Biodiversity – a growing part of your business

The Teagasc National Farm Survey is investigating indicators of biodiversity. Biodiversity is an important indicator of agricultural sustainability

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The recently launched EU Green Deal and Farm to Fork strategies set out ambitious plans to improve EU agriculture in a range of areas, including the way in which agriculture affects the environment.

A key part of the strategy is to develop more ways of measuring the positives and the negatives associated with food production.

Whereas in the past the focus in data collection was mainly on reporting the income levels of farmers, EU member states will now be asked to produce a broader range of measures of sustainability.

It is tempting to consider that raising farm incomes, striving for a better lifestyle and better protection of the environment might be conflicting objectives in agriculture, but increasingly it is argued that these goals should be achieved together.

This is because consumers will be choosing foods that have been produced in a way that protects the environment, ahead of foods that have been produced in a way that has no regard for the environment.

Investigating the measurement of habitat quantity on Irish farmland

In Ireland, we are ahead of many other EU member states in collecting data to measure farm sustainability. The range of sustainability measures continues to expand, particularly in the environmental area.

The newest environmental measure under development in the Teagasc National Farm Survey is for farmland habitats that support biodiversity, e.g. species-rich grasslands, heathland, peatland, hedgerows, woodlands, rivers, streams, and ponds.

Certain habitats are better able to support particular species. This means that if we quantify the amount of available habitats on our farms we can begin to understand whether farmland habitats for biodiversity are getting better or worse.

> As part of the EU SmartAgriHubs project, new technology allows the process of habitat measurement to take place at a desk in an office

How to measure farm habitats without visiting the farm

Traditionally, habitat surveys relied on an ecologist visiting the farm to document what the entire farm looks like. A full national survey of every farm would be time-consuming and expensive.

As part of the EU SmartAgriHubs project, new technology allows the process of habitat measurement to take place at a desk in an office.

Satellite imagery of Ireland can be combined with electronic maps (the Land Parcel Identification System – LPIS) of each farm.

By studying these maps on a computer, the ecologist can remotely identify the different habitats on each farm.

We are also exploring how farmers can help the process by taking their own photographs on the ground, using their smartphone.

A smartphone app then allows the farmer to upload these photographs to the internet, so that the ecologist can see them and help further verify the habitat type. The photos can also be included in a customised farm habitat report.

As part of the project, the farmer can receive information on the level of habitat diversity on their farm. A map of the farm can be produced showing the various habitats identified on the farm and their area (see Figures 1 and 2).

Farmers can also receive tips relating to the habitat, advising them on how the farm's habitat biodiversity can be maintained or improved. The process could then be repeated at some future point to determine whether each farm's habitat areas had remained the same or changed.

The assessment method identifies the type of farmland habitat, which can be broadly associated with low, medium and high levels of biodiversity (see Figures 1 and 2 for an extract from a sample farm report).

The Irish countryside contains many types of farmland habitats.

LOOKING TO THE FUTURE

Currently, the benefits to farmers from biodiversity provision are limited, and not especially related to habitat quality and the level of biodiversity being provided. Potentially, habitats could be used to determine a payment for the biodiversity status of the farm.

This would encourage farmers to make choices about farm management that are more likely to protect biodiversity. Having a biodiversity measure for Irish farming could also be an important tool that would lead consumers to choose food that has been produced in a way that is supportive of biodiversity.

A great benefit of conducting a biodiversity assessment on National Farm Survey farms is the ability to link that data with the other agronomic, economic, environmental and social data collected by the Teagasc NFS. This could be useful in learning more about the characteristics of farms and farmers achieving a range of habitat performance.

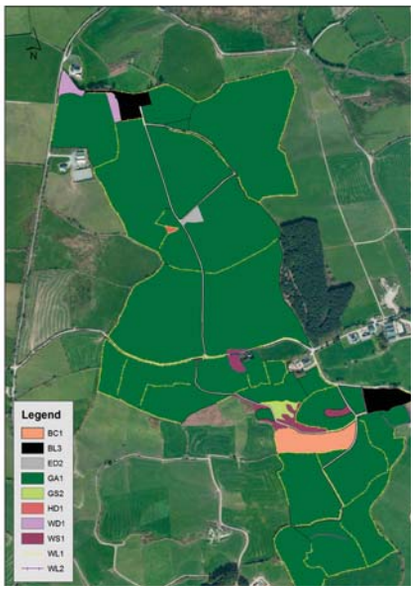

Figure 1: Habitat map from a more intensively managed grassland farm

Code	Habitat	Area (ha)	Length (m)	Relative wildlife importance
BC1	Arable crops	0.99		Low, but can be mitigated by management, and by wildlife habitats in adjacent areas
BL3	Buildings/artificial surfaces	1.06		Generally low, but old farm buildings and yards can benefit bats/birds
ED2	Spoil and bare ground	0.13		Generally low, transient habitat
GA1	Improved agricultural grassland	42.7		Low, but can be mitigated by management, and by wildlife habitats in adjacent areas
GS2	Dry meadows/grassy verges	0.21		Medium - high. Can vary considerably in quality, depending on management
HD1	Dense bracken	0.03		Medium-high, management dependent
WD1	Mixed (broadleaved) woodland	0.34		Medium-high, management dependent
WS1	Scrub	0.62		Medium-high, management dependent
WL1	Hedgerow		6,847	Low to very high, depending on hedge management. Important for wildlife, and their movement in landscape.
WL2	Treeline		545	Very high

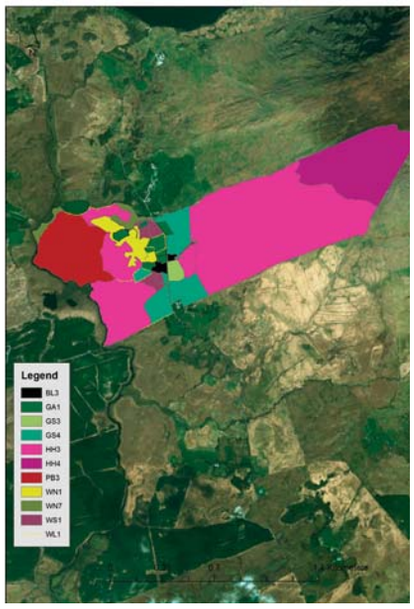

Figure 2: Habitat map from a more extensively managed farm with large areas of heathland

Code	Habitat	Area (ha)	Length (m)	Relative wildlife importance
BL3	Buildings/artificial surfaces	0.87		Generally low, but old farm buildings and yards can benefit bats/birds
GA1	Improved agricultural grassland	3.50		Low, but can be mitigated by management, and by wildlife habitats in adjacent areas
GS3	Dry-humid acid grassland	1.3		High
GS4	Wet grassland	12.1		Medium - high. Can vary in quality, depending on management.
HH3	Wet heath	84.3		High - very high
HH4	Montane heath	25.9		High - very high
PB3	Lowland blanket bog	17.5		Low – medium, management-dependent
WN1	Oak-birch-holly woodland	4.8		Very high
WN7	Bog woodland	2.5		Very high
WS1	Scrub	2.6		Medium-high, management dependent
WL1	Hedgerow		1432	Low to very high, depending on hedge management. Important for wildlife, and their movement in landscape