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Creating and enhancing farmland habitats: a review of options and evidence

Key external stakeholders:

Agri-environment policymakers, participants in agri-environment schemes, extensive farmers and environmental NGO's.

Practical implications for stakeholders:

- A booklet is available for policymakers and farmers that provides accessible information on the effectiveness of a variety of selected agri-environment measures for biodiversity.
- The use of expert groups is an efficient and effective method through which to learn how to improve agri-environment measures and could be useful at the design stage of agri-environment measures/schemes as a structured approach for eliciting expert comments on the likely ecological and environmental effectiveness of proposed measures.

Ecological research has extensive literature on the creation, enhancement and management of farmland habitats. Unfortunately, this information was not in a readily available format for policymakers, which frequently inhibited its transfer and incorporation into the design of agri-environment measures.

Main results:

- Novel agri-environment measures were identified that could be applied to:
  - maintain existing habitats of good ecological value (this should always be a priority);
  - restore or enhance existing habitats of good ecological value e.g. species-rich grassland;
  - assist more intensive farmers to create new habitats on their farms: e.g. ponds, field margins, and;
  - control invasive alien species.
- The experts considered that most biodiversity options in REPS 4 appear to be adequately designed and implemented by farmers.
- Based on both the experts' judgements and a review of evidence, several of the REPS 4 biodiversity options would be expected to have little or no benefit for biodiversity. For most of these options, the primary reason is that participation levels are too low to achieve an environmental impact.
- The potential for the biodiversity objectives of REPS to be better aligned with national and international conservation priorities was highlighted.

Opportunity / Benefit:

Details from the literature review and the experts' assessments will aid policy-makers with the design of future agri-environment schemes and measures and several potential measures for the conservation of biodiversity were highlighted.

Collaborators:

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1. Project background:

Ecological research has an extensive literature on farmland biodiversity, and on the creation and enhancement of farmland habitats. Unfortunately, this information and understanding is not in a readily available format, which frequently inhibits its transfer to policymakers. For example, a 2003 review of the effectiveness of European agri-environment schemes for wildlife objectives concluded that 46% of studies found few or no benefits associated with the relevant scheme. We collated the evidence base from ecology journals and research reports, with the aim of identifying methods for the creation and enhancement of farmland habitats and presenting them in a more accessible format.

There has been a widespread lack of environmental monitoring and assessment of agri-environment schemes. As a consequence, they have an impaired ability to identify either successes or failures, and to learn how to improve their environmental effectiveness. In the absence of relevant empirical data, we used experts' judgements to identify strengths and opportunities for improvement in current habitat management recommendations in the Rural Environment Protection Scheme (REPS).

Overall, this study can harness existing ecological knowledge, and present it in a more accessible format for policymakers. This will aid the identification of agri-environment measures that are appropriate to the biodiversity objectives both of the existing REPS, and of future agri-environment schemes.

2. Questions addressed by the project:

- What is the rationale for habitat creation and enhancement techniques?
- What are examples of best practice within existing REPS and what are potential improvements?

3. The experimental studies:

We collated a number of agri-environment measures to conserve or enhance farmland biodiversity, and provided an overview of the evidence-base relevant to their wildlife benefits. A small number of case studies were used to highlight relevant issues and potential agri-environment measures. This information was used in a booklet to improve the accessibility of relevant knowledge to policymakers and farmers.

Additionally, a group of eight Irish agri-environmental experts assessed the wildlife value of current supplementary measures and options in the REPS 4 scheme. In the absence of environmental data from monitoring, the assessment utilised a novel methodology which used experts' judgements of the effectiveness of the REPS options and supplementary measures that are relevant to biodiversity. The experts scored each option using a scoring scale for each of five criteria. A group meeting of the experts allowed them to discuss each option, elaborate on the justification for their decisions and achieve consensus.

4. Main results:

There is likely to be a greater onus on agri-environment schemes to target farmland habitats and species of highest conservation concern and value. In general, conservation efforts will be most effective (and cost-effective) if they target extensively farmed areas that support high levels of biodiversity.

The effectiveness of agri-environment measures can be significantly assisted through design that is informed by available evidence. Generally, there is scope for environmental effectiveness to be increased through a greater contribution of ecological evidence to the design phase of agri-environment. The objectives and measures for agri-environment schemes should be developed in a way that ensures good linkages among biodiversity research outputs, legislative obligations, national targets for biodiversity policy and delivery of targets. This can be facilitated by consultation with the appropriate state and non-governmental organisations.

The design, implementation and assessment of agri-environment measures can be greatly facilitated by clear statements about their intended impact, and how the proposed management prescriptions are intended

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to achieve this impact. This will also assist farmers and land managers to achieve the biodiversity objectives.

Depending on the environmental status of farmland, appropriate options may include measures to safeguard priority habitats, create new habitats, restore and enhance existing habitats and prevent negative impacts from damaging farmland habitats. Greater consideration should be given to opportunities to maximise the biodiversity value of agri-environment schemes through the 'bundling' of complementary measures to create an appropriate mosaic of habitats.

In relation to agri-environment measures/options, the experts recommended that the aims and objectives of the scheme and individual options should be stated with greater clarity and precision. The objectives should clearly identify the type of biodiversity to be benefited/ targeted, and better explain how this will be achieved by the management prescriptions.

A number of recommendations were more relevant to design and implementation choices at the scheme-scale:

- The experts recommended a move away from a 'one-size-fits-all' approach, and toward one that better facilitates spatial targeting
- There is scope for the design stage to consider the additional environmental effectiveness that may be achieved from spatial targeting or incentivised participation of groups of farmers. This approach should also consider the level of participation that is required to achieve specific environmental objectives.
- Experts suggested a reduction in the choice of measures within the agri-environment scheme. A tiered approach was recommended, with the choice of options being more strongly guided toward those best suited to the farm conditions and its environmental priorities.

The use of expert groups proved to be an efficient and effective method to:

- Assess the likely environmental effectiveness of biodiversity option.
- Identify specific aspects of options that are in need of improvement.
- Highlight modifications which should improve environmental effectiveness.

5. Opportunity/Benefit:

Details from the literature review and the experts' assessments will aid policy-makers with the design of future agri-environment schemes and measures.

The literature review highlights several potential measures for the conservation of biodiversity, and indicates sources of associated evidence on their effectiveness.

The experts' assessments offers a method to get high-quality and relevant information on environmental effectiveness within a short timeframe. In the absence of relevant empirical data, the use of expert groups proved to be an efficient and effective method with which to learn how to improve agri-environment measures. This approach could be especially useful at the design stage of agri-environment measures (or schemes) as a structured approach for eliciting expert comments on the likely ecological and environmental effectiveness of proposed measures. In this way, it could contribute a methodology for use in ex ante (and ex post) evaluations.

6. Dissemination:

Main publications:

Ó hUallacháin, D., Finn, J.A., Gormally, M. and Carlin, C. (2011) Experts' assessments of biodiversity options and supplementary measures in REPS 4. In: Conserving Farmland Biodiversity: lessons learned and future prospects, Ferrycarrig Hotel, Wexford, 25th May-2011, pp 82-83.

Carlin, C., Finn, J., Ó hUallacháin, D. and Gormally, M. (2010). Biodiversity options in agri-environment schemes in Ireland: Doing the job right or doing the right job? *Aspects of Applied Biology* 100, Agri-environment schemes - What have they achieved and where do we go from here? pp. 449-454. (Reviewed and published paper as part of International Conference.)

Carlin, C., Finn, J., Ó hUallacháin, D., & Gormally, M. (2010). Biodiversity options in agri-environment

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schemes in Ireland: Doing the job right or doing the right job? Fourth Annual Environmental Change Institute/MRI Conference.

Popular publication:

Carlin, C., Gormally, M., Ó hUallacháin, D. and Finn, J.A. (2010). Farmland Biodiversity: Measures to create and enhance farmed habitats. NUIG/Teagasc. 32 pages. ISBN 978-0-9537544-2-7

Carlin, C., Gormally, M., O hUallacháin, D and Finn, J (2009). Identification of agri-environment measures to improve farmland biodiversity. Johnstown Castle Research booklet, Teagasc, p. 84-85.

Carlin, C., Gormally, M., and Finn, J (2009). Bridging the researcher-user interface: Reviewing the evidence for agri-environmental measures to create and enhance farmland habitats. 19th Irish Researchers' Colloquium. 9th -11th February, Waterford Institute of Technology, p. 71.

7. Compiled by: Dr Daire Ó'hUallacháin & Dr John Finn

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