Road effects on tawny owls (*Strix aluco*)

Patterns in road-kills, abundance, population trend, and movements

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LIFELINES
Linear Infrastructure Networks with Ecological Solutions

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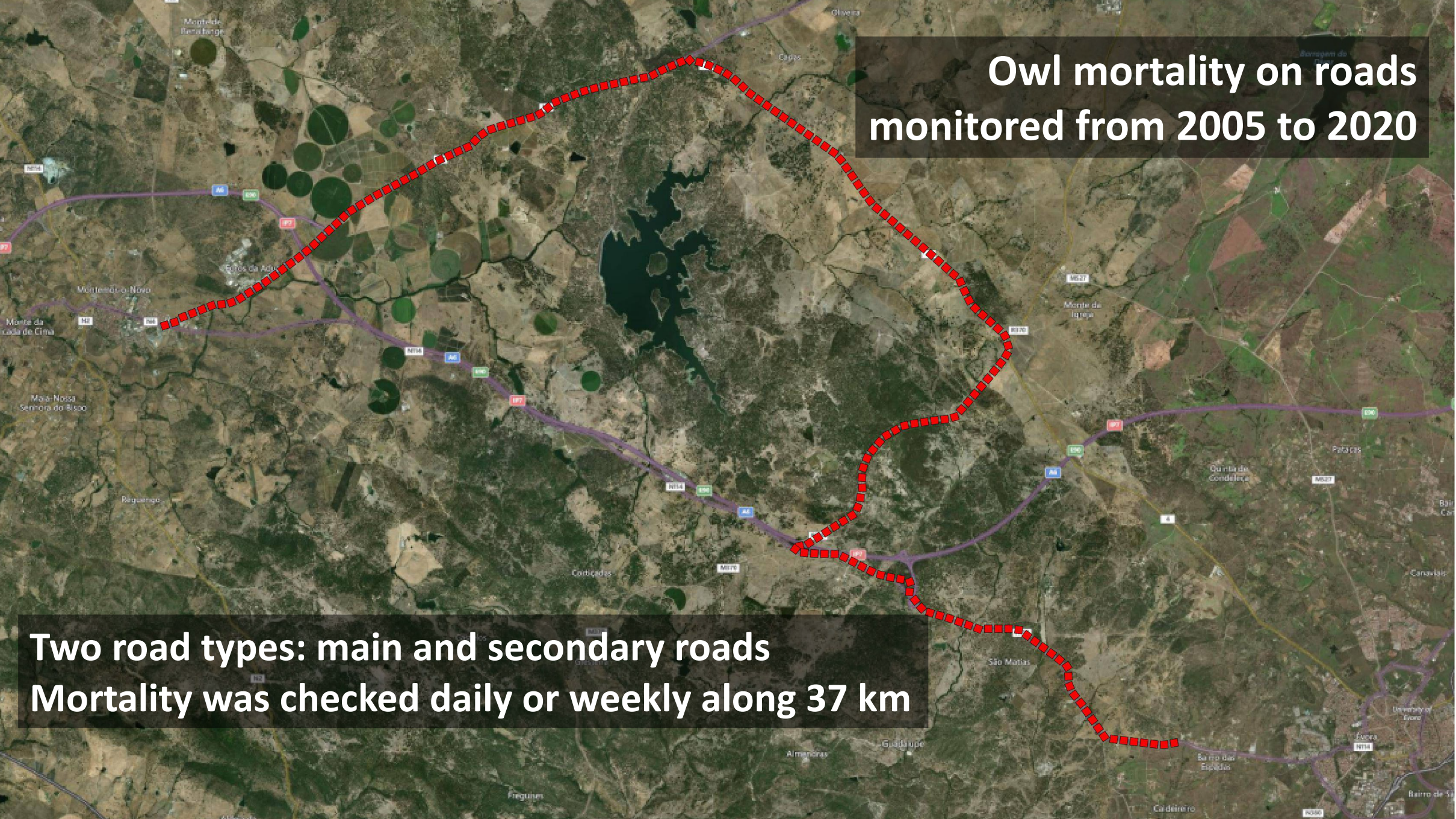
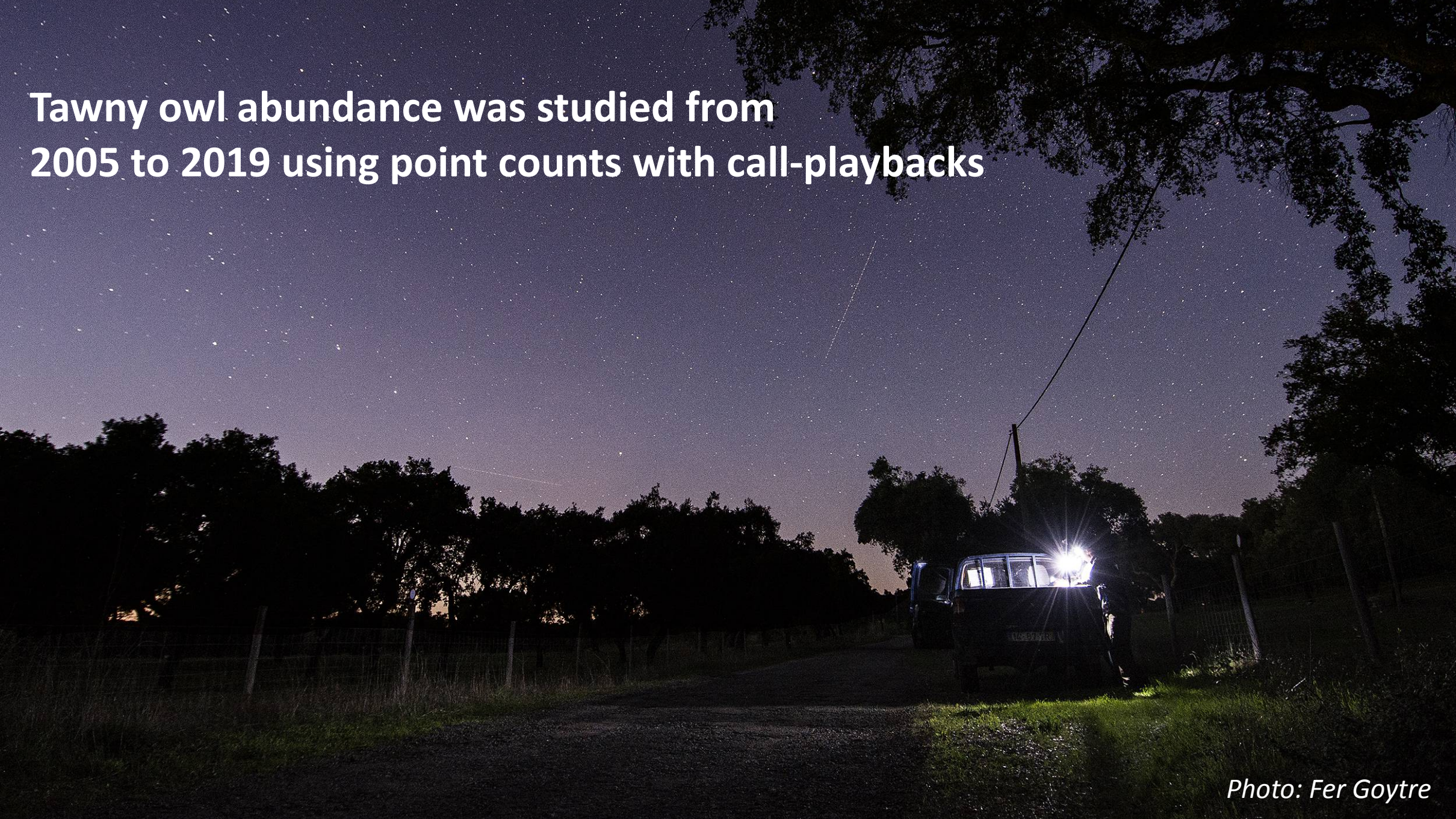
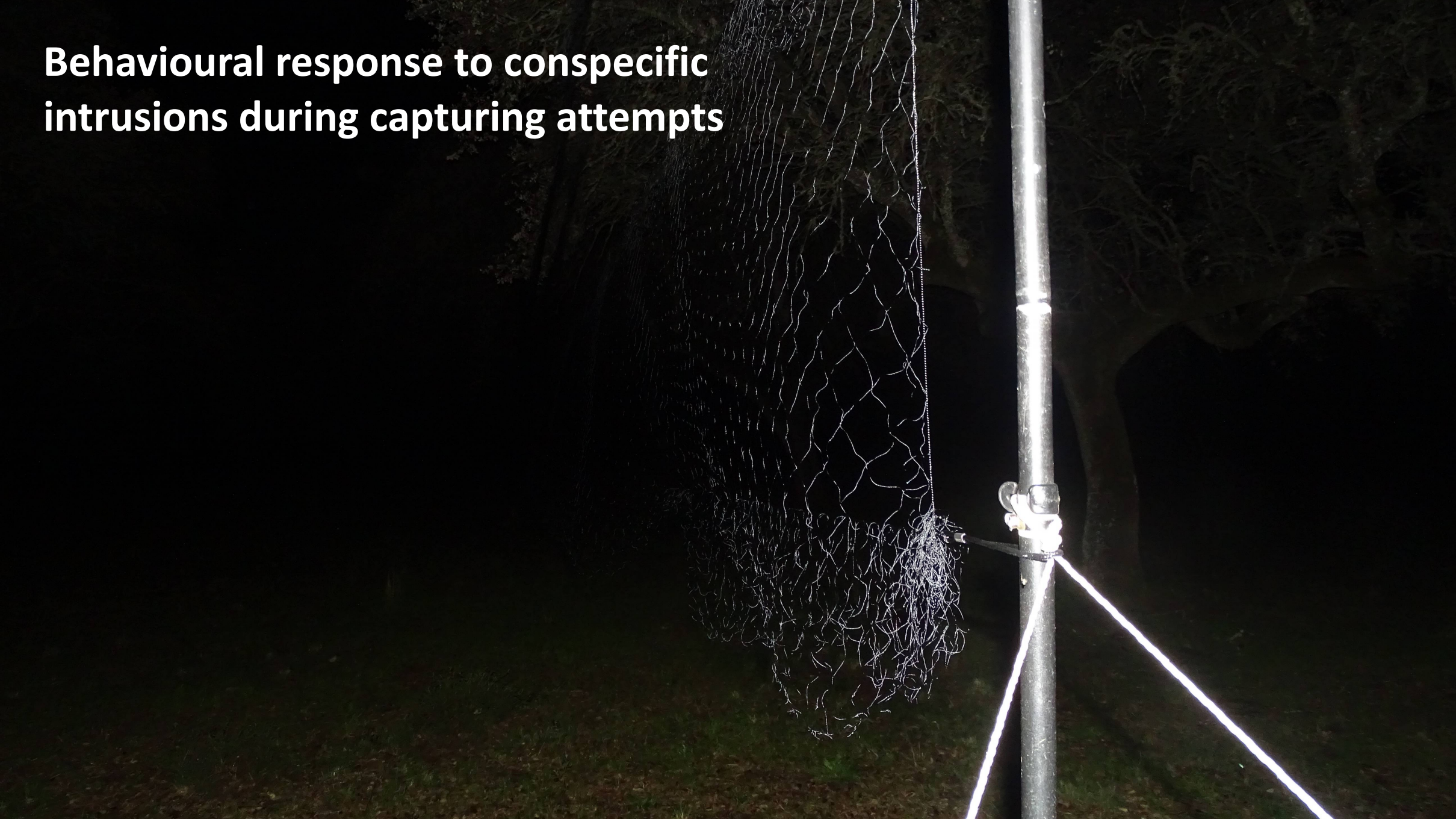
Owls can be strongly affected by roads,
namely due to collision with vehicles and disturbance


The tawny owl (*Strix aluco*)
is a common European raptor species
and a frequent victim of road-killing


Owl mortality on roads monitored from 2005 to 2020
Two road types: main and secondary roads
Mortality was checked daily or weekly along 37 km

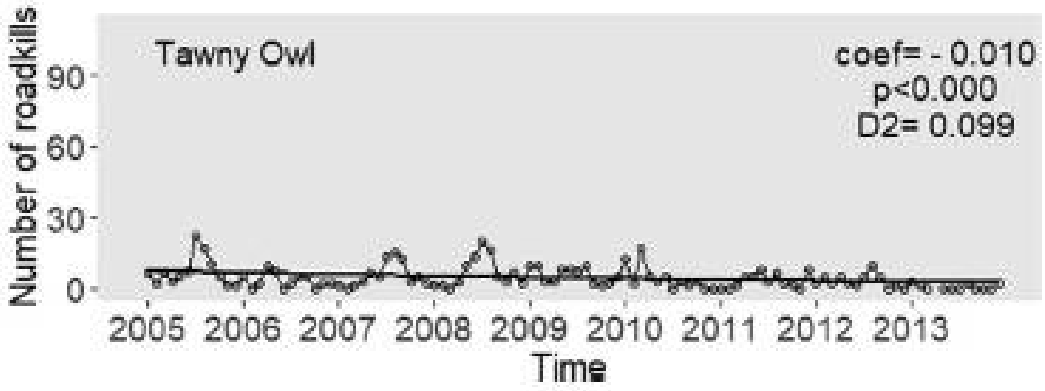

Tawny owl abundance was studied from
2005 to 2019 using point counts with call-playbacks
Photo: Fer Goytre

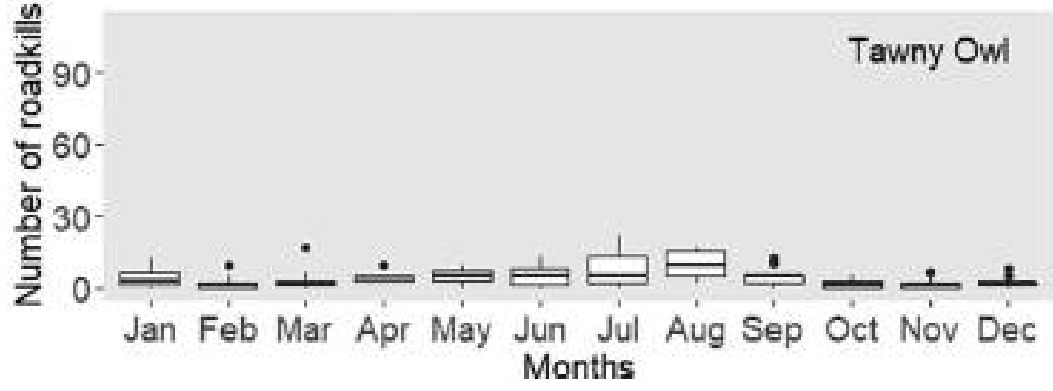
Behavioural response to conspecific intrusions during capturing attempts

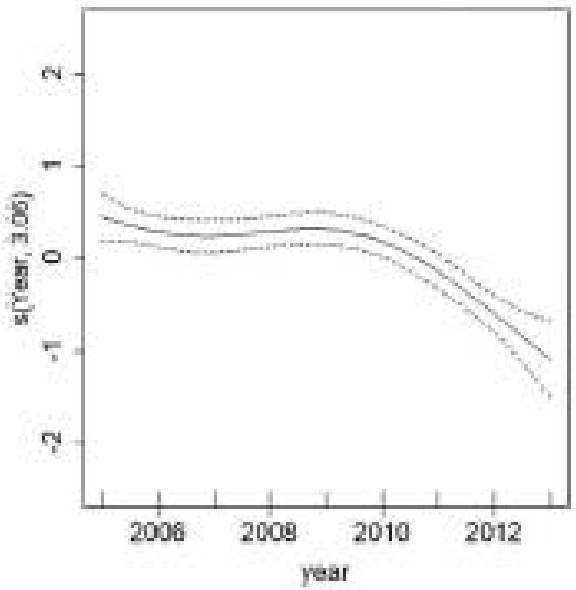


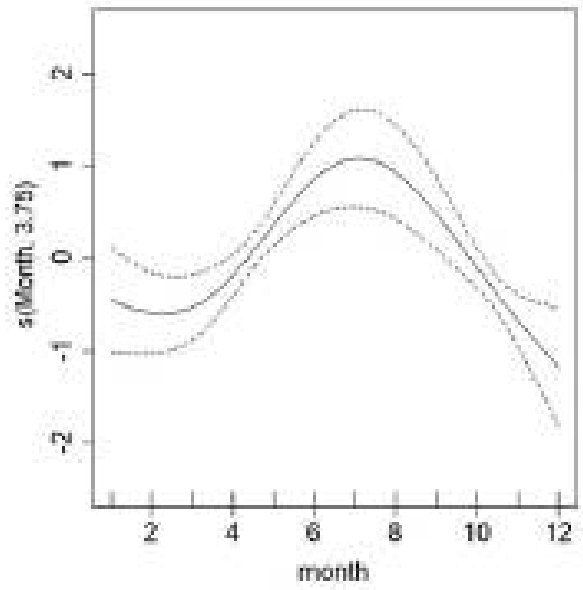
- Tracking of 6 tawny owls living near roads
- Analysis of movement behaviour near linear infrastructures
- Individuals tracked between 6 and 64 days
(436 – 5262 fixes)

TEMPORAL PATTERNS OF TAWNY OWL MORTALITY ON ROADS







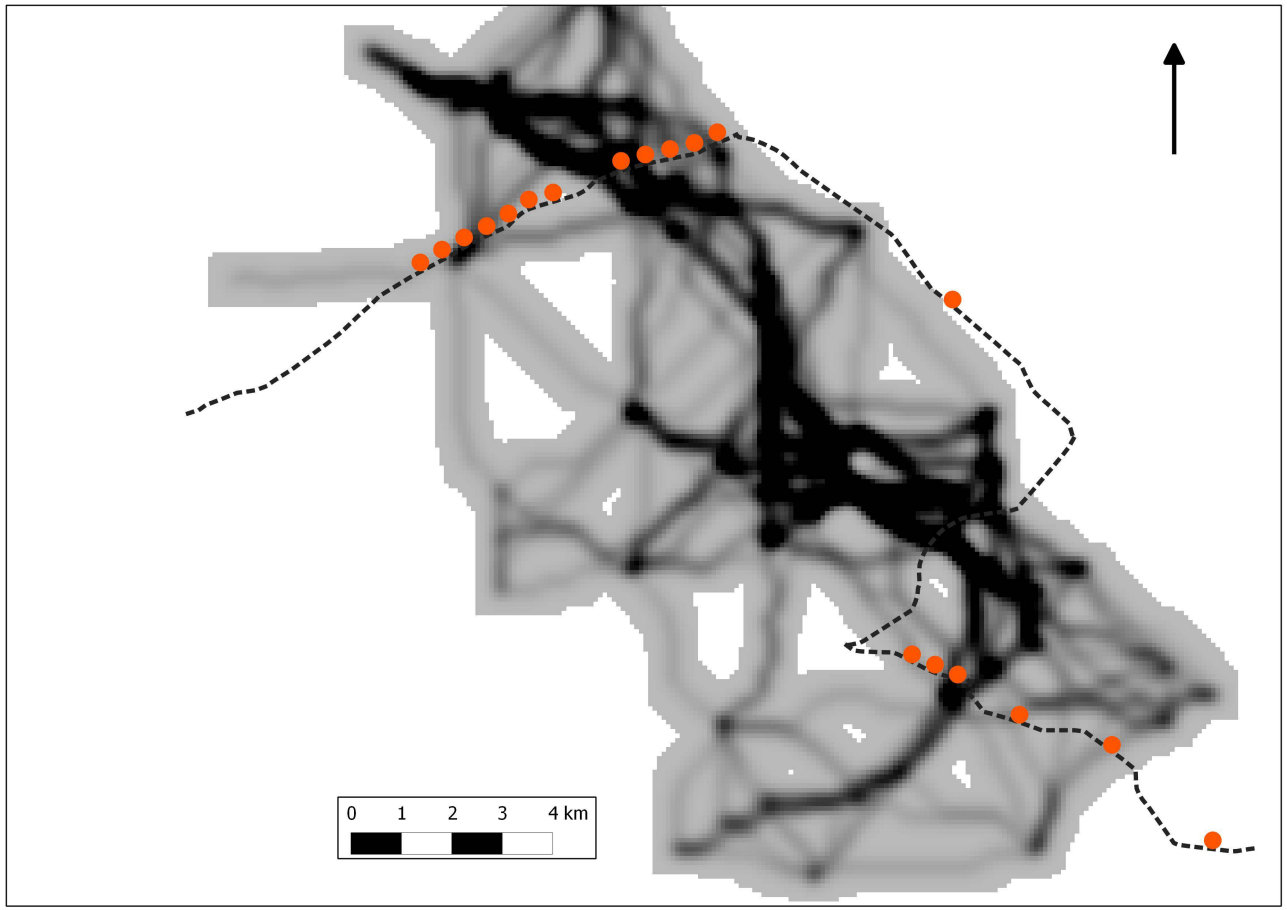


– Tawny owl mortality on roads showed a decreasing trend between 2005 and 2013

– Casualties on roads were more frequent during the post-fledging dispersal period i.e. <u>July to September</u>

Pinto P, Lourenço R, Mira A, Santos S (2020) Temporal patterns of bird roadkills in southern Portugal. Bird Study 67:71-84

SPATIAL PATTERNS OF TAWNY OWL MORTALITY ON ROADS

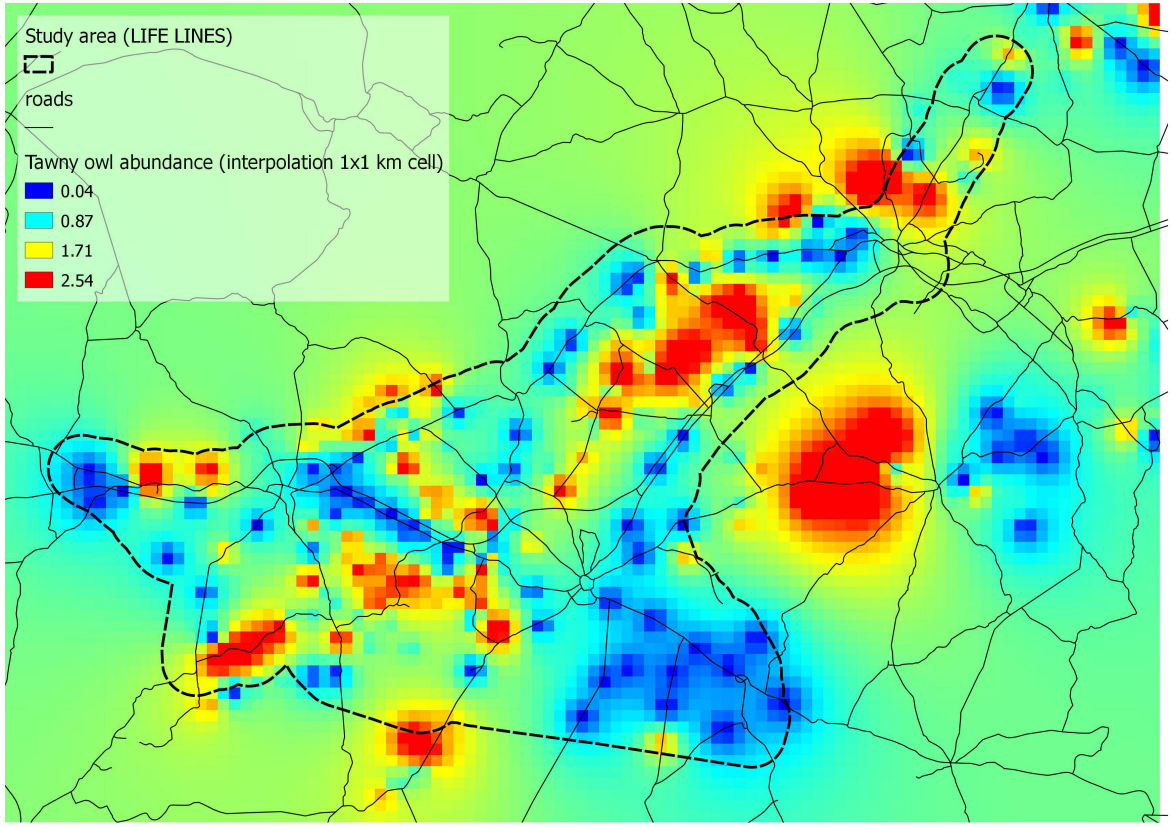


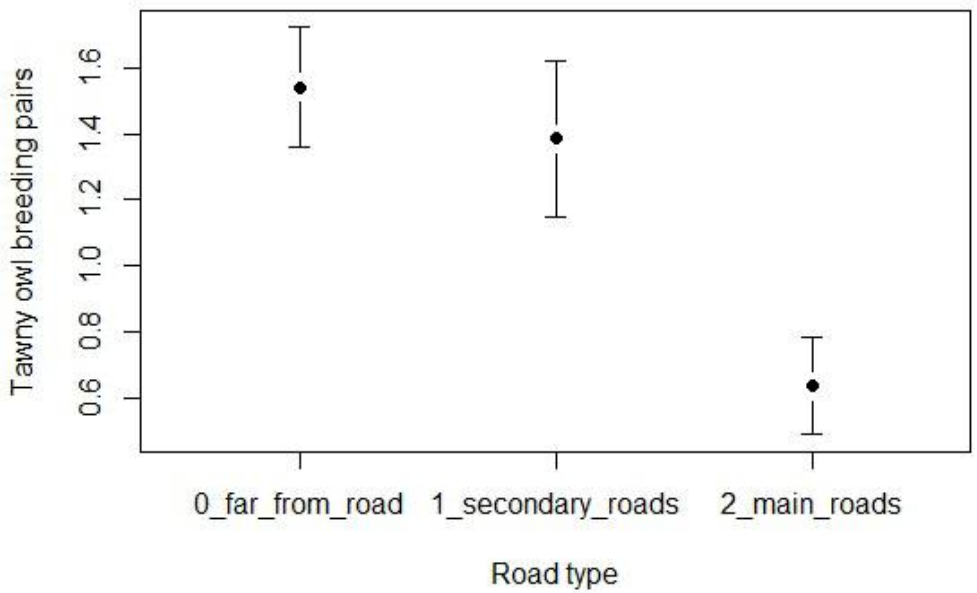
– Mortality hotspots seem to be influenced by overall roadkill patterns and landscape connectivity

Santos SM, Lourenço R, Mira A, Beja P (2013) Relative effects of road risk, habitat suitability, and connectivity on wildlife roadkills: the case of tawny owls (*Strix aluco*). PLoS ONE 8(11):379967

SPATIAL PATTERNS OF TAWNY OWL MORTALITY ON ROADS

Tawny owl abundance was negatively affected by main roads
Abundance near secondary roads and far from roads is similar

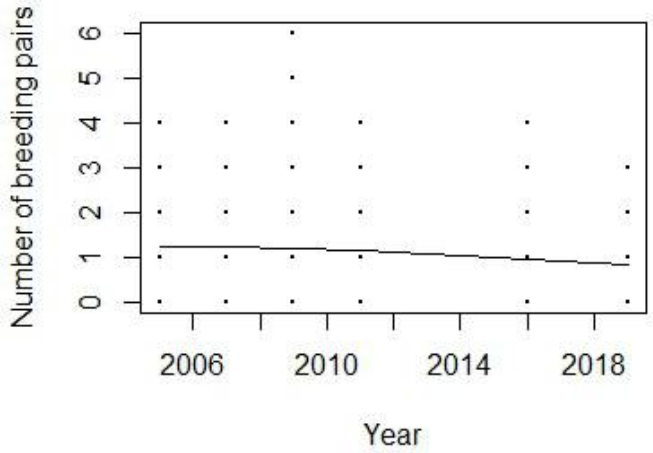




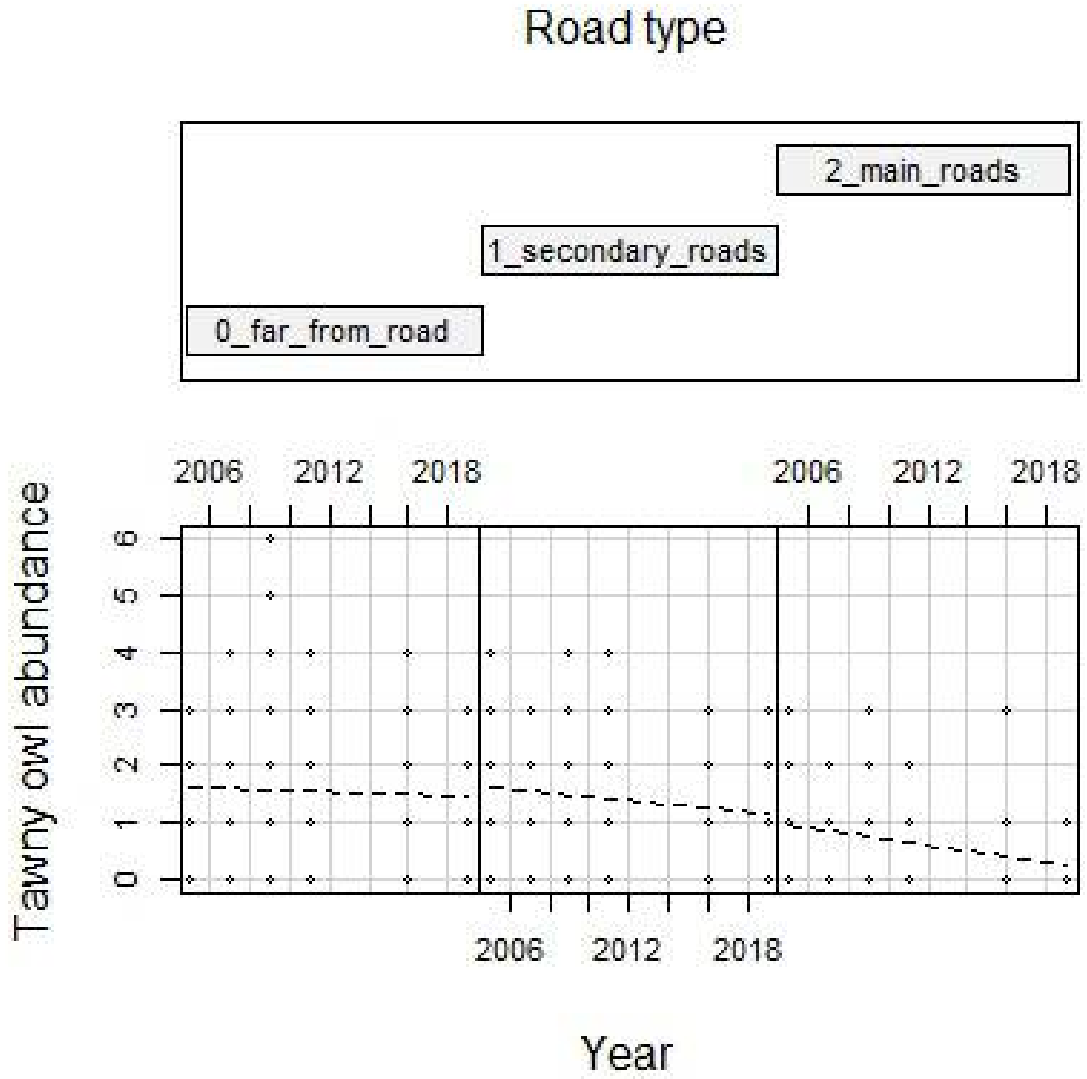
Silva CC, Lourenço R, Godinho S, Gomes E, Sabino-Marques H, Medinas D, Neves V, Silva C, Rabaça JE, Mira A (2012) Major roads negatively affect Tawny Owl abundance and Little Owl presence. Acta Ornithologica 47:47–54. ### van der Horst S, R Lourenço, F Goytre, A Marques, S Santos, A Mira (2020) Road effects on tawny owl abundance and population trend. European Journal of Wildlife Research 65:99

ROAD EFFECTS ON TAWNY OWL POPULATION TREND

The tawny owl population in the study area showed an overall negative trend (2005-19)

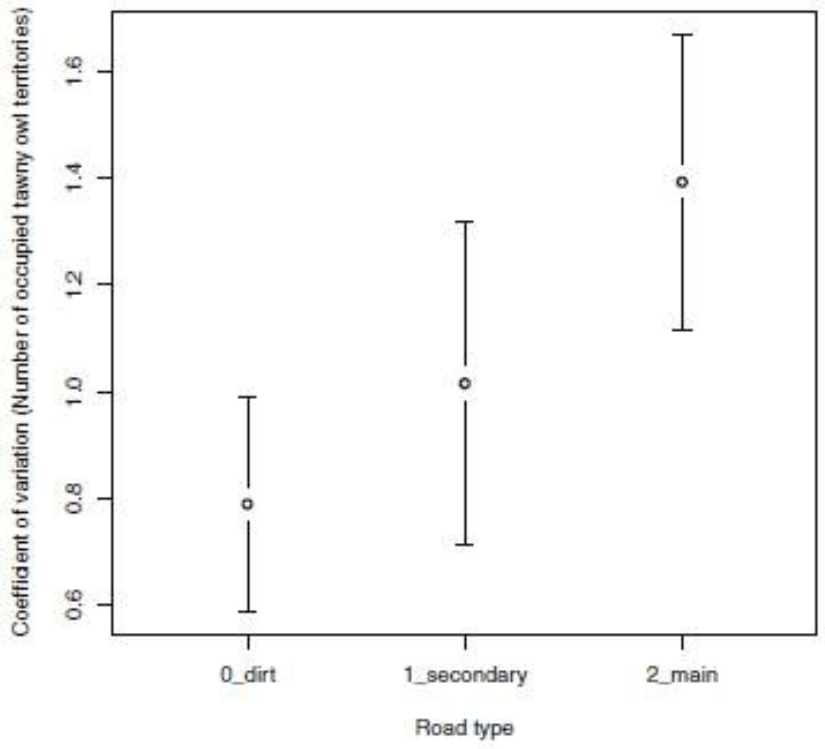


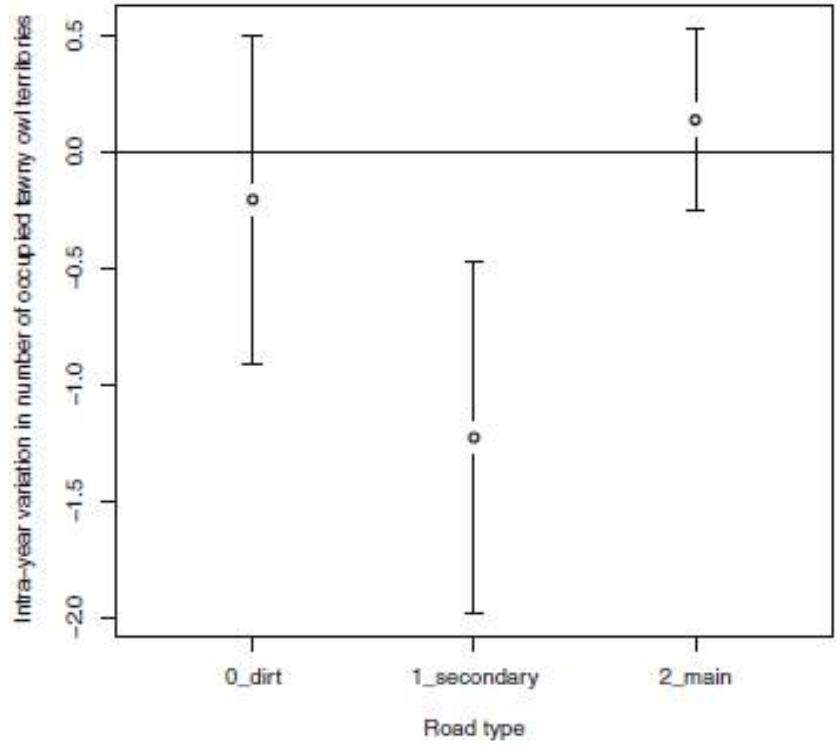
The local population trend was <u>stable far from roads</u>, and <u>negative near main and secondary roads</u>



van der Horst S, R Lourenço, F Goytre, A Marques, S Santos, A Mira (2020) Road effects on tawny owl abundance and population trend. European Journal of Wildlife Research 65:99

ROAD EFFECTS ON SITE OCCUPANCY BY TAWNY OWLS



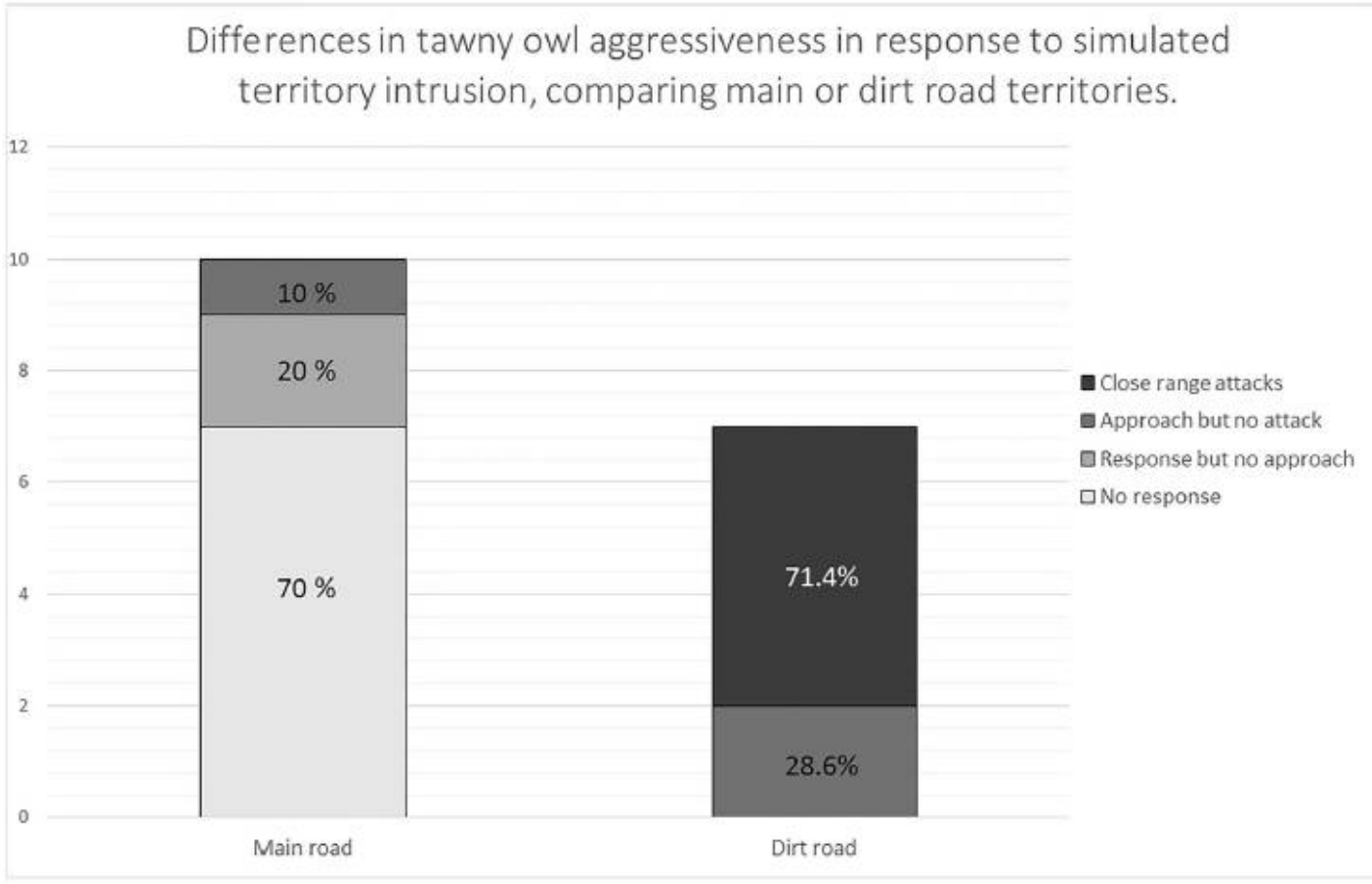


– Road type affected occupancy between years – territories near main and secondary roads showed greater variation in the number of territories

– Sites near secondary roads showed greater intra-year variation in occupancy, losing more potential territories along the breeding season

van der Horst S, R Lourenço, F Goytre, A Marques, S Santos, A Mira (2020) Road effects on tawny owl abundance and population trend. European Journal of Wildlife Research 65:99

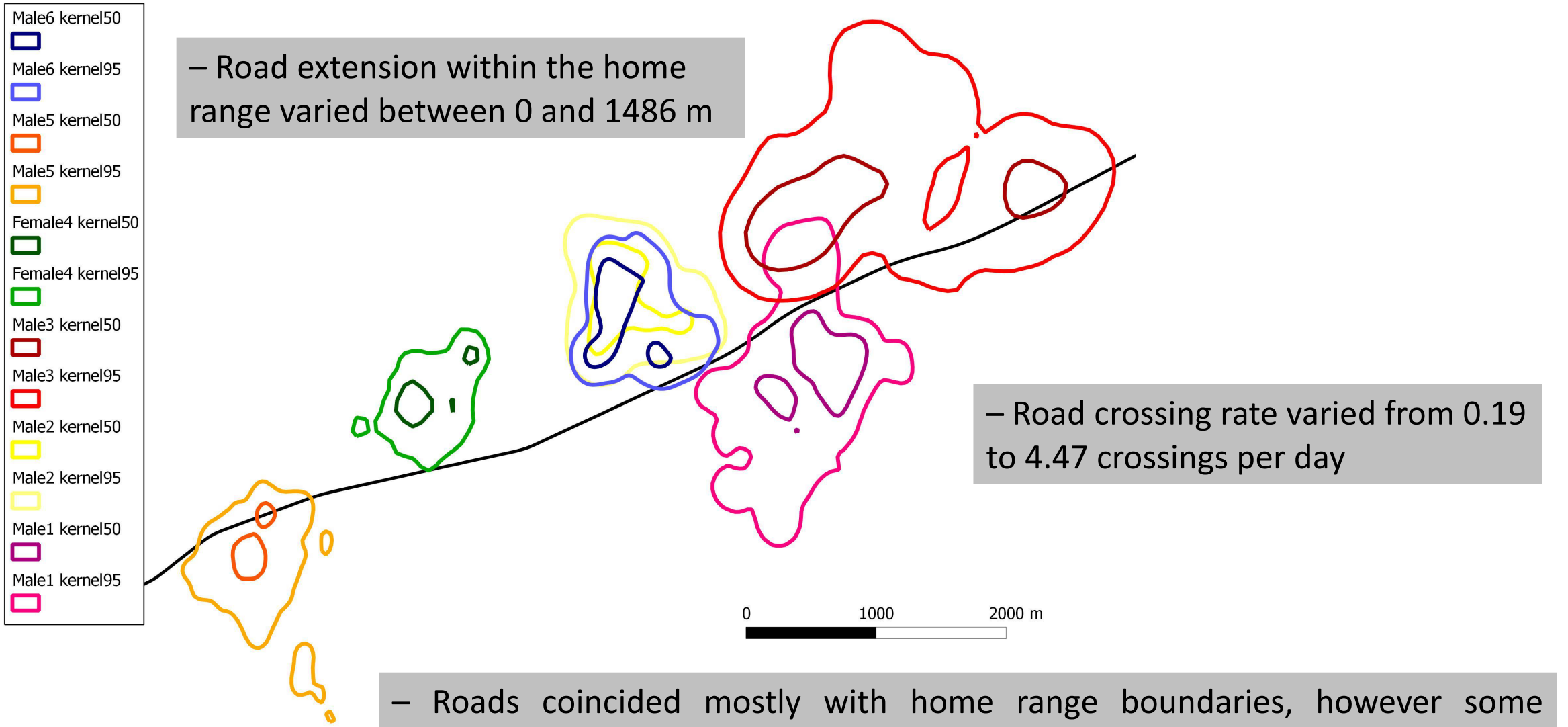
BEHAVIOURAL RESPONSE OF TAWNY OWLS NEAR ROADS



Less aggressive responses to intrusions of the territory holders near roads compared with sites far from roads

van der Horst S, R Lourenço, F Goytre, A Marques, S Santos, A Mira (2020) Road effects on tawny owl abundance and population trend. European Journal of Wildlife Research 65:99

HOME RANGE AND MOVEMENTS OF TAWNY OWLS NEAR ROADS

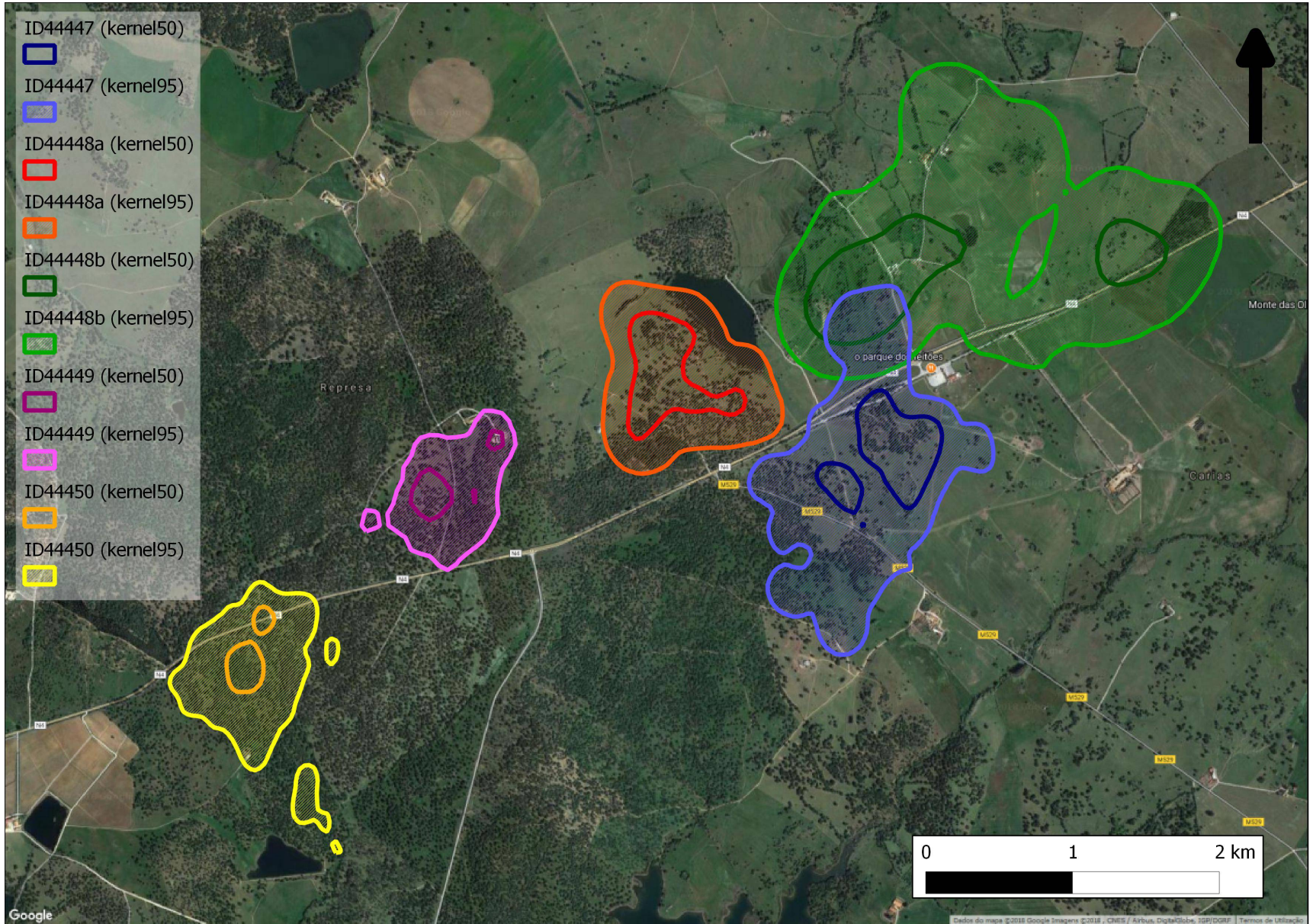


– Road extension within the home range varied between 0 and 1486 m

– Road crossing rate varied from 0.19 to 4.47 crossings per day

– Roads coincided mostly with home range boundaries, however some individuals crossed the road very regularly or used verges as hunting areas

HOME RANGE AND MOVEMENTS OF TAWNY OWLS NEAR ROADS



HOME RANGE AND MOVEMENTS OF TAWNY OWLS NEAR ROADS

CONCLUSIONS

– Mortality hotspots should be looked for not only on main roads but also on secondary roads

– Mitigation measures may need to be applied as well in secondary roads

– Tracking results suggest that landscape features that attract owls across roads (perches, feeding areas, movement pathways) increase mortality risk, and thus are priority sites to application of mitigation measures

THANK YOU
FOR YOUR ATTENTION

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Linear Infrastructure Networks with Ecological Solutions

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LIFE-LINES (LIFE14 NAT/PT/001081)
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