



EU POLLINATORS INITIATIVE

A review of Member States actions to tackle the decline of wild pollinators

DENMARK



STRATEGY



INITIATIVES



Rural



Urban



Private sector



NATIONAL RED LISTS

Threatened species



17%
Bumblebees (2010)



35%
Butterflies (2010)



RAISING AWARENESS



Citizens



Schools children



Farmers & beekeepers

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Despite having signed the Coalition of the Willing in 2016, Denmark does not have a national strategy for wild pollinators, nor any current ambition to establish one. There is a national strategy for honeybees, with the aim to help future-proof Danish beekeeping and pollination.

A small number of academic research projects have studied pollinator decline and its causes, but there is no official monitoring scheme for wild pollinators in Denmark and none is planned to be introduced. A status assessment is currently being carried out of all Danish bees, however the significant lack of relevant data poses a major challenge. Red lists have previously been published for bumblebees and butterflies, and one on solitary bees is on the way. 17% of bumblebees and 35% of butterflies were assessed as vulnerable, endangered or critically endangered.

Agriculture is by far the dominant land use in Denmark and the biggest threat to wild bees.

Other than the support for organic farming, there are currently few incentives for farmers to create more pollinator habitat.

Public awareness about pollinators has improved over the past few years, however the general understanding of wild pollinators (other than bumblebees) remains low. Few national initiatives have been launched to address this, with the primary example being a 2018 awareness raising campaign by the Danish Agriculture & Food Council targeting farmers, called “10 bee-friendly recommendations for your farm” (wild bee focus).



STRATEGIES FOR WILD POLLINATORS OR ANY OTHER SIMILAR PLANS

Denmark has no national strategy for pollinators in place and there is no current plan to establish one (personal communications with Aarhus University researchers).

Denmark has a national [Beekeeping Strategy \(2016-2019\)](#) in place which aims to help future-proof Danish beekeeping and pollination, including education of the bee industry and beekeepers, communication and research. The Strategy focuses on honey bees although it recognizes that improving food resources for honeybees will also benefit wild pollinators. It provides the framework for the Danish national beekeeping support programme, launched in 2017. An advisory board under the Ministry of the Environment and Food provides advice on bee management and beekeeping issues.

Wild pollinator experts at Aarhus University (providing consultancy services via a framework agreement with the Ministry of the Environment and Food) are currently seeking national funding to initiate a network of relevant stakeholder with the ambition to formulate a national Danish pollinator strategy¹. The ambition is to involve representatives from public groups, beekeeping associations, scientist, stakeholders involved in conservation management and relevant governmental representatives.

Activities related to pollinators, including wild pollinators and honey bees, are administered by three government agencies under the Ministry of Environment and Food. The Danish Environmental Protection Agency nature package ([Naturpakke](#)) has funded initiatives related to nature and biodiversity conservation with a total budget of 363.5 million DKK (about €49,000) between 2016 and 2019. The Nature Agency is responsible for the management of Danish state land. The Agency for Agriculture is responsible for managed bees and beekeeping.

¹ Article in Altinget: miljø 1. november 2019. Forskere om ny insektstrategi: Glem ikke de vilde bier. <https://www.altinget.dk/miljoe/artikel/forskere-om-ny-insektstrategi-glem-ikke-de-vilde-bier>



IMPROVING KNOWLEDGE OF POLLINATOR DECLINE, ITS CAUSES AND CONSEQUENCES

RED LISTS ON POLLINATORS AND DATA ON POLLINATOR POPULATIONS

The national checklist of bees in Denmark now includes 292 known bee species, but more species will probably be found in the future, as the wild bee fauna in Denmark has never been thoroughly investigated. Species are listed based on individual bees that come to Denmark by themselves, either by migrating or with the wind (Madsen et al 2015, 2018).

Two experts are currently preparing the Danish red list for solitary bees, which is planned to be published in the spring of 2019. However, due to significant data gaps, the status of solitary bees in Denmark is foreseen to remain unknown (personal communication, Beate Strandberg).

[Danish red lists of bumblebees and butterflies](#) have been published (Wind and Pihl 2010). Of the 29 species of bumblebees, 5 (17%) were assessed as threatened (i.e. vulnerable, endangered or critically endangered). In addition, of the 77 species of butterflies, 27 (35%) were assessed as threatened. An [assessment of the threat status of all Danish bees](#) using the IUCN criteria and guidelines is being carried out, based on expert judgements, and is expected to be completed at the end of 2019. Previously, researchers in the STEP project documented the long-term decline in certain bumblebee species on the island of Funen since the 1930s (Dupont et al 2011).

A checklist of all Lepidoptera species in Denmark was published in 2017 (Aarvik et al 2017).

POLLINATOR MONITORING SCHEMES

There is no official monitoring scheme for wild pollinators in Denmark. Individual research projects have done smaller monitoring exercises, but these are fully dependent on project funding and therefore not systematic over time or centrally coordinated (personal communication, Beate Strandberg). There are no plans for introducing a national monitoring scheme for wild pollinators.

For honeybees, the Agricultural Agency carries out surveillance of honeybee health, including controls by skilled beekeepers of hives that are being moved or changing owner, checks of apiaries around detected outbreaks, and an active surveillance programme for honeybee pests and diseases.

Since 2017, the Zoological Museum in Copenhagen and the Danish EPA have collaborated on the development of a “species portal” (database), however the portal does not contain information about bees. A citizen science-based database has also been established (“fugleognatur.dk”, since 2001), but it does not focus on bees.

RESEARCH INITIATIVES

The following research initiatives in relation to wild pollinators are ongoing or have recently been finalized in Denmark, led by researchers in Aarhus University and Copenhagen University:

- Claus Rasmussen and team (Dept. of Bioscience, Aarhus University) ran the research project 'Wild bees in Denmark' (2016-2019). They are investigating historical trends and status of wild bee species in Denmark using historical records (museum collections) and field observations by a team of expert citizen scientists. Funded by '15 Juni Fonden'. Claus Rasmussen and Henning B. Madsen (Dept. of Biology, Copenhagen University) published two papers summarizing distribution, phenology and host plants of wild bee species in Denmark, as known from major collections (Madsen et al 2016, Rasmussen et al 2016),
- Henning Bang Madsen (Dept. of Biology, Copenhagen University) ran a project to survey wild bees on the island of Møn (UNESCO world heritage site) (2018-2019).
- Jørgen Eriksen (Dept. of Agroecology, Aarhus University) recently coordinated a project (with Yoko L. Dupont, Dept. of Bioscience, Aarhus University); '[MultiPlant](#)' (Multifunctional perennial high-value crops in organic plant production), investigated multi-functionality of grassland mixtures and cutting strategies for biogas production, protein feed production and biodiversity of pollinators.
- A group of Danish researchers at Aarhus University wrote a report in 2011 which assembled the available knowledge on the status of wild pollinators in Denmark and the pollination need of wild plants (Strandberg et al 2011). The report concluded that, despite many years of research of both pollinating insects and pollinator biology, the knowledge about the status and development of wild pollinators in Denmark, as well as the pollination need of wild Danish plants, is still very limited. Existing research has focused on more exotic species or evolution studies.
- Anne Eskildsen and team (Dept of Bioscience, Aarhus University) quantified the spatio-temporal changes in species richness and assemblage composition of Danish butterflies over more than a century (1900–2012) (Eskildsen et al, 2015). They showed severe declines and a net loss of 10% of Danish species. Although declines were most severe between 1940 and the 1990s, the decline continued in the decade to 2012. The authors suggest that the observed changes in species richness were driven by a gradual replacement of ecological specialists by broadly adapted ecological generalist species, with the most severe local scale losses in the group of butterflies specialised in semi-natural grasslands and heathlands.

TAXONOMICAL EXPERTS ON POLLINATORS

There is a small number of taxonomical experts in Denmark, including the researchers involved in developing the Danish red list for bees (see above). There are no training opportunities for taxonomical identification of pollinators. There is a significant lack of knowledge on species abundance, distribution and trends (personal communication, Thyge Nygaard). The scientific community reports that more knowledge is needed about how bees are influenced by human management of the landscape (agriculture, for example), climate change and natural stress factors (diseases, predation and parasitism), and more knowledge about the genetic differences in bee species across Europe is also needed (personal communication, Mette Gervin Damsgaard).



INITIATIVES TACKLING THE CAUSES OF POLLINATOR DECLINE

ACTION PLANS ON SPECIES AND HABITATS

None identified.

FARMER AND LANDSCAPE INITIATIVES, AS WELL AS LOCAL LEVEL STRATEGIES

Agriculture is by far the dominant land use in Denmark and the biggest threat to wild bees.

The [Danish Organic Action Plan](#) sets a target to double the organically cultivated area by 2020, which is currently 8.6% of the farmed area ([Eurostat organic farming statistics 2017](#)). The Danish Rural Development Programme ([Landdistriktsprogrammet 2014-2020](#)) provides support for organic farming. Denmark has a strong organic farming association (“Økologisk Landsforening”) and the influence that they can exert might ultimately benefit wild pollinators.

Other than the support for organic farming, there are currently few incentives for farmers or other landowners to create more pollinator habitat. Examples include:

- The Nature Package includes a nationally funded grant scheme ([Læhegn og småbeplantninger](#)) for landowners since 2017, which supports the creation of hedgerows for shelter and valuable habitats and ecological corridors enhancing biodiversity in open agricultural areas and their management for five years. The scheme will include requirements of 25% coverage of flowering plants and bushes valuable to pollinators, types of flowering crops, and installation of wild flower strips. The hedge creation scheme will benefit pollinators, but the hedges have no legal protection beyond the end of the funding contract (personal communication, Thyge Nygaard).
- The Danish hunting regulation defines habitat improvement requirements on farm estates that seek to release high densities of partridges or pheasants, and since 2017 these include voluntary habitat improvements targeting pollinators, although the actions will remain primarily focused on game birds ([Biotopplaner](#)).

A few public sector initiatives target pollinators:

- The [Danish Nature Agency](#) is carrying out projects to protect pollinators and improve pollinator habitats in Danish state forest.

- The Danish Environmental Protection Agency and the national railway (“Banedanmark”) have entered into a partnership ([natur y byen project](#)) to protect and manage habitats around train stations and tracks in the city of Copenhagen to increase plant species relevant to pollinators as well as wider biodiversity benefits.

MEASURES ON PESTICIDES

The Danish pesticide taxation system is based on the Pesticide Load indicator, which weights pesticides according to three indicators, including environmental toxicity: a measure of the toxicity for pesticides to animals and plants in the field (e.g. earthworms and bees) and the surrounding nature (e.g. fish and birds). This means more environmentally toxic pesticides are more expensive. The environmental toxicity to bees is, however, based only on values for acute toxicity (LC/LD/EC50 and NOEC values) to honeybees from the Pesticide Property Database (PPDB) (Kudsk 2018), and does not take into account the fact that most currently approved pesticides have not been tested for their toxicity to wild bees, and the evidence for significant chronic toxicity impacts on wild bees and other pollinators.

The Danish national plan for the sustainable use of pesticides (2017-2021) announces a ‘focus on low-risk substances and substances that may be harmful to bees’ and aims at ‘further developing the assessment methods and the basis for harmonising approval/authorisation work in the North Zone and the EU as a whole. This includes guidance documents for assessing the risk to bees.’

The national database of pesticides ([middeldatabasen.dk](#)) includes information on whether or not a product is toxic for bees and other beneficial insects (“bifare”). SEGES² advises farmers to apply good spraying practice (god sprøjtepraksis) in their operations, such as spraying at night, only when there is no or little wind, and using drift reducing nozzles.

Denmark has a government declaration to phase out the [use of pesticides in public areas](#), but to date only the use of herbicides in cemeteries is legally banned. The city of Copenhagen has a ban on pesticide use in public areas, and the cities of Aalborg, Aarhus and Eckernförde also have pesticide bans.

² [SEGES](#) is the research and innovation centre for agriculture and the food industry in Denmark; part of the Danish Agriculture & Food Council.



RAISING AWARENESS, ENGAGING SOCIETY-AT-LARGE AND PROMOTING COLLABORATION

The Danish public interest in bees and other wild pollinators has increased over the past few years. There are initiatives to help wild bees through planting and sowing of wildflowers in communities, farmland and private gardens (personal communication, Aarhus University researchers). However, national experts raise the issue that the knowledge about wild pollinators among the general public in Denmark remains very low. People are generally aware of honeybees and bumblebees, but not the diversity of other pollinating species. The experts call for a national field guide for wild bees, including keys for species identification (personal communication, Beate Strandberg and researchers from Aarhus and Copenhagen Universities).

There are a number of bottom-up community initiatives in Denmark related to wild bees, including Wild Bees in Denmark ("[Vilde Bier i Danmark](#)") and Plan Bee ("[Plan Bi](#)"). These groups arrange courses, training and other awareness-raising activities. Further, a Nordic initiative was recently initiated by the Norwegian group "La Humla Suse", in collaboration with Wild Bees in Denmark and Swedish and Finish equivalents³.

State-initiated campaigns and initiatives are listed below.

TRAINING AND AWARENESS RAISING CAMPAIGNS

The Danish Agriculture & Food Council launched in 2018 a campaign called "[10 bee-friendly recommendations for your farm](#)", aimed at farmers (see a copy of the material under the heading educational materials below). The campaign suggests and rates different actions that farmers can take on their land, based on a [scoring system](#) developed by experts. Farmers can also contact the Danish Agriculture & Food Council to help them evaluate what could be done at their farm to help wild bees.

No other significant awareness-raising or communication initiatives were found that address wild pollinators.

EDUCATIONAL CAMPAIGNS AND MATERIALS ON WILD POLLINATORS

³ Personal communication 18 February 2019, Beate Strandberg, Institut for Bioscience, Aarhus University.

In spring 2018, the national Danish TV channel DR focused on bees (primarily honeybees). The children's channel ("DR Ramasjang") had a campaign which included six TV programs about bees, in addition to some public events and networking of stakeholders.

CITIZEN ENGAGEMENT CAMPAIGNS

Økologisk Landsforening (the national Danish organization for organic farming) launched a campaign which aimed at increasing public awareness of wild bees. Work included development of a website with information on requirements of bees, in addition to the distribution of small bags with wildflower seed mixtures.

PRIVATE SECTOR INITIATIVES FOR WILD POLLINATORS

None identified.

APICULTURE SECTOR INITIATIVES FOR WILD POLLINATORS

A campaign ("[bliv bivenlig](#)") was launched by the National Danish Beekeepers' Association in March 2017. It included the development of a booklet about wild bees and honeybees, and how to plant, sow and manage private gardens, public areas, farmland and forested areas in order to support pollinators.

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Educational materials

Farmers

“10 bee-friendly recommendations for your farm”; Danish Agriculture & Food Council

The campaign is available here: <https://lf.dk/bi/det-kan-landmanden-goere#>, and the background information and scoring system are described here <https://lf.dk/bi/~media/e09d4b3a727845c992923a1747be0d66.ashx>.

1 **Bevar og pas på småbiotoperne** i agerlandet – markveje, diger, markskel, læhegn, remiser, grøftekanter og vejrabatter kan være gode levesteder for bierne

2 **Udtag arealer permanent til natur** i forlængelse af eksisterende naturarealer, fx ukurante hjørner af marken. Gerne solesponoreret og på tør og sandet jord

3 **Slå ikke vejrabatter, grøfter, markskel og brak** eller græsarealer når blomstene blomstrer. Vær dog opmærksom på slåningsfrister i landbrugsordninger

4 **Sørg for, at der ikke sker spild og afdrift** til naturområder og småbiotoper, når du gødsker og sprøjter – fx ved at holde afstand

5 **Pas på og plej eksisterende naturarealer** såsom overdrev, enge og heder med ekstensiv græsning eller høslæt, så der er blomster igennem hele sæsonen

6 **Bevar de gamle træer** i læhegn, markskel og andre steder på din ejendom

7 **Lav blomsterstriber** eller blomsterbrak på din omdrifts jord – lad dem gerne ligge flere år og onlæg etapevis, så du undgår at pleje hele striben op på én gang

8 **Etabler naturlige "bihoteller"** udlæg fx bunker med grene eller sten eller læg en halmballe til henfald i læhegnet

9 **Efterlad dødt ved** og lad fx grene og kvas ligge i læhegn eller andre småbiotoper efter beskæring

10 **Plant hjemmehørende hvidblomstrende buske og træer** i læhegn og remiser

Her er 10 anbefalinger til tiltag, som kan skabe flere levesteder og føde til bierne i landskabet. Hver anbefaling er værdsat med humlebier, hvor antallet af humlebier viser, hvor stor effekt tiltaget har – 10 humlebier er bedst, men alle anbefalingerne kan gøre en positiv forskel. Vælg de tiltag, som passer på din ejendom og i din drift.

Det kan du gøre **10** bivenlige anbefalinger