Intra-guild competition and ecosystem services of mammal scavengers in a new colonized wolf landscape

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Intra-guild competition and ecosystem services of mammal scavengers in a new colonized wolf landscape

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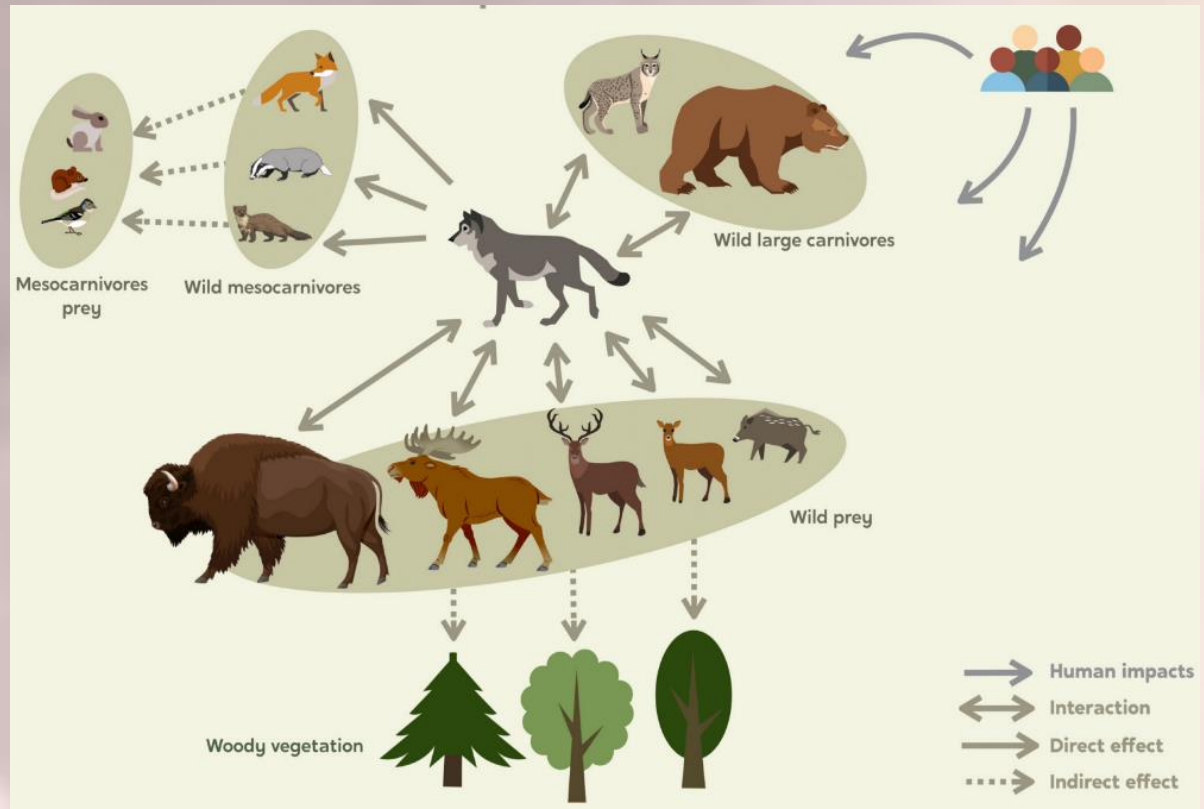
Wolf return → consequences on the ecosystem level

Low human impact



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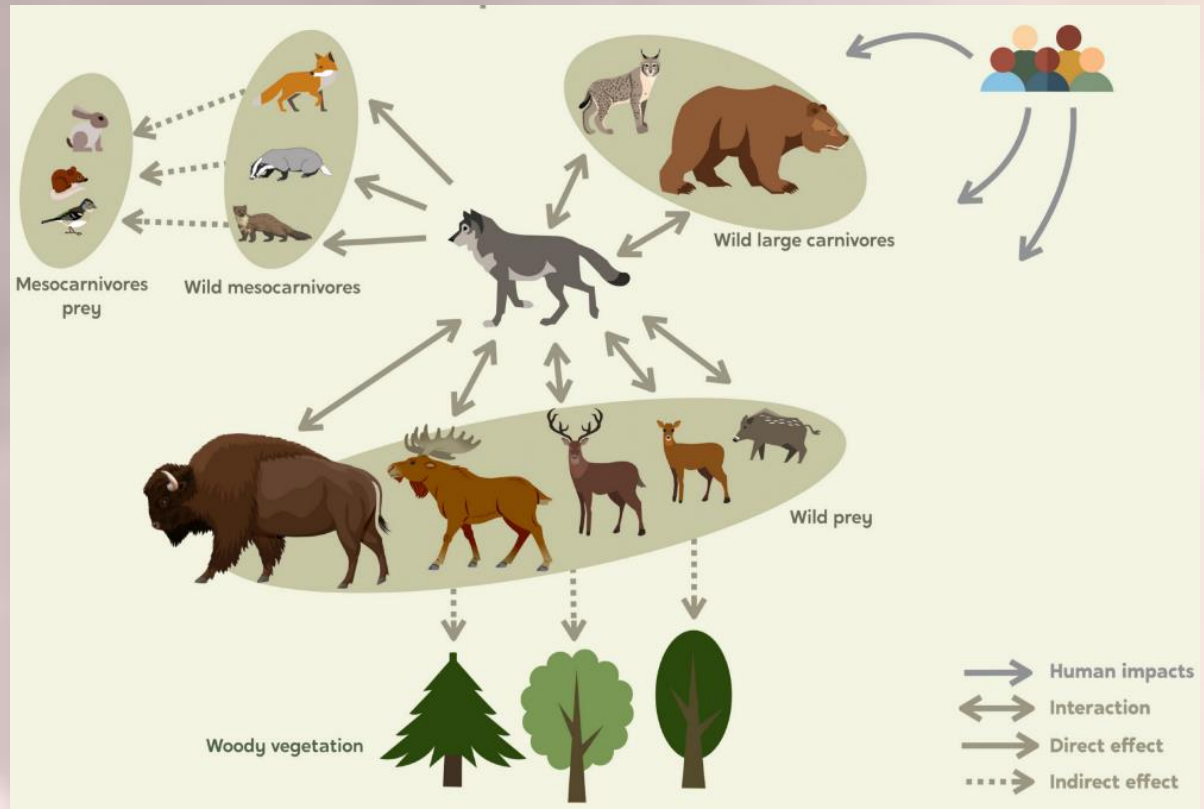
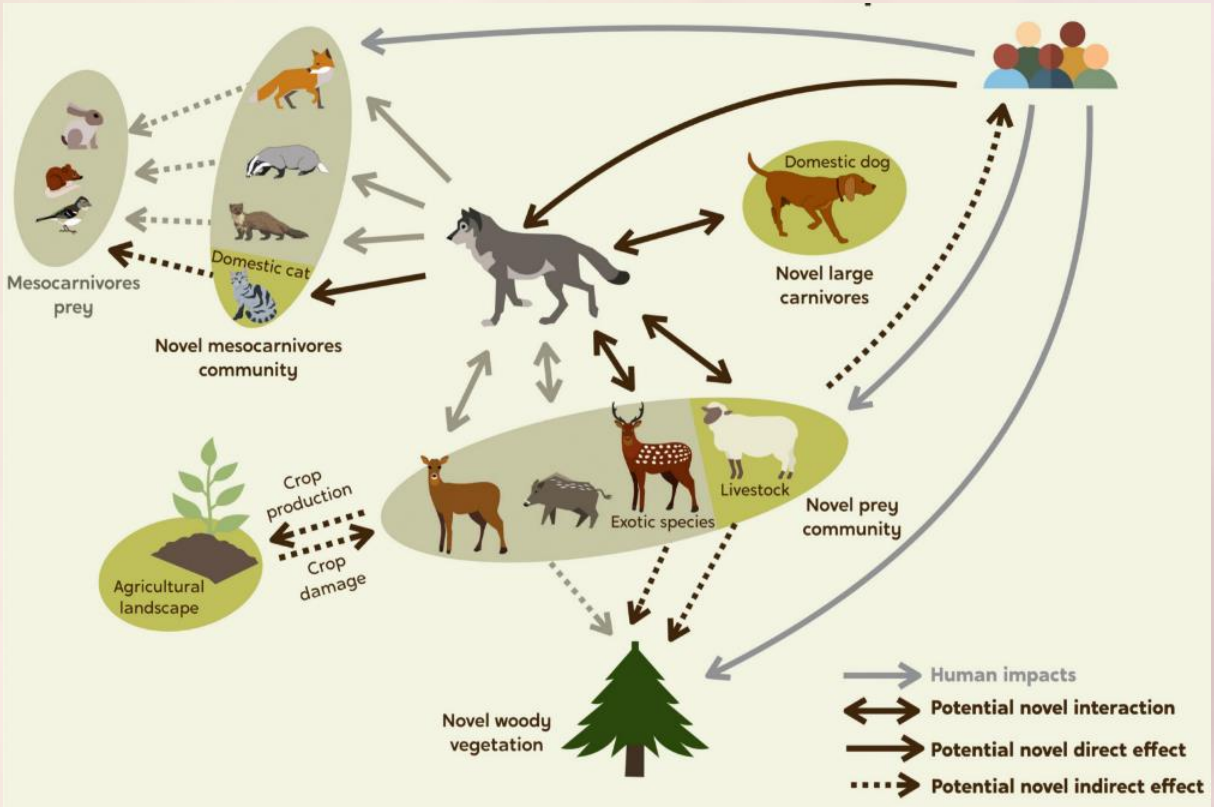


Human-modified environments



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Novel ecosystem functions

"wolves in human-modified ecosystems will engage in an array of novel interactions and potential novel trophic cascades"

Wolf return to human-dominated, **prey-rich** landscapes

translocations

environmental conditions

legal protection

Wolf return to human-dominated, **prey-rich** landscapes

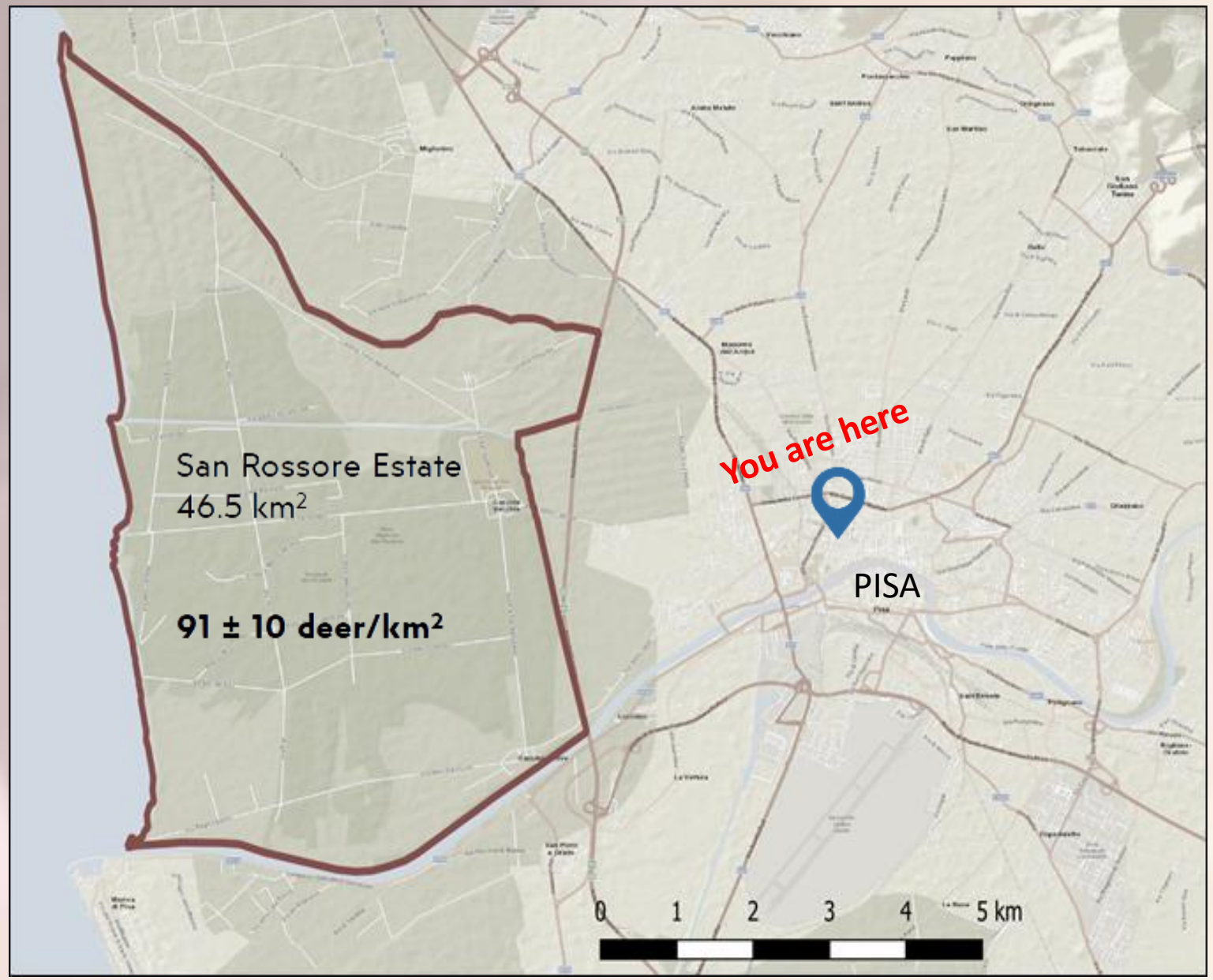
Wolf return to human-dominated, prey-rich landscapes

release of unconsumed carcasses due to overkilling

cascading effects on the scavenger community

- **Who** is going to **win the competition** for the emerging resource represented by deer carcasses?
- How does scavenger competition for wolf-killed carcasses **change over time** following wolf return?

Study area



91 ± 10 fallow deer/km²

Methods

- 12,000+ km transects since 2017 to 2022
- **103** fresh wolf-killed fallow deer **carcasses**
- monitored by **camera traps** for 7-10 days

Only 3 mammal scavengers:

carcasses totally consumed in **18.75** ± 20.44 **h**

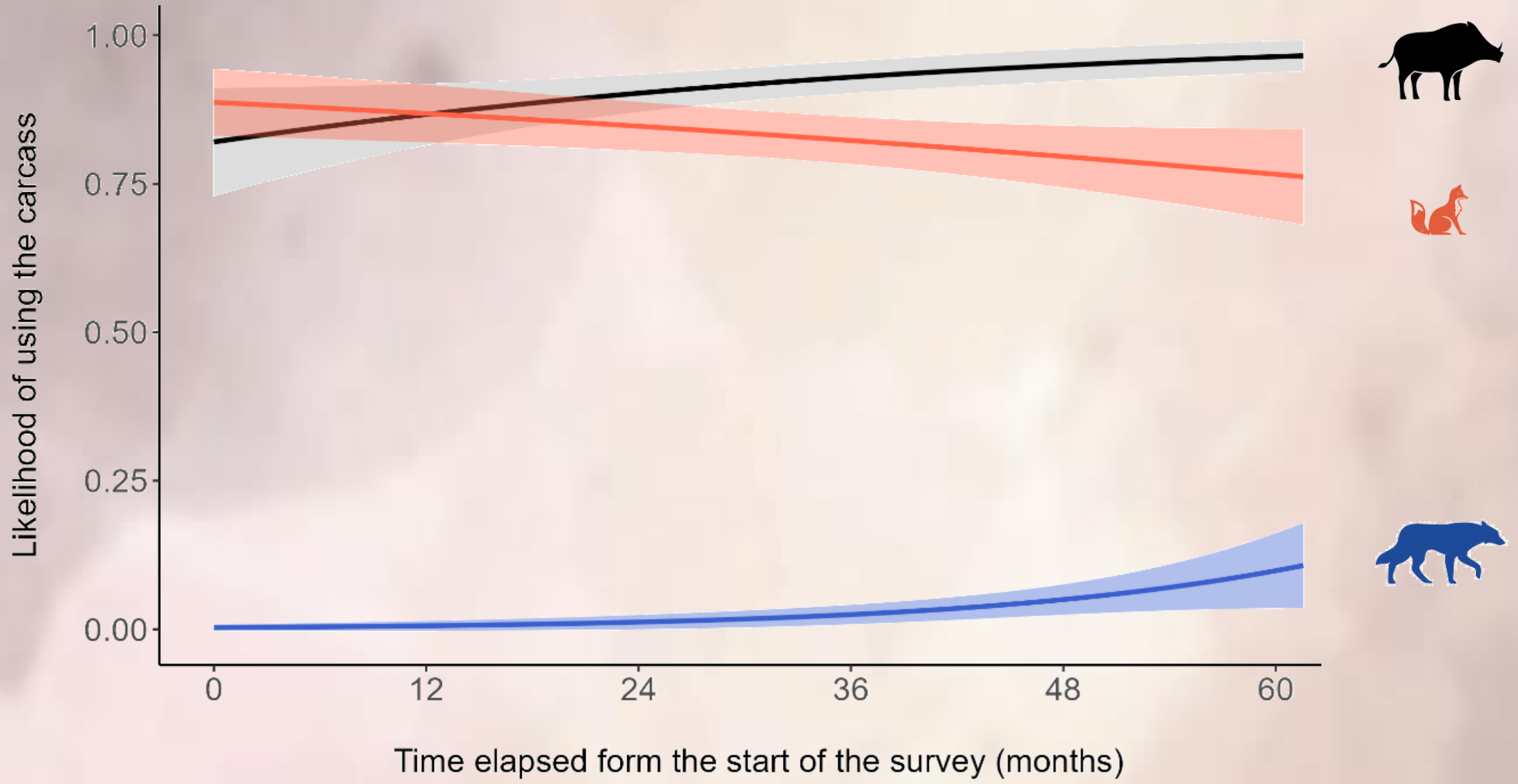
Methods

- **Likelihood** of finding and using the carcass
- **Total time** spent feeding on the carcass
- Outcome of **direct interactions**
- Interspecific **spatiotemporal associations**

modelled across species and along the 5 years-monitoring period

Results

Likelihood of finding and using the carcass **~ species*time** + carcass weight + re(carcass id)



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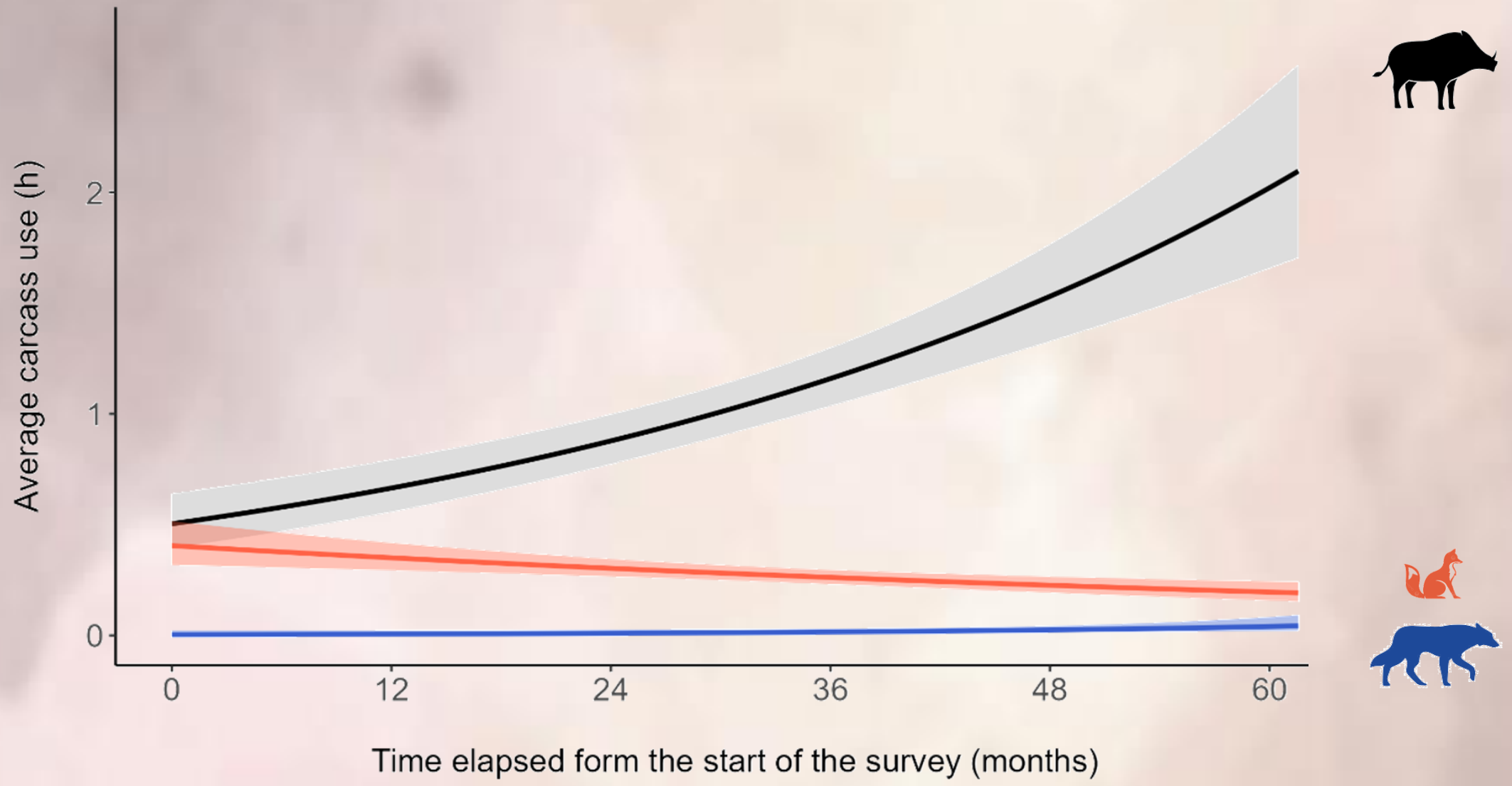


Outcome of direct interactions on the carcasses

Outcome of direct interactions on the carcasses

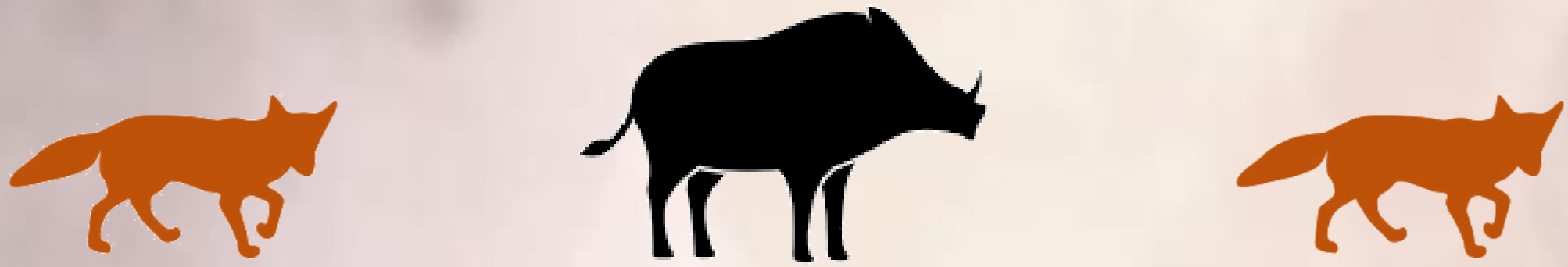
Results

Outcome of direct interactions on the carcasses (n=44)

Results

Interspecific spatiotemporal association ~ species*time + re(carcass id)

i.e., delay in arriving on a carcass after the competitor species



Niedballa et al. 2019

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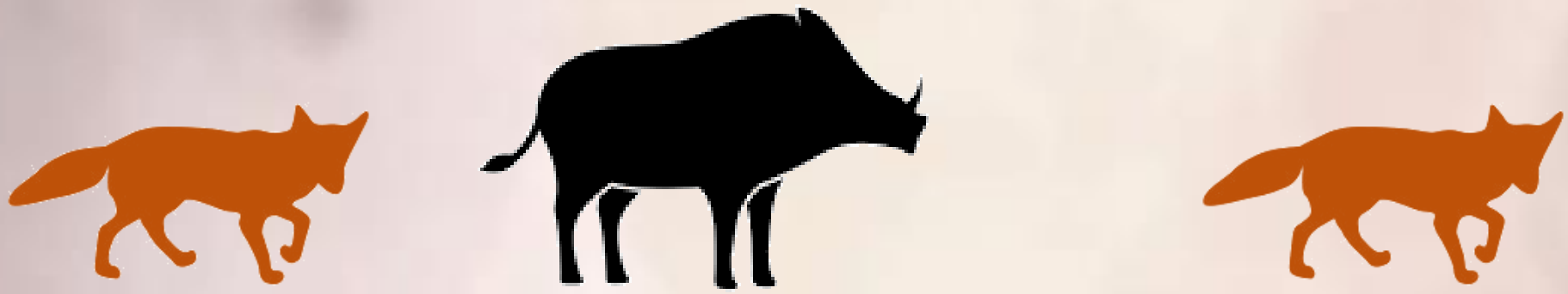
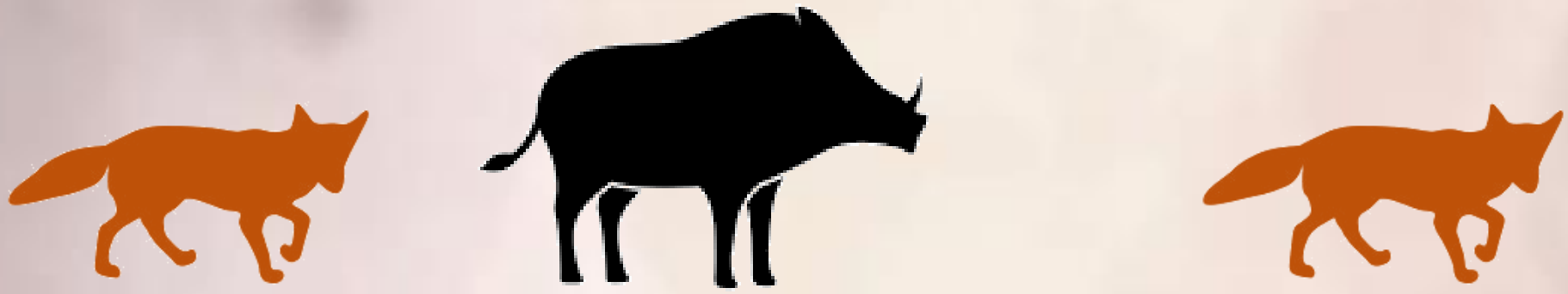


Time (fox after wild boar) **<** Time (wild boar after fox)

Results

Interspecific spatiotemporal association ~ species*time + re(carcass id)

i.e., delay in arriving on a carcass after the competitor species

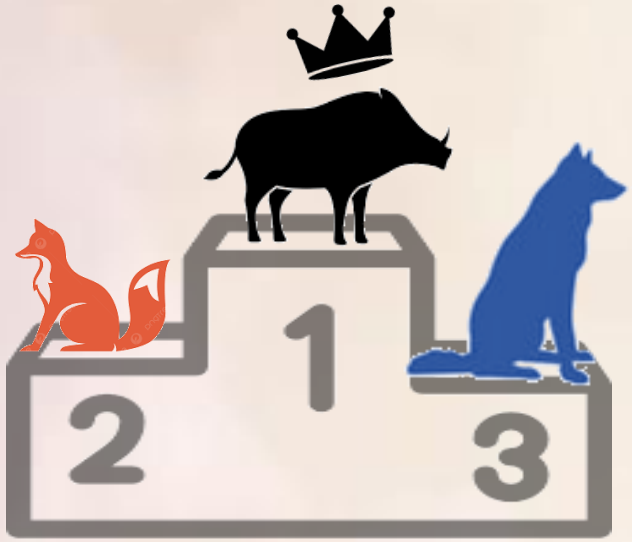


Time (fox after wild boar) **<** Time (wild boar after fox)

Red foxes did not avoid wild boars;
No variations along the study period

Mostly indirect competition

DISCUSSION AND CONCLUSIONS



- Wolves did not even take part
- Wild boar > red fox

} ≠ previous studies

Vucetich et al. 2012, Focardi et al. 2017

Selva et al. 2005, Bassi et al. 2018

DISCUSSION AND CONCLUSIONS

Behavioural plasticity

Brogi et al. 2023

DISCUSSION AND CONCLUSIONS

Behavioural plasticity

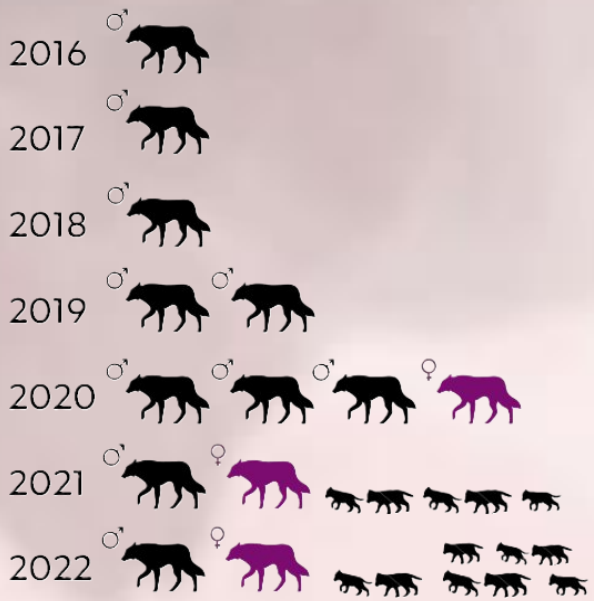
Predictable carcass availability

wolf return +
unnaturally high prey density

Welti et al. 2020, Brogi et al. 2023

DISCUSSION AND CONCLUSIONS

91 ± 10 fallow deer/km^2



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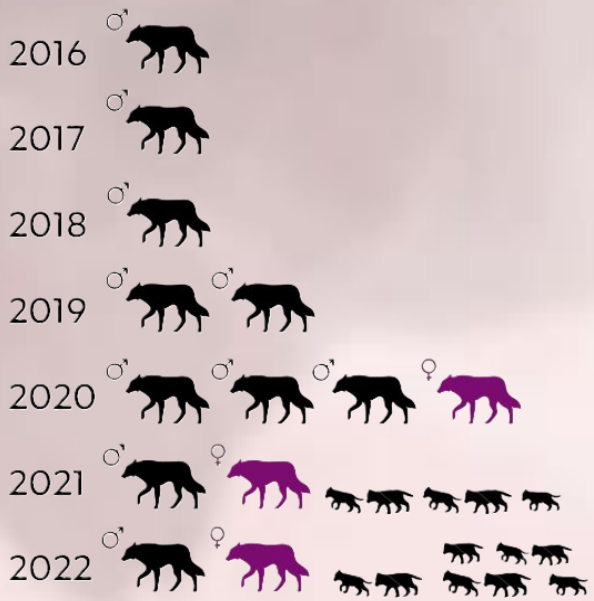

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wolves up, deer down?

DISCUSSION AND CONCLUSIONS

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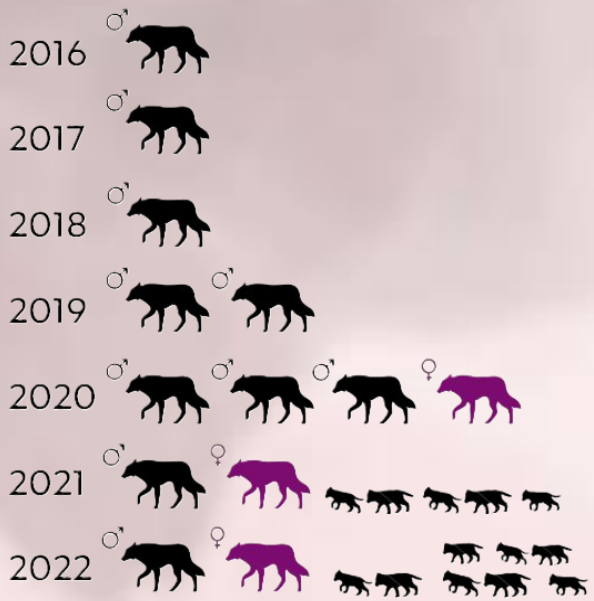

?

wolves up, deer down?

CONCLUSIONS

- Wild boar competed with red foxes but progressively monopolized the emerging niche

- Wolf return + unnaturally high prey density → enhanced predictability of carcass availability

- Minimal carcass reutilization by wolves, but what with the increasing wolf population?

Thanks for listening!

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