

Spatio-temporal movement behaviour as the fundamental basis for applied management

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Attention!

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PROTECTION MIGRATION AND MOVEMENT HUMAN INTERACTION



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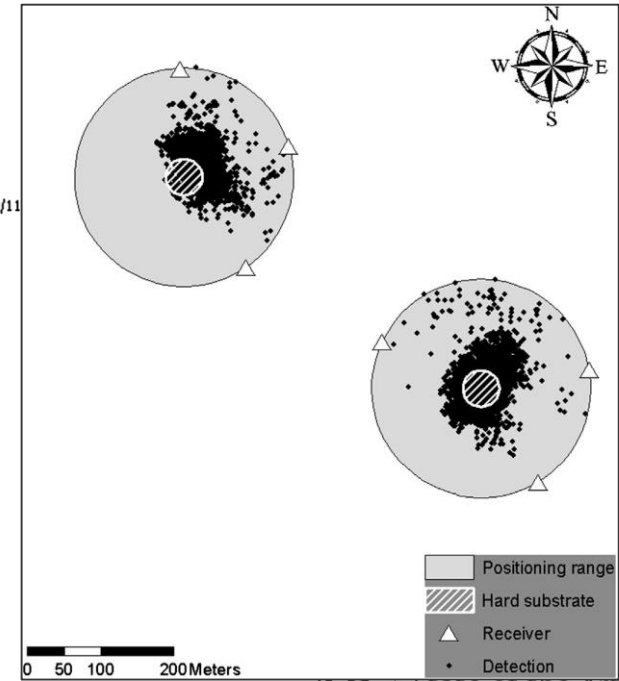
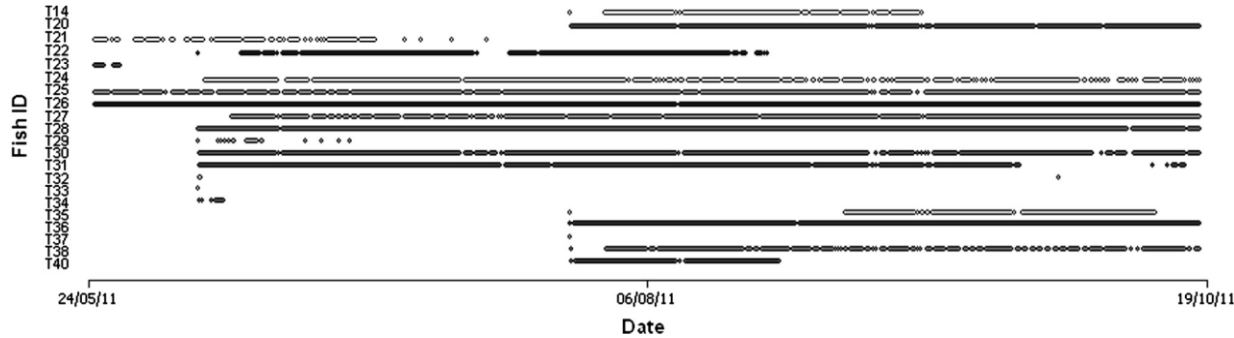
PROTECTION

What are the most used scientific tools to aid habitat and species protection in policy?

- Movement data
- direct observations (e.g. sightings, catches)
- indirect observations (e.g. prey kills, feces)
- DNA

PROTECTION

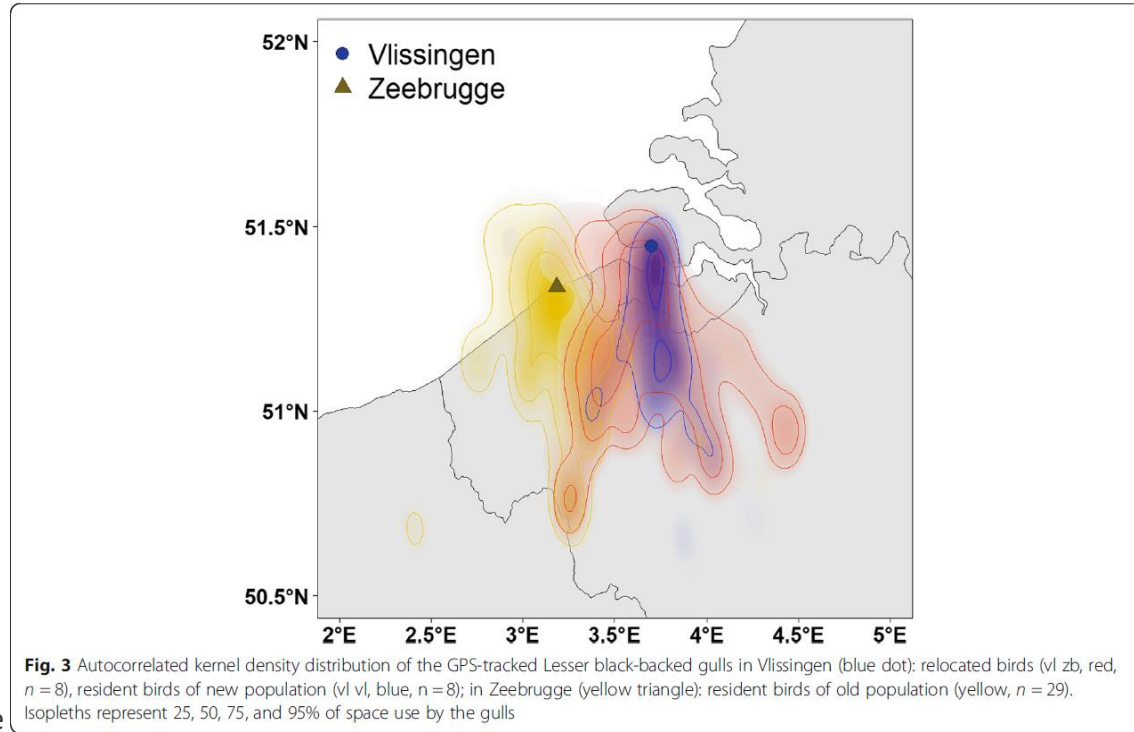
Case 1: Should we open windmill farms to cod (*Gadus morhua*) fisheries?



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PROTECTION

Case 2: Effect of disturbance on Foraging behaviour of lesser black-backed gulls (*Larus fuscus*)



Kavelaars et al. Movement Ecology (2020) 8:45



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PROTECTION

Case 3: Home range and habitat use of a wolf pack



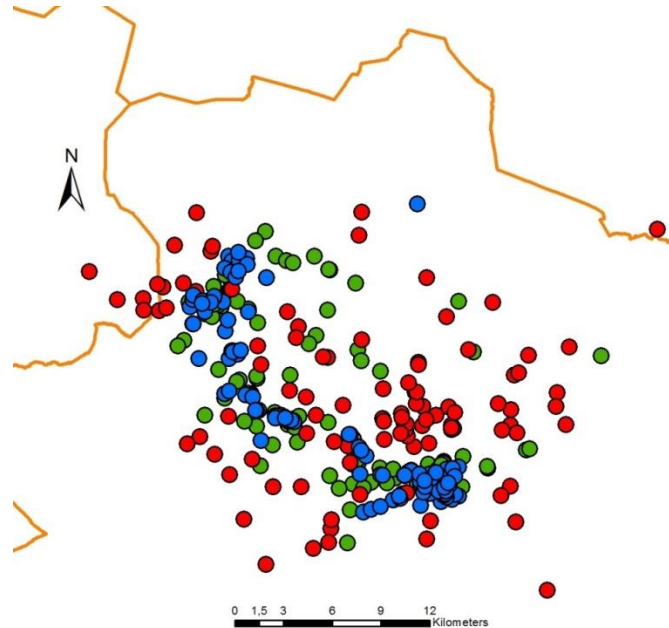
Monitoring by a combination of observation techniques and data integration

- Core areas and denning sites located every year for better protection

PROTECTION

Case 3: Home range and habitat use of a wolf pack

- *Camera trapping*
- *Track observations*
- *Visual observations*
- *DNA sampling of kills*





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MIGRATION AND MOVEMENT

What information does policy need for adequate management in habitat connectivity?

Demographic info

genetics

habitat use

MIGRATION AND MOVEMENT

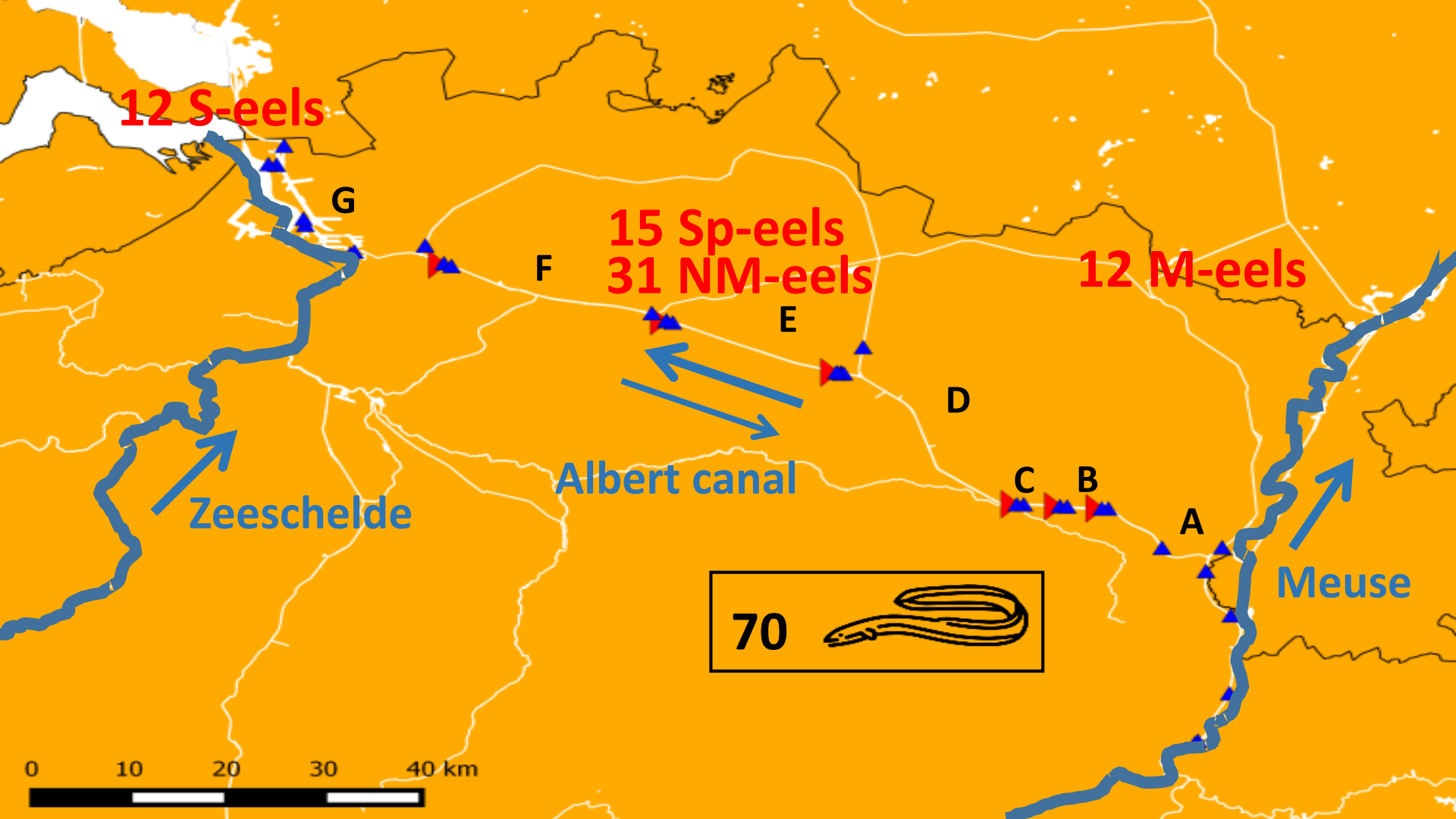
Case 1: European eel (*Anguilla anguilla*) migration in the Albert Canal



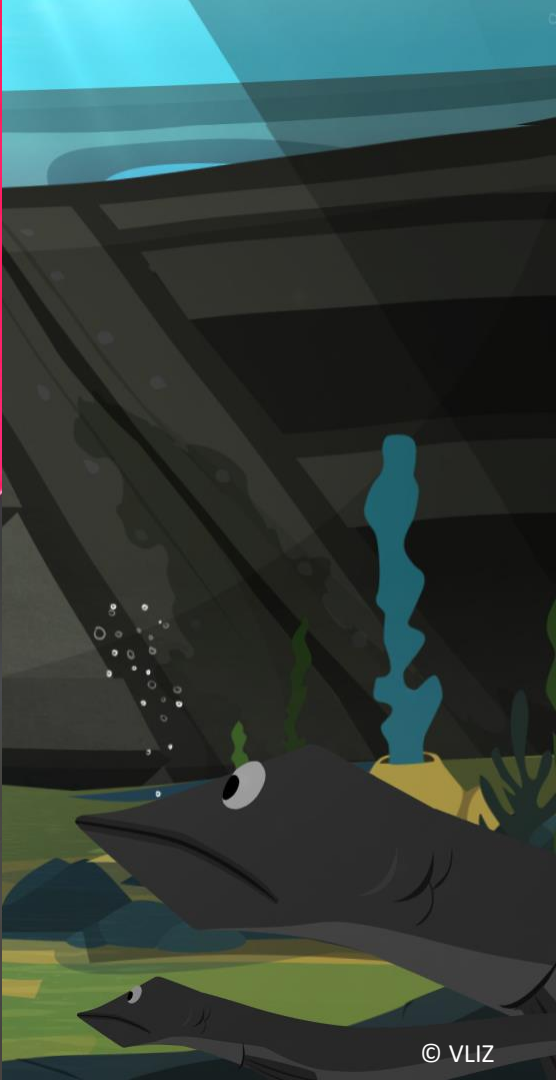
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De Vlaamse Waterweg nv

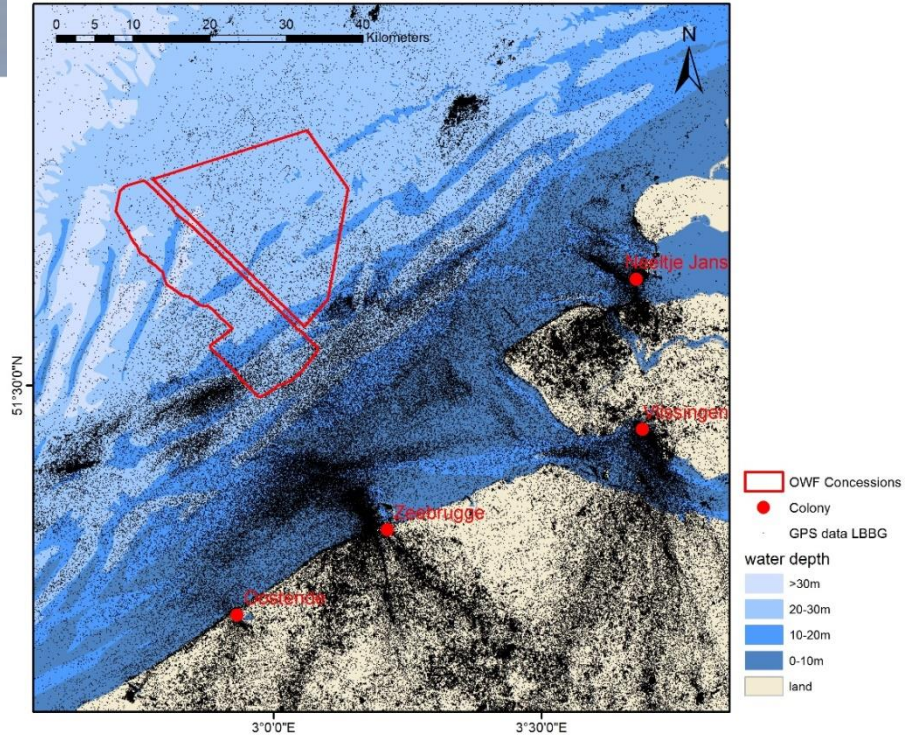
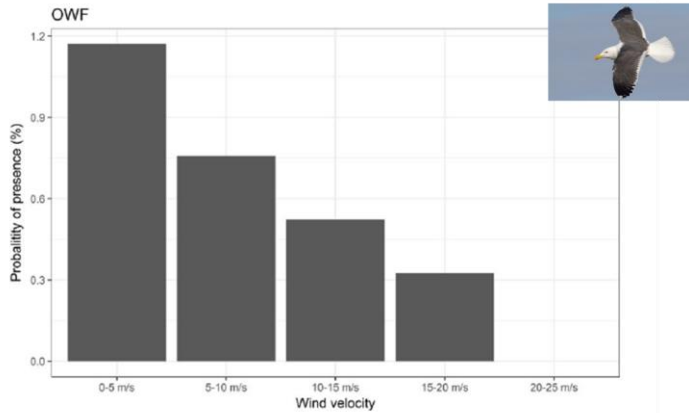






MIGRATION AND MOVEMENT

Case 2: Are there collision hazards for gulls in the windfarms at sea?



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MIGRATION AND MOVEMENT

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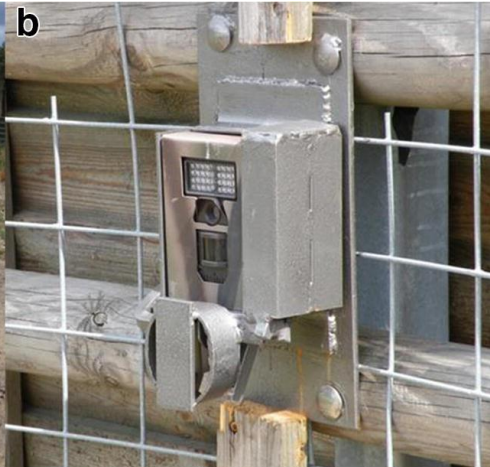
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MIGRATION AND MOVEMENT

Case 3: Evaluation of ecoduct-effectivity



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Mysłajek et al. (2020).
*European Journal of
Wildlife Research*, 66(5),
1-14.



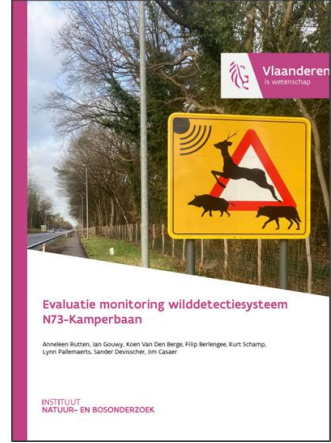
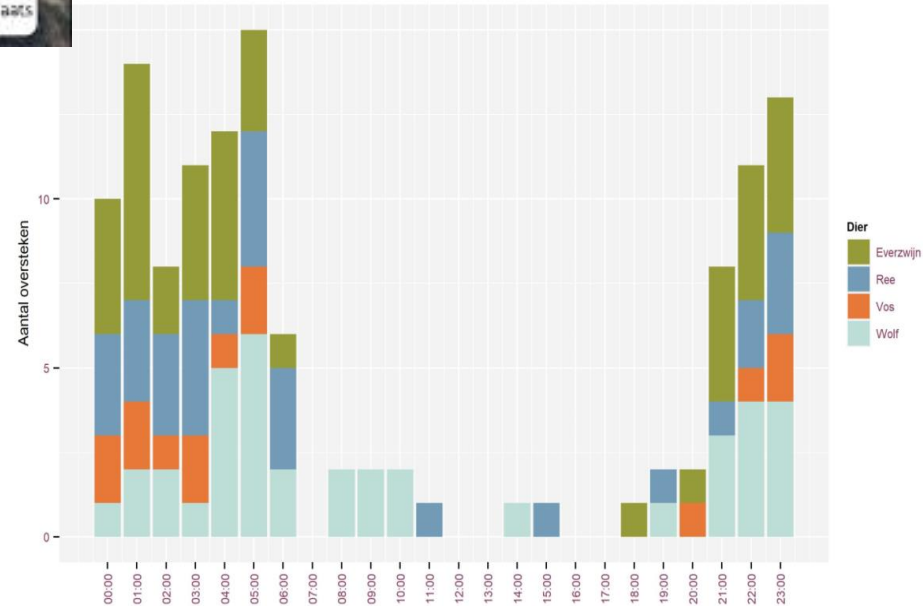
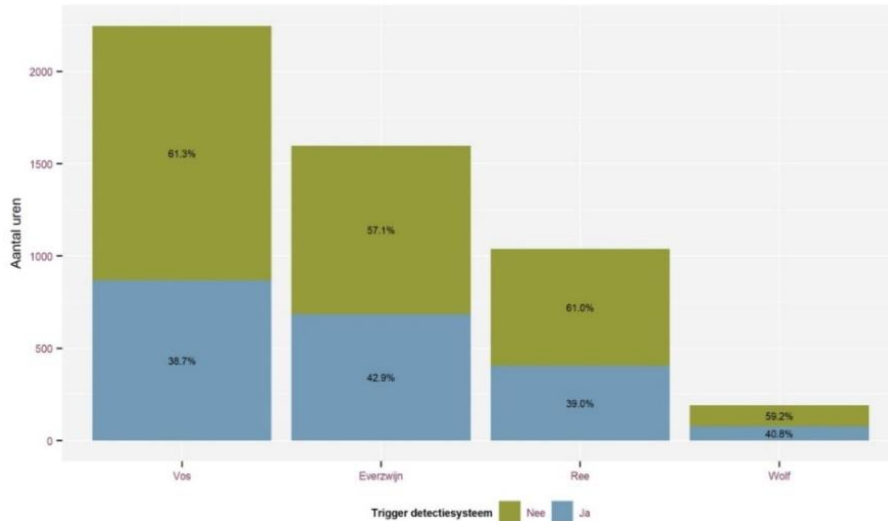
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MIGRATION AND MOVEMENT

Case 3: Evaluation of ecoduct-use





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HUMAN INTERACTION

As the human population keeps expanding, we are living closer to animals increasing the number of interactions and conflicts. Can these tracking and observational technologies reduce such conflicts?

YES

NO

NO IDEA

HUMAN INTERACTION

Case 1: Migration of an aquatic invader, the Chinese mitten crab (*Eriocheir sinensis*)

- ▶ Knowledge on crab migration behaviour can aid management:
 - Where are the spawning locations?
 - How fast do they migrate?
 - Where should we put traps?



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Ecosystem Management
University of Antwerp

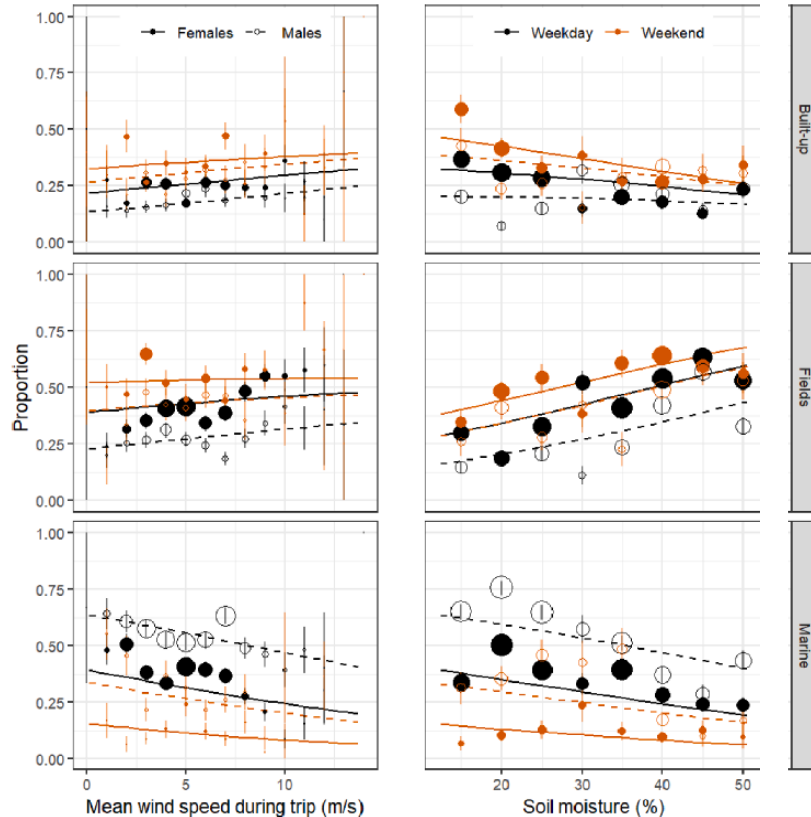


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HUMAN INTERACTION

Case 2: Effects of climate change on gull foraging habitat use



Sotillo et al. 2021. Landscape and Urban Planning.



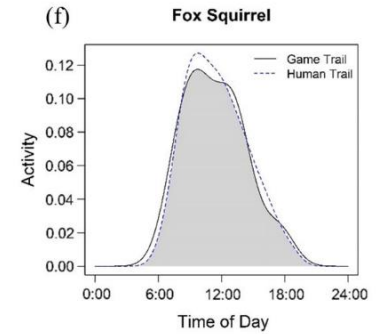
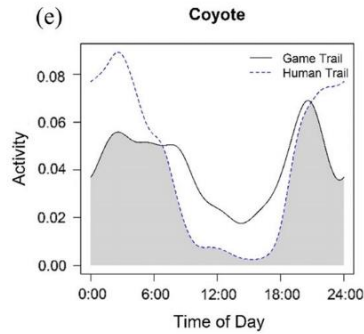
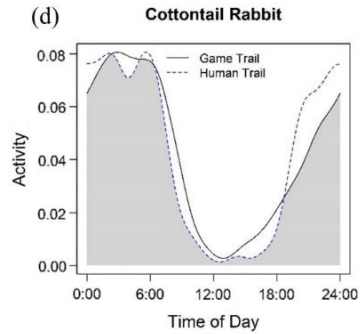
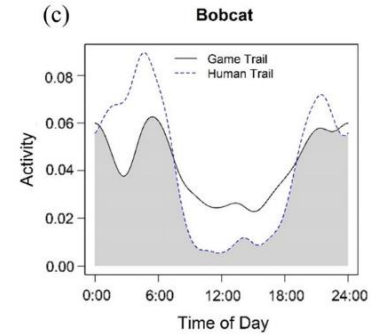
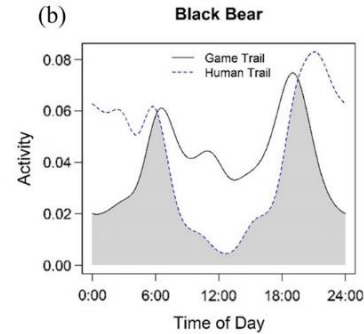
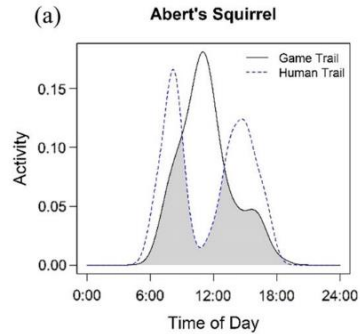
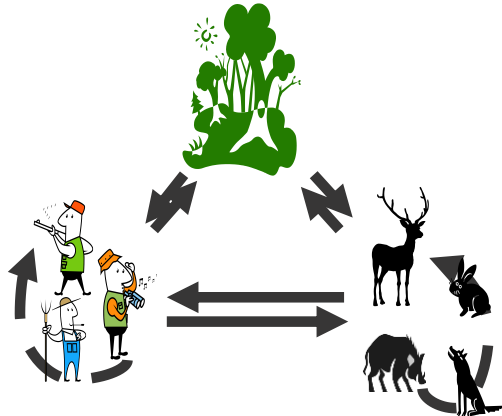
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HUMAN INTERACTION

Case 3: Impact of human activities on wildlife habitat use and activity patterns



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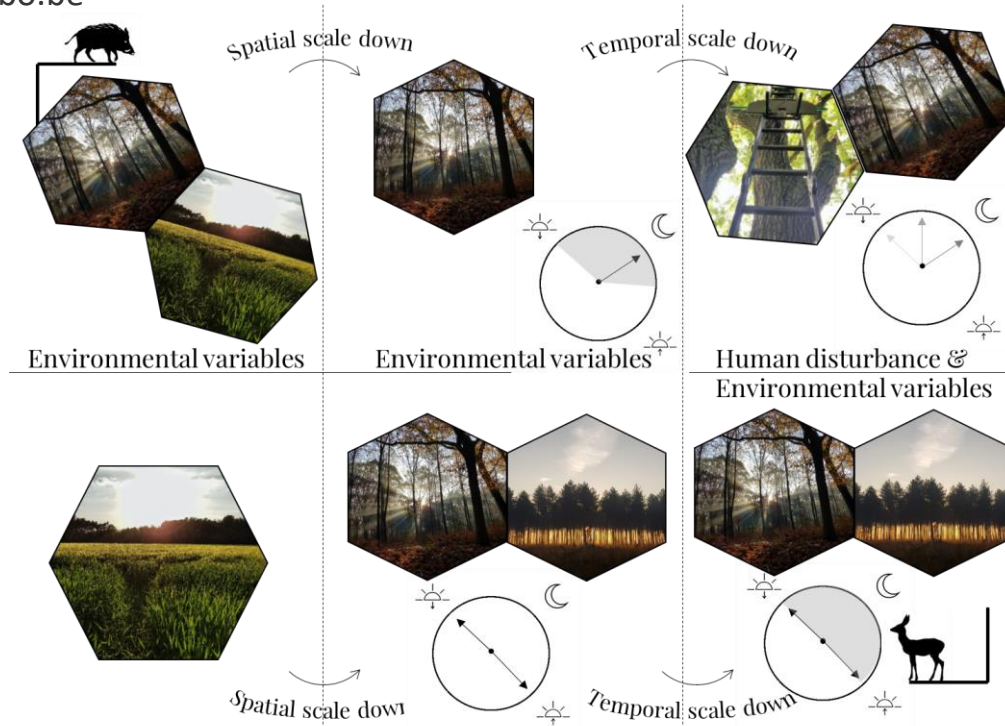
Lewis et al.(2021). *Ecosphere*, 12(5)

HUMAN INTERACTION

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Wevers. 2021 – National Park Hoge Kempen

CONCLUSION

- ▶ These innovative, state of the art techniques provide us new info on animal movement and habitat use
 - ▶ Enormous application potential
 - ▶ New challenges:
 - individual behaviour
 - huge datasets
 - ▶ We can do even more!
 - E.g. real-time tracking fish in remote areas to identify calamities based on fish movement behaviour
- Burnett et al. (2020). Ecological Indicators, 111



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THANKS!

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