Local and regional movements of the little bustard: application to the prediction of the risk of collision with power lines

(Metodological approach and main conclusions)

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Foto: Luis Venâncio

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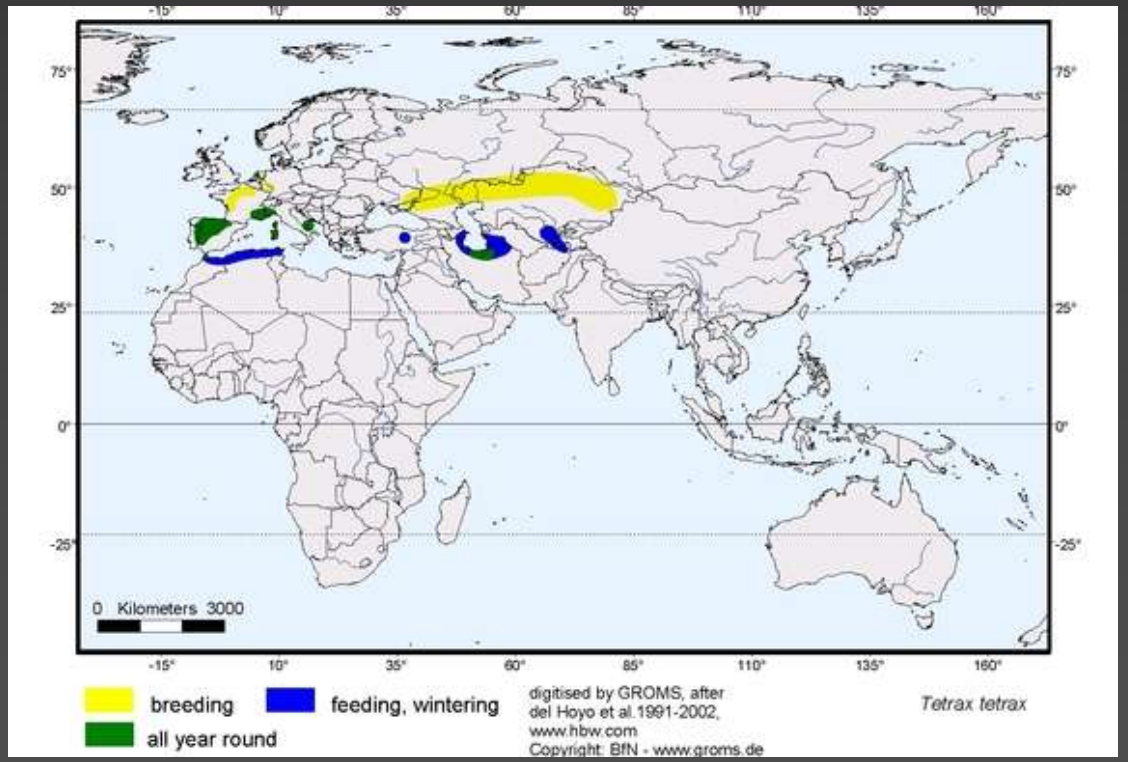
- Graham Martin (University of Birmingham), for his willingness to attend and contribute to this seminar;
- Other invited speakers;

The study species

- The little bustard is grassland bird typical of agricultural landscapes with low intensity farming;
- The most viable population is found in the Iberian Peninsula which holds more than half of the world's population;



The problem

- This is the threatened species with more collisions with power lines in Portugal.

Overall objective of the project

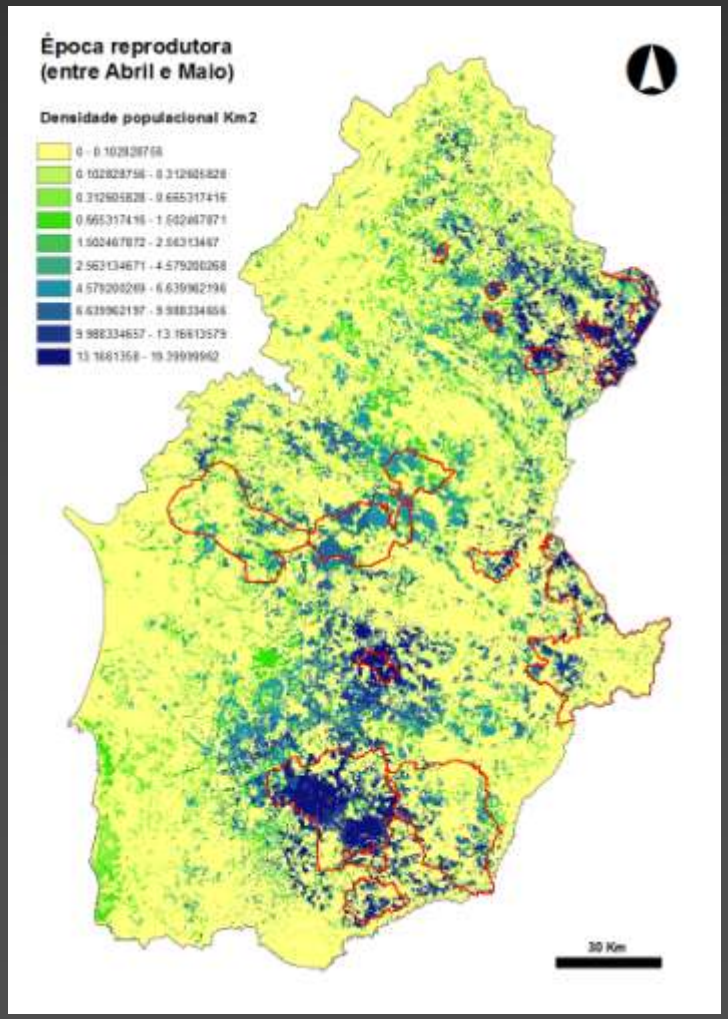
- Build a map of the risk of collision of little bustards with power lines in Baixo Alentejo, to support decision-making regarding mitigation measures.

Methodological approach

$$\text{Risk of collision} \sim \int \left(\text{Population density} + \text{Distance travelled in flight} + \text{\% flights at height risk} + \text{existence of migratory corridors} \right)$$

Methodological approach

Risk of collision ~ $\int$ (Population density + Distance travelled in flight + % flights at height risk + existence of migratory corridors)

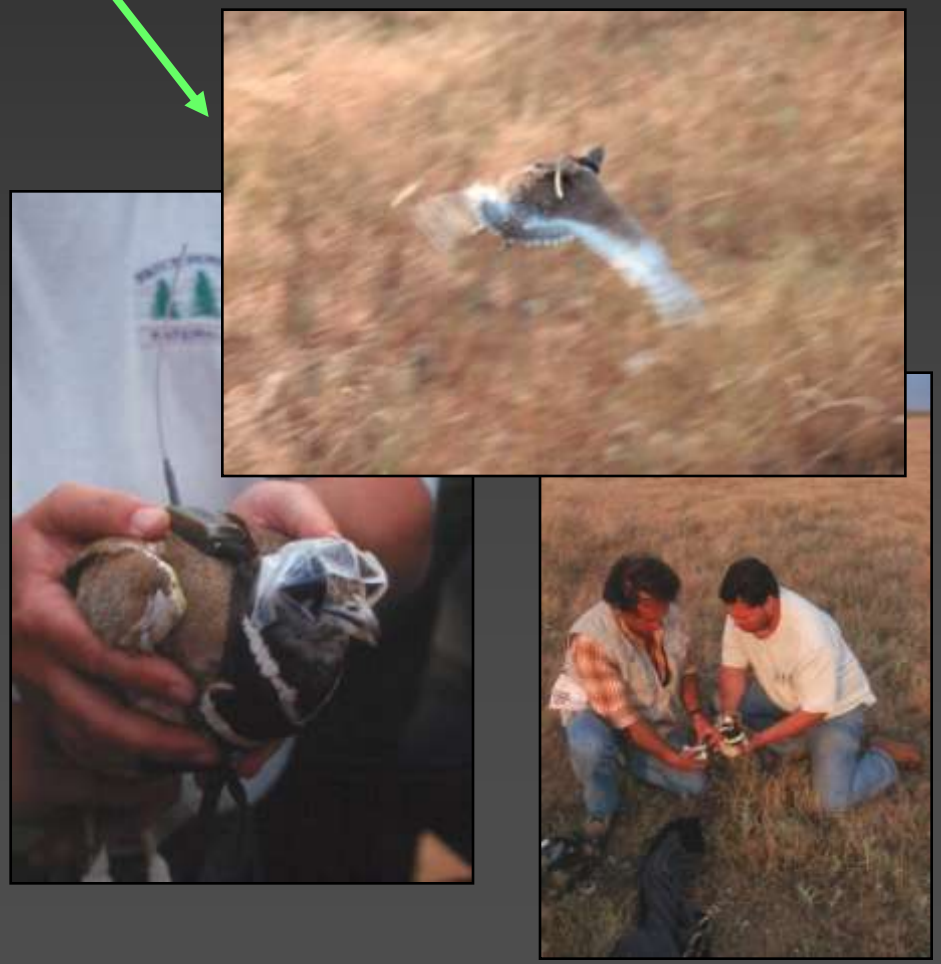


- *maps resulting from modelling using land cover information + little bustard abundance data coming from a previous project (LIFE)*

Methodological approach

Risk of collision ~ $\int$ (Population density + Distance travelled in flight + % flights at height risk + existence of migratory corridors)

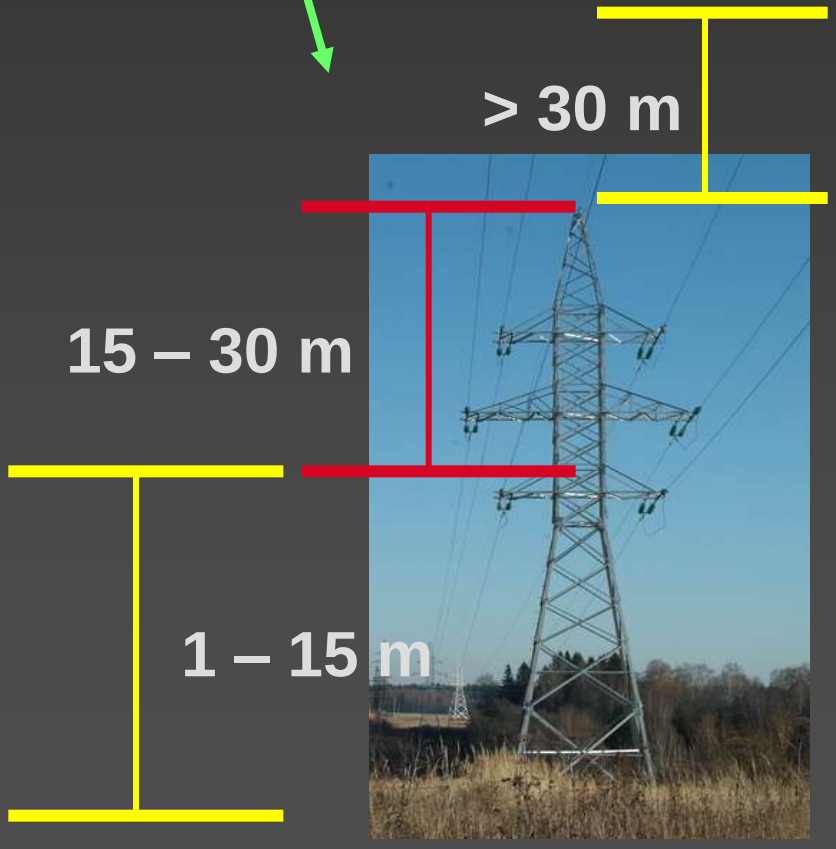
- *The most expensive part of the project*
- *31 birds tagged with solar Argos/GPS PTT*
- *Data collected: 75000 locations and 21500 km of movements*



Methodological approach

Risk of collision ~ $\int$ (Population density + Distance travelled in flight + % flights at height risk + existence of migratory corridors)

- *Focal observations in the field*



Methodological approach

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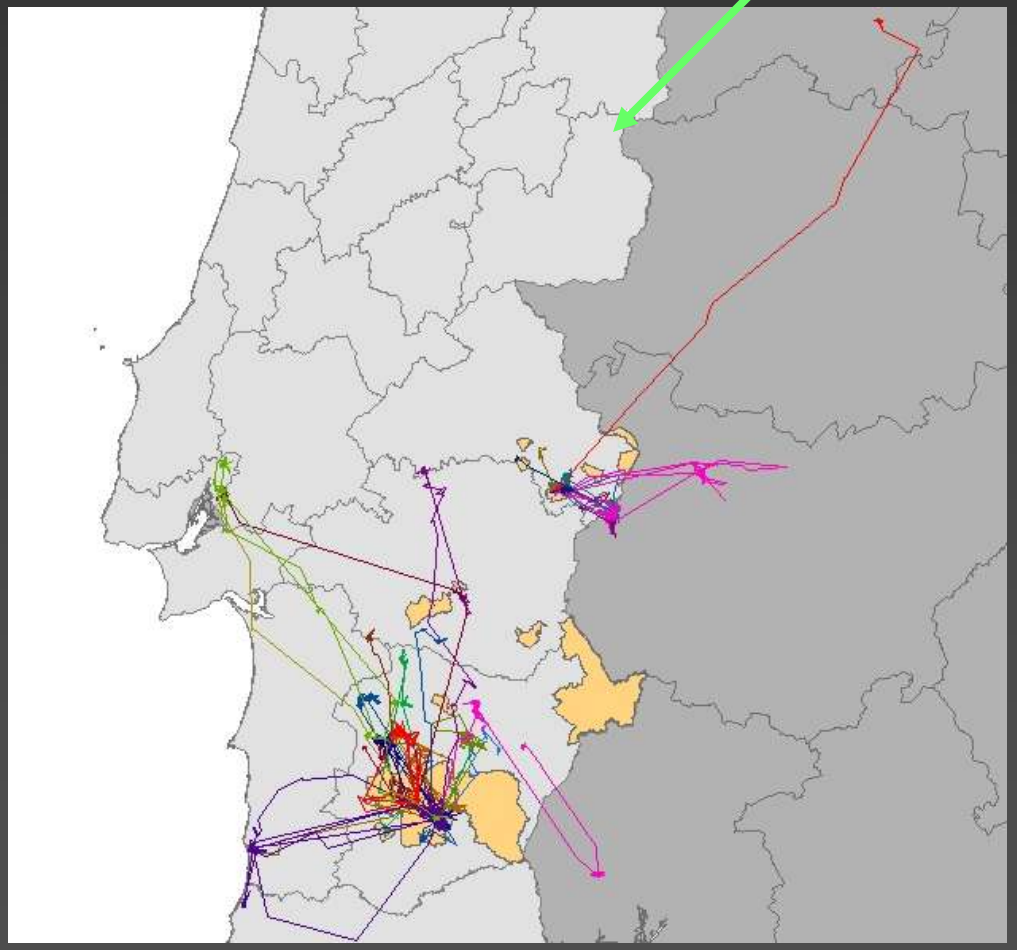
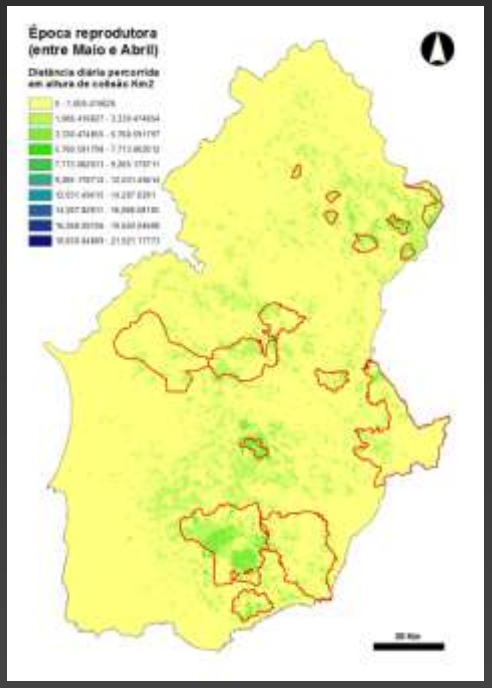
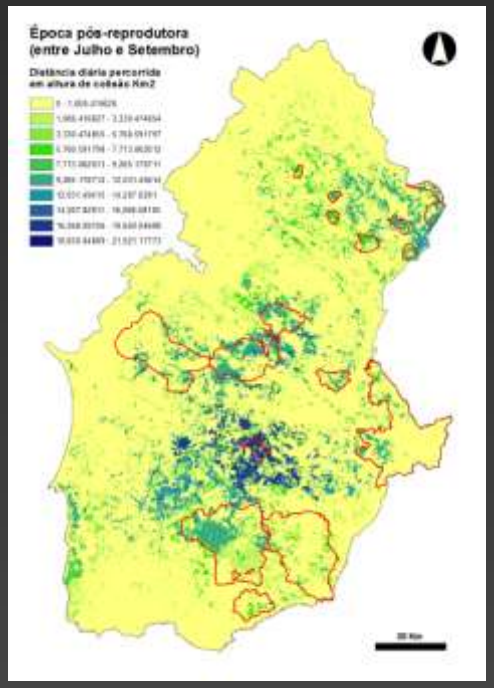


- *Satellite data coming from tagged birds*
- *Differences in population densities across seasons*

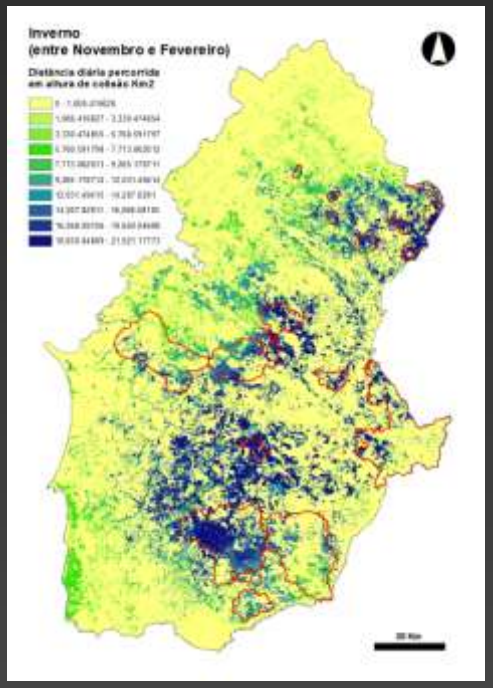
Main conclusions



Breeding



Post-breeding

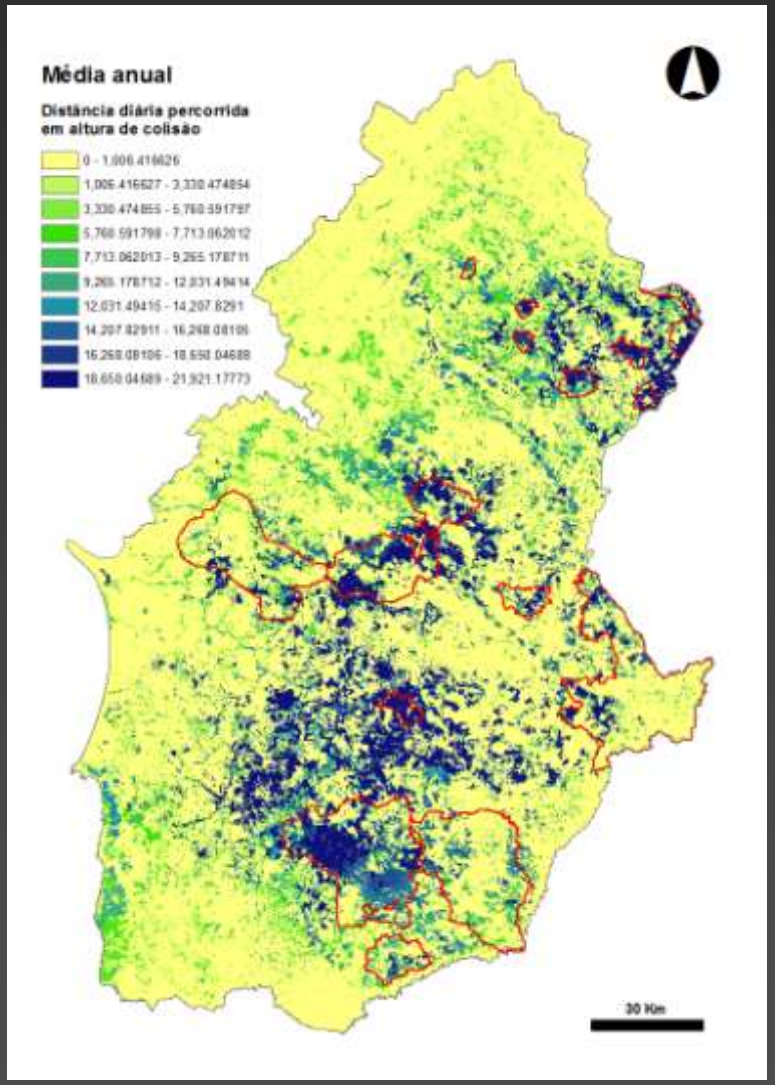


Winter

- Larger collision risk in winter (larger amount of territory with high collision risk)

Main conclusions

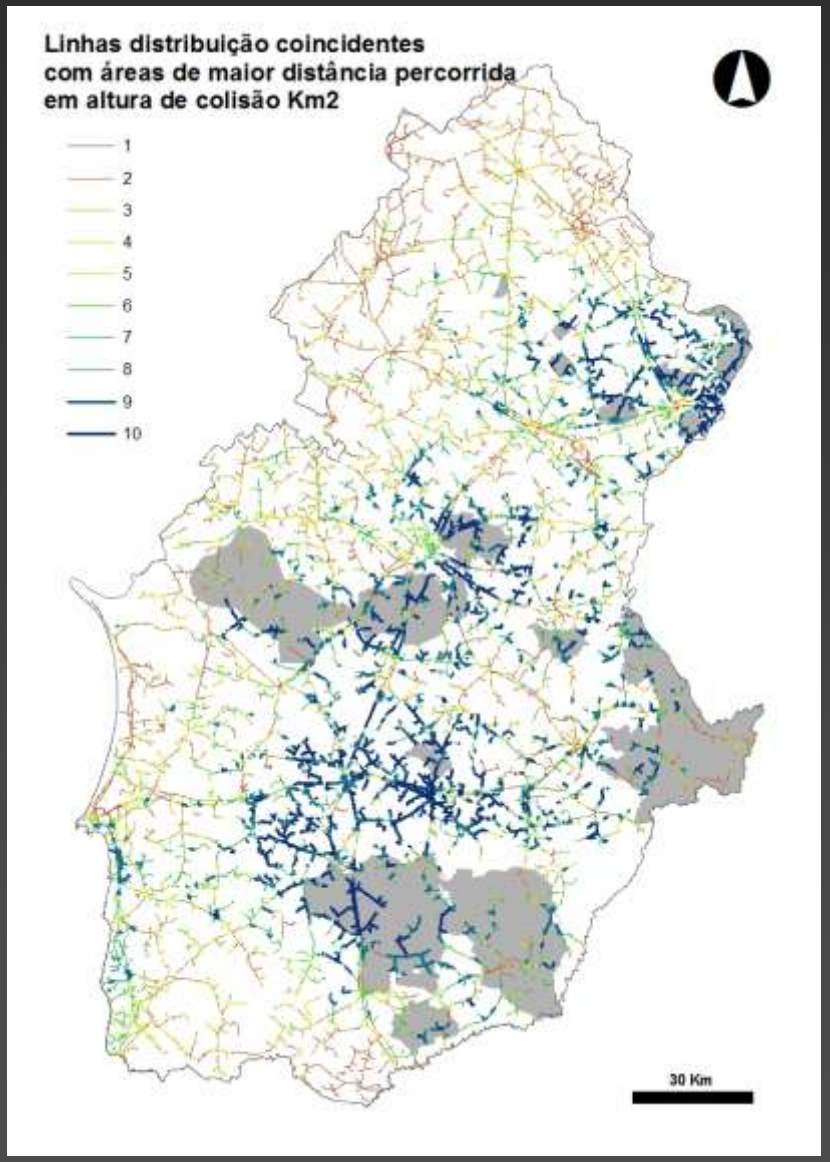
- Spatial pattern of collision risk allows the identification of critical areas of maximum impact in the case of power line establishment



Average risk of collision (all seasons)

Main conclusions

- The location and regional density of power lines can be used to identify existing critical areas to implement minimisation measures

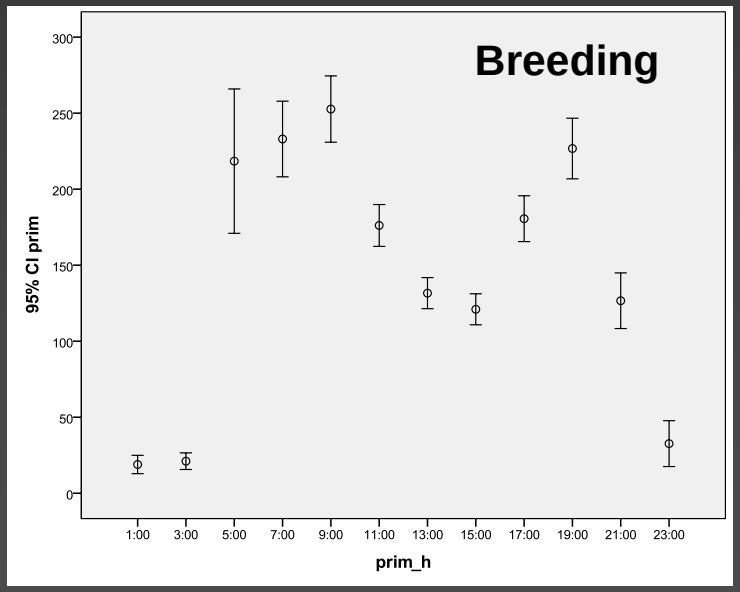


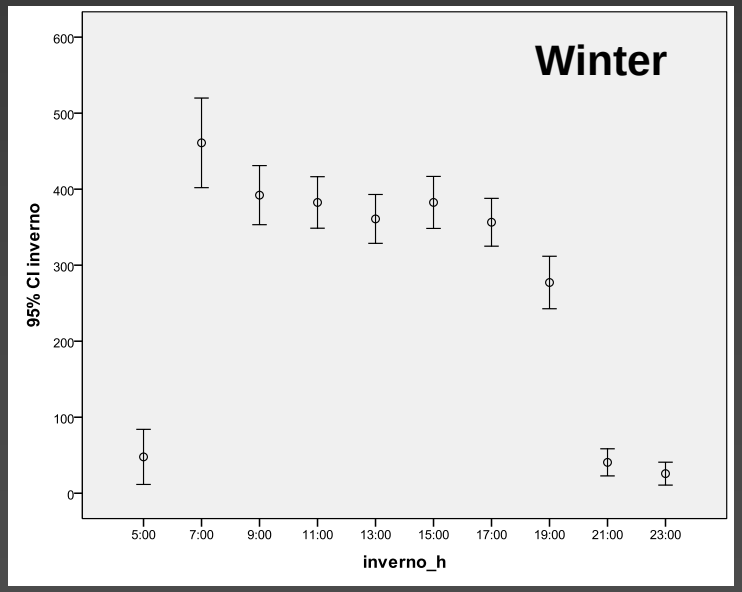
Identification of critical power lines

New contributions for science

- Daily activity patterns
- Time of day with higher risk of collisions

Distance (m)

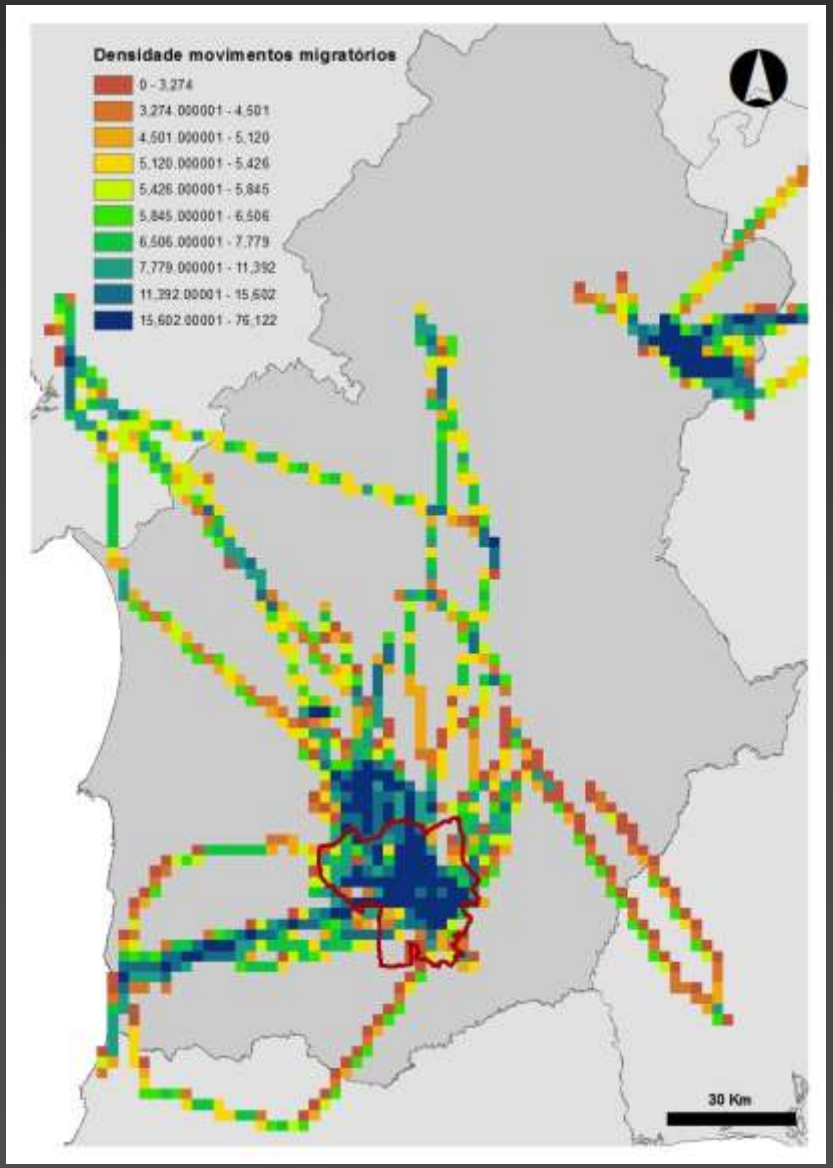




Hour of day

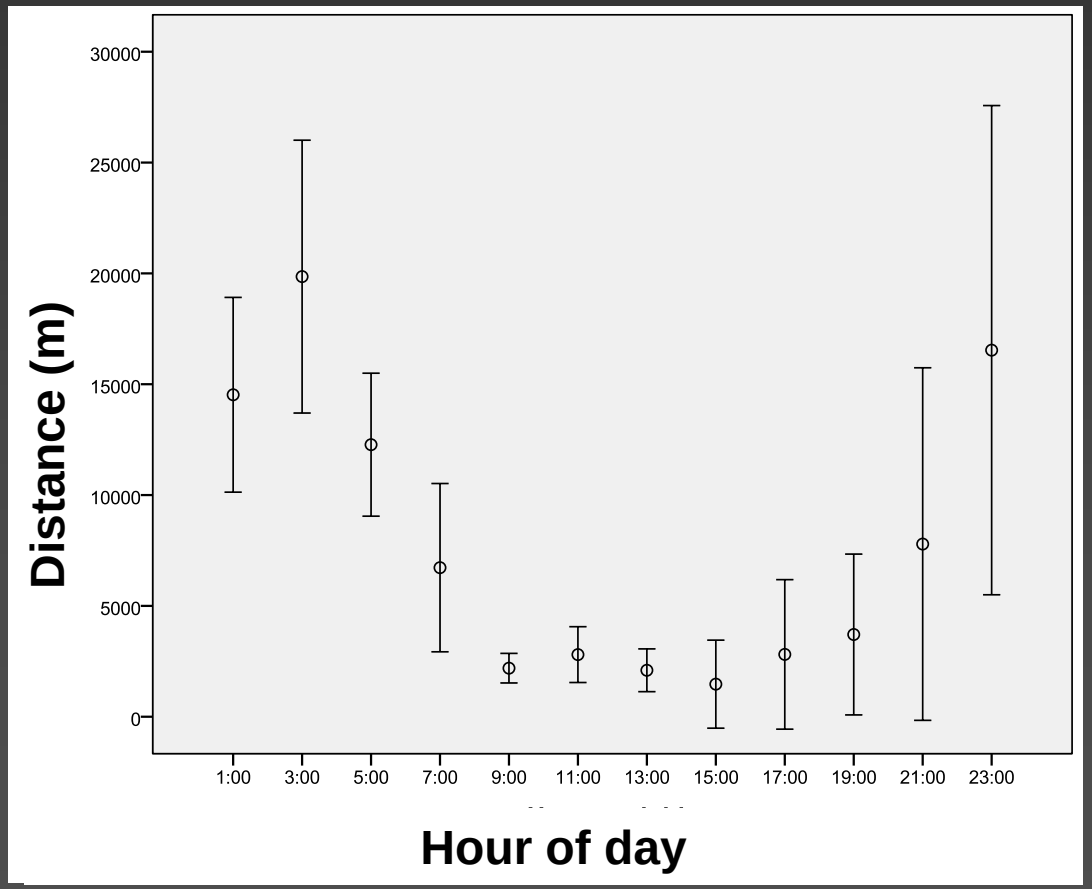
New contributions for science

- Migratory routes and distance



New contributions for science

- Migratory movements occur mostly during night
- Implications for wire marking schemes to reduce collisions



New contributions for science

- Male territories, annual fidelity, breeding strategies

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