

How to boost wild bees on farmlands



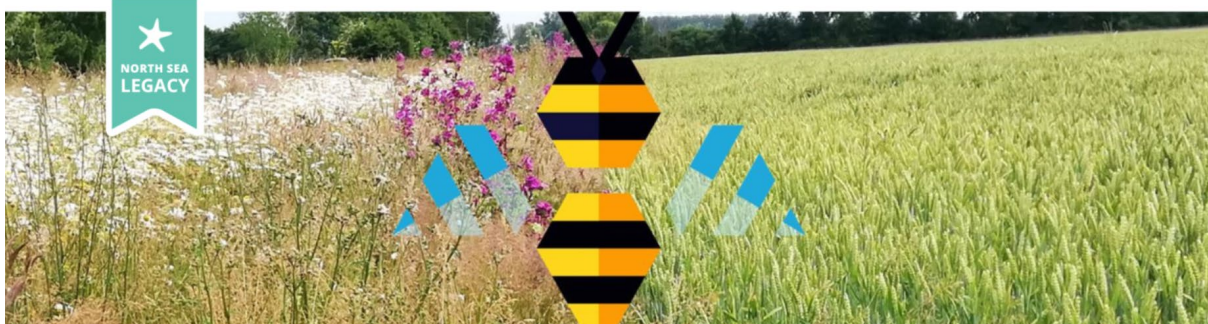
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9 minutes



A future without bees? Why we need to act now, and what can be done. BEESPOKE has left a solid legacy behind, ready for farmers and policymakers to pick up.

Looking across a northern European agricultural landscape in summer is typically a sea of green. Productive maybe, but with few flowers and therefore few bees. Unfortunately, this is having an impact and wild bees are declining in agricultural areas.

So, what would life be like without pollinating insects?

Our diet would be extremely bland, consisting mostly of grains with no fruits, berries, nuts, and vegetables. In fact, most items needed to maintain a healthy diet. In the BEESPOKE project we set out to find new solutions and incentives to support wild pollinators so that we can future-proof our food production.



Agricultural fields do not always offer many flowers for pollinating insects to thrive.

Photo: Alfred Tei/Getty images via Canva.com.

Why farmers need wild bees

For many years, land managers in the North Sea Region have had access to agri-environment funds. In theory, they could use these funds to create flower-rich habitats for wild bees.

However, not many take up these options - and when doing so the aim is to help conservation rather than crop pollination. This is understandable if the farmers don't grow insect-pollinated crops although even a mostly wind-pollinated crop such as oilseed rape can in fact sometimes benefit from insect pollination.

For fruit growers, the benefits of pollination can be more substantial, improving both yield and quality. The problem is that pollination is rarely measured. Also, achieving pollination requires knowledge because the types of pollinators needed differ between crops. For example, solitary bees are better at pollinating apples whereas beans need bumblebees.



Sowing the seeds of knowledge

In BEESPOKE, we made a strong effort to bridge the gap between science on the one side and farming policies and practices on the other. We therefore took an interdisciplinary approach to boosting wild pollinators and their crucial role in supporting food production and biodiversity.

For example, we developed a range of tools and tips to enhance floral food supplies for pollinators. This included 21 guides and [33 videos](#) encouraging stakeholders to adopt pollinator-friendly practices and policies.

We also encouraged sharing of best practices and new solutions as well as research on pollinator conservation. BEESPOKE reached around 400,000 people via digital platforms, field demonstrations, training materials, and events.

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The BEESPOKE project has enabled us to share information between colleagues in the North Sea Region, help farmers to improve habitats for pollinating insects and furthered our understanding on the vital role insects play in crop production.

Dr Michelle Fountain NIAB, UK



How to measure crop pollination

We may be slow to detect a decline in crop pollination as farmers do not routinely measure it. To help in the process, National Institute of Agricultural Botany (UK), University of Copenhagen, and Horticultural Advice A/S (Denmark) developed simple guides and videos on how to measure pollination of six crops: Apple, pear, cherry, strawberry, blackcurrant and raspberry.

We also produced guides on how to identify bumblebees and solitary bees and measure overall levels of pollinators.

Wildflowers for key crop pollinators

To support the specific types of pollinators needed by different crops, we designed novel wildflower seed mixes for eight crops: Apple, pear, strawberry, sweet cherry, raspberry, blackcurrant, oilseed rape, and broad bean.

The flower mixes provide the types of flowers that would attract the crops' most important pollinators while not supporting their pests. We found in our extensive testing that the mixes were attractive to a wide array of pollinators and in some situations, this helped improve crop quality.



BEESPOKE flower strip next to an orchard in Flanders.

Establishing and managing wildflower areas has many challenges, so we produced a range of guides and videos on that topic. The partners also provided training to help land managers ensure better quality habitats. Over 300 new wildflower areas were created through BEESPOKE.

Selecting the most appropriate wildflower seed mix for a locality is also crucial as factors such as soil type and shade can be highly influential on which species will thrive. Seed merchants can provide such advice but may do not know which plant species are best for the pollinators. To aid the selection of the most appropriate plant species for the required pollinators, we created a database of plants used by pollinators along with an online seed selection tool.



Enhancing grasslands for wild bees

Intensively managed grassland covers much of Northwest Europe but is comprised primarily of rye grass providing little for pollinators. A new grassland seed mix was developed by the University of Oldenburg and by Cruydt-Hoeck/Van Hall Larenstein, University of Applied Sciences. This contained herbaceous flowering plants that not only support bees but provide nutritious forage for livestock. The five farmers in Germany involved with testing this will continue using the mix which the seed company has also sold to over 100 farms.

On June 19, 2023, a webinar was held all about herb-rich grasslands for livestock. Participants learned about the value of reestablishing diverse grasslands, their benefits for pollinators, biodiversity, and farmers.

Our project partners from Germany and the Netherlands shared their expertise and learnings from four years of participating in the BEESPOKE project:



Other non-crop habitats found on farmland such as hedgerows, woodland, field margins and other agri-environment scheme habitats can also provide floral resources and nesting sites for wild bees. Arable plants (weeds) within crops and in scruffy areas are also important for bees. We found that farming approaches, such as regenerative farming, that include greater provision of floral areas also benefit pollinators and pollination of wild plants. We compiled recommendations on how to best manage such habitats or to just leave alone.

Open Influencing policymakers configuration options

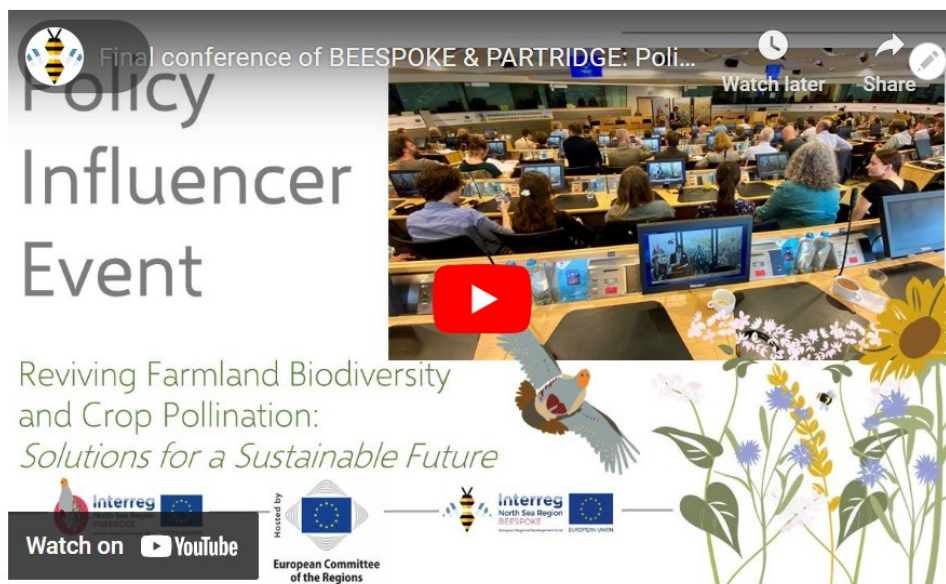
Influencing policymakers

Very little information is available regarding farmer attitudes to pollinators and crop pollination. This is why carried out surveys of the attitudes and experiences of land managers across the North Sea Region.

This study helped in developing recommendations for policymakers as we better understood the constraints and issues that the farmers faced when utilising agri-environment schemes as well as the barriers that prevented some from entering the schemes in the first place. We also appraised existing agri-environment schemes in each country, to determine how well they were delivering for pollinators and how they may be improved.

Using this information and all the partners' knowledge accrued from working with many different wildflower mixes, across the North Sea Region, contributed to the final series of policy recommendations.

We presented our recommendations to key policymakers at our final symposium in Brussels. We also sent them to national organisations developing agri-environment schemes. VLM, as the managing authority for agri-environmental measures (AEM) in Flanders, ensured BEESPOKE recommendations were considered in the design of the AEM in the new EU Common Agricultural Policy (CAP) 2023-2027. In Denmark, there is now a new option that subsidises farmers establishing smaller biotopes below one hectare, such as perennial wildflower areas.



New tools for land managers

The North Sea Region is intensively farmed and consequently new habitats for pollinators may have to be established on farmed land.

This can be an attractive option on low-yielding lands, but not always. Economic investigations revealed that the opportunity costs - i.e., the costs of losing alternative options - are crucial to the profitability of agri-environment options.

For highly pollinator-dependent crops, there may be no other option if pollination levels are low. In such situations, the landowner needs to know how much land to take out of production and where to place it to optimise wild bee conservation and crop pollination.

In addition, as wild bees can be quite mobile there may be opportunities for land managers to work together at a landscape scale to encourage their populations of wild bees. To help with this the BEESPOKE project has developed two online tools:

Tool 1 allows users to assess freely available pollination services from existing habitats for a range of crops. It can also predict the effect of adding flower strips or nesting places on crop pollination. Predictions are available for Belgium, Denmark, Germany, Netherlands, Norway, Sweden and the UK.

Tool 2 offers country-specific tips on the best flowering species for 12 crop types. We identified the main pollinators of each crop along with the three top plant species on which they forage, excluding any that may attract pests. The tips cover Belgium, Denmark, France, Germany, Netherlands, Norway, Poland, Sweden, and the UK.

[Find both tools here](#)

A third tool provides examples based on monitoring data from Belgium and the UK. You will find it [here](#).

A legacy built together

By working across borders, we were able to share our experiences of habitat conservation for pollinators. We found major differences in the countries' use of agri-environment measures (AEM?) to conserve pollinators. And testing new seed mixes across several countries enabled us to develop more robust approaches to pollinator conservation in the North Sea Region.

The BEESPOKE project laid the ground for further action. It leaves behind a tangible legacy of tools and new actions are shaping up, based on our work.

- The BEESPOKE outputs will remain available as an important source of information on crop pollination and pollinator conservation. Partners and other stakeholders will continue using and promoting them as a “go to” toolbox.
- The University of Ghent will continue to maintain and improve the two online tools.
- The interest is clearly there; partners continue receiving requests for help regarding seed mixes to plant in and around their crops.
- Many wildflower areas established during the project will remain, helping to conserve pollinators and providing a resource for future projects. Also, there are already plans for follow-on projects.

The right time for action is now

The decline in insects has attracted considerable media attention over the last five years. Yet, most land managers are not concerned about pollination levels, partly because this is not routinely measured.

We provided a set of simple methods for land managers to monitor pollination and estimate it for their locality.

Our project revealed the challenges of establishing and managing new wildflower areas. To create high-quality habitats, managers need flexibility and training alongside financial support, but without too much bureaucracy.

Agricultural landscapes have to deliver a greater abundance and diversity of flowering plants and trees to prevent further decline in pollinators. This is our key message to all land managers and policymakers.

Top 3 project highlights

A

Guidance for farmers

BEESPOKE created a wide range of training materials on how to encourage pollinators and measure crop pollination. Two online tools help land managers assess pollination by wild bees, predict the effect of adding extra habitats, and choose the best flower mix to enhance pollinators for 12 crop types.

B

Policy inputs

Through feedback from stakeholders and project activities, the project compiled and publicised a set of policy recommendations to encourage pollinators.

C

300 new flower plots

BEESPOKE created over 300 new flower plots, demonstrating the benefits of bespoke wildflower seed mixes for wild bees and the crops they pollinate.

Learn more

To learn more, visit the project's website:

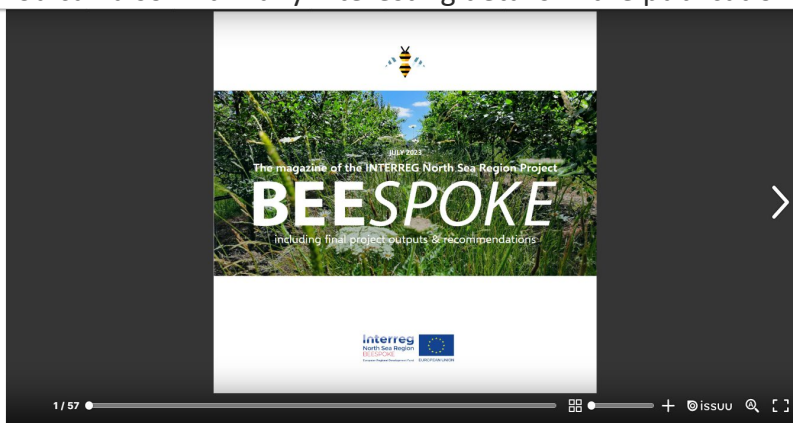
[Visit BEESPOKE's website](#)

Access the project's extensive range of training materials and download their free guides: [BEESPOKE tools and publications](#)

Access training and explainer videos:

[BEESPOKE YouTube channel](#)

You can also find many interesting details in the publication below:



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