



Biodiversity and agriculture: an international perspective

Lynn Dicks Associate Professor of Animal Ecology Department of Zoology, University of Cambridge

15 October 2022





Global land use for food production





Data source: UN Food and Agriculture Organization (FAO)

OurWorldinData.org - Research and data to make progress against the world's largest problems.

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* Since prehistory



Leclère, D., et al., *Bending the curve of terrestrial biodiversity needs an integrated strategy.* Nature, 2020. **585**(7826): p. 551-556.

Four objectives to reduce the impact of agriculture on biodiversity

- 1. Stop agriculture from **expanding** into natural habitats
- 2. Produce food efficiently, on the **smallest possible footprint** of land
- 3. Produce food in a way that doesn't **continually degrade** the land used for production
- **4. Reduce land demand**, by shifting diets away from very 'land-intensive' products and reducing food waste.

1. Stop agriculture from expanding into natural habitats



Potapov *et al.* (2021) Global maps of cropland extent and change show accelerated cropland expansion in the twenty-first century. *Nature Food*





Keep your eyes on the pink!



What does all this have to do with **Ireland**?

- ~ 25% of food *consumed* in Ireland is produced domestically; 75% is imported
- Countries in Western Europe create a large part of their **biodiversity footprint** beyond their borders
- 25% of the world's cropland is growing products for global trade



Total food mass imported in 2019 (1000 tonnes)

Sources: www.gov.ie; Map by Tom Ball, University of Cambridge, Mandala project www.mandala-consortium.org; FAO trade data; Method described by Schwarzmueller *et al.* (2022). 'Agricultural trade and its impacts on cropland use and the global loss of species habitat', *Sustainability Science*: https://doi.org/10.1007/s11625-022-01138-7.



Animal feed is also imported into Ireland from around the world

Total animal-consumed mass imported in 2019 (1000 tonnes)



Sources: www.gov.ie; Map by Tom Ball, University of Cambridge, Mandala project www.mandala-consortium.org; FAO trade data; Method described by Schwarzmueller *et al.* (2022). 'Agricultural trade and its impacts on cropland use and the global loss of species habitat', *Sustainability Science*: https://doi.org/10.1007/s11625-022-01138-7. Feeding cows ©DoneDeal

2. Produce food efficiently on the smallest possible footprint of land



Scenarios of **sustainable production** often involve closing '**yield gaps**'

3. Produce food in a way that doesn't continually degrade the land







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Source: Stanley et al (2013). Pollinators and pollination of oilseed rape crops (Brassica napus L.) in Ireland: ecological and economic incentives for pollinator conservation. Journal of Insect Conservation, 17(6), 1181-1189.

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4. Reduce **land demand**, by shifting diets away from very 'landintensive' products and reducing food waste.

Our World

in Data

Land use per kilogram of food product

Land use is measured in meters squared (m²) per kilogram of a given food product.



Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. OurWorldInData.org/environmental-impacts-of-food • CC BY



Source: Wagner et al (2021). Insect decline in the Anthropocene: Death by a thousand cuts. Proceedings of the National Academy of Sciences, 118(2), e2023989118.

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