Biodiversity Measurement on NFS Farms

Simon Leach
Biodiversity Technologist,
Environment Research Centre, Johnstown Castle.

Overview

- **Why Biodiversity?**

- **Why the NFS?**

- **Development Work to date.**

- **Plans for an Indicator in the NFS.**

- **Wider research and the importance of key data sources.**

Why should we look at biodiversity?

- Widely acknowledged biodiversity crisis.

- Key sustainability metric.

- Central objective of the CAP.

- Closely linked to climate challenge.

- High (policy) demand for this information.

There is currently no nationally representative, repeatable and repeated monitoring of farmland biodiversity in the wider countryside (outside of designated areas).

Benefits/Impact of a Biodiversity Indicator in the NFS

- Aim to include data on habitats for all NFS/SFS farms.

- Provide a data set of habitat quantity/quality.

- Facilitate combined analysis with other financial, environmental and social data collected for NFS.

- Assess the degree to which nationally available datasets can meet biodiversity monitoring objectives.

- Establish mechanism to track change over time.
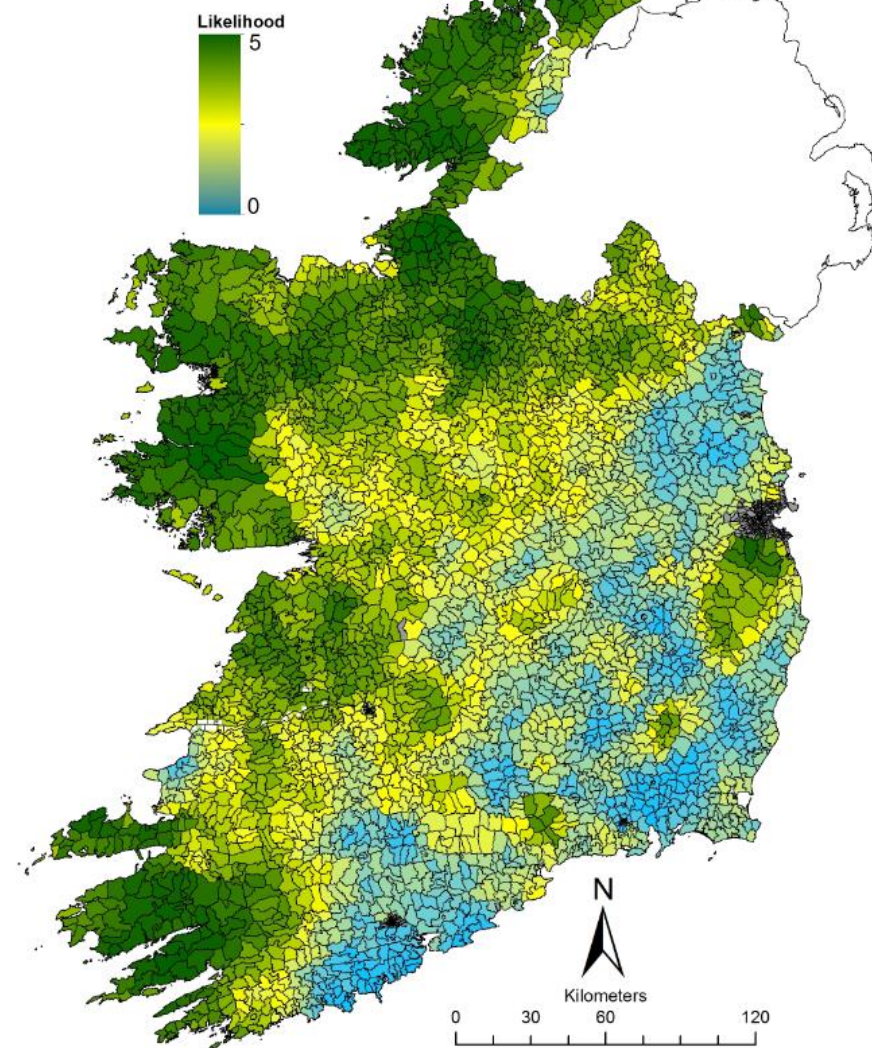
Contributing Activities 1:

Identifying the Distribution and Extent of Agricultural Land of High Nature Value

- **Different challenges: different solutions**

- **Habitat restoration in Low Nature Value Areas.**

- **More focus on improving the quality of existing habitats in higher nature value regions.**

High Nature Value Farmland Likelihood Map
Republic of Ireland

Likelihood
5
0

Matin et al. 2016, 2020

Contributing Activities 2:

Farm-scale habitat maps by GIS, farm-scale index, and automated reporting

9.6 / 10

4.04 / 10

2.04 / 10

Habitat Index Score

Farm area dominated by habitats with conservation value = 10 (max)

Farm area dominated by habitats with conservation value = 1 (min)

- **Habitat index for 300 NFS farms based on ecological value of habitat, and proportion of farm area.**

- **But assessment of aerial imagery by ecologists is prohibitively expensive for scaling up (beyond research projects)...**

National Land Cover Map (NLCM)

Land Cover Level 2 Classes

- Buildings
- Ways
- Other Artificial Surfaces
- Exposed Rock and Sediments
- Coastal Sediments
- Mudflats
- Bare Soil and Disturbed Ground
- Cultivated Land
- Coniferous Forest
- Mixed Forest
- Transitional Forest
- Broadleaved Forest and Woodland
- Scrub
- Hedgerows
- Treelines
- Improved Grassland
- Amenity Grassland
- Dry Grassland
- Wet Grassland
- Salt Marsh
- Sand Dunes
- Swamp
- Fens
- Raised Bog
- Blanket Bog
- Cutover Bog
- Bare Peat
- Bracken
- Dry Heath
- Wet Heath
- Burnt Areas
- Rivers and Streams
- Lakes and Ponds
- Artificial Waterbodies
- Transitional Waterbodies
- Marine Water

- **Produced by Tailte Éireann and the EPA.**

- **Released in March of 2023.**

- **Mapping reference Year of 2018.**

- **Aligned with Fossitt Habitat Classification.**
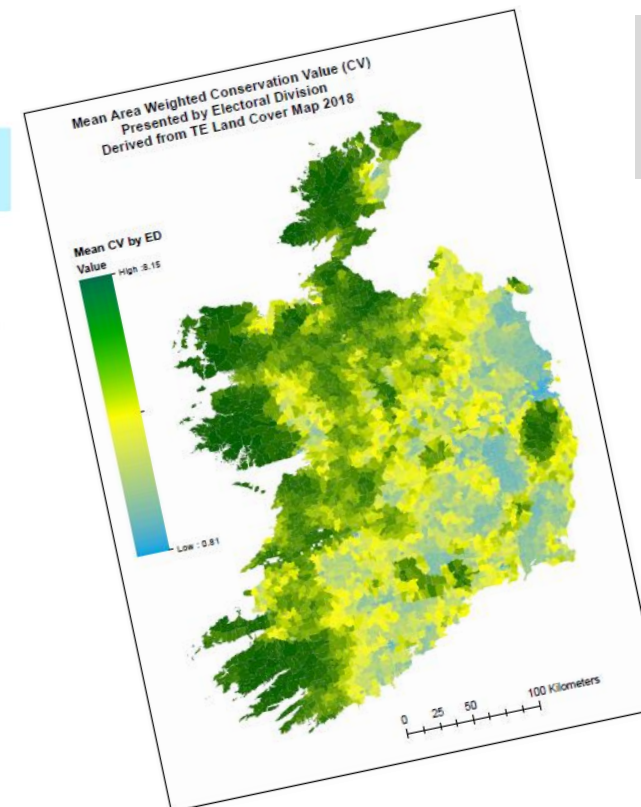
HNV FARMLAND & FORESTRY
FARMFORBIO

Developed 'conservation value' scoring for NLCM classes

Mean Area Weighted Conservation Value (CV)
Presented by Electoral Division
Derived from TE Land Cover Map 2018

Mean CV by ED Value
High :8.15
Low : 0.81

0 25 50   100 Kilometers

eagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Biodiversity Indicator: Quantity

- The NLCM delineates the landscape at the land parcel scale.

- Opportunity to apply 'conservation value scores' to land covers/ habitats at the farm level.

- Farm level scoring is dependent on accurately defining the farm boundaries.
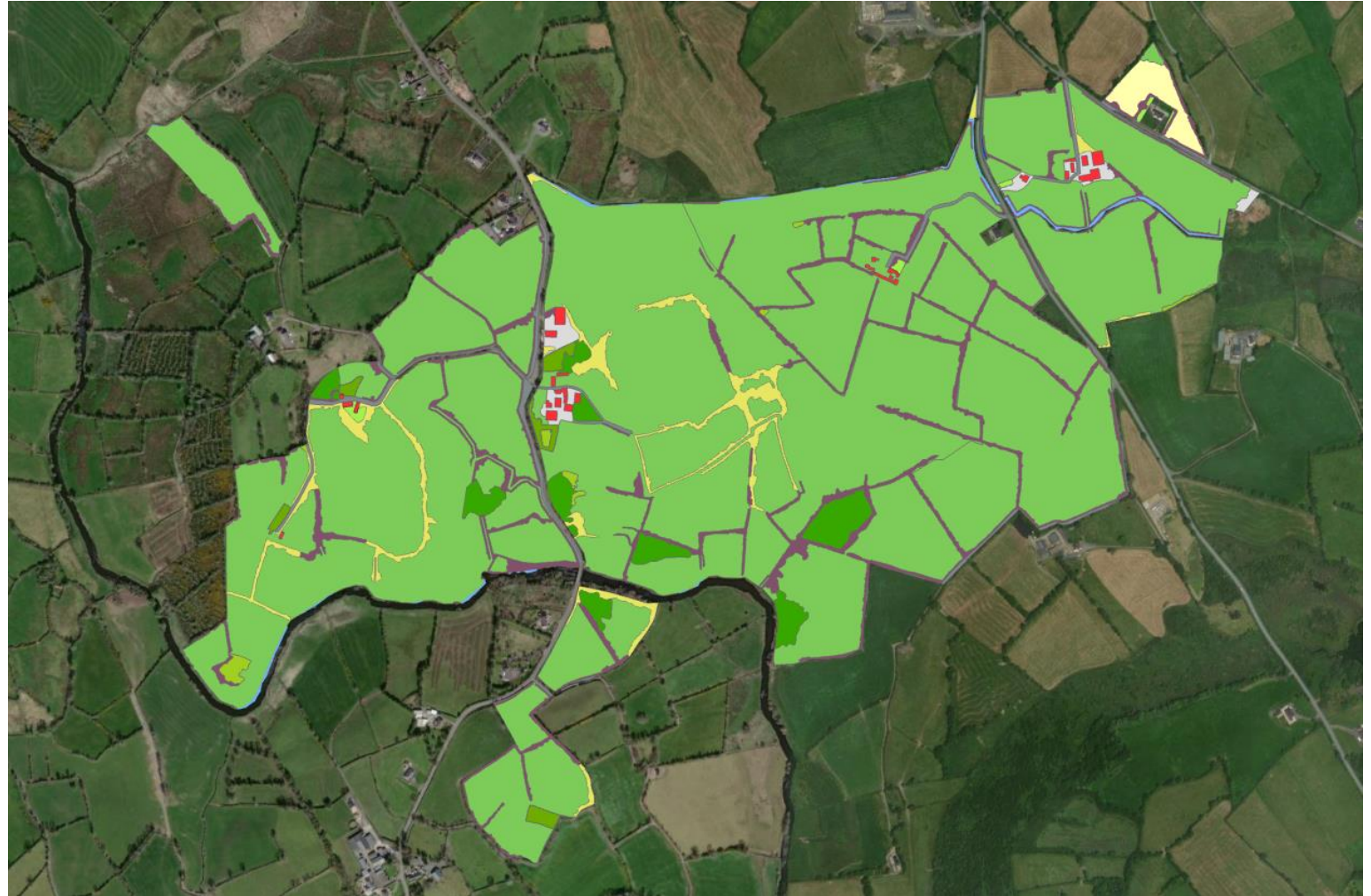
Biodiversity Indicator: Quality

- Design and implement a targeted field campaign.

- Farm typology maps from the habitat quantity work will assist prioritisation and sampling design.

- Use scorecards for habitat quality assessment.

- Aim to assess the distribution and range of habitat quality across farms and farm categories.

- Survey designed to be repeatable to assess changes over time.

FARM ECOS
Farming and Natural Resources:
Measures for Ecological Sustainability

Teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Related Research

- **Wider assessment of how the NLCM can contribute to biodiversity monitoring.**

- **Digital information on farm boundaries is essential.**

- **Evaluate the sensitivity required to adequately capture the expected level of change in the landscape, at farm and national level.**

Conclusions

- Proposed approach provides a mechanism to deliver tracking of habitat quantity and quality.

- Clear benefits of linking with the National Farm Survey and Small Farm Survey.

- As we develop and implement these surveys, we will review and document the strengths and limitations of the approaches and data sources.

- Aim to build a representative, robust and repeatable indicator for farmland biodiversity.