**SM5.** Mean and 95% credible intervals for each parameter estimate of the multispecies co-occurrence model. Estimates are on the logit scale.

| Parameter | Prey | Predator | Covariate | Mean | Median | Direction effect | Pr(direction effect) | 95% CI Lower 2.5 | Upper 97.5 |
|---|---|---|---|---|---|---|---|---|---|
| **Predator occupancy model** | | | | | | | | | |
| $\beta_0$ | | coyote | | 0.94 | 0.94 | positive | 1.00 | 0.70 | 1.21 |
| $\beta_0$ | | badger | | -0.02 | -0.02 | negative | 0.57 | -0.26 | 0.24 |
| $\beta_0$ | | swift fox | | -1.95 | -1.95 | negative | 1.00 | -2.35 | -1.53 |
| **Autologistic term** | | | | | | | | | |
| $\theta$ | | coyote | | -0.04 | -0.04 | negative | 0.57 | -0.42 | 0.35 |
| $\theta$ | | badger | | 0.81 | 0.80 | positive | 1.00 | 0.36 | 1.27 |
| $\theta$ | | swift fox | | 0.90 | 0.90 | positive | 0.95 | -0.17 | 2.01 |
| $\theta$ | jackrabbit | | | -0.30 | -0.30 | negative | 0.87 | -0.85 | 0.21 |
| $\theta$ | cottontail | | | 1.17 | 1.17 | positive | 1.00 | 0.71 | 1.62 |
| **Predator-prey co-occurrence model** | | | | | | | | | |
| $\beta_0$ ind x site | jackrabbit | no predators | | -3.48 | -3.45 | negative | 1.00 | -4.54 | -2.61 |
| $\beta_0$ ind x site | jackrabbit | coyote | | 1.53 | 1.50 | positive | 1.00 | 0.76 | 2.48 |
| $\beta_0$ ind x site | jackrabbit | badger | | 1.41 | 1.40 | positive | 1.00 | 0.73 | 2.18 |
| $\beta_0$ ind x site | jackrabbit | swift fox | | 1.09 | 1.05 | positive | 0.97 | -0.07 | 2.43 |
| $\beta_0$ ind x site | cottontail | no predators | | -1.98 | -1.97 | negative | 1.00 | -2.56 | -1.46 |
| $\beta_0$ ind x site | cottontail | coyote | | 0.02 | 0.01 | positive | 0.52 | -0.48 | 0.55 |
| $\beta_0$ ind x site | cottontail | badger | | 0.61 | 0.60 | positive | 0.98 | 0.05 | 1.23 |
| $\beta_0$ ind x site | cottontail | swift fox | | 0.19 | 0.19 | positive | 0.63 | -0.94 | 1.33 |
| $\beta_1$ ind x site | jackrabbit | no predators | prairie | 0.26 | 0.26 | positive | 0.74 | -0.53 | 1.05 |
| $\beta_1$ ind x site | jackrabbit | coyote | prairie | 0.11 | 0.11 | positive | 0.62 | -0.63 | 0.86 |
| $\beta_1$ ind x site | jackrabbit | badger | prairie | 0.46 | 0.46 | positive | 0.92 | -0.18 | 1.07 |
| $\beta_1$ ind x site | jackrabbit | swift fox | prairie | -0.38 | -0.39 | negative | 0.85 | -1.11 | 0.36 |
| $\beta_2$ ind x site | jackrabbit | no predators | vegHeight | -1.18 | -1.16 | negative | 0.99 | -2.29 | -0.18 |
| $\beta_2$ ind x site | jackrabbit | coyote | vegHeight | 0.05 | 0.04 | positive | 0.54 | -0.78 | 0.94 |
| $\beta_2$ ind x site | jackrabbit | badger | vegHeight | 1.08 | 1.06 | positive | 1.00 | 0.25 | 2.03 |
| $\beta_2$ ind x site | jackrabbit | swift fox | vegHeight | -0.46 | -0.45 | negative | 0.84 | -1.41 | 0.44 |
| $\beta_3$ ind x site | jackrabbit | no predators | grass | -1.44 | -1.42 | negative | 1.00 | -2.55 | -0.49 |
| $\beta_3$ ind x site | jackrabbit | coyote | grass | 0.96 | 0.94 | positive | 0.98 | 0.05 | 2.04 |
| $\beta_3$ ind x site | jackrabbit | badger | grass | -0.01 | -0.02 | negative | 0.52 | -0.74 | 0.73 |
| $\beta_3$ ind x site | jackrabbit | swift fox | grass | 0.04 | 0.07 | positive | 0.54 | -1.40 | 1.35 |
| $\beta_4$ ind x site | jackrabbit | no predators | forbs | -0.68 | -0.66 | negative | 0.97 | -1.51 | 0.03 |
| $\beta_4$ ind x site | jackrabbit | coyote | forbs | 0.16 | 0.14 | positive | 0.65 | -0.56 | 0.96 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $\beta_4$ ind x site | jackrabbit | badger | forbs | 0.00 | 0.00 | positive | 0.50 | -0.67 | 0.64 |
| $\beta_4$ ind x site | jackrabbit | swift fox | forbs | 0.74 | 0.76 | positive | 0.80 | -0.80 | 2.28 |
| $\beta_1$ ind x site | cottontail | no predators | prairie | 0.43 | 0.43 | positive | 0.94 | -0.11 | 0.99 |
| $\beta_1$ ind x site | cottontail | coyote | prairie | -0.30 | -0.30 | negative | 0.86 | -0.86 | 0.23 |
| $\beta_1$ ind x site | cottontail | badger | prairie | -0.08 | -0.08 | negative | 0.62 | -0.60 | 0.45 |
| $\beta_1$ ind x site | cottontail | swift fox | prairie | 0.03 | 0.03 | positive | 0.54 | -0.66 | 0.74 |
| $\beta_2$ ind x site | cottontail | no predators | vegHeight | 0.01 | 0.01 | positive | 0.51 | -0.71 | 0.68 |
| $\beta_2$ ind x site | cottontail | coyote | vegHeight | 0.03 | 0.02 | positive | 0.53 | -0.63 | 0.72 |
| $\beta_2$ ind x site | cottontail | badger | vegHeight | -0.07 | -0.07 | negative | 0.60 | -0.67 | 0.52 |
| $\beta_2$ ind x site | cottontail | swift fox | vegHeight | 0.59 | 0.58 | positive | 0.90 | -0.31 | 1.53 |
| $\beta_3$ ind x site | cottontail | no predators | grass | 0.19 | 0.18 | positive | 0.75 | -0.36 | 0.76 |
| $\beta_3$ ind x site | cottontail | coyote | grass | -0.11 | -0.10 | negative | 0.64 | -0.69 | 0.45 |
| $\beta_3$ ind x site | cottontail | badger | grass | -0.05 | -0.05 | negative | 0.58 | -0.54 | 0.44 |
| $\beta_3$ ind x site | cottontail | swift fox | grass | -0.63 | -0.61 | negative | 0.85 | -1.90 | 0.53 |
| $\beta_4$ ind x site | cottontail | no predators | forbs | 0.52 | 0.51 | positive | 0.98 | 0.02 | 1.05 |
| $\beta_4$ ind x site | cottontail | coyote | forbs | -0.05 | -0.05 | negative | 0.57 | -0.63 | 0.50 |
| $\beta_4$ ind x site | cottontail | badger | forbs | -0.24 | -0.23 | negative | 0.80 | -0.81 | 0.30 |
| $\beta_4$ ind x site | cottontail | swift fox | forbs | 1.12 | 1.05 | positive | 0.92 | -0.32 | 2.89 |

**Prey detection model**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $\alpha_0$ | jackrabbit | | | -0.11 | -0.11 | negative | 0.90 | -0.28 | 0.06 |
| $\alpha_0$ | cottontail | | | 0.07 | 0.07 | positive | 0.81 | -0.09 | 0.23 |
| $\alpha_1$ | jackrabbit | | vegHeight | -0.29 | -0.29 | negative | 1.00 | -0.46 | -0.12 |
| $\alpha_1$ | cottontail | | vegHeight | -0.17 | -0.17 | negative | 0.98 | -0.34 | 0.00 |
| $\alpha_2$ | jackrabbit | | prairie | -0.06 | -0.06 | negative | 0.83 | -0.20 | 0.07 |
| $\alpha_2$ | cottontail | | prairie | -0.22 | -0.22 | negative | 0.99 | -0.41 | -0.05 |

**Predator detection model**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $\alpha_0$ | | coyote | | -0.25 | -0.25 | negative | 1.00 | -0.34 | -0.16 |
| $\alpha_0$ | | badger | | -1.03 | -1.03 | negative | 1.00 | -1.18 | -0.89 |
| $\alpha_0$ | | swift fox | | -1.64 | -1.64 | negative | 1.00 | -2.11 | -1.17 |
| $\alpha_1$ | | coyote | vegHeight | -0.24 | -0.24 | negative | 1.00 | -0.33 | -0.16 |
| $\alpha_1$ | | badger | vegHeight | -0.02 | -0.02 | negative | 0.65 | -0.13 | 0.09 |
| $\alpha_1$ | | swift fox | vegHeight | -0.80 | -0.80 | negative | 1.00 | -1.12 | -0.48 |
| $\alpha_2$ | | coyote | prairie | -0.04 | -0.04 | negative | 0.81 | -0.12 | 0.05 |
| $\alpha_2$ | | badger | prairie | -0.51 | -0.51 | negative | 1.00 | -0.63 | -0.38 |
| $\alpha_2$ | | swift fox | prairie | -0.26 | -0.26 | negative | 0.99 | -0.50 | -0.03 |