**First insight into the spatio-temporal ecology of sympatric large carnivores in Niokolo-Koba National Park, Senegal**

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Supplementary Table 1 Table ranking the three best occupancy models for spotted hyena, leopard, lion and wild dog in Niokolo-Koba National Park, Senegal. Detection probability (*ρ*) and site use (*ψ*) were modelled using covariates. AICc is the Akaike information criterion corrected for small sample sizes, used for model selection; ΔAIC is the difference in AICc values between the best-performing models; AICw is Akaike weight, a measure of the relative plausibility of each model; and GOF is a measure of the goodness-of-fit using the overdispersion parameter *ĉ*.

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| --- | --- | --- | --- | --- | --- |
| Species | Model | AICc | ΔAIC | AICw | GOF |
| Spotted hyena *Crocuta crocuta* | *ρ* (Effort + Lion + Leopard + Wild dog) ~ *ψ* (RAI\_Leopard + NDVI) | 781.0 | 0.00 | 0.26 | 1.41 |
| *ρ* (Effort + Leopard + Wild dog) ~ *ψ* (RAI\_Leopard + NDVI) | 781.4 | 0.36 | 0.22 | 1.65 |
| *ρ* (Effort + Leopard + Wild dog + Type) ~ *ψ* (RAI\_Leopard + NDVI) | 782.4 | 1.40 | 0.13 | 1.66 |
| Leopard *Panthera pardus* | *ρ* (Hyena) ~ *ψ* (Dist\_Road) | 495.90 | 0.00 | 0.24 | 0.91 |
| *ρ* (Hyena) ~ *ψ* (Dist\_Road + RAI\_Hyena) | 496.46 | 0.55 | 0.18 | 1.12 |
| *ρ* (Hyena) ~ *ψ* (Dist\_Road + RAI\_Wild dog) | 496.64 | 0.73 | 0.16 | 1.10 |
| West African lion  *Panthera leo leo* | *ρ* (1) ~ *ψ* (NDVI+ Dist\_Gambie + RAI\_Leopard) | 212.12 | 0.00 | 0.06 | 2.17 |
| *ρ* (Effort + Leopard) ~ *ψ* (NDVI + Dist\_Gambie + RAI\_Leopard) | 212.49 | 0.37 | 0.05 | 2.17 |
| *ρ* (Effort + Leopard) ~ *ψ* (NDVI + Dist\_Gambie) | 212.60 | 0.48 | 0.04 | 3.09 |
| African wild dog  *Lycaon pictus* | *ρ* (1) ~ *ψ* (dist\_Road + RAI\_Leopard + RAI\_Lion + RAI\_Hyena) | 98.03 | 0.00 | 0.11 | 1.19 |
| *ρ* (1) ~ *ψ* (dist\_Road + dist\_Edge + RAI\_Lion) | 98.84 | 0.80 | 0.07 | 10.65 |
| *ρ* (1) ~ *ψ* (dist\_Road + dist\_Edge RAI\_Leopard + RAI\_Lion) | 99.50 | 1.47 | 0.05 | 11.91 |

Supplementary Table 2 Scientific names corresponding to the categorical taxon names used in the nMDS plot (Figure 2).

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| **Categorical name** | **Scientific name** |
| Aardvark | *Orycteropus afer* |
| Roan antelope | *Hippotragus equinus* |
| Guinea baboon | *Papio papio* |
| Honey badger | *Mellivora capensis* |
| African buffalo | *Syncerus caffer ssp. brachyceros* |
| Bushbuck | *Tragelaphus sylvaticus* |
| Caracal | *Caracal caracal* |
| Chimpanzee | *Pan troglodytes ssp. versus* |
| African civet | *Civettictis civetta* |
| African palm civet | *Nandinia binotata* |
| Red colobus | *Piliocolobus badius* |
| Grey duiker | *Sylvicapra grimmia* |
| Red-flanked duiker | *Cephalophus rufilatus* |
| Giant eland | *Tragelaphus derbianus ssp. derbianus* |
| African elephant | *Loxodonta spp* |
| Unspecified genet | *Genetta spp* |
| Unspecified hare | *Lepus spp* |
| Hartebeest | *Alcelaphus buselaphus ssp. major* |
| Hippopotamus | *Hippopotamus amphibius* |
| Red river hog | *Potamochoerus porcus* |
| Human | *Homo sapiens* |
| Spotted hyaena | *Crocuta crocuta* |
| Side-striped jackal | *Canis adustus* |
| Western kob | *Kobus kob* |
| African leopard | *Panthera pardus ssp. pardus* |
| Lion | *Panthera leo ssp. leo* |
| Banded mongoose | *Mungos mungo* |
| Gambian mongoose | *Mungos gambianus* |
| Large grey mongoose | *Herpestes ichneumon* |
| Slender mongoose | *Herpestes sanguineus* |
| Water mongoose | *Atilax paludinosus* |
| White-tailed mongoose | *Ichneumia albicauda* |
| Green monkey | *Chlorocebus sabaeus* |
| Patas monkey | *Erythrocebus patas* |
| Oribi | *Ourebia ourebi* |
| Spotted-necked otter | *Hydrictis maculicollis* |
| Crested porcupine | *Hystrix cristata* |
| Greater cane rat | *Thryonomys swinderianus* |
| Reedbuck bohor | *Redunca redunca* |
| Serval | *Leptailurus serval* |
| Warthog | *Phacochoerus africanus* |
| Waterbuck | *Kobus ellipsiprymnus* |
| Wild dog | *Lycaon pictus* |
| African wildcat | *Felis lybica* |