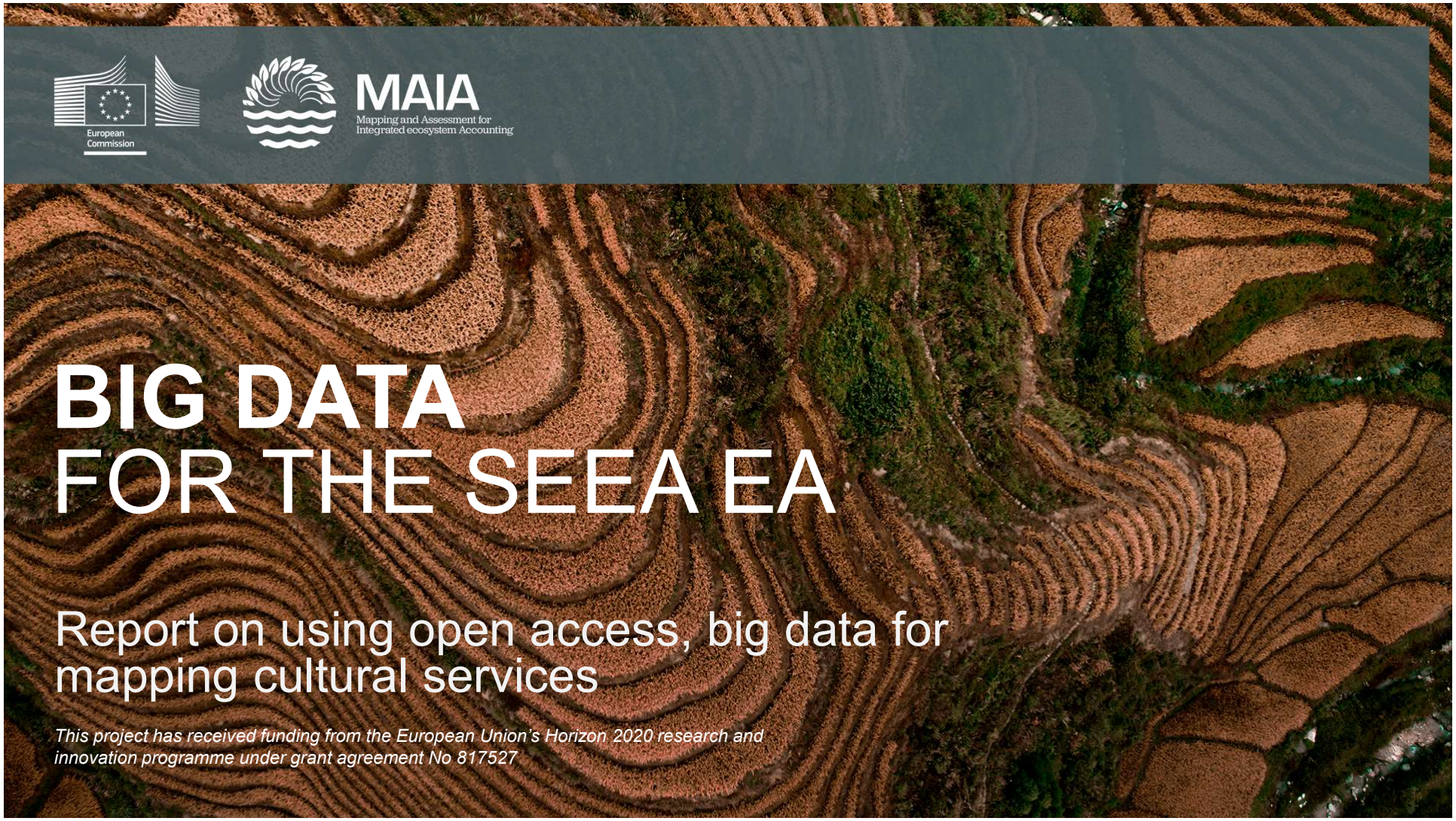


BIG DATA FOR THE SEEA EA

Report on using open access, big data for mapping cultural services

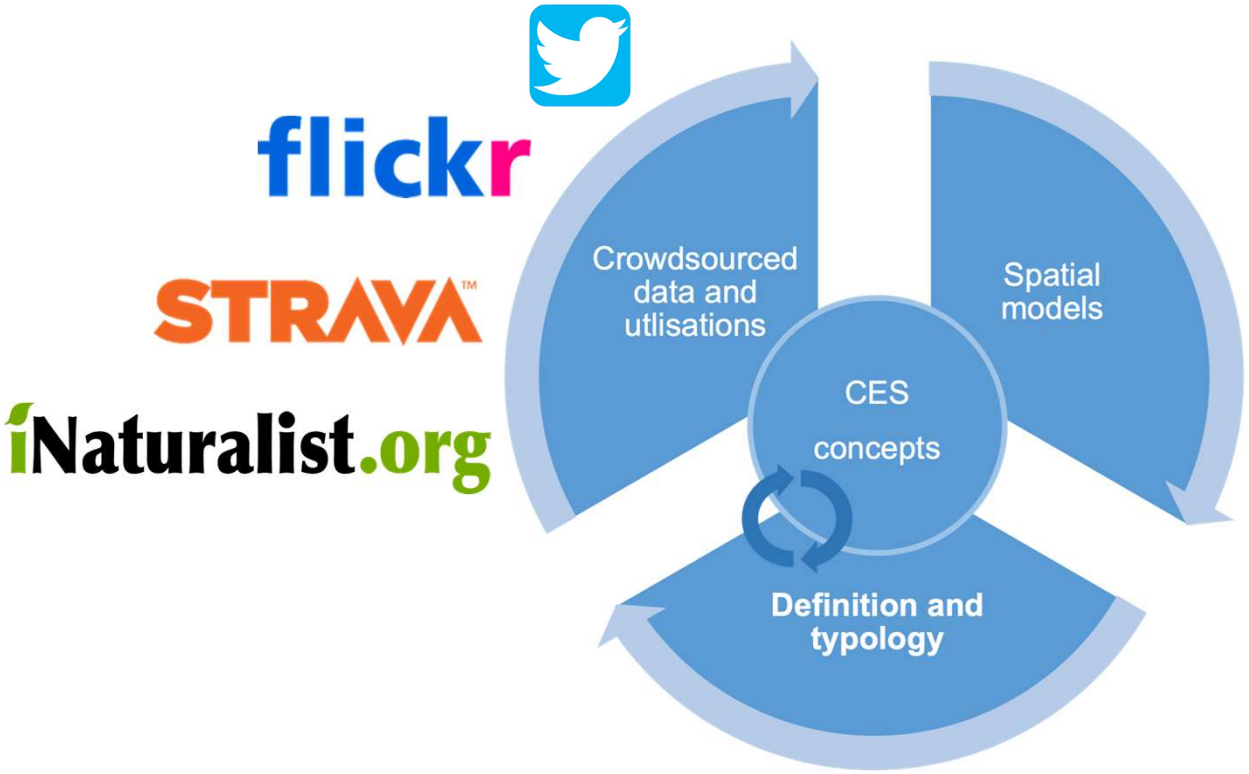
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817527

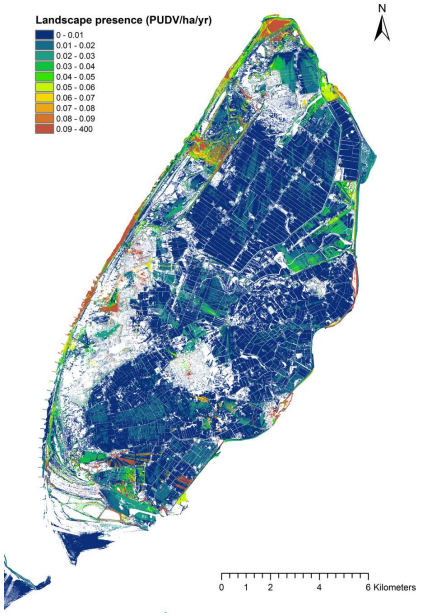
CONTENTS

RESEARCH QUESTIONS

1. How can CES be defined and spatially modelled in the context of big data for NCA purposes?
2. Can big data and AI capture the aesthetic services generated by ecosystems in line with SEEA requirements?
3. What is the potential of big data and AI in capturing the CES generated by biodiversity?

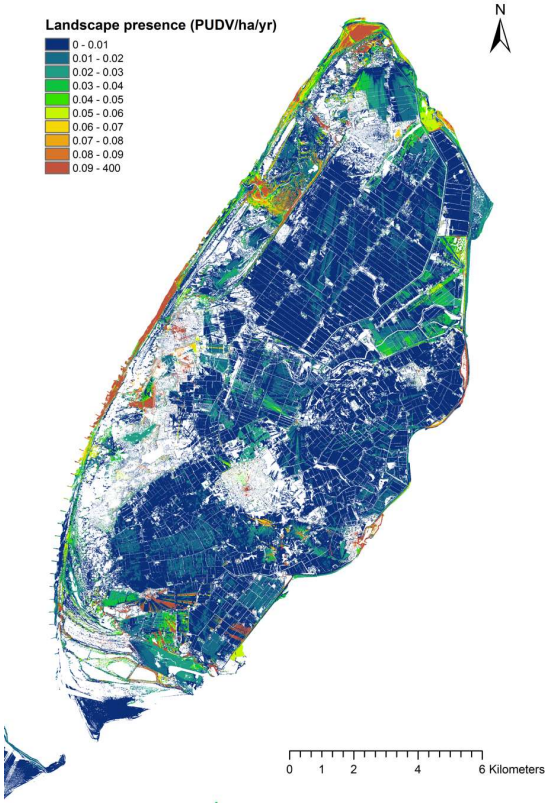
Defining and spatially modelling CES



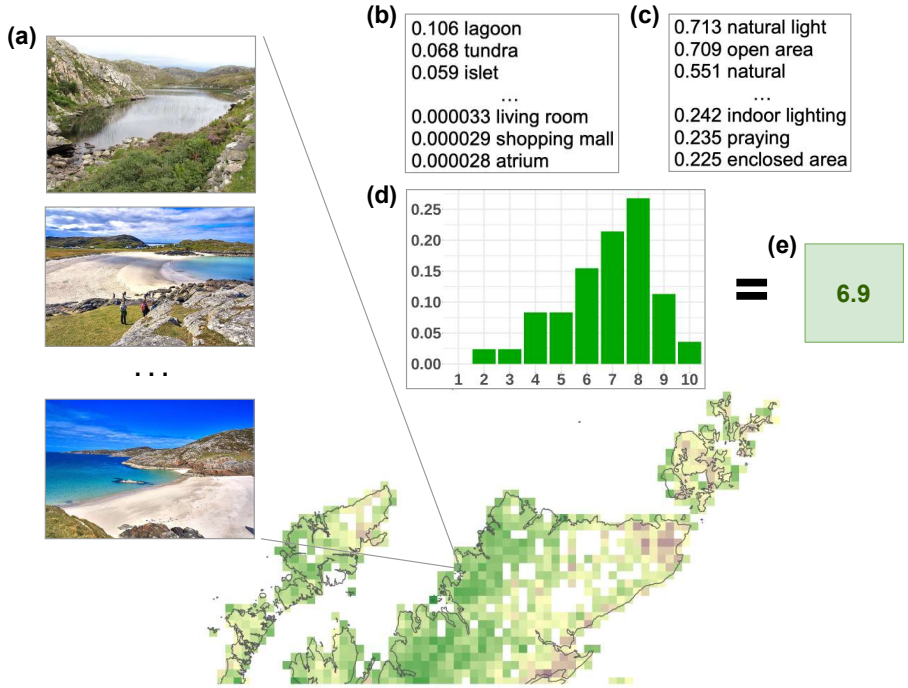


information-flows generated by ecosystems that contribute to cultural experiences

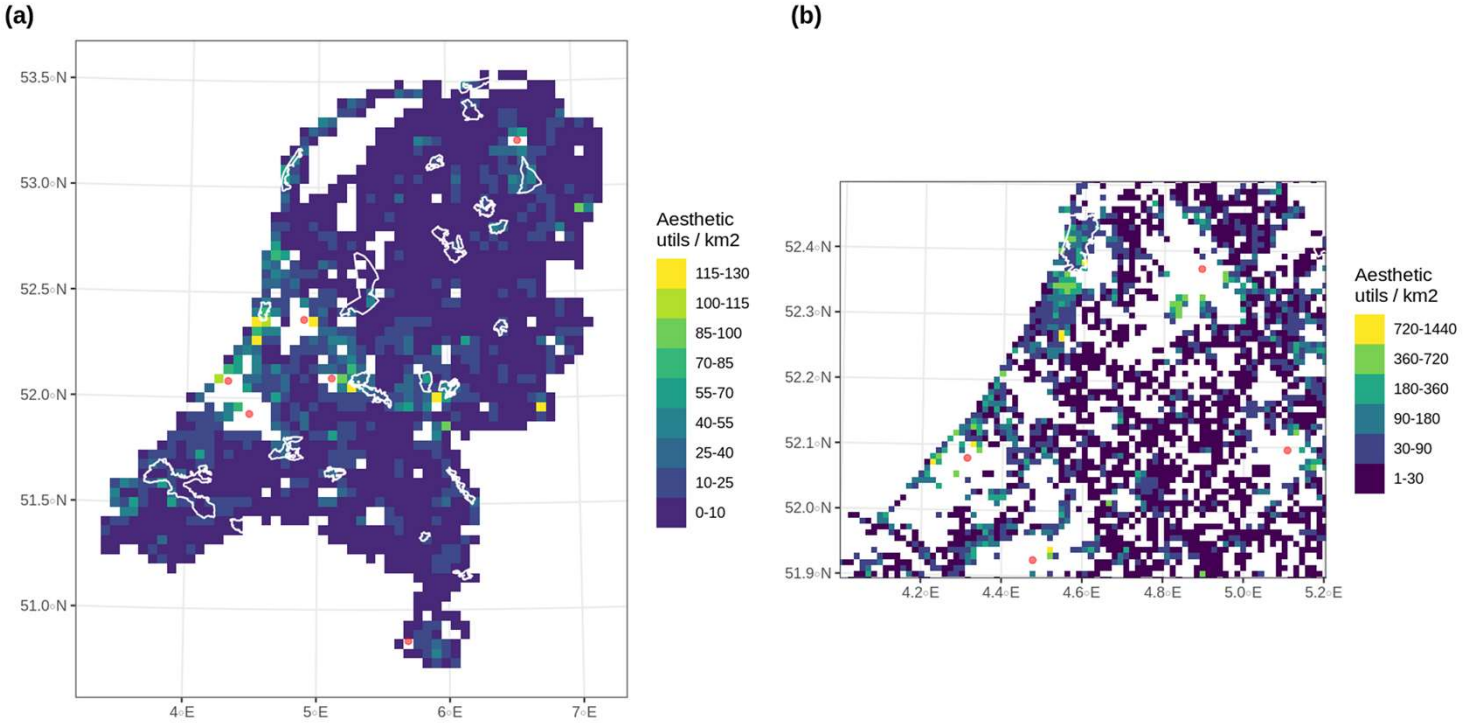
Defining and spatially modelling CES



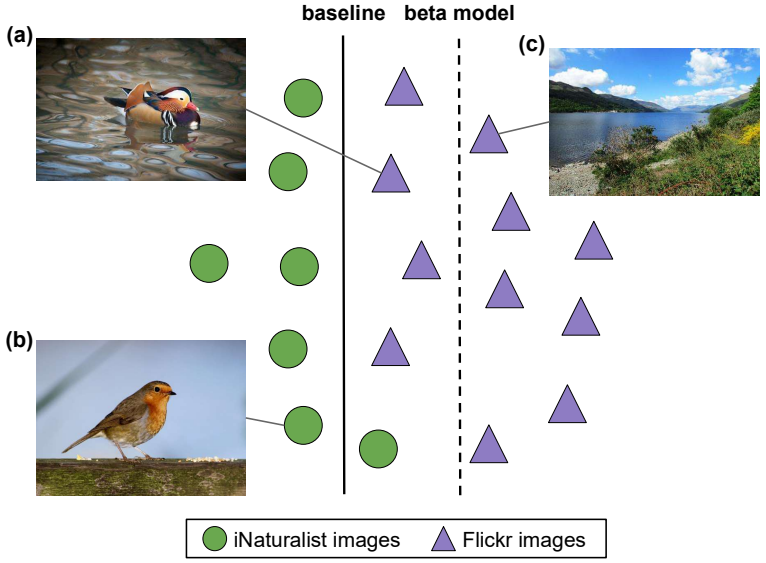
Quantifying aesthetic ecosystem services

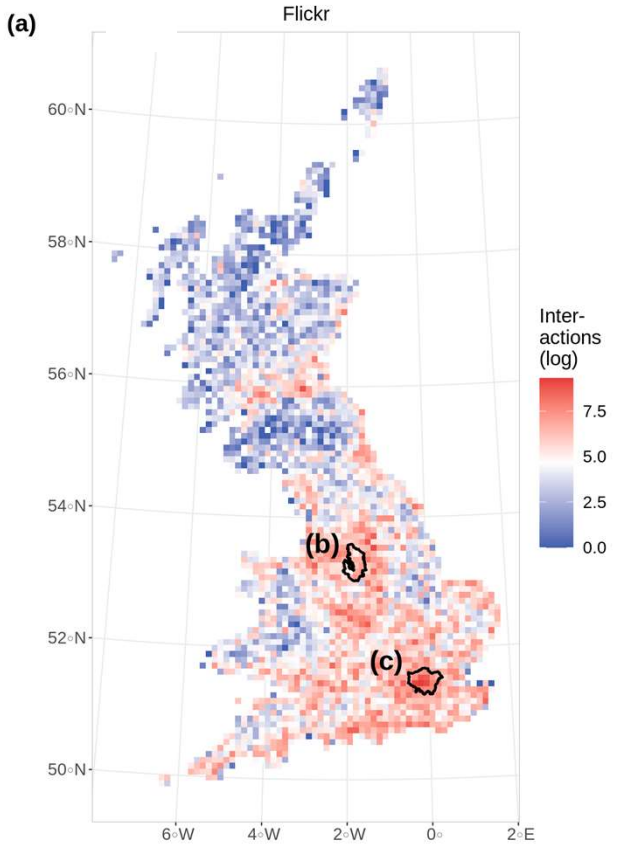


Quantifying aesthetic ecosystem services

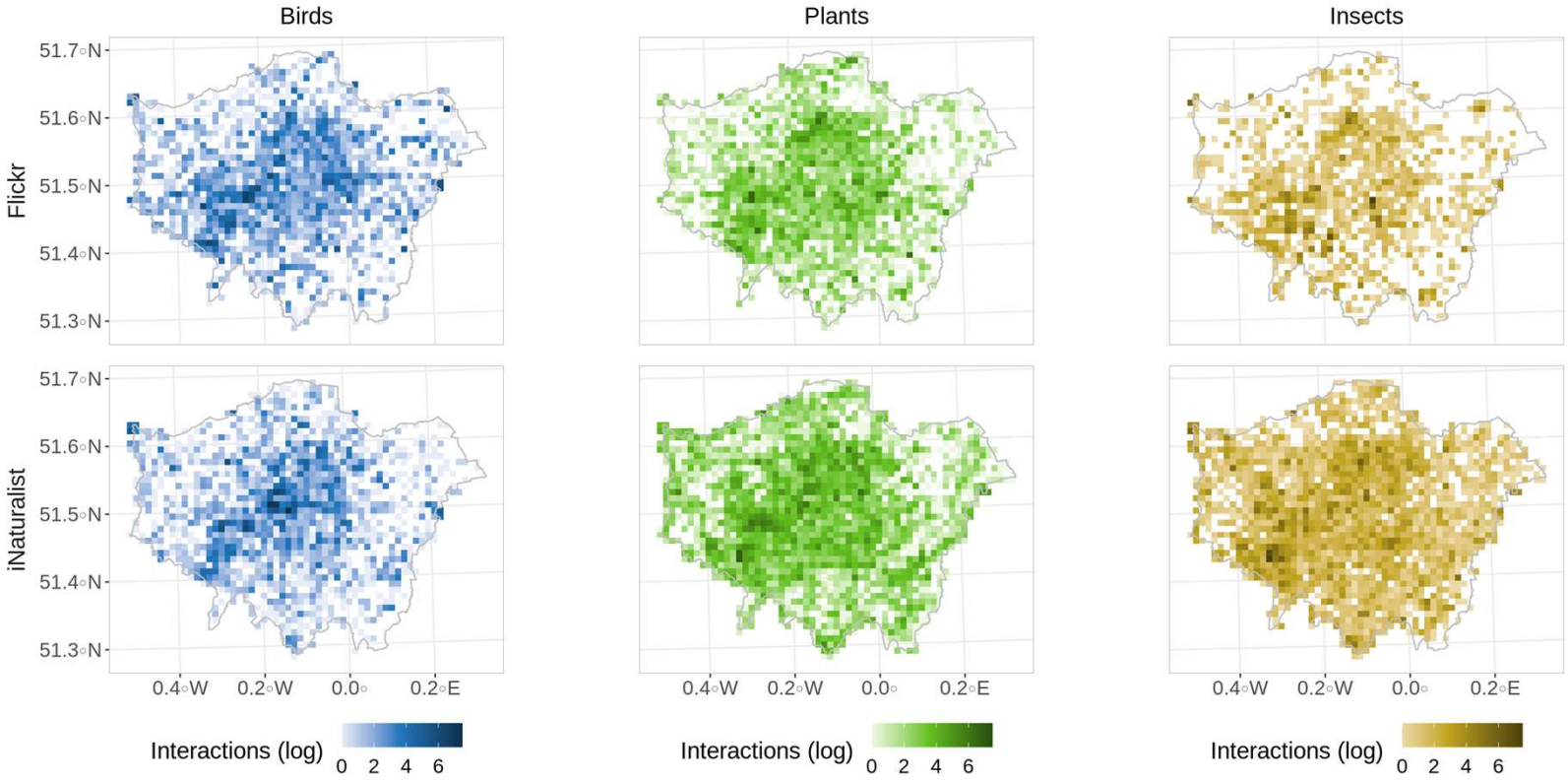


Big data and AI for measuring biodiversity CES





Big data and AI for measuring biodiversity CES



CONCLUSIONS / NEXT STEPS

- Comprehensive, high-resolution, and scalable statistics for the SEEA can be achieved with the use of big data (especially versus survey methods)
- Requires expertise and relies on availability of data
- Demographic biases key challenge
- On-going work to apply the aesthetic ecosystem service model at European-level (starting with Spain)
- Questionnaire conducted in Spain to verify AI model predictions

PAPERS

- Havinga, I., Bogaart, P.W., Hein, L., Tuia, D., 2020. Defining and spatially modelling cultural ecosystem services using crowdsourced data. *Ecosystem Services* 43, 101091. https://doi.org/https://doi.org/10.1016/j.ecoser.2020.101091.
- Havinga, I., Marcos, D., Bogaart, P.W., Hein, L., Tuia, D., 2021. *Social media and deep learning capture the aesthetic quality of the landscape. Scientific Reports* 11, 20000. *https://doi.org/10.1038/s41598-021-99282-0.*
- Havinga, I. and Hein, L. 2020. Exploring aesthetic ecosystem service measures using big data and machine learning. *MAIA working paper.*
- Havinga, I., Marcos, D., Bogaart, P.W., Massimino, D., Hein, L., Tuia, D., 2022. Deep learning and social media reveal specific cultural contributions of biodiversity. *People and Nature (under review).*

MAIA
Mapping and Assessment for Integrated ecosystem Accounting

Mapping & Assessment for Integrated ecosystem Accounting
Brussels consortium meeting September 2022
http://maiaportal.eu/

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