

Insect-Responsible Sourcing Regions: harmonising food production and biodiversity conservation

Dr Patrick Pyttel, Lake Constance Foundation
Jenja Kronenbitter, Global Nature Fund
Kristin Mehler, Global Nature Fund
Patrick Trötschler, Lake Constance Foundation

The world is facing a massive decline in insects. Global studies conclude that 40% of insect species are under threat. In Germany, national long-term studies showed that the biomass loss of insects is above 75%. The dramatic loss of insects is primarily attributed to the expansion of intensive agriculture and climate change.



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This trend can be reduced if extensive and more sustainable agricultural practices are broadly applied. Corresponding practical approaches, including nature-based solutions for biodiversity conservation and local climate change adaptation, are available, and their impacts are at least partly well studied. These practices reduce pesticide use and enhance soil quality, thereby improving productivity, carbon sequestration, water quality and protection of pollinators and insects.

However, there is still a huge deficit in the know-how of farmers, food companies and other land users regarding the implementation of measures, especially regarding insect protection. An additional factor that aggravates the situation is that until today, the EU's Common Agricultural Policy (CAP) did not develop sufficient framework conditions for insect-friendly agriculture.

This holistic project tries to tackle this huge issue by initiating so-called insect-responsible sourcing regions (IRSR). Knowing that the transition to biodiversity-friendly agriculture requires collaboration and persistent agreements of various stakeholders on sustainable practices, the project tries to involve stakeholders such as farmers, farmers' associations/suppliers, food companies, other land users, NGOs, political decision-makers and the specialised authorities of municipalities, counties and districts at a regional scale. By applying a combination of farm-level and landscape approaches (sourcing regions), the project aims to

boost insect protection. The main project objectives are to:

- apply and disseminate measures for the promotion of pollinating insects in agriculture
- monitor the project impact at the farm level by applying project-specific software packages and citizen science tracking the biodiversity performance over time
- train competences and awareness, especially of farmers, decision makers of food companies and retailers, and consumers.

After developing and testing conceptual frameworks, the project delivers results and outputs that can be transferred to organisations and institutions in all EU member states. The project also specifically supports the replication of IRSR in other countries. Existing EU legislation and the related EU policies and strategies provide common ground for action and facilitate the replicability and transferability of project results and outputs.

Think big—re-work a region!

In line with our objective, the designated regions are central to most of the activities and events in our project. These regions refer to specific, geographically defined areas where support measures were implemented to enhance insect habitats significantly. More precisely, as many land users as possible (businesses, trade, municipalities, industry) should be involved in the protection of insects and their habitats by the end of the project.

The choice of geographical location of the individual regions did not follow any strict methodological guidelines. Nor were any random routines or application procedures applied. Instead, the location was determined by experts based on the project developers' many years of experience. The prevailing agricultural structures (type and size of the numerically predominant farms), the aggregation of agricultural suppliers to players in the food industry and the interlinking of urban and rural areas were decisive factors in the selection process. In principle, the aim was to map the greatest possible heterogeneity between the regions so that recommendations for action can be derived for various other Central European landscape sections. The existence and effectiveness of comparable initiatives were irrelevant to the choice of regions.

A basic orientation within the region is essential for the targeted design of direct insect-promoting measures. This orientation results from extensive research work that characterises the natural area, depicts any entomological peculiarities of the species inventory and finally shows how and by which actors the frequency and diversity of insects are influenced. This makes it possible to identify species or species groups that are typical for the region, approach regional stakeholders as quickly as possible, plan support measures with them, and, if necessary, network them with each other.





Photo: The Venosta Valley (Vinschgau) in Italy. Its special location brings with it exceptional climatic conditions. © Gerhard/Pixabay.



Photo: The Bliesgau in southwest Germany has the highest density of endangered species and habitat types of the region. © GNF/Jenja Kronenbitter.



Photo: Fruit orchards and vineyards are characteristic in the Lake Constance region. © Lake Constance Foundation.



Photo: © H.Loritz.



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Insect responsible sourcing region	Area (km ²)	Agricultural landscape
Wendland, Germany	1428	This region belongs to the federal state of Lower Saxony, northern Germany. Lower Saxony is the No. 1 agricultural state in Germany. Irrigation plays a major role in the cultivation of herbs for many farms in the region.
Bliesgau, Germany	360	The Bliesgau is characterised by a distinctive natural landscape consisting of extensive orchards, species-rich rough pastures, beech forests and a meadow landscape crisscrossed by the meandering Blies river. The Bliesgau has the highest density of endangered species and habitat types in southwest Germany.
Northern Upper Rhine (Nördlicher Oberrhein), Germany	2572	Due to the introduction of large quantities of loess from the Upper Rhine Graben during the Ice Age, the region is characterised by silty soils. These very fertile soils enable intensive arable farming. The mild climate and terraced slopes, especially along the Rhine valley, also create ideal conditions for fruit and wine growing.
Hohenlohe, Germany	7934	Agriculture in this rural region is diverse and important. Almost all types of agriculture cultures are represented here, from fruit, wine and vegetable cultivation to all sorts of animal husbandry.
Allgäu, Germany	6107	The predominant agricultural use in the Allgäu is grassland farming for milk and meat production, with milk and cheese being the main products. The average farm size of 25–37 hectares is far below the farm sizes of other regions in Germany.
Lake Constance (Bodensee), Germany	1483	The landscape in this region is characterised by Lake Constance and the adjacent hilly countryside, which has fruit orchards, vineyards, meadows and forests. In the rather small-scale arable landscape, 56% is arable land and 41% grassland. The rest is accounted for by special crops such as fruit, wine and hops.
Venosta Valley (Vinschgau), Italy	1442	The Venosta Valley in South Tyrol, Italy, was used to grow cereals in the past. Today, apple cultivation has taken hold. Even though only 2% of the Venosta Valley area is planted with permanent crops, the almost complete coverage of the valley floor with plantations is unmistakable. Meadows and pastures with intensive grassland farming are, however, the most important agricultural areas.

Frontrunner farms—where the magic happened

Through networking and regular exchange, a working group was created in each region, which was involved in a participatory manner in the identification of priority measures and in the dissemination of the project objectives. The regional working groups also played a key role in the acquisition of demonstration farms for the industry. On these farms, areas were redesigned to promote insects, either permanently or integrated into the seasonal shifting farming routines. A considerable amount of the projects' working time was devoted to recruiting, advising and supporting these farms.

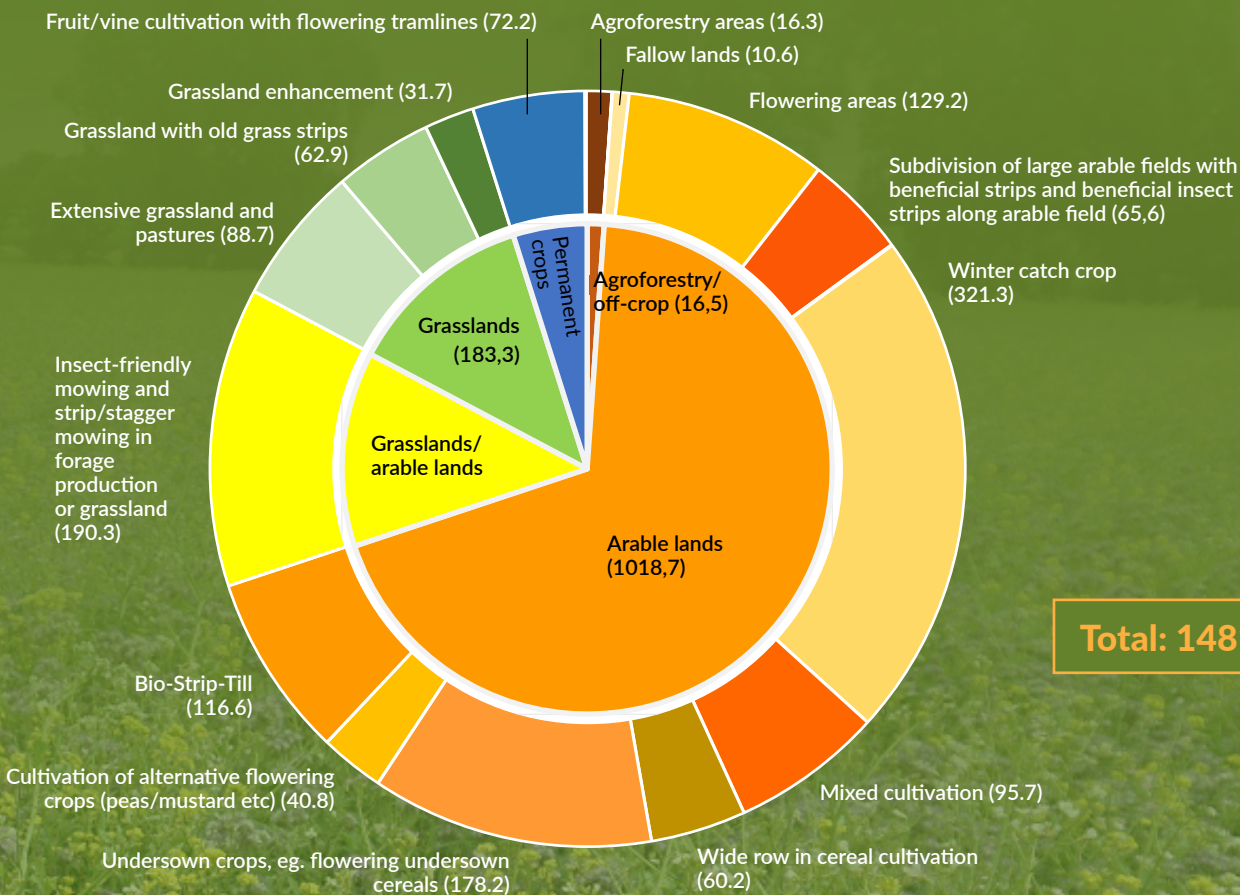
In project regions where several farms belonged to a producer association or trade network, it was much easier to involve these farms in the project. The regions without these unifying structures required sustained effort, as the farms had to be informed and ultimately

convinced one by one to participate. Overall, the project partners were able to attract a wide range of different farm types to the LIFE project. The spectrum of demonstration farms ranges from traditional arable farms to grassland-orientated dairy farms and fruit, wine and vegetable farms. In line with this diversity of farms, many different measures were implemented to promote insects. The focus on testing production-integrated measures was very important to achieve a higher area effect for promoting insects and biodiversity as a whole. The areas on the farms, which had been redesigned or ecologically enhanced in a variety of ways, were repeatedly checked by experts regarding their effect on target species groups (butterflies, wild bees and grasshoppers). These areas also serve as training sites, particularly for the training and further education of agricultural practitioners.

Expand competences!

To protect biodiversity, the practical

concepts and perspectives of all land users must be renewed. In rural areas, this renewal is countered by everyday routine and reliance on traditional patterns of action. In discussions, farmers used to say: “We have already heard of good ideas and more sustainable approaches!” However, we observed that the step towards self-motivated change of the status quo is only taken hesitantly. Training and training materials should help to break down such inhibitions. So far, more than 1300 farmers and other land users have been trained in all IRSRs combined. Field days and workshops were particularly aimed at farmers and agricultural advisors. Other lectures and teaching units were designed to strengthen the skills of members of environmental organisations, administrations and students of technical colleges and universities. No fewer than 40 fact sheets are available online, which briefly summarise insect-promoting measures for the most important crops and describe their implementation in a practical way.



Total: 1481 hectares

IRSR measures and area types in hectares as of September 2024 © GNF.

Excursus: Biodiversity on the pasture!

Biodiversity and animal welfare on the Hofgut Schleinkofer

Steady westerly winds, days with seven to eight hours of sunshine and correspondingly hot and dry summer months are exhausting—even for livestock. Integrating trees into agricultural production areas improves animal welfare, increases the supply of feed and provides urgently needed ecosystem services in the long term.

Due to the prominent role assigned to (industrial) agriculture in connection with the drastic decline in insect diversity, social pressure on farms is also increasing in terms of nature and species conservation. Agroforestry systems defuse this area of conflict, as trees can be planted individually, loosely distributed across the land or in neat rows: trees significantly increase the ecological value of agricultural land.

Agroforestry systems take many forms: sometimes they are slender rows of trees, sometimes single trees loosely distributed over the area. Depending on the type of tree and the form of cultivation, their establishment can be used to pursue very different but always several fundamental objectives. They

fully meet the requirements of modern agriculture, although their origins date back to prehistoric times. More and more farms are making use of this traditional experience, together with more recent findings from ecosystem research.

The organic-certified farm Schleinkofer is a demonstration farm in the LIFE project "Insect-Responsible Sourcing Regions". The farm mainly keeps dairy cattle but also grows cereals. "I want my cows to be better; I want them to be out of the sun and out of the wind," says farm manager Susanne Schleinkofer. She decided to plant willows because a large number of insect species occur on this tree species.

In Central Europe, the foliage of the willow is a food plant for the caterpillars of 37 species of butterflies and moths. The pollarded willows that result from the leafy forage are not only a traditional element of the cultural landscape but also a particularly valuable habitat in terms of nature conservation, for example, for 550 species of beetle. As a result of regular pruning, numerous fungi colonise the wood of the willows, creating cavities in a relatively short time, which in turn are used by numerous species of birds and bats.

Susanne deliberately opted for rows of willow trees because, in the medium

term, she can offer her cows additional leafy fodder with relatively little effort. The first cut turns the trees into pollarded willows, which can then be cut back in parts or completely at regular intervals. The foliage is used on the farm as stable bedding or fodder—fresh or dried. It provides the cows with trace elements and is readily eaten.

Susanne also sees the benefits of tree rows in the face of climate change and for nature-friendly farming. A total of 600 metres of tree rows were planted on the farm Schleinkofer. It was possible to harvest unrooted cuttings from willows that had already been planted on the farm years ago. From a cost perspective, this harvesting and use of cuttings from 'own cultivation' is particularly advantageous. With the help of a planting machine, around 400 willow rods were planted on 3.5 hectares of grassland in March 2022. Offset rows create a wind break over the entire area, allowing mowers and drag hose distributors to pass through.

The ecosystem services of agroforestry systems outlined above naturally also include the long-term storage of carbon in the woody tree biomass. For climate adaptation projects to be successful in the long term, the protection of biodiversity and the production of food must be considered together.



Image: In a few years, the pastures will protect dairy cows from extreme sunlight and constant wind. Some of the planted willow rods did not survive the hot and dry summer of 2022. Sections that remained dense will provide material in the coming planting period to repair any defects. Photo © P. Pyttel

Hofgut Schleinkofer, Karlsruhe/Germany

Area: 50 hectares arable farming, 30 hectares grassland (thereof 3.5 hectares with agroforestry)

Farm activities: cattle (35 dairy cows + offspring), bread grain (wheat), maize

Sales: Organic dairy farm with artisanal milk processing and marketing in and around Karlsruhe, south west Germany (regional direct marketing)

<https://www.hofgut-schleinkofer.de>

Wendland, Northern Germany.
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What's next?

The establishment of the regions, all the efforts that led to regional awareness raising and the development of the role of the farms as pioneers involved enormous efforts. In order to justify this expenditure, which has continued over several years, and to achieve a lasting improvement in insect habitats, the continuation of the regions is the most important component of the project's after-life strategy.

Trade and the food industry will play the most important role here, as these players can largely translate food's added value from insect-promoting regions into marketing and communication strategies. To this end, the project partners will increase their presence at relevant events and seek dialogue with companies, industry associations and initiatives. The project partners are planning the final international conference in Frankfurt/Main on 20 May 2025. The project's core objectives will certainly remain within the structures of the partners of the 'Food for Biodiversity' sector initiative.

Another important aspect is the transfer of the project results to other regions. The project partners will summarise the

experiences and findings to date in the guidelines for more and better insect promotion at the landscape level. This guide will be available in German and English on the project website from autumn 2024. In addition to agriculture, it will also show how other stakeholders, such as the food industry, forestry, municipalities and companies can get involved in insects and biodiversity and how these commitments can be consolidated into an insect-promoting region.

For further insect-promoting regions to be created, funding policy offers are needed for regional stakeholders. To this end, the LIFE project is developing two proposals on how regions focussing on insect promotion can be financially supported in the future. These drafts are already being discussed with several experts and ministries at the federal and state level in Germany and are being adapted in some cases. One proposal follows the cooperative approach that has been tried and tested in the Netherlands. The second proposal focuses on how the LEADER funding framework can possibly be used to promote the so-called landscape approach. The final dossier will be finished by March 2025.



PROJECT SUMMARY

LIFE Insect-Responsible Sourcing Regions aims to further disseminate proven measures for the promotion of pollinating insects in agriculture and resolutely break new ground: a positive ecological impact is no longer limited to the individual farm. Landscapes benefit holistically, and the concept is transferable to many cultivation regions in Germany and the EU. The project develops tailor-made biodiversity action plans and creates 700 hectares of insect-friendly farmland plus 100 hectares of new insect-friendly habitats. This means less fertiliser, higher soil fertility and more biodiversity. In addition, trainers, advisors, and certifiers are trained, and the insect population is monitored using a specially created citizen science tool.

PROJECT PARTNERS

Lake Constance Foundation (Coordination), Global Nature Fund, Netzwerk Blühende Landschaft, Bäuerliche Erzeugergemeinschaft Schwäbisch Hall, Nestlé Germany.

PROJECT LEAD PROFILE

Patrick Trötschler is an agricultural engineer, Programme Manager of 'Agriculture & Food' and Managing Director of the Lake Constance Foundation. In these roles, he has been committed to implementing more sustainability in agriculture and the food industry. For more than 23 years, he has played a key role in shaping the profile of the Lake Constance Foundation as a reliable partner for agriculture and the food industry. He advises farms and producer organisations, as well as companies in the food industry (processing and trade), on biodiversity, climate protection and climate change adaptation.

PROJECT CONTACTS

Bodensee-Stiftung
Patrick Trötschler
Fritz-Reichle-Ring 4, 78315 Radolfzell, Germany
+49 7732999541
p.troetschler@bodensee-stiftung.org
<https://insect-responsible.org/en/>

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Coordinator



Further partners



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