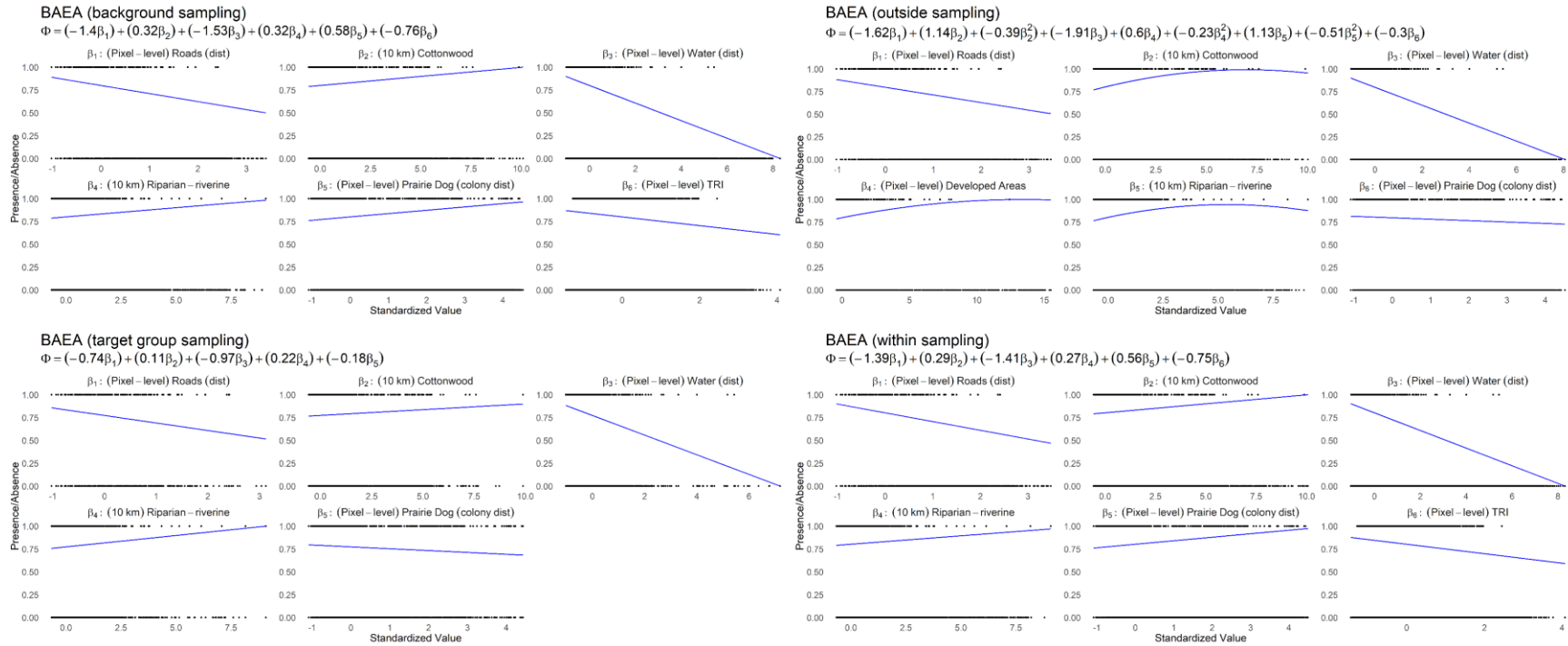SUPPLEMENTAL MATERIAL 2

NEST DISTRIBUTION OF FOUR PRIORITY RAPTOR SPECIES IN COLORADO
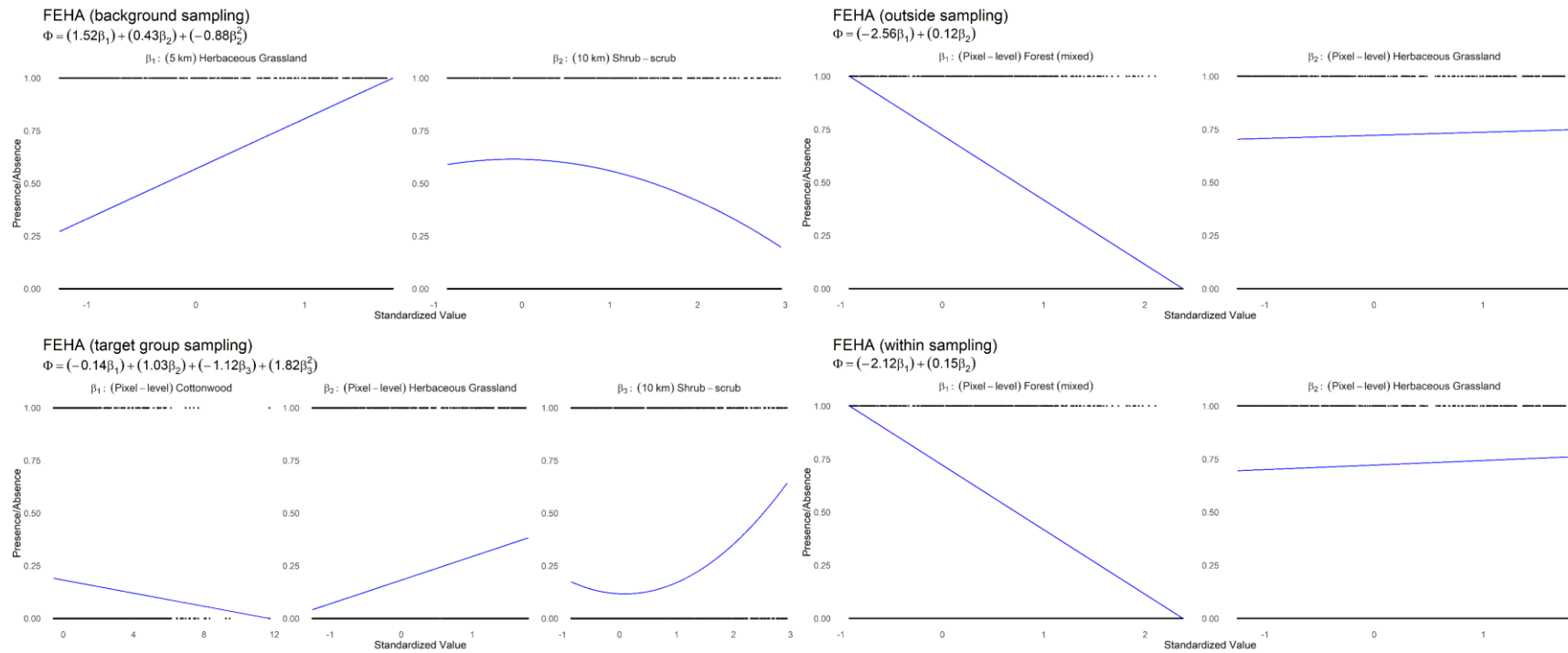
KEVIN AAGAARD, REESA YALE CONREY, AND JAMES H. GAMMONLEY

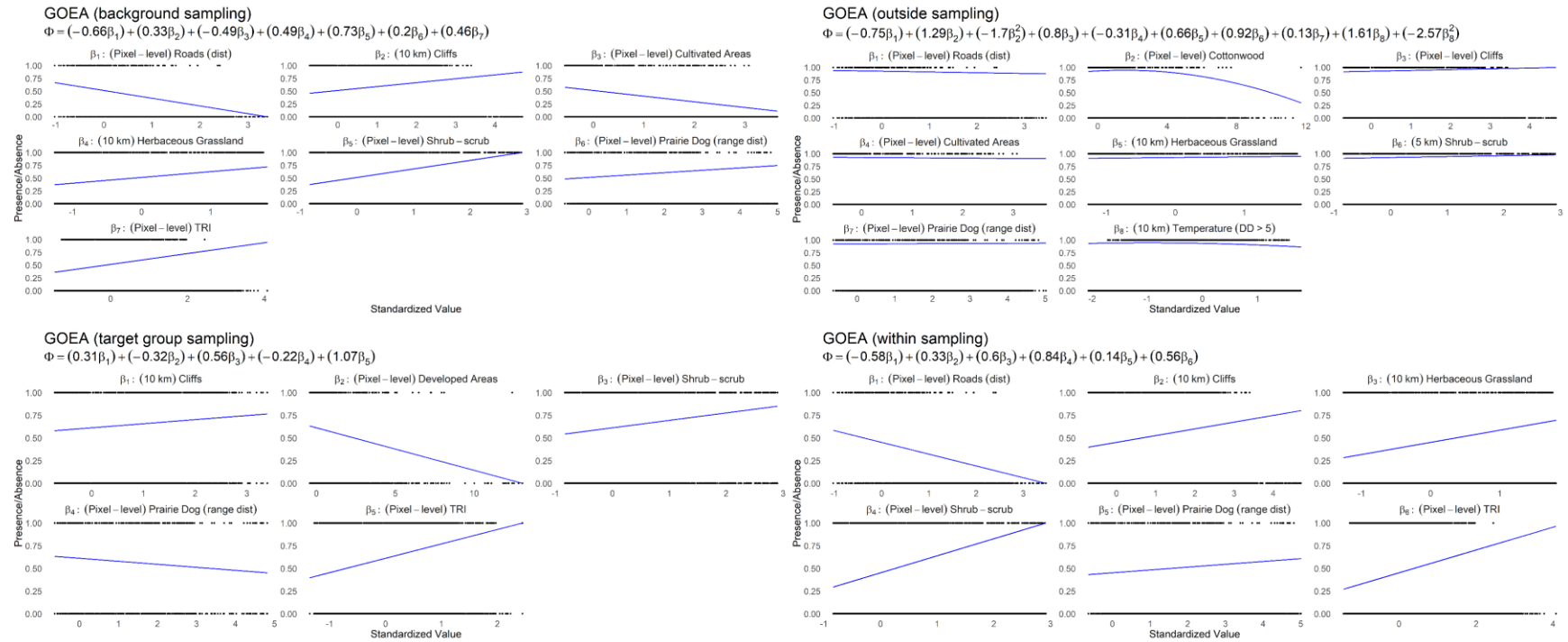*Colorado Parks and Wildlife, 317 W Prospect Road, Fort Collins, CO 80526 USA*

Supplementary Figure 2.1. $\boldsymbol{\phi}$ is the relative probability of use, each $\boldsymbol{\beta}$ is a covariate. Blue lines represent the partial regression estimate, taking either a linear form (y ~ x) or a quadratic form (y ~ x + x²), depending on the best-fitting association of each covariate to the response. "Pixel-level" is 1 km².
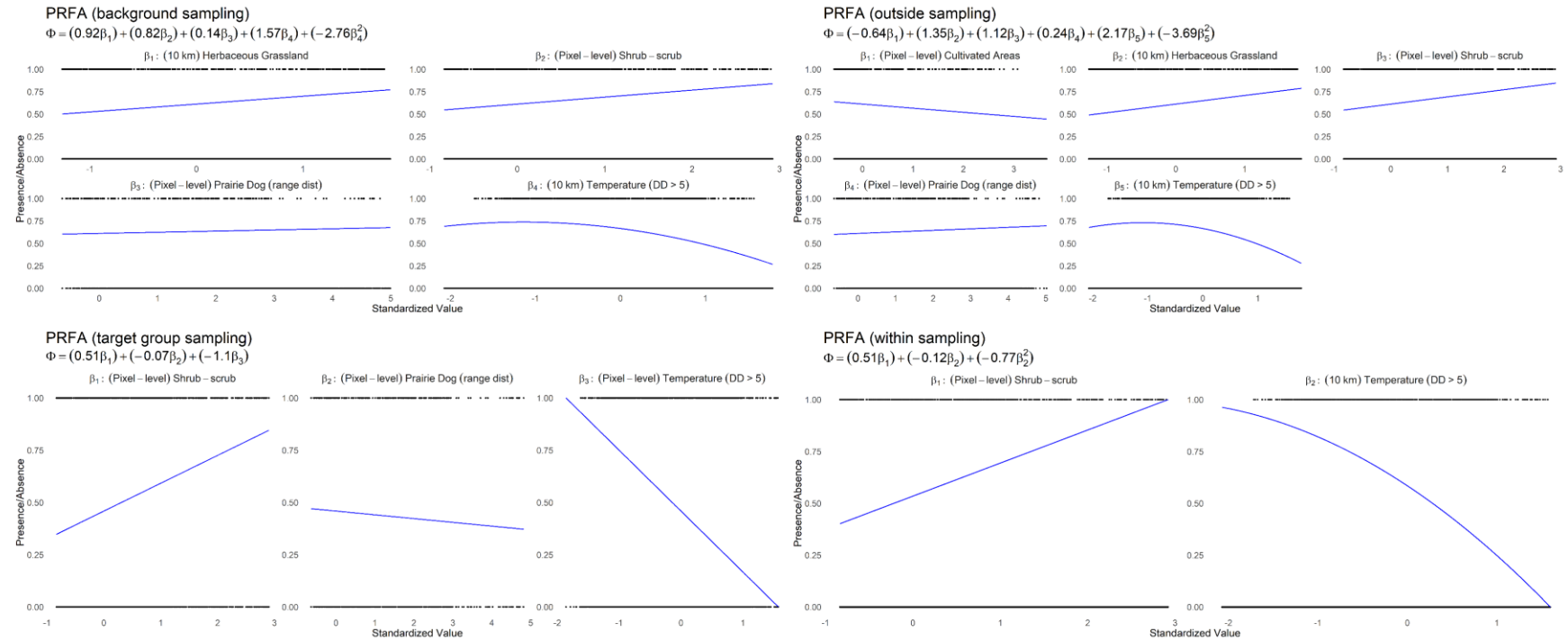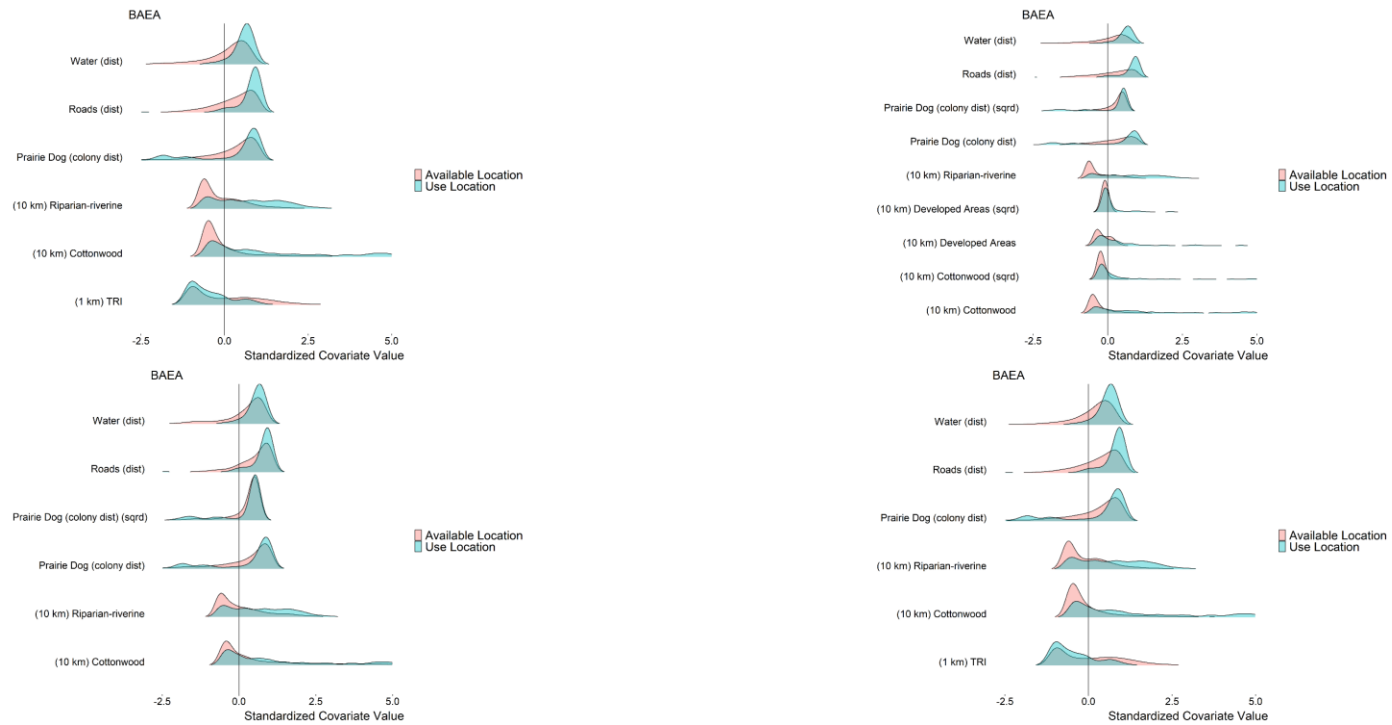
Supplementary Figure 2.2.

FEHA (background sampling)
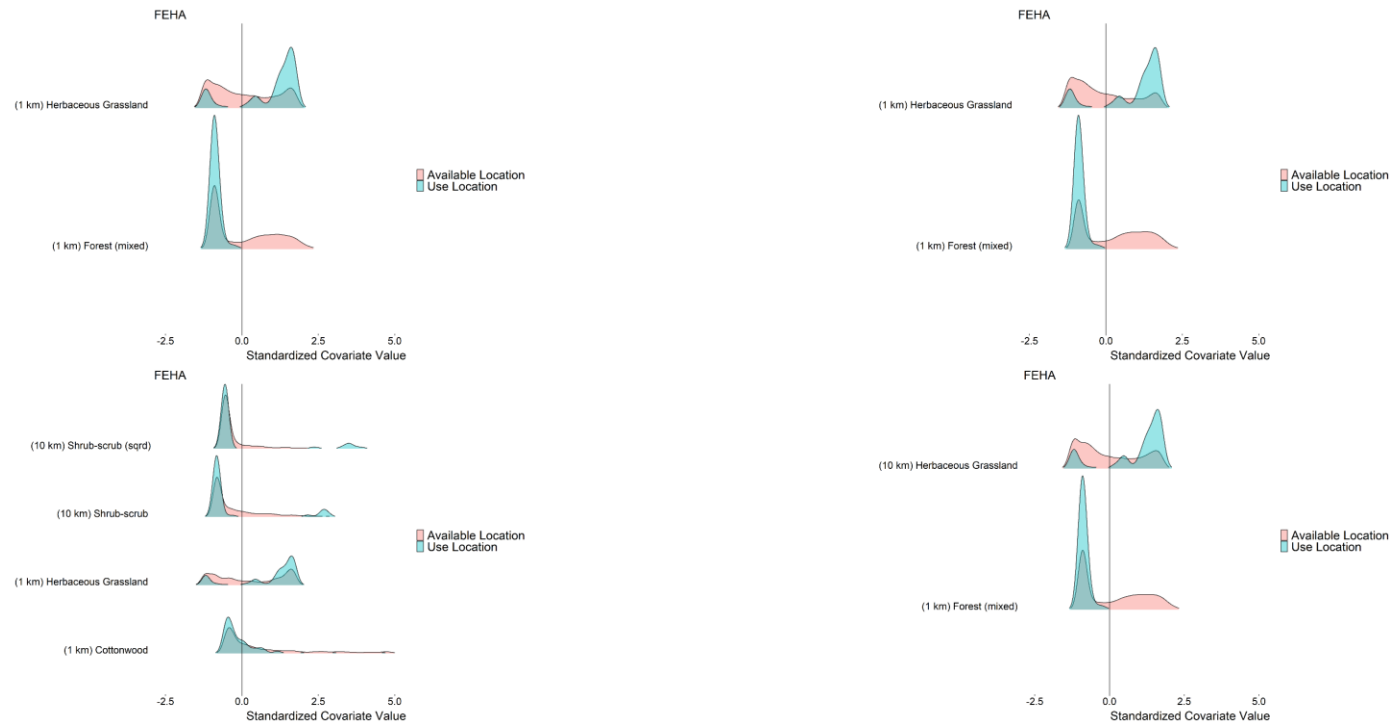$$\Phi = (1.52\beta_1) + (0.43\beta_2) + (-0.88\beta_2^2)$$

β_1: (5 km) Herbaceous Grassland
β_2: (10 km) Shrub $-$ scrub

FEHA (outside sampling)
$$\Phi = (-2.56\beta_1) + (0.12\beta_2)$$

β_1: (Pixel $-$ level) Forest (mixed)
β_2: (Pixel $-$ level) Herbaceous Grassland

FEHA (target group sampling)
$$\Phi = (-0.14\beta_1) + (1.03\beta_2) + (-1.12\beta_3) + (1.82\beta_3^2)$$

β_1: (Pixel $-$ level) Cottonwood
β_2: (Pixel $-$ level) Herbaceous Grassland
β_3: (10 km) Shrub $-$ scrub

FEHA (within sampling)
$$\Phi = (-2.12\beta_1) + (0.15\beta_2)$$

β_1: (Pixel $-$ level) Forest (mixed)
β_2: (Pixel $-$ level) Herbaceous Grassland

Supplementary Figure 2.3.

GOEA (background sampling)
$\Phi = (-0.66\beta_1) + (0.33\beta_2) + (-0.49\beta_3) + (0.49\beta_4) + (0.73\beta_5) + (0.2\beta_6) + (0.46\beta_7)$

β_1: (Pixel − level) Roads (dist)
β_2: (10 km) Cliffs
β_3: (Pixel − level) Cultivated Areas
β_4: (10 km) Herbaceous Grassland
β_5: (Pixel − level) Shrub − scrub
β_6: (Pixel − level) Prairie Dog (range dist)
β_7: (Pixel − level) TRI

GOEA (outside sampling)
$\Phi = (-0.75\beta_1) + (1.29\beta_2) + (-1.7\beta_2^2) + (0.8\beta_3) + (-0.31\beta_4) + (0.66\beta_5) + (0.92\beta_6) + (0.13\beta_7) + (1.61\beta_8) + (-2.57\beta_8^2)$

β_1: (Pixel − level) Roads (dist)
β_2: (Pixel − level) Cottonwood
β_3: (Pixel − level) Cliffs
β_4: (Pixel − level) Cultivated Areas
β_5: (10 km) Herbaceous Grassland
β_6: (5 km) Shrub − scrub
β_7: (Pixel − level) Prairie Dog (range dist)
β_8: (10 km) Temperature (DD > 5)

GOEA (target group sampling)
$\Phi = (0.31\beta_1) + (-0.32\beta_2) + (0.56\beta_3) + (-0.22\beta_4) + (1.07\beta_5)$

β_1: (10 km) Cliffs
β_2: (Pixel − level) Developed Areas
β_3: (10 km) Shrub − scrub
β_4: (Pixel − level) Prairie Dog (range dist)
β_5: (Pixel − level) TRI

GOEA (within sampling)
$\Phi = (-0.58\beta_1) + (0.33\beta_2) + (0.6\beta_3) + (0.84\beta_4) + (0.14\beta_5) + (0.56\beta_6)$

β_1: (Pixel − level) Roads (dist)
β_2: (10 km) Cliffs
β_3: (10 km) Herbaceous Grassland
β_4: (Pixel − level) Shrub − scrub
β_5: (Pixel − level) Prairie Dog (range dist)
β_6: (Pixel − level) TRI

Supplementary Figure 2.4.

PRFA (background sampling)
$\Phi = (0.92\beta_1) + (0.82\beta_2) + (0.14\beta_3) + (1.57\beta_4) + (-2.76\beta_4^2)$

$\beta_1:$ (10 km) Herbaceous Grassland

$\beta_2:$ (Pixel – level) Shrub – scrub

$\beta_3:$ (Pixel – level) Prairie Dog (range dist)

$\beta_4:$ (10 km) Temperature (DD > 5)

PRFA (outside sampling)
$\Phi = (-0.64\beta_1) + (1.35\beta_2) + (1.12\beta_3) + (0.24\beta_4) + (2.17\beta_5) + (-3.69\beta_5^2)$

$\beta_1:$ (Pixel – level) Cultivated Areas

$\beta_2:$ (10 km) Herbaceous Grassland

$\beta_3:$ (Pixel – level) Shrub – scrub

$\beta_4:$ (Pixel – level) Prairie Dog (range dist)

$\beta_5:$ (10 km) Temperature (DD > 5)

PRFA (target group sampling)
$\Phi = (0.51\beta_1) + (-0.07\beta_2) + (-1.1\beta_3)$

$\beta_1:$ (Pixel – level) Shrub – scrub

$\beta_2:$ (Pixel – level) Prairie Dog (range dist)

$\beta_3:$ (Pixel – level) Temperature (DD > 5)

PRFA (within sampling)
$\Phi = (0.51\beta_1) + (-0.12\beta_2) + (-0.77\beta_2^2)$

$\beta_1:$ (Pixel – level) Shrub – scrub

$\beta_2:$ (10 km) Temperature (DD > 5)

Supplementary Figure 2.5. Bald Eagle (clockwise from top left: background, outside, within, target group)

Supplementary Figure 2.6. Ferruginous Hawk (clockwise from top left: background, outside, within, target group)

Supplementary Figure 2.7. Golden Eagle (clockwise from top left: background, outside, within, target group)

Supplementary Figure 2.8. Prairie Falcon (clockwise from top left: background, outside, within, target group)

Supplementary Figure 2.9. Bald Eagle
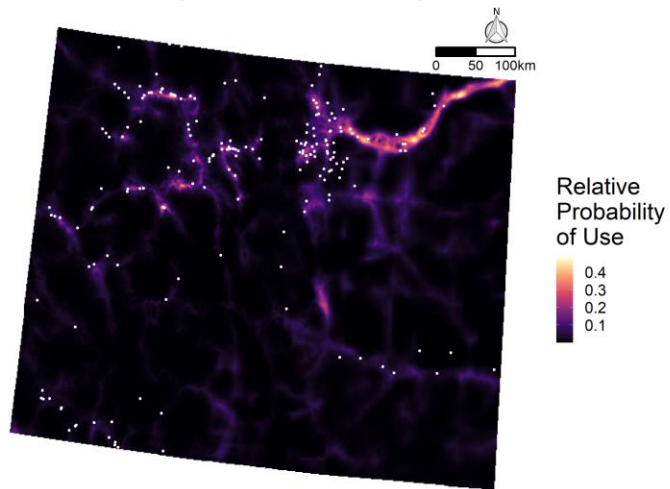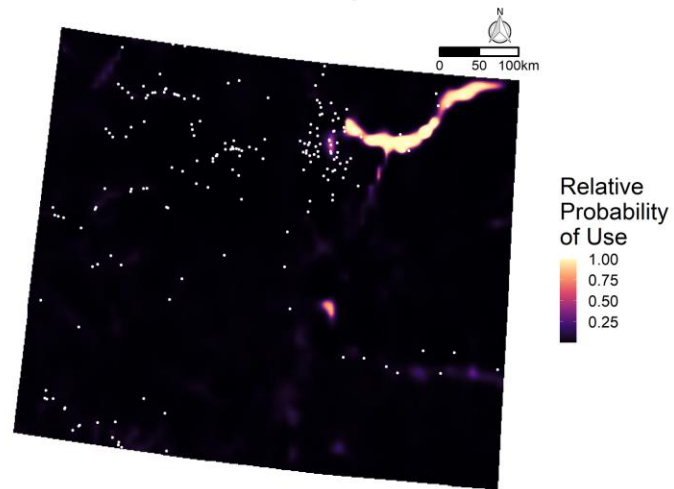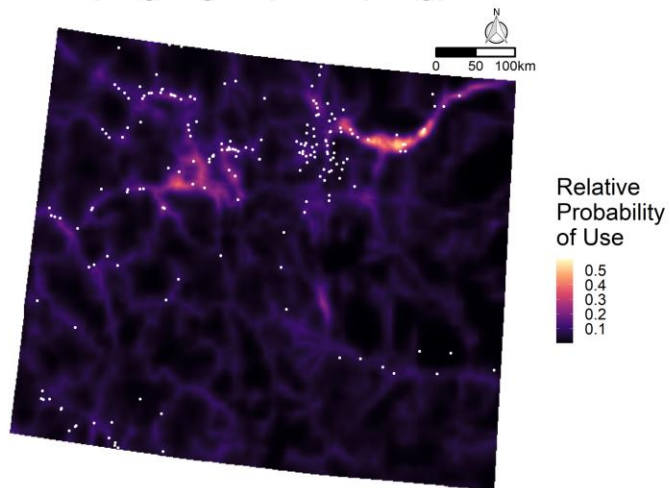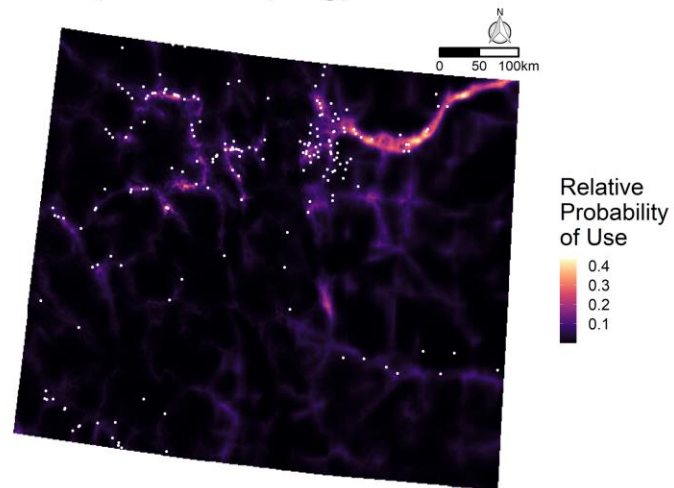
Supplementary Figure 2.10. Ferruginous Hawk
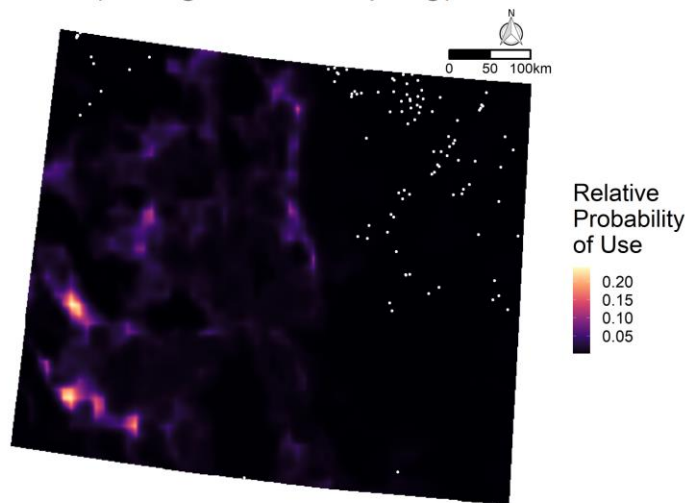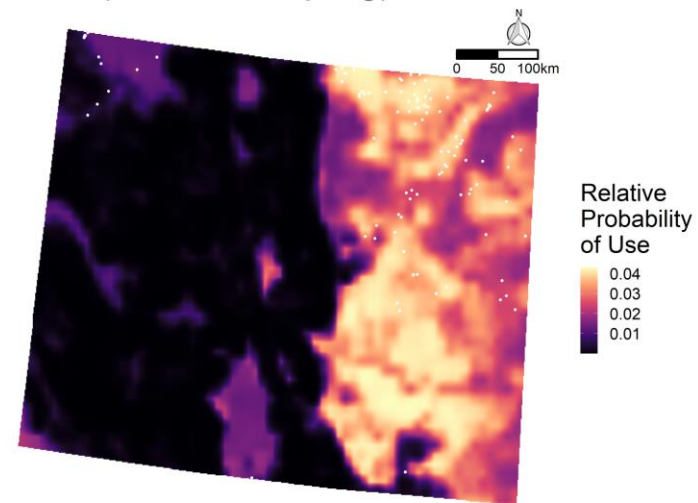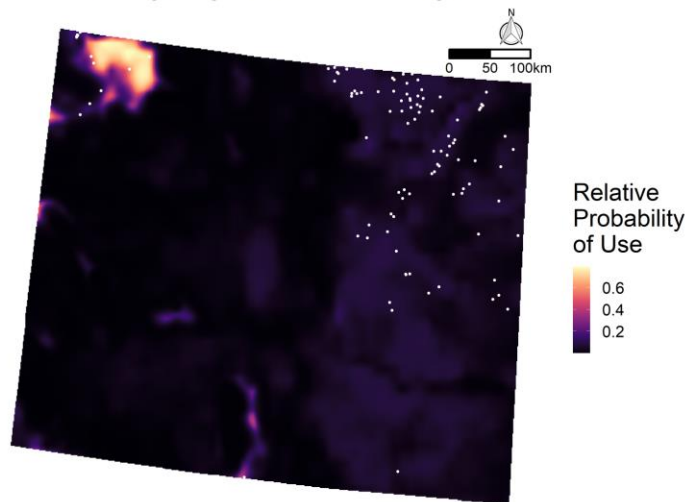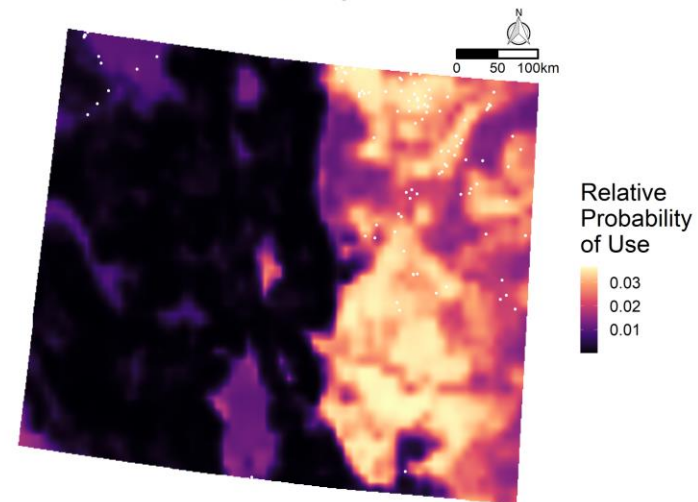
Supplementary Figure 2.11 Golden Eagle
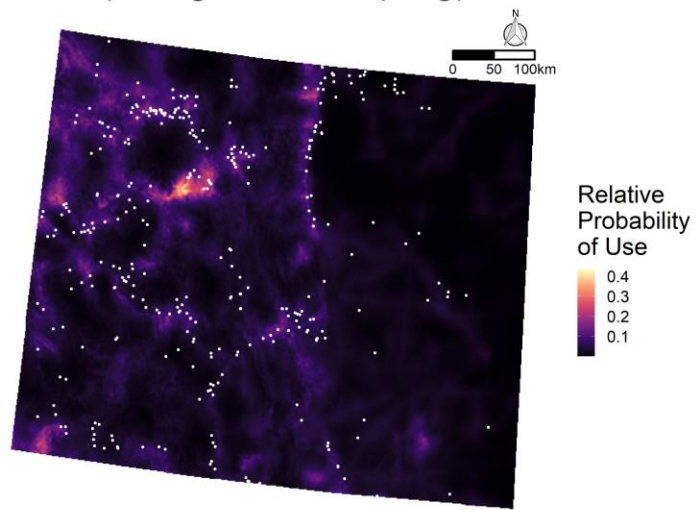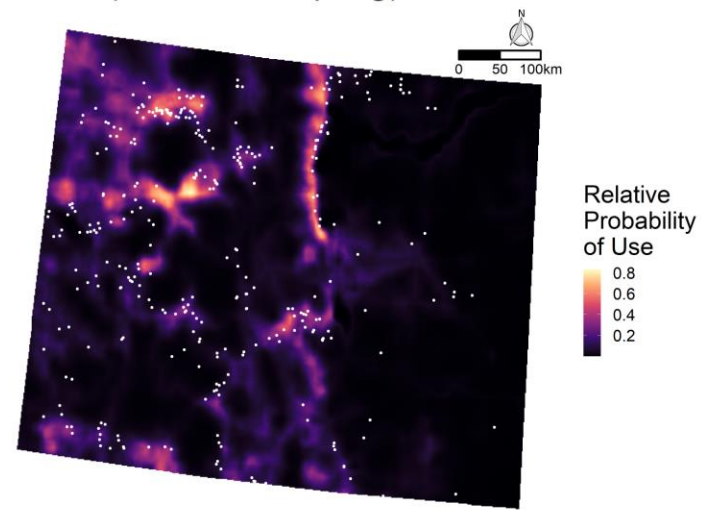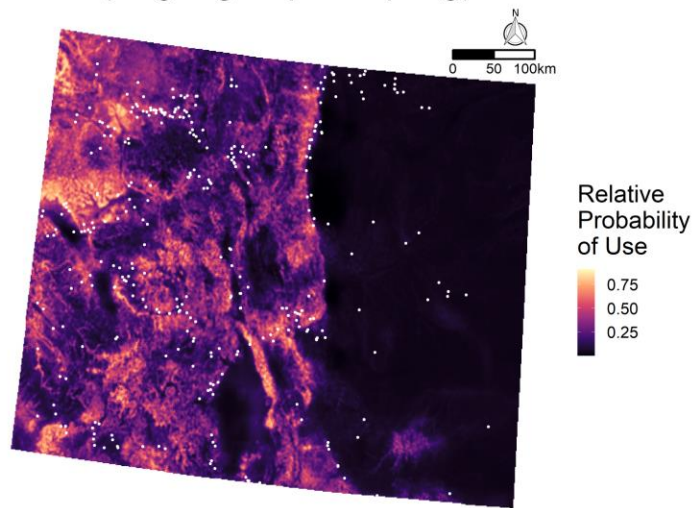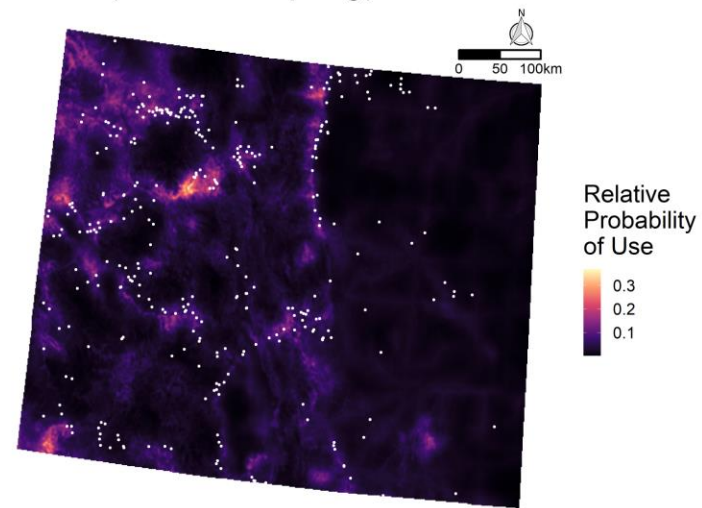
Supplementary Figure 2.12. Prairie Falcon
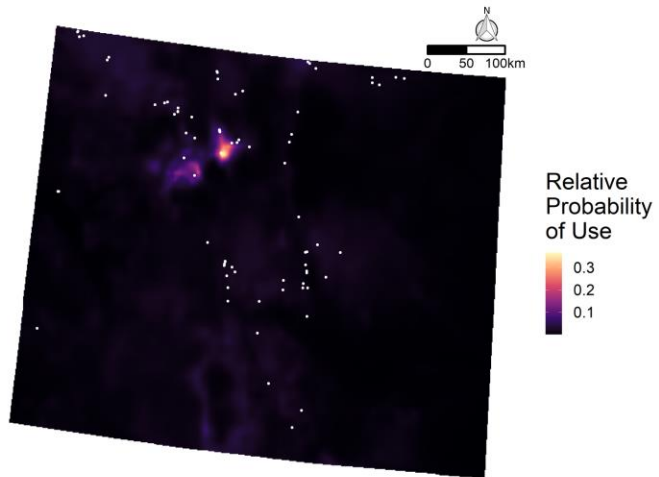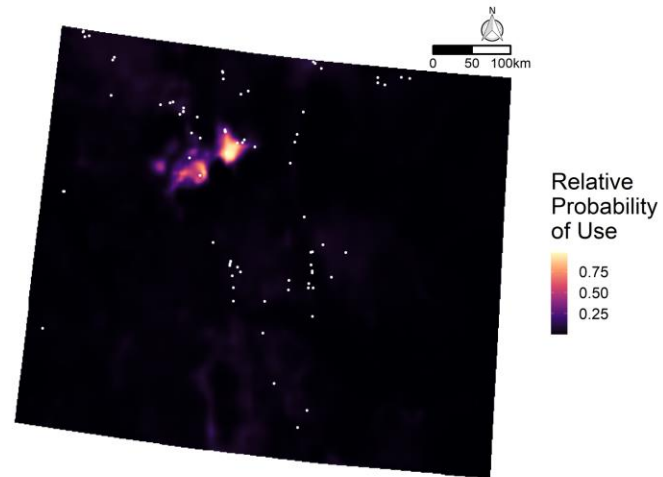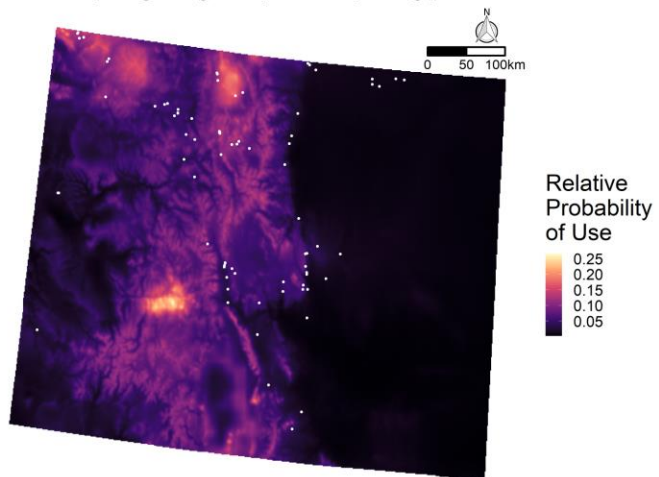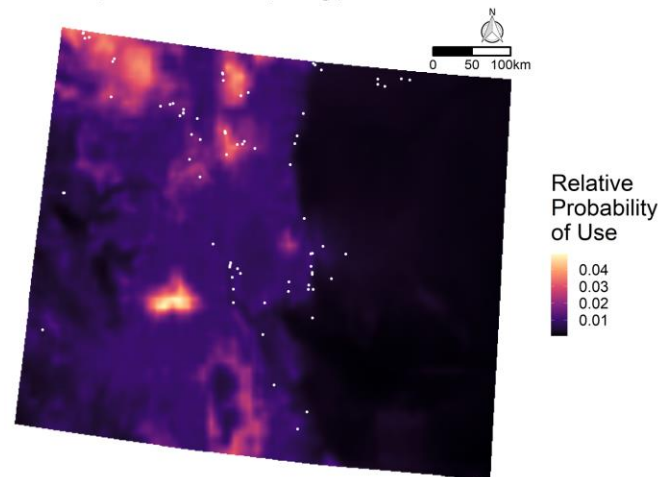
Supplementary Figure 2.13. BAEA = Bald Eagle; FEHA = Ferruginous Hawk; GOEA = Golden Eagle; PRFA = Prairie Falcon. Not all variables evaluated were supported in the final model; see Fig. 2). These density plots demonstrate the high degree of fidelity among covariate distributions across selection frames.