

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/317888632>

Are transportation infrastructures barriers to movements?

Presentation · June 2017

DOI: 10.13140/RG.2.2.14082.68809

CITATIONS

0

READS

51

4 authors, including:



Michel Baguette

Muséum National d'Histoire Naturelle

191 PUBLICATIONS 5,198 CITATIONS

SEE PROFILE



Sylvain Moulherat

TerrOïko

32 PUBLICATIONS 116 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

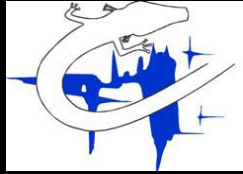


Multicriterion assessment of spatial conservation planning [View project](#)



All content following this page was uploaded by [Jonathan Remon](#) on 26 June 2017.

The user has requested enhancement of the downloaded file. All in-text references [underlined in blue](#) are added to the original document and are linked to publications on ResearchGate, letting you access and read them immediately.



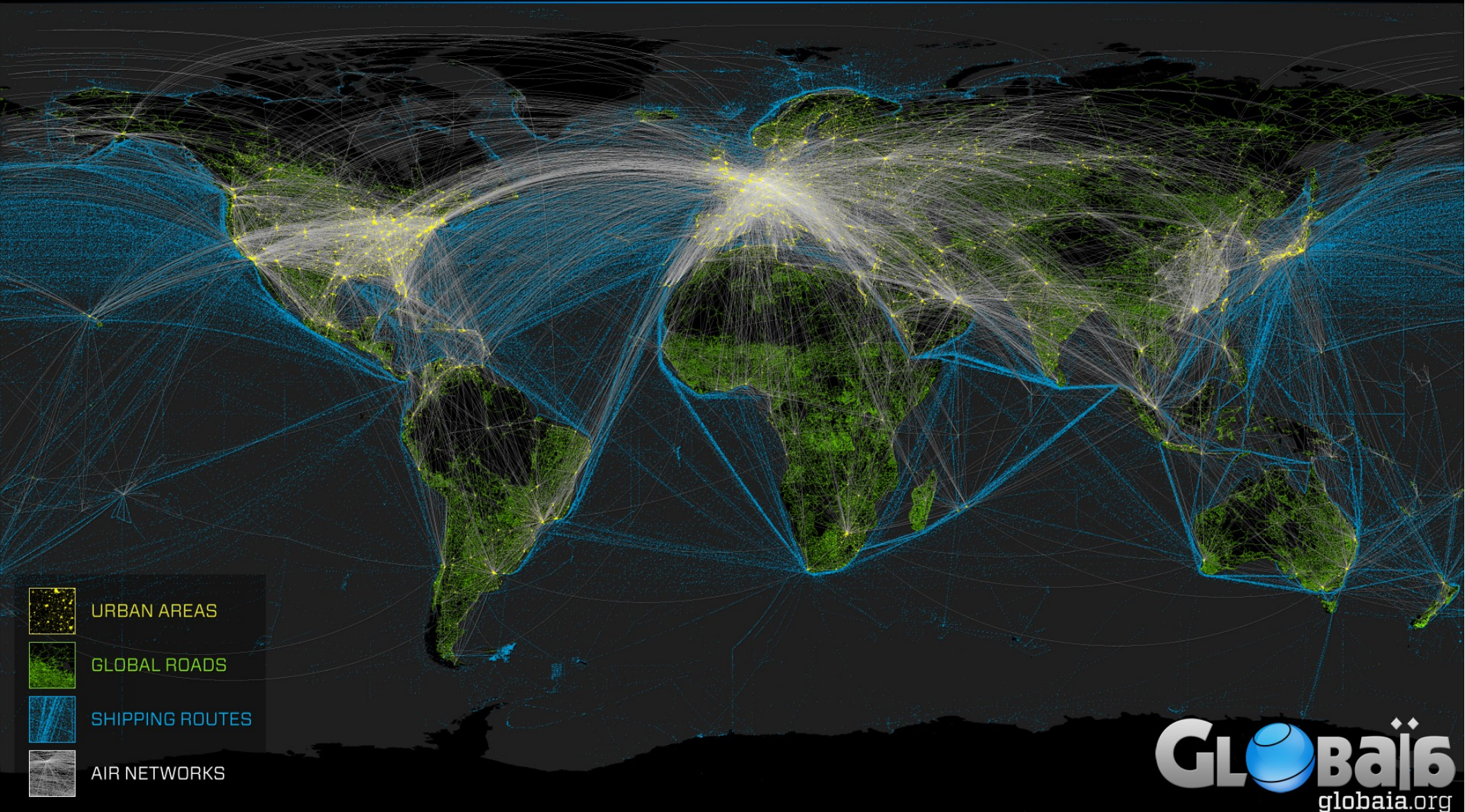
Are transportation infrastructures barriers to movements ?



J. Remon, E. Chevallier, M. Baguette, S. Moulherat (TerrOïko, CNRS Moulis)

Eb2017, 23 juin 2017

THE GLOBAL TRANSPORTATION SYSTEM

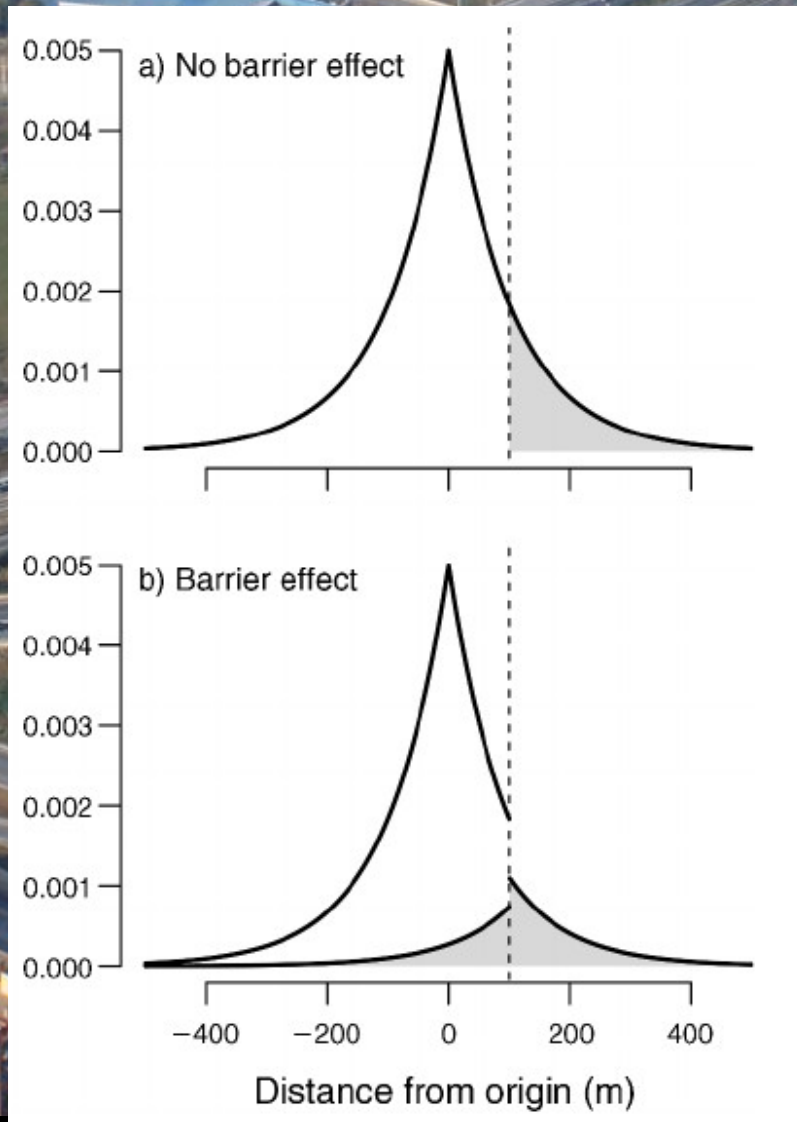


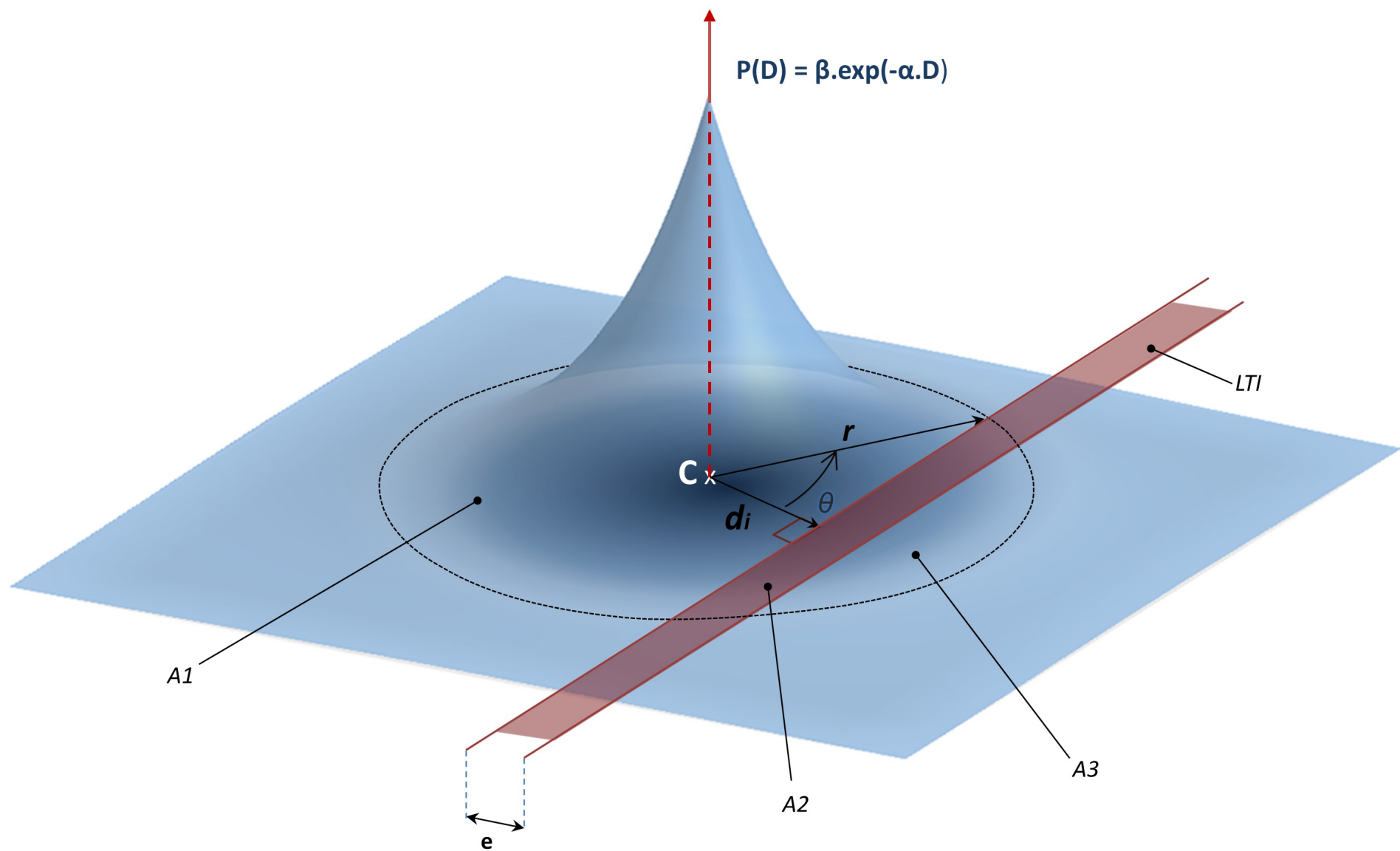






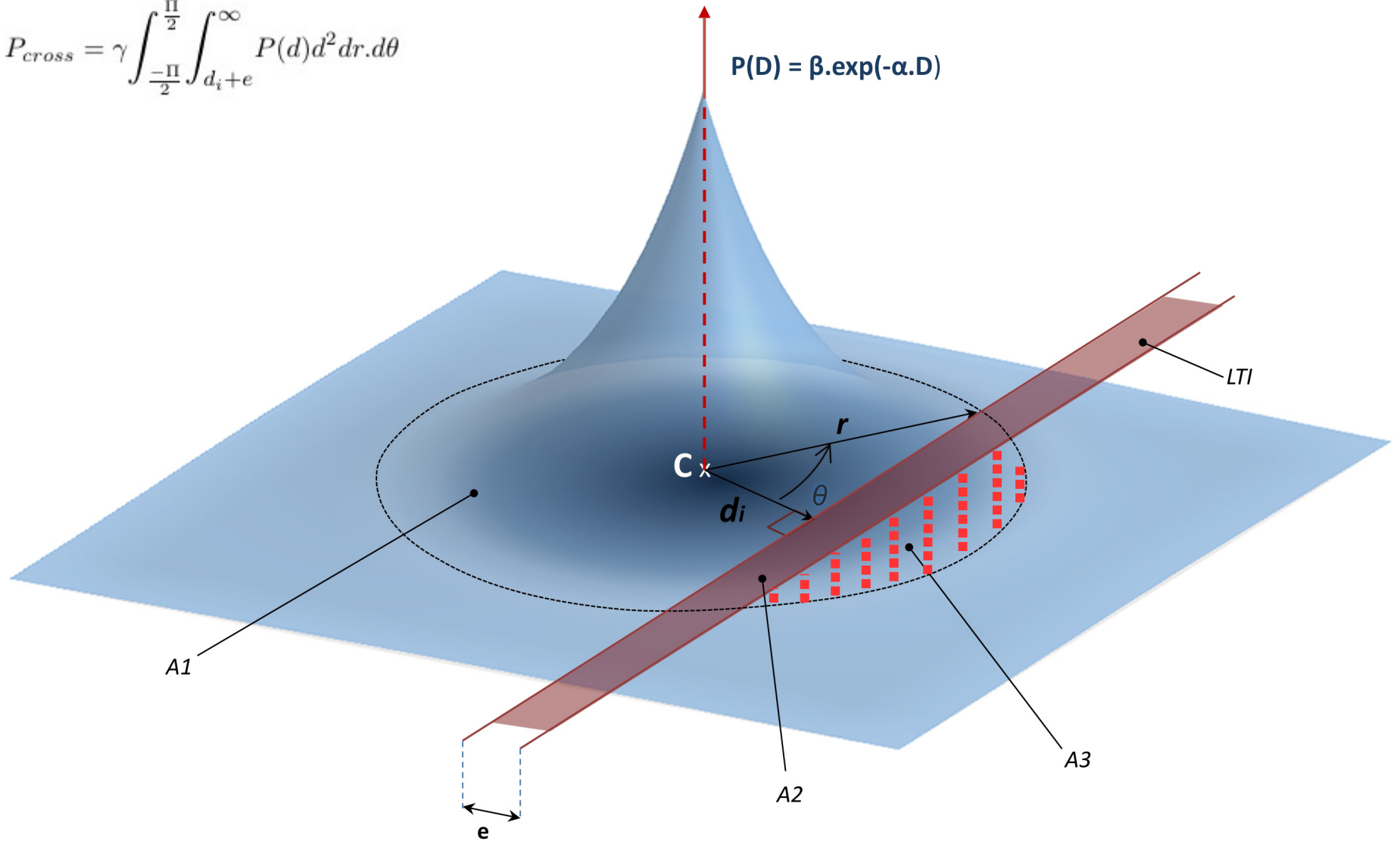




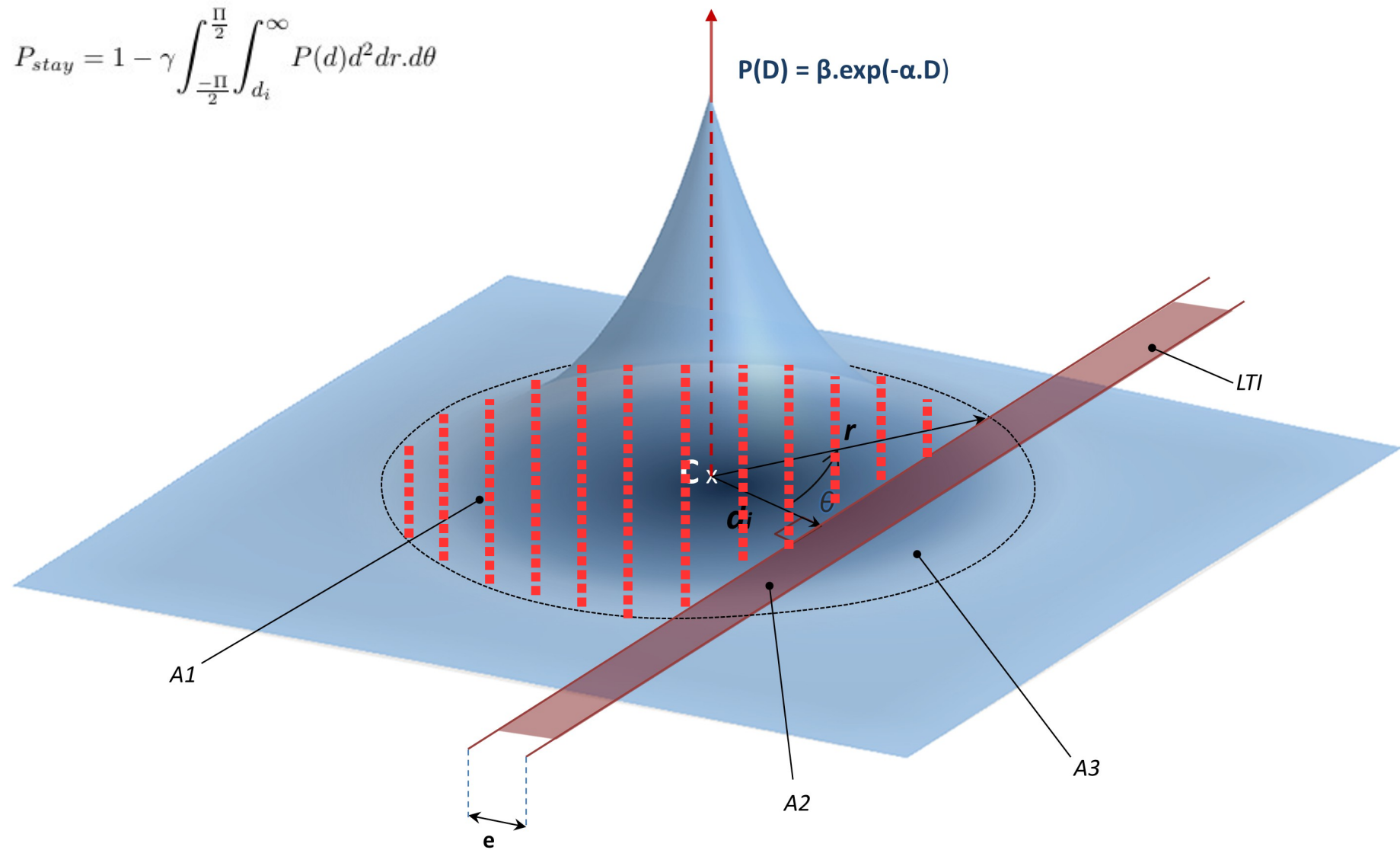


$$P_{cross} = \gamma \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{d_i+e}^{\infty} P(d) d^2 dr d\theta$$

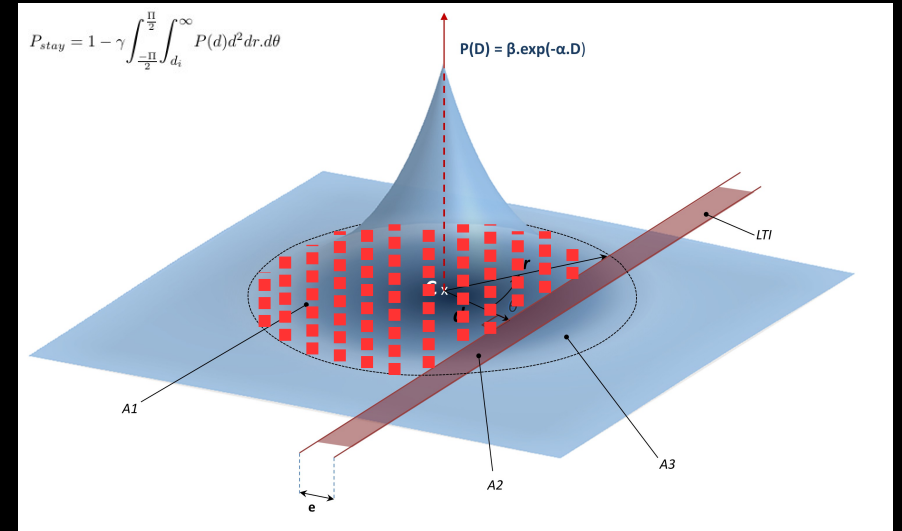
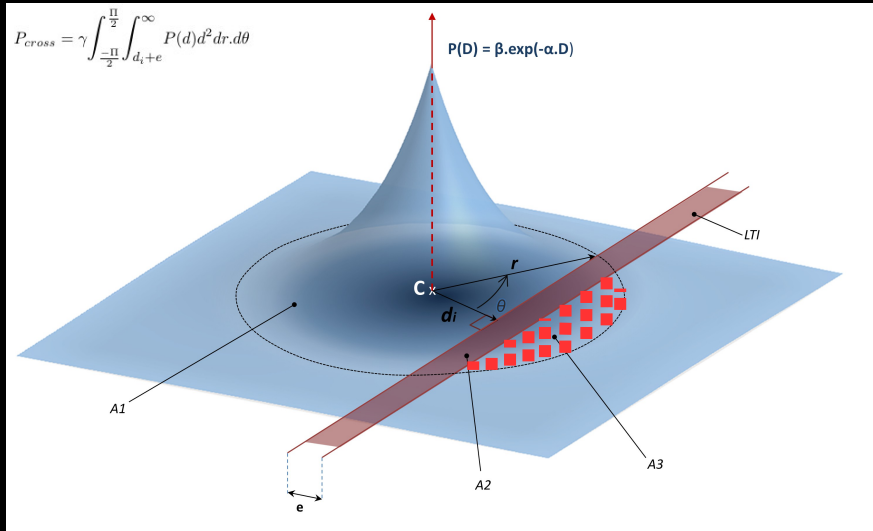
$$P(D) = \beta \cdot \exp(-\alpha \cdot D)$$



$$P_{stay} = 1 - \gamma \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{d_i}^{\infty} P(d) d^2 dr. d\theta$$



EXPECTED



OBSERVED

Study site



Large-scale transportation infrastructures



Railway



Motorway



Gas pipeline



Power line

Model species

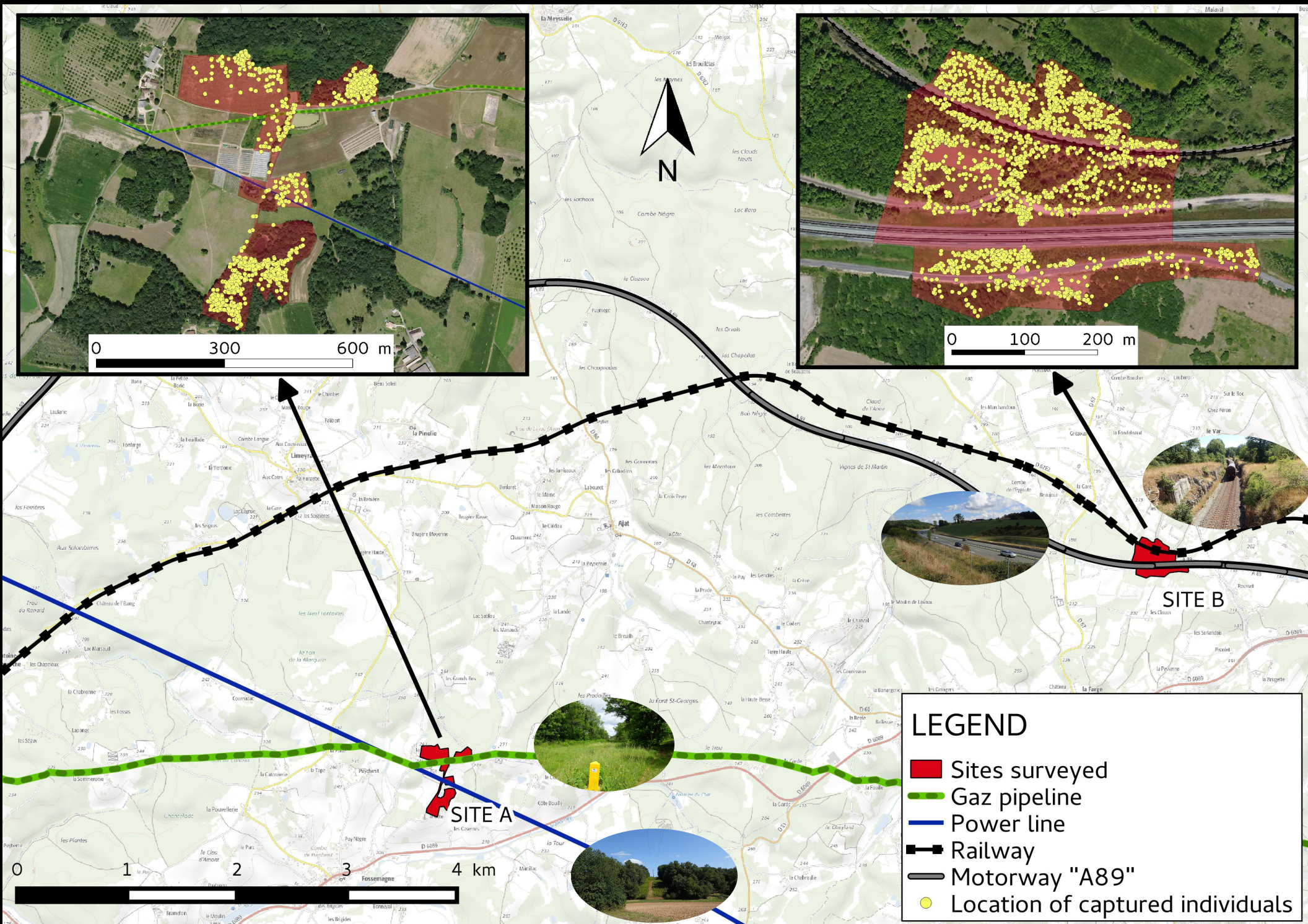


♂

Meadow Brown,
Maniola jurtina



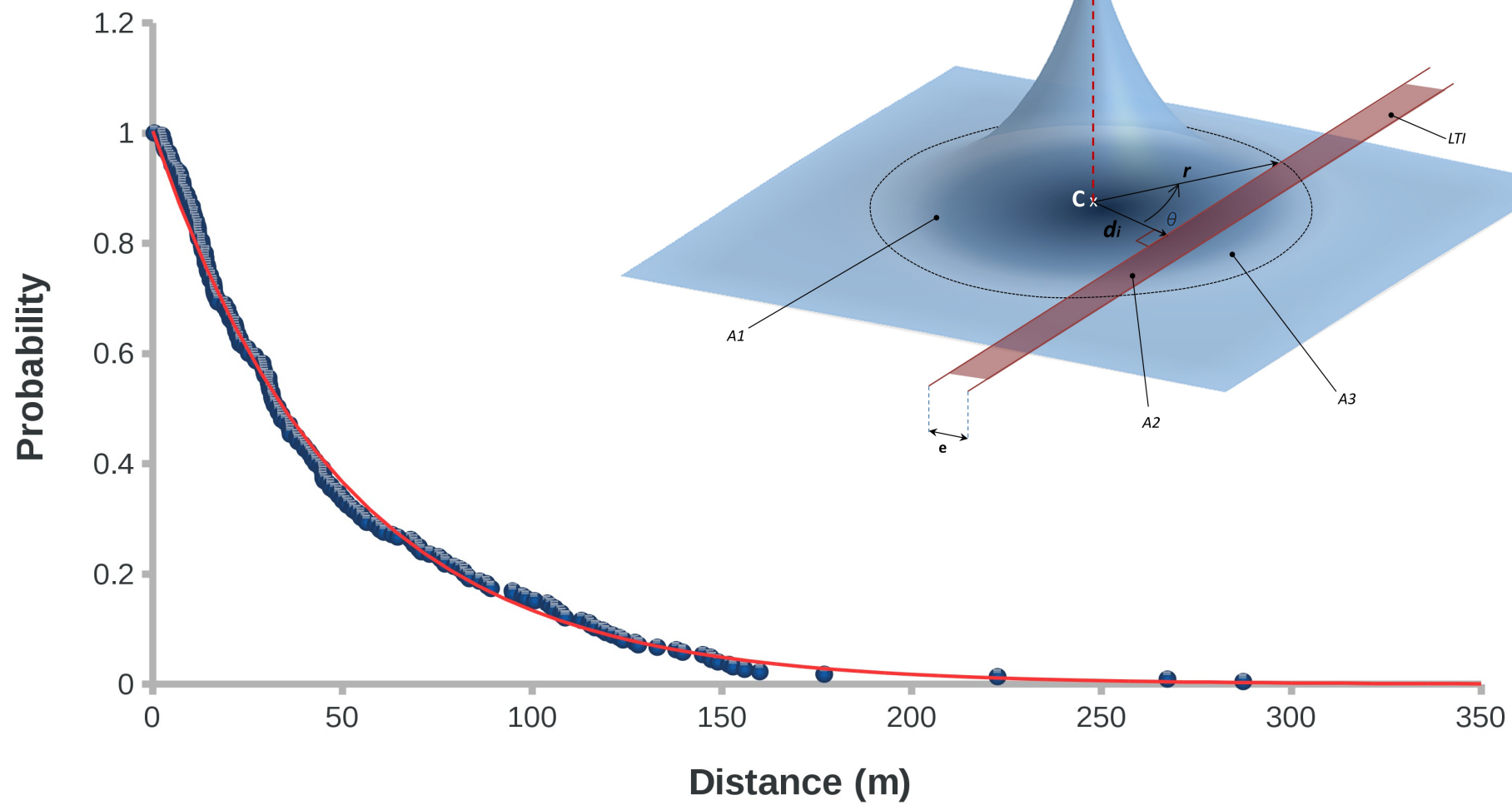
♀



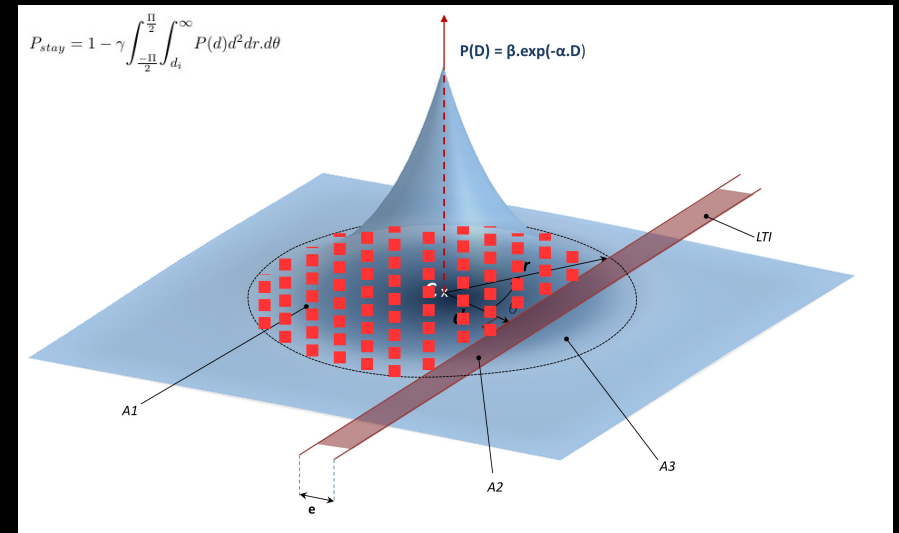
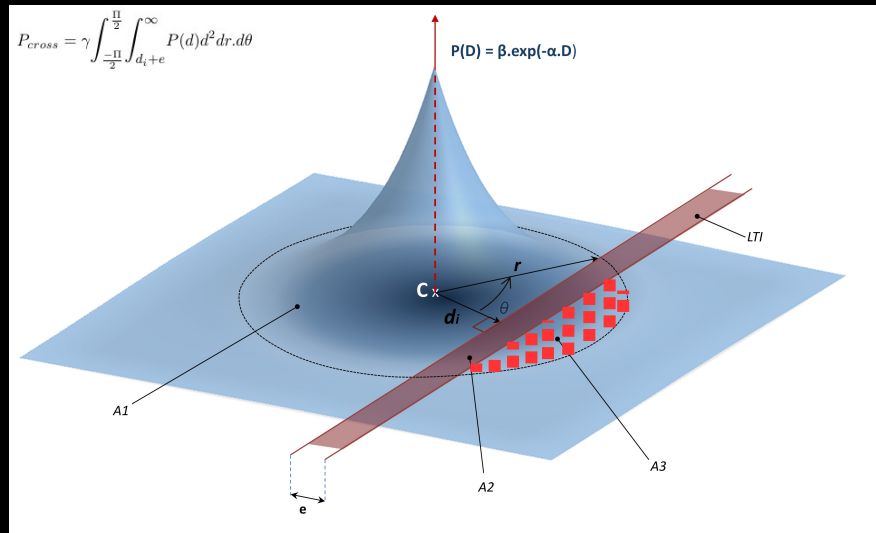


Mark-Recapture surveys





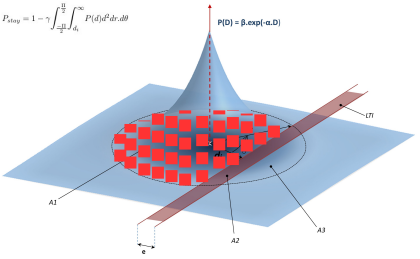
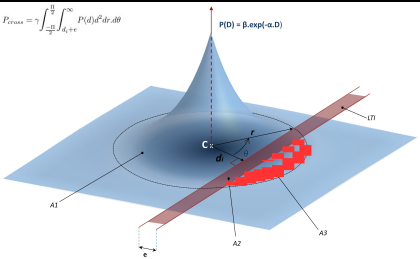
EXPECTED



OBSERVED

Results

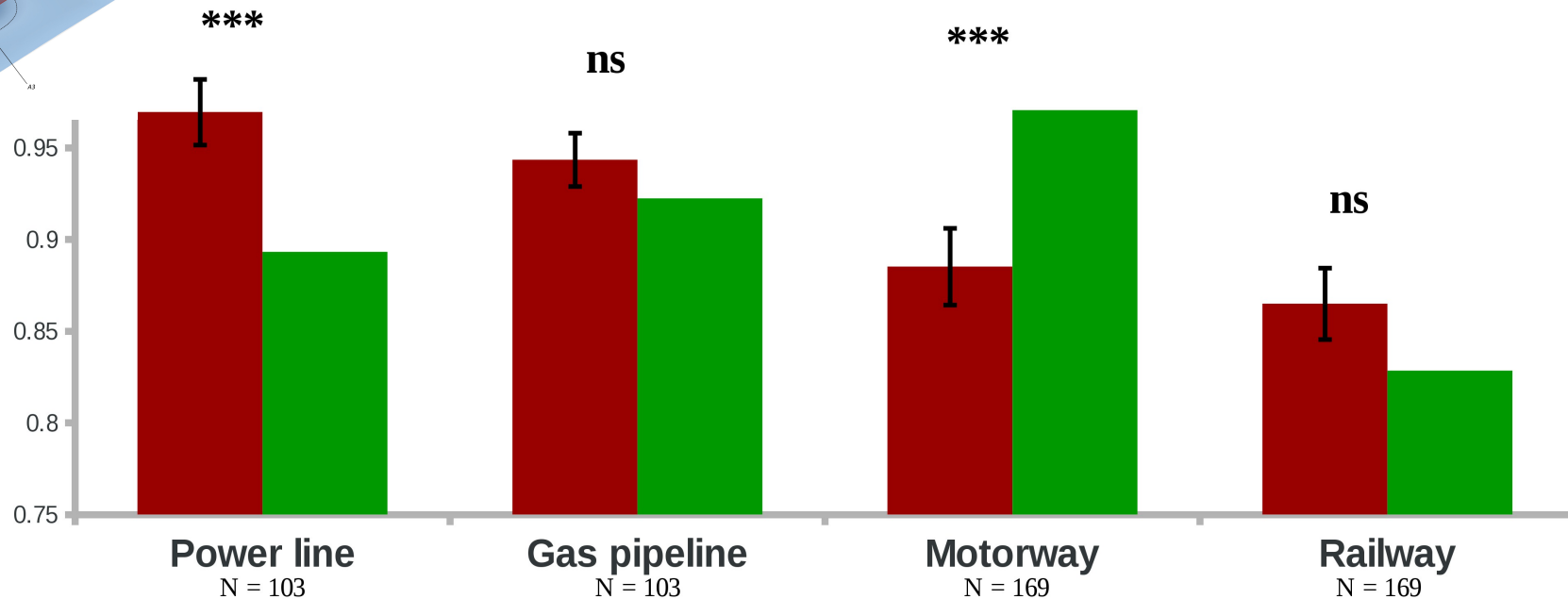
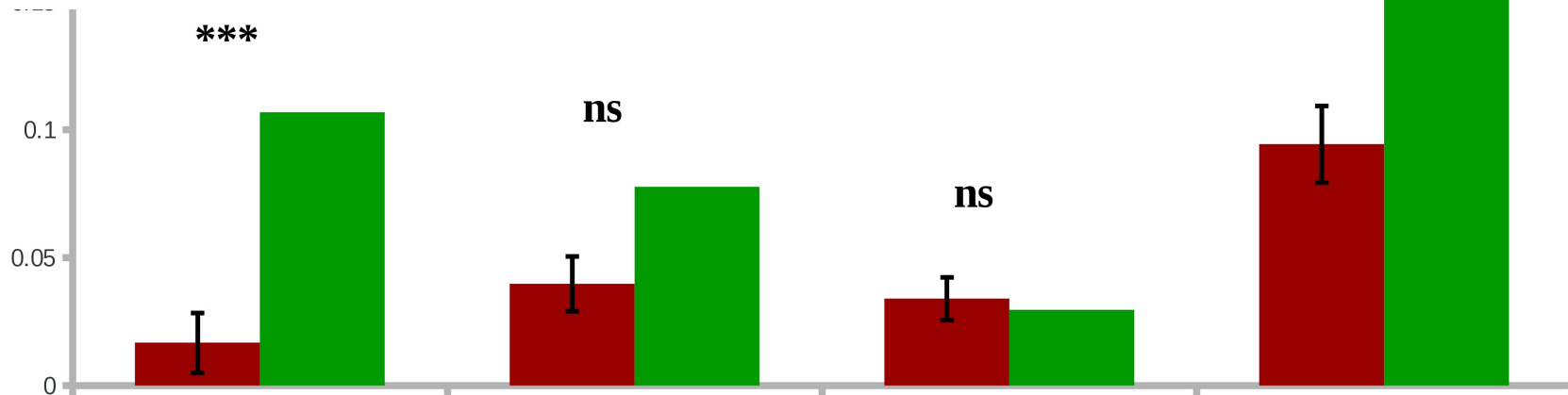




Crossing probabi

Staying probability

Expected Observed

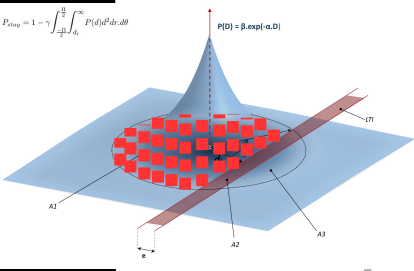
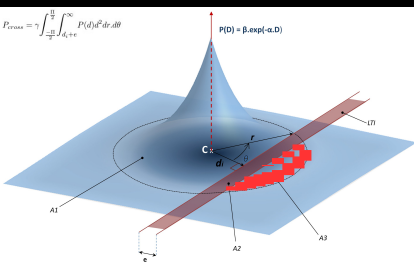


Power line
N = 103

Gas pipeline
N = 103

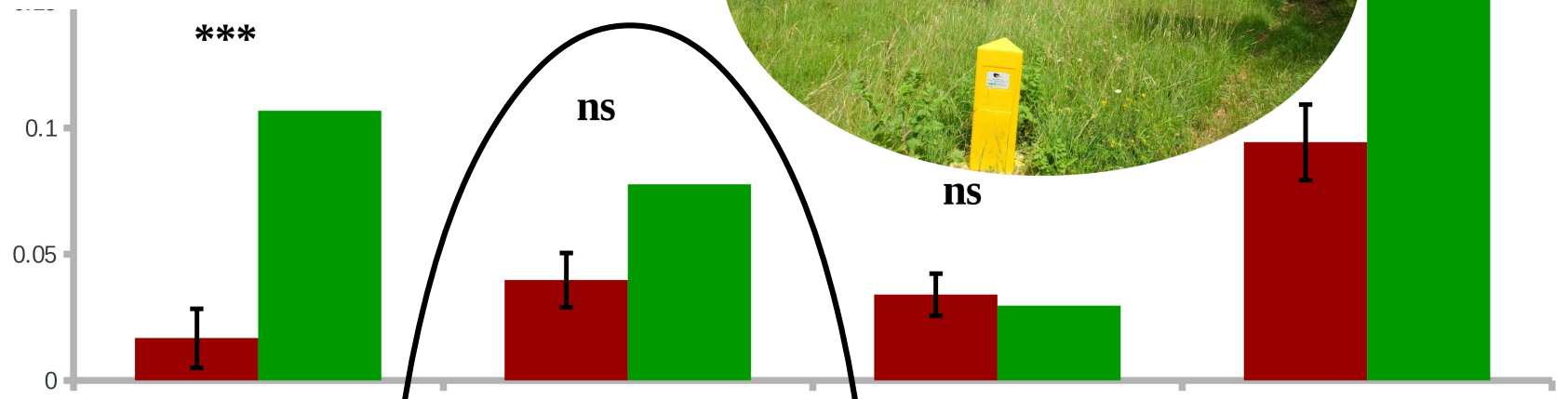
Motorway
N = 169

Railway
N = 169

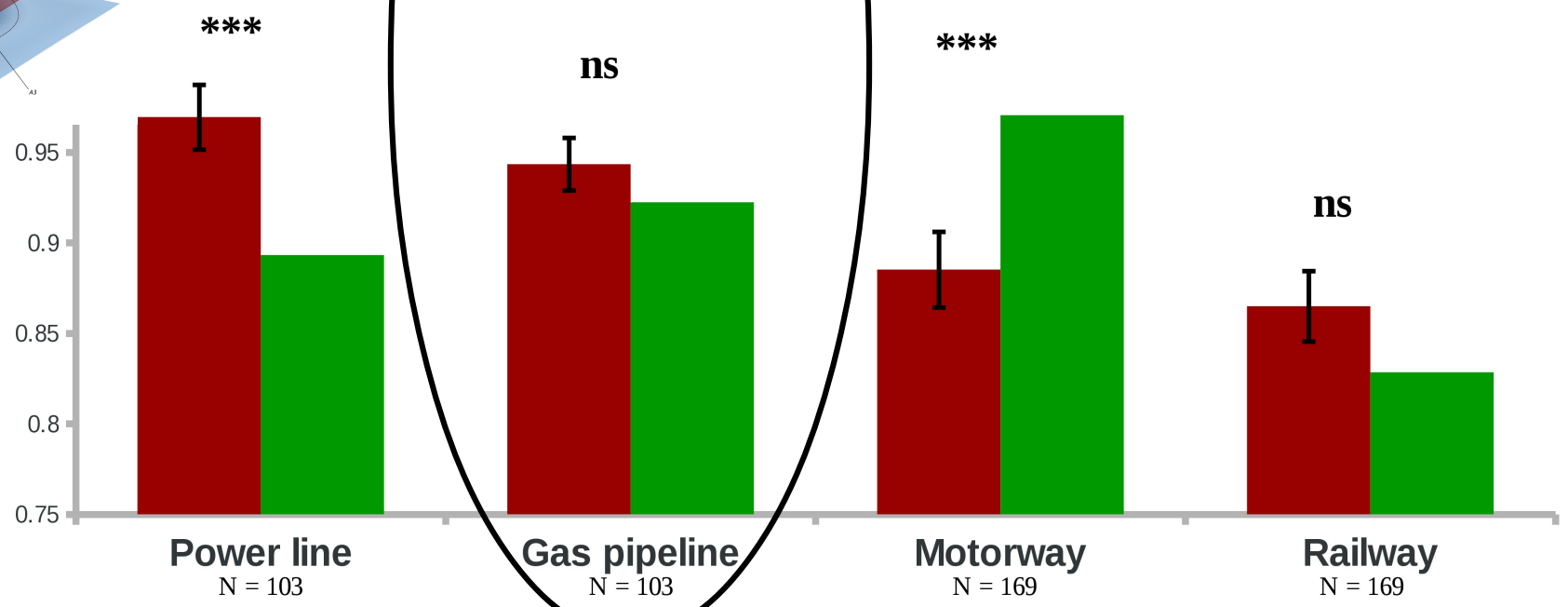


Expected Observed

Crossing probabi



Staying probability

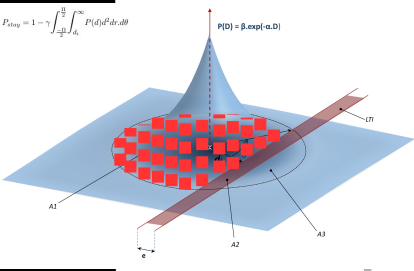
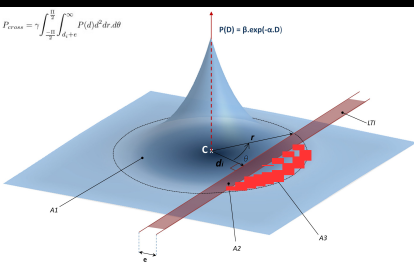


Power line
N = 103

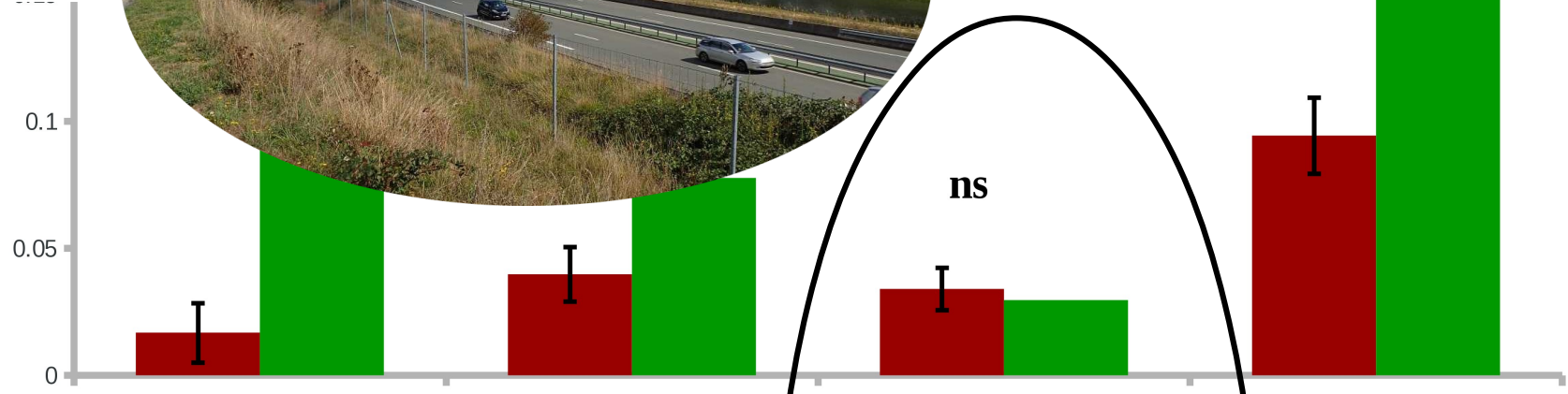
Gas pipeline
N = 103

Motorway
N = 169

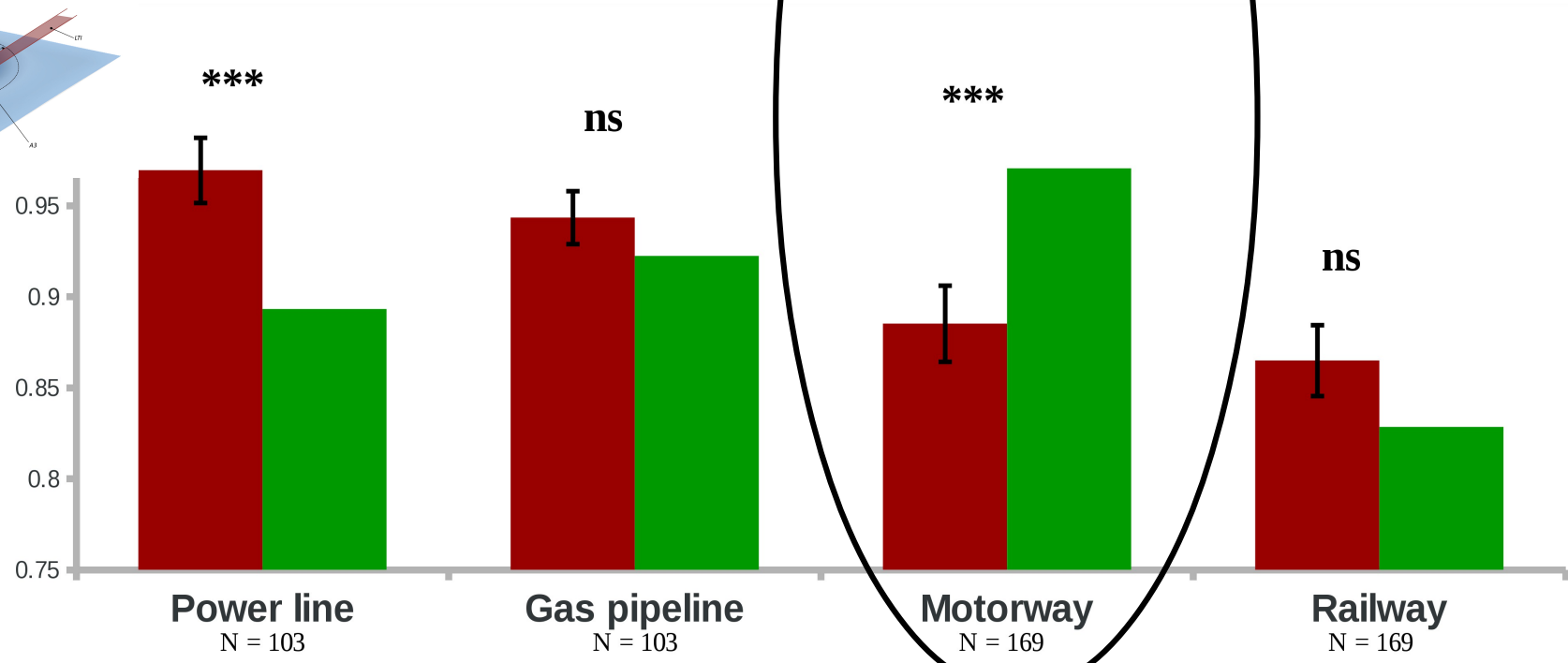
Railway
N = 169



Crossing probabi



Staying probability

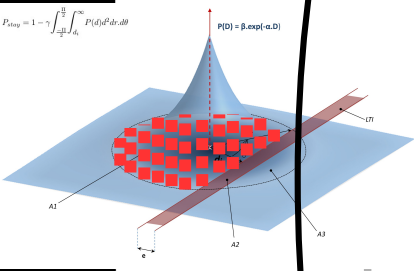
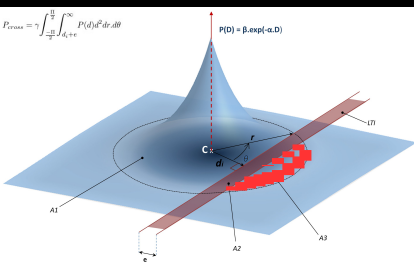


Power line
N = 103

Gas pipeline
N = 103

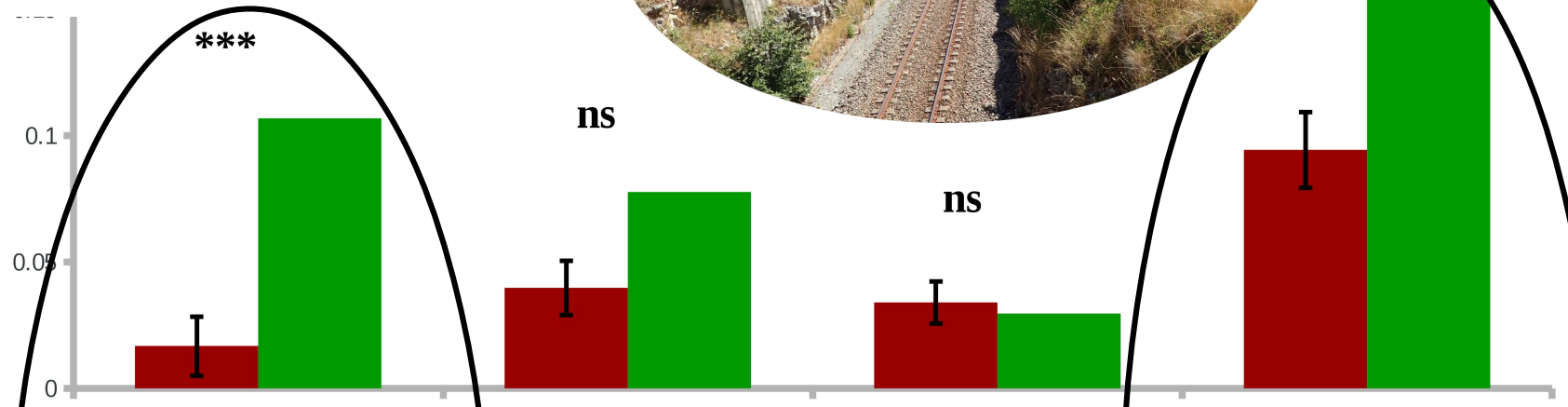
Motorway
N = 169

Railway
N = 169

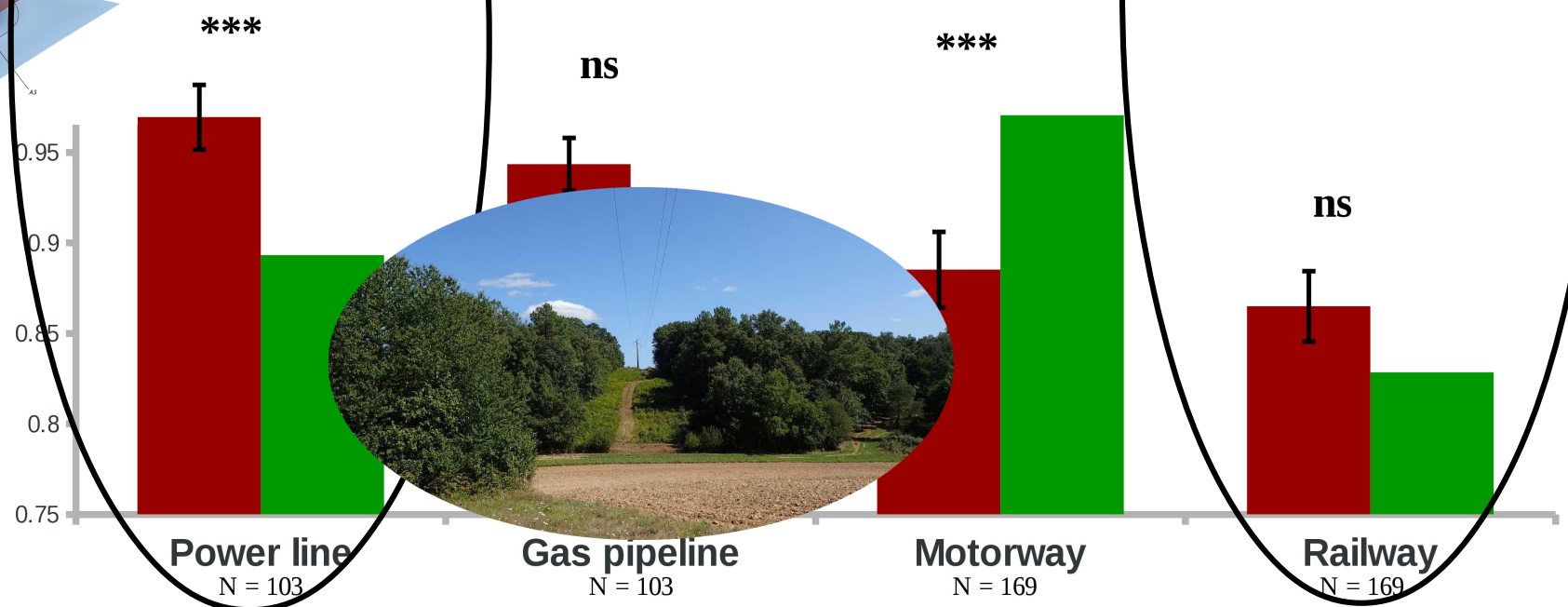


Expected Observ

Crossing probabi



Staying probability



Power line
N = 103

Gas pipeline
N = 103

Motorway
N = 169

Railway
N = 169

Take home messages

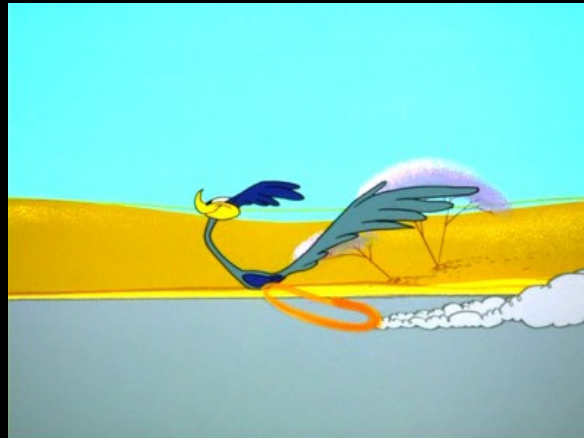
Take home messages

- Motorway has a strong barrier effect



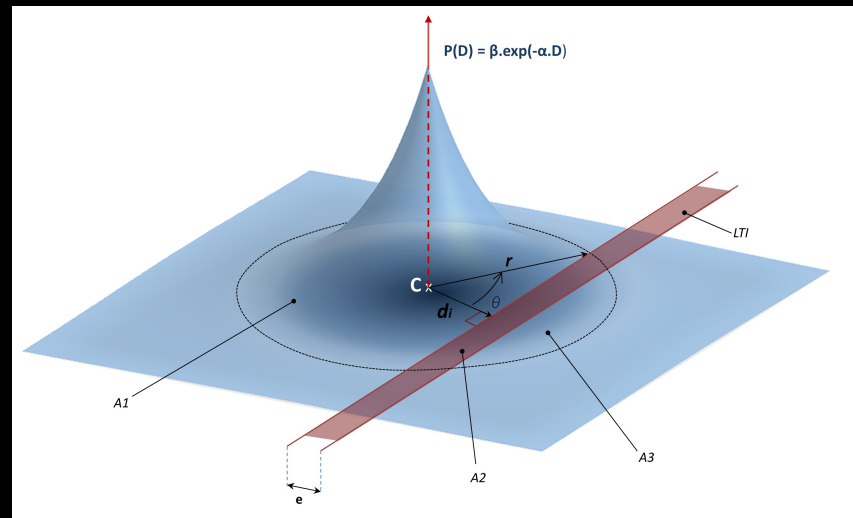
Take home messages

- Motorway has a strong barrier effect
- Some infrastructures increase crossing events



Take home messages

- Motorway has a strong barrier effect
- Some infrastructures increase crossing events
- Method usefull and simple that can be applied to any mobile species



Thanks for your attention !

Acknowledgements :

Emmanuelle Chevallier

Sylvan Moulherat

Michel Baguette

Jérémie Cornuau

Allison Mira

Eva Garcia

Aymeric Brissaud

Raphaël Roudier

Timothée Langer

Elise Languille

Aurélia Dubois

Jérôme Prunier

Jeff Arnoldi



And the eb2017 organisers !!