A chart with blue and gray lines

Description automatically generated with medium confidence

**Supplementary Figure S5.** Coefficient estimates for the effect of the proportion of non-flooded forests (within a 1km buffer around the site) on the probability of carcasses suitability. The top coefficient (M-L Mammals) represents the “community” effect for all medium and large-sized mammals followed by: Taypec: Tayassu pecari (white-lipped peccary); Nasnas: Nasua nasua (South American Coati); Bladic: Blastocerus dichotomus (marsh deer); MazSub: Mazama and Subulo (brocket deer); Didalb

**Supplementary Table S2.1.** Community coefficients estimates of mortality and detection of medium and large-sized mammals after Pantanal 2020 megafires. Estimates were obtained in the global fitted multi-species zero-inflated N-mixture model with a dependent double-observer observation process from carcass surveys. Mean (µ) and standard deviance (σ) represent the hyper-parameter (“community”) estimates of species random effects. NFforest = proportion of non-flooded forest; dist2wiw = mean distance to the nearest water body (from Water in Wetlands index); NBR = mean difference Normalized Burn Ratio; AWB = presence/absence of artificial water body; greenVeg = proportion of green vegetation.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Estimate** | **SE** | **95% CI** |
| ***Probability of suitability (*Ψ*)*** |  |  |  |
| Intercept Ψ (µ) | -1.77 | 0.77 | -3.14 - -0.07 |
| Intercept Ψ (σ) | 1.81 | 0.55 | 0.85 - 2.88 |
| ΔNFforest (µ) | 0.96 | 0.43 | 0.27 - 1.96 |
| ΔNFforest (σ) | 1.11 | 0.45 | 0.47 - 2.26 |
| Δdist2wiw (µ) | 0.06 | 0.27 | -0.49 - 0.58 |
| Δdist2wiw (σ) | 0.66 | 0.38 | 0.09 - 1.61 |
| ***Local abundance (*λ*)*** |  |  |  |
| Intercept λ (µ) | -2.63 | 0.74 | -4.12 - -1.26 |
| Intercept λ (σ) | 1.65 | 0.44 | 0.91 - 2.62 |
| αNBR | 0.48 | 0.11 | 0.25 - 0.7 |
| αAWB | 2.02 | 0.25 | 1.53 - 2.49 |
| ***Detection probability (p)*** |  |  |  |
| Intercept p (µ) | -0.78 | 0.94 | -2.85 - 0.72 |
| Intercept p (σ) | 1.95 | 0.75 | 0.6 - 3.54 |
| βgreenVeg | 0.37 | 0.24 | -0.1 - 0.86 |

**Supplementary Table S2.2.** Species-specific coefficients estimates of mortality and detection of medium and large-sized mammals after Pantanal 2020 megafires. Estimates were obtained in the global fitted multi-species zero-inflated N-mixture model with a dependent double-observer observation process from carcass surveys. Species-specific parameters were estimated considering species as random effects (normal distribution). NFforest = proportion of non-flooded forest; dist2wiw = mean distance to the nearest water body (from Water in Wetlands index).

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Estimate** | **SE** | **95% CI** |
| ***Probability of Suitability (Ψ)*** |  |  |  |
| Intercept Ψ (*Alocar*) | -2.43 | 2.13 | -6.61 - 2.02 |
| Intercept Ψ (*Bladic*) | -2.12 | 1.71 | -5.18 - 1.76 |
| Intercept Ψ (*Certho*) | -1.32 | 1.91 | -4.66 - 2.85 |
| Intercept Ψ (*Chrbra*) | -2.41 | 2.12 | -6.62 - 2.02 |
| Intercept Ψ (*Coelon*) | -0.98 | 1.69 | -3.86 - 2.71 |
| Intercept Ψ (*Cunpac*) | -1.99 | 1.88 | -5.38 - 2.13 |
| Intercept Ψ (*Dasaza*) | -1.71 | 0.47 | -2.56 - -0.72 |
| Intercept Ψ (*Dasnov*) | -1.97 | 1.88 | -5.45 - 2.06 |
| Intercept Ψ (*Didalb*) | -2.32 | 1.9 | -5.8 - 2.02 |
| Intercept Ψ (*Eirbar*) | -1.07 | 1.81 | -4.11 - 2.98 |
| Intercept Ψ (*Eupsex*) | -0.63 | 1.68 | -3.37 - 3.15 |
| Intercept Ψ (*Heryag*) | -2.47 | 2.16 | -6.65 - 2.04 |
| Intercept Ψ (*Hydhyd*) | -3.65 | 1.1 | -5.92 - -1.55 |
| Intercept Ψ (*Leopar*) | -2.49 | 2.13 | -6.79 - 1.88 |
| Intercept Ψ (*MazSub*) | -0.65 | 1.25 | -2.57 - 2.32 |
| Intercept Ψ (*Myrtri*) | -1.71 | 1.73 | -4.8 - 2.16 |
| Intercept Ψ (*Nasnas*) | -0.28 | 1.13 | -2.14 - 2.28 |
| Intercept Ψ (*Panonc*) | -2.55 | 2.07 | -6.69 - 1.73 |
| Intercept Ψ (*Pectaj*) | -0.63 | 1.36 | -2.61 - 2.86 |
| Intercept Ψ (*Primax*) | -2.38 | 1.76 | -5.67 - 1.33 |
| Intercept Ψ (*Procan*) | -1.97 | 1.88 | -5.35 - 2.23 |
| Intercept Ψ (*Pumcon*) | -0.49 | 1.82 | -3.36 - 3.74 |
| Intercept Ψ (*Sapcay*) | -3.91 | 0.46 | -4.91 - -3.12 |
| Intercept Ψ (*Speven*) | -2.51 | 2.16 | -6.67 - 2.21 |
| Intercept Ψ (*Tamtet*) | -0.67 | 1.31 | -2.68 - 2.39 |
| Intercept Ψ (*Tapter*) | -2.1 | 0.61 | -3.13 - -0.84 |
| Intercept Ψ (*Taypec*) | -0.34 | 0.75 | -1.55 - 1.42 |
| ΔNFforest *(Alocar)* | 0.87 | 1.21 | -1.43 - 3.53 |
| ΔNFforest *(Bladic)* | 1.66 | 1.06 | -0.05 - 4.13 |
| ΔNFforest *(Certho)* | 0.44 | 1.19 | -1.99 - 2.84 |
| ΔNFforest *(Chrbra)* | 0.87 | 1.22 | -1.45 - 3.53 |
| ΔNFforest *(Coelon)* | 1.27 | 1.12 | -0.42 - 4.02 |
| ΔNFforest *(Cunpac)* | 1.15 | 1.17 | -0.8 - 3.91 |
| ΔNFforest *(Dasaza)* | 1.2 | 0.37 | 0.55 - 2 |
| ΔNFforest *(Dasnov)* | 1.04 | 1.18 | -0.94 - 3.8 |
| ΔNFforest *(Didalb)* | 1.43 | 1.08 | -0.37 - 3.93 |
| ΔNFforest *(Eirbar)* | 0.7 | 1.07 | -1.28 - 3.08 |
| ΔNFforest *(Eupsex)* | 0.62 | 0.97 | -1.2 - 2.77 |
| ΔNFforest *(Heryag)* | 0.9 | 1.21 | -1.42 - 3.54 |
| ΔNFforest *(Hydhyd)* | -1.01 | 0.72 | -2.65 - 0.21 |
| ΔNFforest *(Leopar)* | 0.88 | 1.21 | -1.44 - 3.48 |
| ΔNFforest *(MazSub)* | 1.53 | 0.89 | 0.05 - 3.63 |
| ΔNFforest *(Myrtri)* | 1.25 | 1.17 | -0.69 - 4.03 |
| ΔNFforest *(Nasnas)* | 1.95 | 1.02 | 0.47 - 4.5 |
| ΔNFforest *(Panonc)* | 0.9 | 1.23 | -1.41 - 3.56 |
| ΔNFforest *(Pectaj)* | 0.19 | 0.65 | -0.98 - 1.64 |
| ΔNFforest *(Priomax)* | 1.27 | 1.11 | -0.64 - 3.8 |
| ΔNFforest *(Procan)* | 1.24 | 1.16 | -0.66 - 3.92 |
| ΔNFforest *(Pumcon)* | 0.23 | 0.85 | -1.45 - 2.01 |
| ΔNFforest *(Sapcay)* | 1.13 | 0.42 | 0.35 - 2 |
| ΔNFforest *(Speven)* | 0.89 | 1.22 | -1.43 - 3.53 |
| ΔNFforest *(Tamtet)* | 0.91 | 0.69 | -0.19 - 2.56 |
| ΔNFforest *(Tapter)* | 0.41 | 0.43 | -0.34 - 1.24 |
| ΔNFforest *(Taypec)* | 2.02 | 0.71 | 0.94 - 3.75 |
| Δdist2wiw *(Alocar)* | 0.07 | 0.78 | -1.59 - 1.65 |
| Δdist2wiw *(Bladic)* | 0.16 | 0.74 | -1.23 - 1.71 |
| Δdist2wiw *(Certho)* | -0.01 | 0.74 | -1.61 - 1.44 |
| Δdist2wiw *(Chrbras)* | 0.08 | 0.79 | -1.54 - 1.7 |
| Δdist2wiw *(Coelon)* | -0.03 | 0.58 | -1.26 - 1.15 |
| Δdist2wiw *(Cunpac)* | -0.04 | 0.75 | -1.66 - 1.38 |
| Δdist2wiw *(Dasaza)* | -0.34 | 0.32 | -1.02 - 0.25 |
| Δdist2wiw *(Dasnov)* | -0.28 | 0.76 | -2.1 - 0.96 |
| Δdist2wiw *(Didalb)* | -0.09 | 0.73 | -1.75 - 1.25 |
| Δdist2wiw *(Eirbar)* | -0.25 | 0.74 | -1.96 - 0.98 |
| Δdist2wiw *(Eupsex)* | 0.18 | 0.67 | -1.17 - 1.59 |
| Δdist2wiw *(Heryag)* | 0.07 | 0.78 | -1.58 - 1.63 |
| Δdist2wiw *(Hydhyd)* | -0.76 | 0.68 | -2.39 - 0.23 |
| Δdist2wiw *(Leopar)* | 0.07 | 0.78 | -1.5 - 1.65 |
| Δdist2wiw *(MazSub)* | 0.31 | 0.62 | -0.85 - 1.64 |
| Δdist2wiw *(Myrtri)* | -0.09 | 0.79 | -1.86 - 1.35 |
| Δdist2wiw *(Nasnas)* | 0.32 | 0.47 | -0.51 - 1.36 |
| Δdist2wiw *(Panonc)* | 0.07 | 0.77 | -1.54 - 1.63 |
| Δdist2wiw *(Pectaj)* | 0.85 | 0.62 | -0.12 - 2.29 |
| Δdist2wiw *(Primax)* | 0.34 | 0.75 | -0.9 - 2.08 |
| Δdist2wiw *(Procan)* | -0.2 | 0.77 | -2 - 1.15 |
| Δdist2wiw *(Pumcon)* | -0.08 | 0.62 | -1.46 - 1.09 |
| Δdist2wiw *(Sapcay)* | 0.14 | 0.27 | -0.4 - 0.67 |
| Δdist2wiw *(Speven)* | 0.06 | 0.77 | -1.54 - 1.64 |
| Δdist2wiw *(Tamtet)* | 0.61 | 0.72 | -0.36 - 2.47 |
| Δdist2wiw *(Tapter)* | 0.27 | 0.32 | -0.31 - 0.93 |
| Δdist2wiw *(Taypec)* | 0.28 | 0.4 | -0.44 - 1.16 |
| ***Local abundance (λ)*** |  |  |  |
| Intercept λ (*Alocar*) | -3.57 | 1.91 | -7.57 - -0.12 |
| Intercept λ (*Bladic*) | -2.74 | 1.3 | -5.2 - -0.16 |
| Intercept λ (*Certho*) | -3.25 | 1.52 | -6.18 - -0.28 |
| Intercept λ (*Chrbra*) | -3.57 | 1.88 | -7.48 - -0.13 |
| Intercept λ (*Coelon*) | -2.59 | 1.22 | -4.73 - -0.05 |
| Intercept λ (*Cunpac*) | -3.32 | 1.53 | -6.27 - -0.38 |
| Intercept λ (*Dasaza*) | -0.59 | 0.61 | -1.45 - 0.67 |
| Intercept λ (*Dasnov*) | -3.2 | 1.54 | -6.14 - -0.2 |
| Intercept λ (*Didalb*) | -3.04 | 1.5 | -5.93 - -0.12 |
| Intercept λ (*Eirbar*) | -3.27 | 1.36 | -5.69 - -0.45 |
| Intercept λ (*Eupsex*) | -2.93 | 1.25 | -5.12 - -0.22 |
| Intercept λ (*Heryag*) | -3.55 | 1.89 | -7.5 - -0.11 |
| Intercept λ (*Hydhyd*) | -1.43 | 0.82 | -3.03 - 0.21 |
| Intercept λ (*Leopar*) | -3.56 | 1.91 | -7.58 - -0.07 |
| Intercept λ (*MazSub*) | -2.64 | 0.61 | -3.73 - -1.35 |
| Intercept λ (*Myrtri*) | -3.28 | 1.46 | -6.12 - -0.39 |
| Intercept λ (*Nasnas*) | -1.87 | 0.96 | -3.37 - 0.37 |
| Intercept λ (*Panonc*) | -3.53 | 1.89 | -7.47 - -0.11 |
| Intercept λ (*Pectaj*) | -1.78 | 0.96 | -3.46 - 0.34 |
| Intercept λ (*Primax*) | -3.25 | 1.51 | -6.1 - -0.23 |
| Intercept λ (*Procan*) | -3.16 | 1.53 | -6.14 - -0.13 |
| Intercept λ (*Pumcon*) | -2.64 | 1.27 | -4.88 - 0.02 |
| Intercept λ (*Sapcay*) | 0.82 | 0.22 | 0.37 - 1.24 |
| Intercept λ (*Speven*) | -3.53 | 1.89 | -7.46 - -0.1 |
| Intercept λ (*Tamtet*) | -2.59 | 0.73 | -3.85 - -1.11 |
| Intercept λ (*Tapter*) | -1.15 | 0.56 | -2.22 - 0.07 |
| Intercept λ (*Taypec*) | -1.84 | 0.3 | -2.39 - -1.23 |
| ***Detection probability (p)*** |  |  |  |
| Intercept p (*Alocar*) | -1.6 | 2.58 | -7.17 - 2.87 |
| Intercept p (*Bladic*) | -1.3 | 1.53 | -4.57 - 1.28 |
| Intercept p (*Certho*) | -1.82 | 1.88 | -5.88 - 1.37 |
| Intercept p (*Chrbra*) | -1.63 | 2.57 | -7.23 - 2.78 |
| Intercept p (*Coelon*) | -0.98 | 1.45 | -4.17 - 1.49 |
| Intercept p (*Cunpac*) | -0.75 | 2.24 | -5.27 - 3.52 |
| Intercept p (*Dasaza*) | -0.55 | 0.83 | -2.36 - 0.68 |
| Intercept p (*Dasnov*) | -1.14 | 2.17 | -5.45 - 3.03 |
| Intercept p (*Didalb*) | -1.52 | 1.81 | -5.45 - 1.53 |
| Intercept p (*Eirbar*) | -0.61 | 2.18 | -4.95 - 3.66 |
| Intercept p (*Eupsex*) | -1.23 | 1.61 | -4.78 - 1.46 |
| Intercept p (*Heryag*) | -1.65 | 2.59 | -7.2 - 2.82 |
| Intercept p (*Hydhyd*) | 0.66 | 1.31 | -2.08 - 3.19 |
| Intercept p (*Leopar*) | -1.62 | 2.56 | -7.16 - 2.84 |
| Intercept p (*MazSub*) | 1.56 | 1.16 | -0.79 - 3.88 |
| Intercept p (*Myrtri*) | -1.74 | 1.81 | -5.56 - 1.38 |
| Intercept p (*Nasnas*) | -1.44 | 1.27 | -4.14 - 0.73 |
| Intercept p (*Panonc*) | -1.6 | 2.57 | -7.21 - 2.89 |
| Intercept p (*Pectaj*) | -1.28 | 1.17 | -3.87 - 0.71 |
| Intercept p (*Primax*) | -0.54 | 2.25 | -5.18 - 3.73 |
| Intercept p (*Procan*) | -1.47 | 1.88 | -5.57 - 1.69 |
| Intercept p (*Pumcon*) | -1.16 | 1.71 | -4.67 - 1.94 |
| Intercept p (*Sapcay*) | 1.31 | 0.57 | 0.16 - 2.42 |
| Intercept p (*Speven*) | -1.59 | 2.55 | -7.17 - 2.83 |
| Intercept p (*Tamtet*) | 1.41 | 1.18 | -1.02 - 3.76 |
| Intercept p (*Tapter*) | 0.17 | 0.87 | -1.77 - 1.7 |
| Intercept p (*Taypec*) | 1.08 | 0.62 | -0.2 - 2.25 |

A graph of a number of cars

Description automatically generated

**Supplementary Figure S6.** Estimated wildfire mortalities per km² in Sesc Pantanal Reserve after 2020 megafires for the nine taxa detected in five or more 1ha-sites out of 423 sites. Sapcay: Sapajus cay (Azara's capuchin); Dasaza: Dasyprocta azarae (Azara’s agouti); Taypec: Tayassu pecari (white-lipped peccary); Tapter: Tapirus terrestris (Lowland tapir); MazSub: Mazama/Subulo sp. (brocket deer); Tamtet: Tamandua tetradactyla (Southern tamandua); Nasnas: Nasua nasua (South American Coati); Pectaj: Pecari tajacu (collared peccary); Hydhyd: Hydrochoerus hydrochaeris (capybara).