>Passer domesticus</i>	Cat Density (Log transformed + Scaled)	0.085 [0.017, 0.158]	301	11
<i>Passer domesticus</i>	Human Population (Log transformed + Scaled)	0.035 [-0.006, 0.077]	301	11
<i>Passer domesticus</i>	Starting Distance (Log transformed and Scaled)	0.17 [0.135, 0.206]	301	11
<i>Passer domesticus</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.033 [-0.074, 0.01]	301	11
<i>Passer domesticus</i>	On Ground Status	-0.067 [-0.158, 0.019]	301	11
<i>Passer domesticus</i>	Time of Day: Cosine	0.144 [-0.111, 0.395]	301	11
<i>Passer domesticus</i>	Time of Day: Sine	-0.184 [-0.334, -0.013]	301	11
<i>Pipilo crissalis</i>	Initial Behavior: Foraging	0.169 [-0.393, 8135248.054]	61	9
<i>Pipilo crissalis</i>	Cat Density (Log transformed + Scaled)	0.072 [-1277415.149, 452152.643]	61	9
<i>Pipilo crissalis</i>	Human Population (Log transformed + Scaled)	0.066 [-3116482.365, 2265230.668]	61	9
<i>Pipilo crissalis</i>	Starting Distance (Log transformed and Scaled)	0.239 [-1122206.993, 869828.438]	61	9

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Pipilo crissalis</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	0.198 [-0.033, 959552.256]	61	9
<i>Pipilo crissalis</i>	On Ground Status	-0.296 [-7380337.693, 889287.929]	61	9
<i>Pipilo crissalis</i>	Time of Day: Cosine	-0.201 [-15140560.363, 1118.587]	61	9
<i>Pipilo crissalis</i>	Time of Day: Sine	-1.294 [-8511172.812, 28696616.326]	61	9
<i>Sayornis nigricans</i>	Initial Behavior: Foraging	-0.159 [-0.352, 0.014]	73	11
<i>Sayornis nigricans</i>	Cat Density (Log transformed + Scaled)	-0.003 [-0.059, 0.097]	73	11
<i>Sayornis nigricans</i>	Human Population (Log transformed + Scaled)	0.013 [-0.047, 0.074]	73	11
<i>Sayornis nigricans</i>	Starting Distance (Log transformed and Scaled)	0.055 [-0.002, 0.113]	73	11
<i>Sayornis nigricans</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	0.03 [-0.012, 0.073]	73	11
<i>Sayornis nigricans</i>	On Ground Status	-0.014 [-0.129, 0.106]	73	11
<i>Sayornis nigricans</i>	Time of Day: Cosine	0.344 [-0.021, 0.736]	73	11
<i>Sayornis nigricans</i>	Time of Day: Sine	-0.232 [-0.374, -0.08]	73	11
<i>Selasphorus sasin</i>	Initial Behavior: Foraging	-11431.916 [-870470114.13, 7034133390.873]	13	2
<i>Selasphorus sasin</i>	Cat Density (Log transformed + Scaled)	-29242.804 [-1827347008.738, 1124188555.266]	13	2
<i>Selasphorus sasin</i>	Human Population (Log transformed + Scaled)	20620.967 [-325486420.381, 4180830896.009]	13	2

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Selasphorus sasin</i>	Starting Distance (Log transformed and Scaled)	-10422.07 [-1207819349.988, 2168059547.13]	13	2
<i>Selasphorus sasin</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	5993.962 [-3423116492.107, 235992242.118]	13	2
<i>Selasphorus sasin</i>	On Ground Status	-4831.241 [-6438423632.69, 4671008583.375]	13	2
<i>Selasphorus sasin</i>	Time of Day: Cosine	61848.332 [-71322248.063, 10815721885.775]	13	2
<i>Selasphorus sasin</i>	Time of Day: Sine	-63978.95 [-10471243048.846, 449148296.629]	13	2
<i>Sturnus vulgaris</i>	Initial Behavior: Other	121638.717 [-102753293.118, 25747924.687]	11	4
<i>Sturnus vulgaris</i>	Cat Density (Log transformed + Scaled)	23568.485 [-126682304.019, 8439919.541]	11	4
<i>Sturnus vulgaris</i>	Human Population (Log transformed + Scaled)	217364.467 [-2618036.969, 21574423.133]	11	4
<i>Sturnus vulgaris</i>	Starting Distance (Log transformed and Scaled)	54683.514 [-21143366.486, 5635947.508]	11	4
<i>Sturnus vulgaris</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	78551.739 [-14843184.548, 148188957.042]	11	4
<i>Sturnus vulgaris</i>	On Ground Status	93845.447 [-90936328.082, 22774401.014]	11	4

Species	Predictor	Estimate [95% CI]	n_obs	n_sites
<i>Sturnus vulgaris</i>	Time of Day: Cosine	-860348.671 [-37960531.41, 235243861.026]	11	4
<i>Sturnus vulgaris</i>	Time of Day: Sine	339990.348 [-13425736.641, 336223100.292]	11	4
<i>Zenaida macroura</i>	Initial Behavior: Other	1.493 [-4046243.271, 22684256.437]	33	10
<i>Zenaida macroura</i>	Cat Density (Log transformed + Scaled)	0.07 [-5548150.82, 916915.522]	33	10
<i>Zenaida macroura</i>	Human Population (Log transformed + Scaled)	-0.06 [-638362.205, 20588941.755]	33	10
<i>Zenaida macroura</i>	Starting Distance (Log transformed and Scaled)	0.18 [-3018596.679, 2214436.458]	33	10
<i>Zenaida macroura</i>	Starting Distance (Log transformed and Scaled):Cat Density (Log transformed + Scaled)	-0.017 [-1425693.878, 2110322.118]	33	10
<i>Zenaida macroura</i>	On Ground Status	-0.383 [-50904026.788, 1918788.362]	33	10
<i>Zenaida macroura</i>	Time of Day: Cosine	1.547 [-118885062.12, 10732900.268]	33	10
<i>Zenaida macroura</i>	Time of Day: Sine	2.222 [-2320144.285, 100212296.355]	33	10

Supplementary Figures

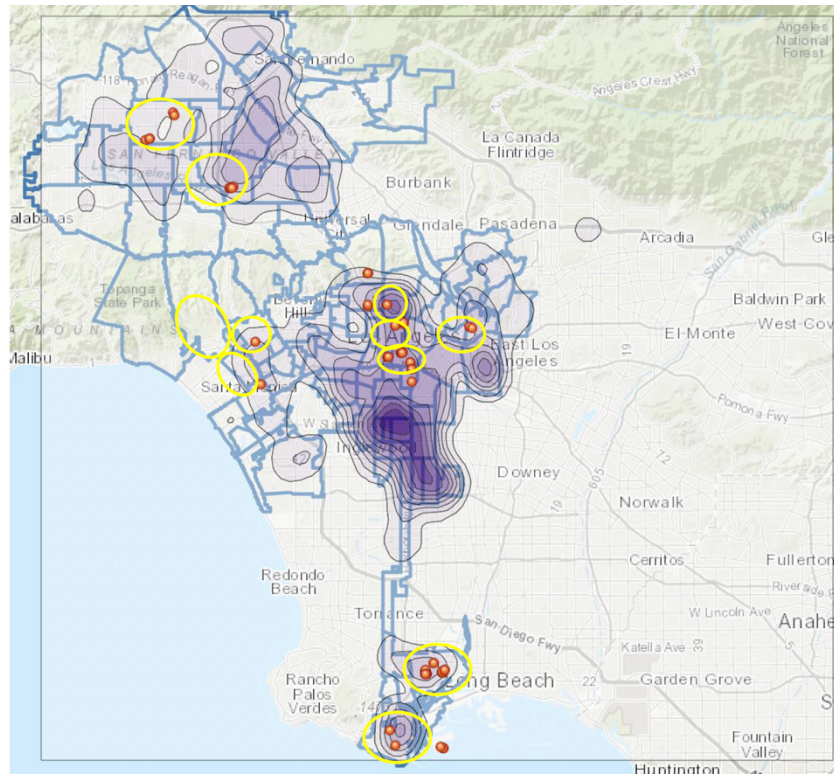


Fig. S1 Spatial distribution of cat sightings in relation to data collection sites and modelled density. Red points indicate cat sightings recorded during field observations, while yellow circles mark the locations of data collection sites. The underlying blue–purple raster represents predicted cat density derived from Los Angeles Animal Services (LAAS) calls-for-service records.

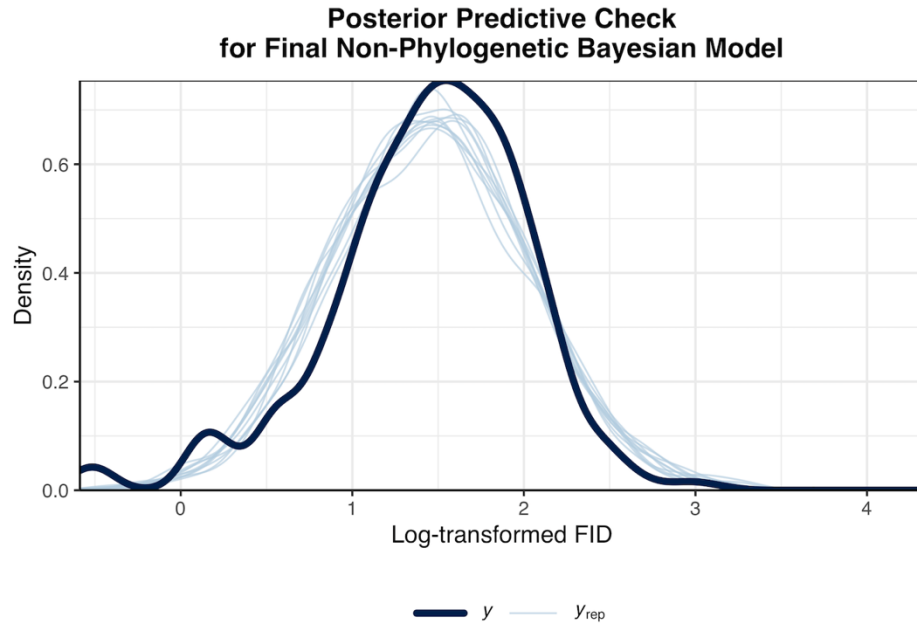
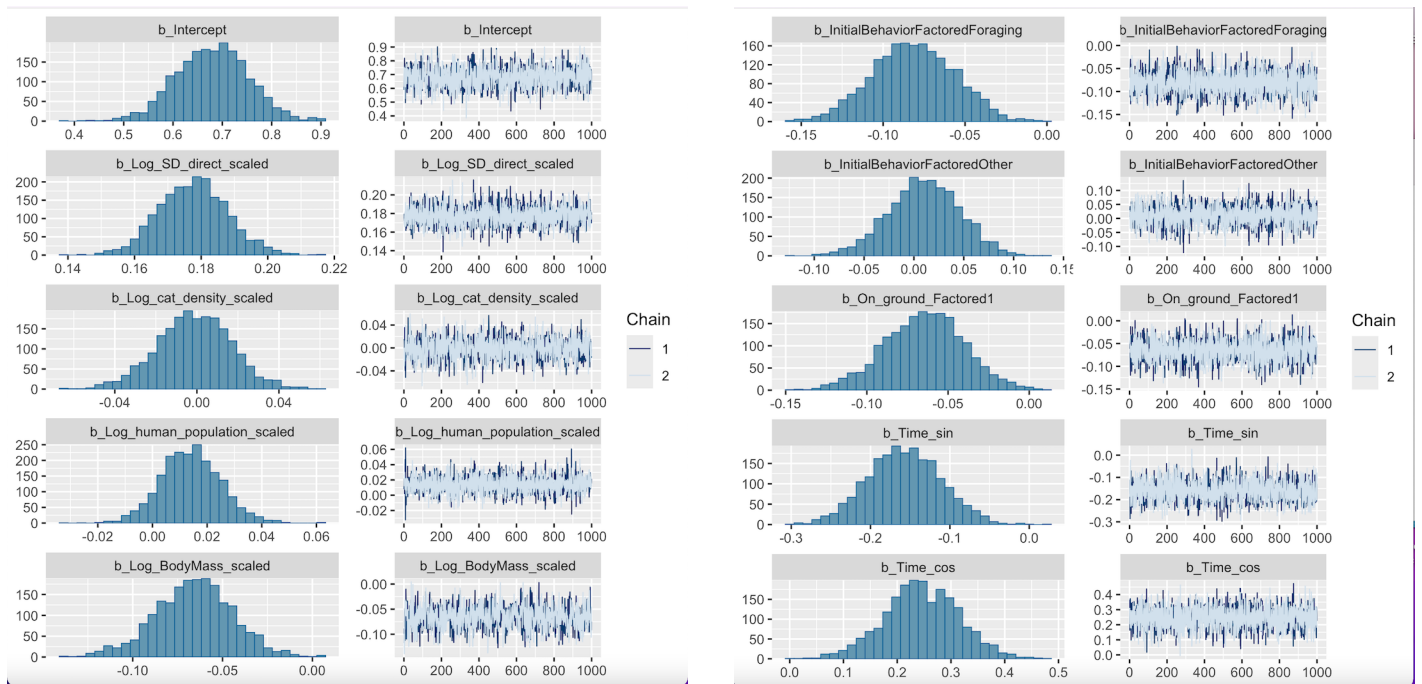


Fig. S2 Posterior predictive check for the final Bayesian regression model. The dark line represents the observed data distribution (y), while the lighter lines represent simulated replicated datasets (y_{rep}) drawn from the posterior predictive distribution.



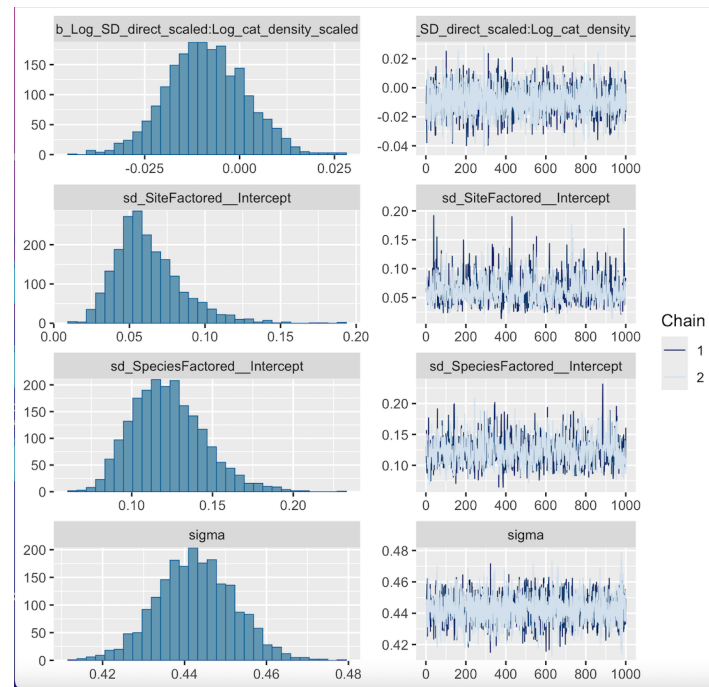


Fig. S3(a-c) Trace and density plots for model parameters corresponding to each predictor. Trace plots (right) show MCMC samples across iterations for each coefficient, with well-mixed chains indicating good model convergence. Density plots (right) display the posterior distributions of predictor effects.

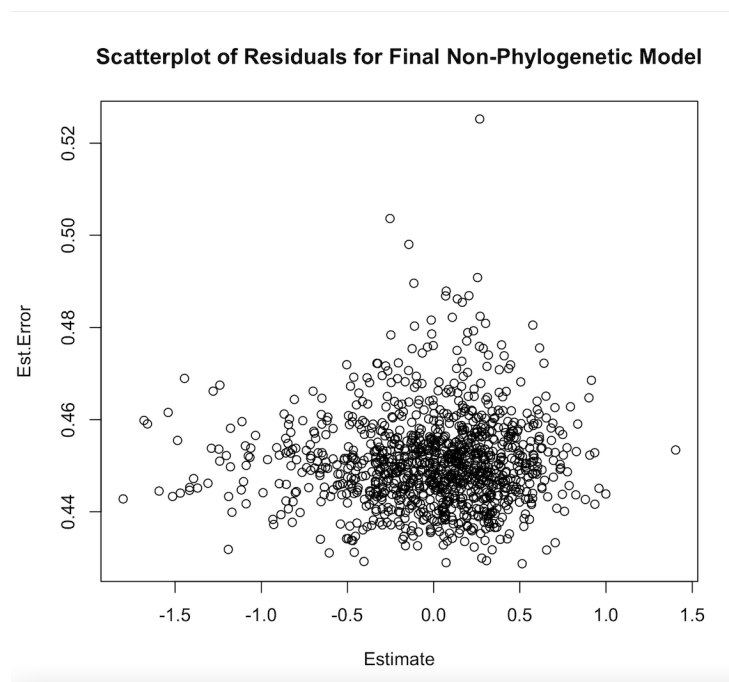


Fig. S4 Scatterplot of model residuals for final Bayesian regression model

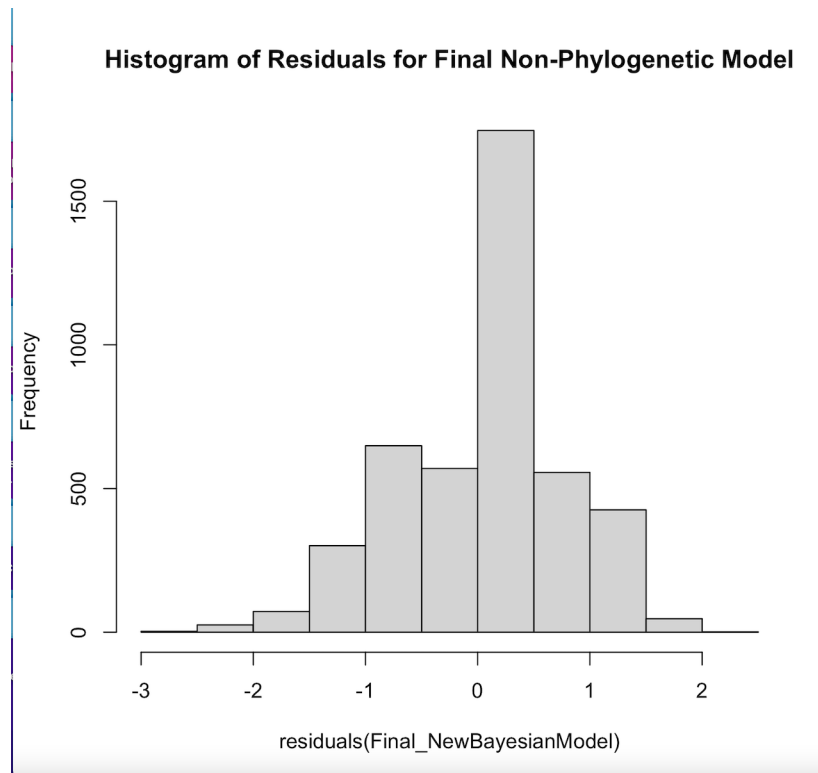


Fig. S5 Histogram of model residuals for final Bayesian regression model