

Appendix C

TABLE C1. Spatial capture-recapture model estimates for the total number (N) and density of mountain lions in the 5912 km² statespace in western Montana from all 16 candidate models. Models with Sex include individual sex as a covariate on baseline detection probability. Models with σ_{sex} allow for the scale of activity ranges to vary by sex. Models with Effort incorporate search effort as a covariate for detection probability. Models with RSF incorporate RSF as a covariate on the density of activity centers across the statespace. The 95% CI represent Bayesian credible intervals. We also report the goodness of fit (GOF) p-value for the encounter model. P-values between 0.05 and 0.95 indicate an adequate fit. $\mathbb{E}(n_{\text{cap}})$ gives the 95% credible interval of the expected number of captured individuals given the estimated point process and encounter process. β_{sex} , σ_{sex} , β_{effort} , and β_{RSF} indicate the significance and direction of the estimated parameters. NS indicates that the 95% CI for the parameter includes zero, + indicates a positive effect on detectability or density, while – indicates a negative effect on detectability or density.

| | N | Median density | 95% CI | GOF p-value | $\mathbb{E}(n_{\text{cap}})$ | β_{sex} | σ_{sex} | β_{effort} | β_{RSF} |
|--------------------------------|-----|-------------------|------------|----------------|------------------------------|----------------------|-----------------------|-------------------------|----------------------|
| Distance | 283 | 4.8 | 3.2 - 7.5 | 0.59 | 43 - 68 | | | | |
| Sex | 299 | 5.1 | 3.3 - 8.6 | 0.65 | 43 - 68 | NS | | | |
| σ_{sex} | 299 | 5.1 | 3.3 - 8.8 | 0.66 | 43 - 68 | | NS | | |
| Sex + σ_{sex} | 313 | 5.3 | 3.5 - 9.7 | 0.75 | 30 - 63 | - | + | | |
| Effort | 300 | 5.1 | 3.3 - 7.9 | 0.58 | 58 - 86 | | | + | |
| Effort + Sex | 333 | 5.6 | 3.7 - 10.4 | 0.66 | 57 - 87 | NS | | + | |
| Effort + σ_{sex} | 310 | 5.2 | 3.4 - 8.5 | 0.63 | 57 - 86 | | NS | + | |

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|--|-----|-----|------------|------|---------|----|----|---|---|
| Effort + Sex + σ_{sex} | 313 | 5.3 | 3.5 - 9.3 | 0.67 | 35 - 81 | NS | NS | + | |
| RSF | 191 | 3.2 | 2.2 - 5.1 | 0.67 | 51 - 75 | | | | + |
| Sex + RSF | 222 | 3.8 | 2.4 - 16.4 | 0.76 | 38 - 76 | NS | | | + |
| σ_{sex} + RSF | 210 | 3.6 | 2.4 - 5.9 | 0.76 | 51 - 76 | | NS | | + |
| Sex + σ_{sex} + RSF | 209 | 3.5 | 2.4 - 5.7 | 0.76 | 47 - 73 | NS | NS | | + |
| Effort + RSF | 201 | 3.4 | 2.4 - 5.7 | 0.64 | 56 - 84 | | | + | + |
| Effort + RSF + Sex | 229 | 3.9 | 2.6 - 7.7 | 0.73 | 55 - 85 | NS | | + | + |
| Effort + RSF + σ_{sex} | 214 | 3.6 | 2.5 - 5.8 | 0.66 | 56 - 84 | | NS | + | + |
| Effort + RSF + Sex + σ_{sex} | 226 | 3.8 | 2.6 - 6.5 | 0.73 | 50 - 81 | NS | NS | + | + |
