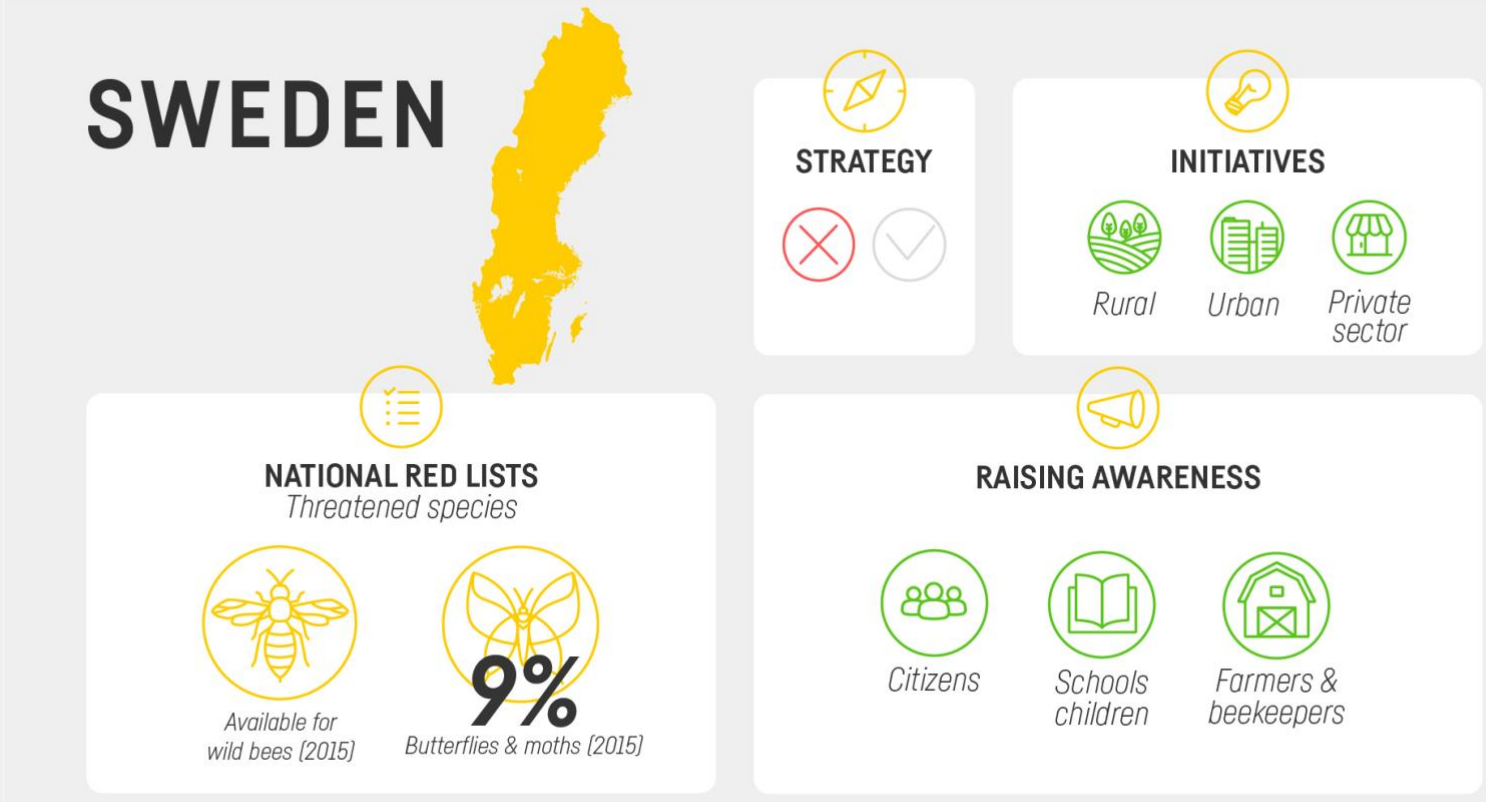
EU POLLINATORS INITIATIVE

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



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There is no national Swedish strategy aimed specifically at wild pollinators, but a comprehensive investigation was conducted in 2018 by SEPA (commissioned by the Government), including the state of Swedish wild pollinators, existing measures that aim to prevent their decline and suggested future measures. Whether or not the recommendations from the investigation will be adopted – or used as basis for a national strategy – is unknown.

Red lists have been collated on Hymenoptera, Lepidoptera, Diptera, Apidae and Syrphidae. Several academic research projects are ongoing to improve the knowledge of wild pollinator decline, including its causes and consequences. Several national monitoring schemes on pollinators are ongoing, particularly for butterflies. Numerous research initiatives on wild pollinators are taking place at different institutions and research centres. Taxonomical expertise is well established in the country.

There are a number of ongoing and recently finished action plans with particular relevance to wild pollinators. Despite the existence of many initiatives this is regarded as insufficient given the large number of threatened wild pollinator species on the Swedish national red list. Measures on pesticides include the regulation on neonicotinoids, the limit to the private use of pesticides that might harm pollinators, the pesticide tax and a national action plan.

Several training and awareness raising campaigns have been launched in the recent past. Educational campaigns have aimed at Swedish schools. Citizens' engagement campaigns have been initiated by various organizations including nature conservation associations, NGOs and gardening networks. Various private sector initiatives have also been launched and some of the apiculture associations' initiatives are aimed at wild pollinators.

STRATEGIES FOR WILD POLLINATORS OR ANY OTHER SIMILAR PLANS

There is no national Swedish strategy aimed specifically at wild pollinators.

During 2018, the Swedish EPA (SEPA) published the results of work commissioned by the government on mapping existing measures for wild pollinators and suggesting future measures (SEPA 2018a, 2018b). The first report, published in April 2018, presents an overview of existing measures in Sweden (at various administrative levels) that aim to prevent the decline in wild pollinator populations. The second report, published in October 2018, presents recommendations by SEPA to the government on measures that could be adopted to prevent this decline. The Swedish IPBES assessment report "Pollinators, pollination and food production" was also published in 2018, supporting SEPA's study on future measures (SEPA, 2018c).

It is not clear whether the proposed measures will be taken forward, or if the results of the 2018 studies will contribute to the development of a national strategy for wild pollinators. SEPA has pointed out that adopting more the proposed measures of more comprehensive nature will require sufficient funding for doing so. SEPA's budget for 2019 has been cut by 40% compared to the previous year.

In their assessment of existing measures, SEPA lists several existing strategies and plans that might have a positive effect on wild pollinators, including, for instance, a national plan for biodiversity in the agricultural landscape, a national food strategy and the development of regional action plans for green infrastructure (SEPA, 2018a). Further, the Swedish Board of Agriculture runs the National Honey Programme ("Nationella honungsprogrammet"), aiming to support honey bees and beekeepers. Some of the measures may have positive impacts also on wild pollinators, especially those aiming to secure the supply of pollen and nectar plants in the environment. The overarching aim of the National Honey Programme is to improve the conditions for production and sales of honey in Sweden. The Board of Agriculture grants funding for individual projects (a total SEK7 million (EUR667,460) in 2018). Individual projects are evaluated compared to project targets as well as their contribution to the overarching aim of the programme (SEPA, 2018b).

IMPROVING KNOWLEDGE OF POLLINATOR DECLINE, ITS CAUSES AND CONSEQUENCES

RED LISTS ON POLLINATORS AND DATA ON POLLINATOR POPULATIONS

Red lists of Hymenoptera, Lepidoptera, Diptera, Apidae and Syrphidae were last updated in 2015 (Ahrné et al 2015, ArtDatabanken 2015). In total, 723 species of Hymenoptera (8.8% of the total number of species) were assessed, 90 of which (12%) were classified as threatened and 196 (27%) included on the red list. In addition, 2,648 species of Lepidoptera (99% of all species) were assessed, 246 (9%) of which were classified as threatened and 545 (21%) included on the red list. 1,706 species of Diptera (22% of all species) were assessed, whereof 84 (5%) were classified as threatened and 217 (13%) included on the red list.

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

POLLINATOR MONITORING SCHEMES

The 2019-2021 SEPA budget contains increased resources for environmental monitoring, whereof SEPA intends to use resources to **increase the national monitoring of wild pollinators**, especially bumblebees, wild bees and Syrphidae.

The following existing schemes have been identified:

- **Swedish Butterfly Monitoring** ("svensk dagfjärilsövervakning") is a national monitoring programme run and financed by the Swedish EPA and executed by Lund University in collaboration with the EPA, ArtDatabanken, the Swedish Entomological Society and Butterfly Conservation Europe. The initiative recruits interested individuals from the public to inventory deployed transects throughout country, on a recurring basis. The last reporting year was 2015, for which 294 individuals participated (Pettersson et al 2017).
- **Monitoring of butterflies and bumblebees in meadows and pastures** ("övervakning av fjärilar och humlor i ängs- och betesmarker") is carried out by SLU representatives since 2006, under commission by the Swedish Board of Agriculture. Butterflies are monitored three times each summer in transects across the country, and bumblebees once each summer. The inventory monitors species and position of each individual insect, as well as diversity of flowering plants and the height of vegetation (Cronvall et al 2017).
- **Regional environmental monitoring in landscape transects** ("regional miljöövervakning i landskapsrutor (Remiil)") is carried out in several Swedish Counties (since 2009), in collaboration with SLU. Some of this monitoring includes wild pollinators.

- **The Nature Calendar** ("Naturens kalender") is a citizen science project run by SLU to collect information about phenological patterns in nature. For instance, data is collected on the flowering of different plants, which can be used for studies on how plants important to pollinators change with a changing climate (SEPA, 2018b).

RESEARCH INITIATIVES

The following research initiatives on wild pollinators have been identified:

- **Applied research on wild pollinators and pollination, Lund University**. Ongoing projects include, e.g., development of models to investigate how much EFAs are necessary for the economic value of pollination to exceed the loss of cultivated land, field experiments to improve knowledge of wild pollinator behaviour and ecology, and studies and simulations to assess the impacts on wild pollinators and pollination by various pressures.
- **Conservation biological research on wild pollinators, Linköping University**. Focusing on grasslands and deciduous forest, aiming to improve understanding of how and why biodiversity varies between different management practices.
- **Applied research on wild pollinators and pollination services, SLU Bommarco lab and SLU Strawberry lab**. Since about 10 years, SLU has conducted several large-scale research initiatives on pollination, including mapping of pollinators in grasslands and agricultural land.
- **Bee health research, SLU**. Research into diseases affecting honey bees and how disease spread. Part of the research includes looking at spread of disease between honey bees and wild pollinators.
- **Agricultural research and development projects on pollination.** The Swedish Board of Agriculture funds a number of R&D projects related to pollination, including a project on land use measures to support pollinators for red clover and the potential for *Osmia bicornis* (Red Mason Bee) as main pollinator in commercial orchards.
- **Preventing threats to pollinators** is a research project funded by the Swedish Civil Contingencies Agency (MSB) focusing on honey bees and bumblebees. The project aim related to bumblebees is to determine the impact on wild bumblebees from the current widespread import of *Bombus terrestris* (Buff-tailed Bumblebee) to Swedish agriculture. The project will result in a report on the most important pests impacting bumblebees and recommendations for new regulation on imports of bumblebees.
- **The Bee Connected project** is part of a wider urban development project in Stockholm ("C/O City"). Bee Connect is a research project studying the conditions for suitable habitats for wild pollinators in urban environments. The wider aim of the C/O City project is to support the value of nature in the city and develop solutions that can help support ecosystem services in city planning. The project is financed by Vinnova (the Swedish government agency that administers state funding for research and development).
- The Swedish national grid (state-owned electricity transmission system operator) is currently conducting a research project on the **habitats for wild bees under power lines.** The aim of the project is to assess whether it is possible to improve the conditions for wild bees under power lines by uncovering suitable sections and planting flowering plants. The project began as a pilot in Jönköping County in 2018 and results of measures will be monitored annually. After 1-2

years, based on results, a decision will be taken whether to roll-out a large scale version of the measures for Swedish power lines.

TAXONOMICAL EXPERTS ON POLLINATORS

The Butterfly Committee ("Fjärilsgruppen"), consisting of 11 experts from around the country, is responsible for assessing status and trends for butterfly species for the Swedish red list. Members of the Committee have also been involved in developing programmes of measures for individual threatened species.

There are similar groups of experts assessing other insect groups:

- Hymenoptera expert group
- Diptera expert group
- Coleoptera expert group

No information has been found regarding training opportunities provided for taxonomical identification of pollinators.

INITIATIVES TACKLING THE CAUSES OF POLLINATOR DECLINE

ACTION PLANS ON SPECIES AND HABITATS

The national Swedish framework for action plans for threatened species and habitat types includes several ongoing and recently finished action plans with particular relevance to wild pollinators. The 2018 SEPA investigation of ongoing measures for wild pollinators lists 35 such action plans (Annex 2 SEPA, 2018b), including:

- Action plan for *Andrena batava*, *Andrena morawitzi* and *Andrena nycthemera* (2014-2018) *("Åtgärdsprogram för batavsandbi, fältsandbi och flodsandbi (2014–2018)")*
- Action plan for solitary bees and moths in semi-natural grasslands (2011-2016) ("*Åtgärdsprogram för vildbin och småfjärilar på torräng (2011–2016)*")
- Action plan for solitary bees in semi-natural grasslands ("*Åtgärdsprogram för vildbin på ängsmark (2011-2016)*")

FARMER AND LANDSCAPE INITIATIVES, AS WELL AS LOCAL LEVEL STRATEGIES

The 2018 assessment identified many existing initiatives that can benefit wild pollinators. It also notes that these are not enough, given the large number of threatened wild pollinator species on the Swedish national red list. The following are a few examples of such initiatives:

- The local nature conservation initiative ("Den lokala naturvårdssatsningen (LONA)") was initiated in 2004 as a large-scale national programme to encourage local nature conservation initiatives. Municipalities and associations can seek LONA funding for up to 50% of project costs. Several of the projects that aim to support biodiversity can be assumed to also benefit wild pollinators (SEPA, 2018b). Over 3,000 LONA projects have been finalised so far (Eckerberg et al 2017).
- BeeUrban, in collaboration with farmers in southern Sweden have launched an initiative called flowers for bees ("Blommor for bin") to establish crops suitable for wild pollinators on 1,000 ha non-productive farmland by 2020. Citizens and companies can donate money to cover the costs for farmers.
- During 2018, the Rural Economy and Agricultural Societies donated seed mixes of legumes to selected Swedish farmers, for them to sow together with crops to increase feed for pollinators. The seed mix is relatively expensive for farmers and often not a viable alternative financially. A few hundred farmers participated in the initiative (SEPA 2018 April assessment).
- Uppsala and Örebro municipalities have tried to increase the area of flowering plants and thereby the feed available for wild pollinators, by planting flowering legumes etc. on municipal land. In Uppsala, 2.5 ha have been planted (SEPA, 2018b).
- SEPA leads the regional action plans for green infrastructure. As part of this work, the CABs map natural factors in the landscape that are important in order to maintain biodiversity and ecosystem services. The action plans should also include proposed areas to strengthen green infrastructure and measures to support those areas. This includes measures for wild pollinators.

MEASURES ON PESTICIDES

Swedish measures targeting the impact of pesticides on pollinators include:

- **Regulation on neonicotinoids**, aiming to address the decline of honeybees and wild pollinator populations.
- **Limit to the private use of pesticides that might harm pollinators.** Implementing acts from the Swedish Chemicals Agency (KIFS 2008:3) regulate the private use of pesticides, e.g. that certain pesticides that harm pollinators are not allowed for private use.
- **Pesticide tax,** targeting importers and domestic manufacturers; SEK34/ kg active substance. Aiming to reduce the use of pesticides for health- and environmental reasons.
- **National action plan on sustainable use of pesticides (**Next period version also available)

Other legislative measures

- Regulation on bee diseases ("Regelverk om bisjukdomar"). This regulation stipulates beekeepers responsibilities to prevent the introduction and spreading of infectious bee diseases in Sweden. ` has four levels: 1) beekeeper's own responsibility, 2) public authorities' reviews at farm level, 3) the county administrative boards' coordination work at regional level, and 4) the Swedish Board of Agriculture's work as a national coordinator (SEPA, 2018b).
- Policy on the import of bumblebee populations ("Reglering av import av humlesamhällen"). The policy requires a health declaration for imported bumblebee populations and their queens, and that the populations are destroyed after use. The rules were initiated to try to reduce the risk of disease spreading from imported bumblebee populations to wild bumblebees of the same species in Sweden (SEPA, 2018b).

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

TRAINING AND AWARENESS RAISING CAMPAIGNS

- Mångfald på slätten (Biodiversity on the plains) – the Swedish Agricultural Board is working together with industry to encourage farmers to take measures to strengthen biodiversity. Pollination is one of four key areas. The project is national, divided into four regional initiatives (Jordbruksverket 2013).
- The Swedish Environment Protection Agency SEPA launched a communications campaign on ecosystem services, including sub-initiatives focusing on pollinators, in 2014. As part of this work, SEPA established a network (including local and regional policy makers, etc.) for knowledge and experience-exchange on the values of ecosystem services. The work was concluded and reported in 2017, but the network has continued.
- Goodla information project, run by SLU in collaboration with LRF, targets young and aspiring farmers, offering free video- and printed material to raise awareness on issues related to food and environment. One of the five main project themes is farmland biodiversity. The project is funded by Formas (SEPA, 2018b).

EDUCATIONAL CAMPAIGNS AND MATERIALS ON WILD POLLINATORS

The Swedish Society for Nature Conservation (SSNC) has run a campaign in Swedish schools aiming, for instance, to increase children's understanding of the links between the foods we eat, and the environmental challenges posed by agriculture. The campaigned focused on the value of wild pollinators, to increase the knowledge of their existence, the threats facing wild pollinators and what individuals can do to support them. The project was supported by the Allba Foundation (SEPA, 2018b).

CITIZEN ENGAGEMENT CAMPAIGNS

- **The Swedish Society for Nature Conservation (SSNC)** produced and sent out information material to the public on how and why citizens can and should help wild pollinators, including instructions for how to construct "bee hotels", planting of certain flowering plants, etc. The campaign was/is funded by the SSNC members and the public can donate specifically to this initiative (SEPA, 2018b).
- **WWF** conducts communication campaigns in Sweden on the values of wild pollinators, including what individuals can do to support them (e.g. Humlesidan). The work is funded by WWF members.
- The monitoring initiative **"Svensk Dagfjärilsövervakning"** is another example (see section 4.2).
- **Buzzing parks and gardens ("Surrande parker och trädgårdar")** is a project initiated by Swedish Bees in collaboration with Swedish Gardens (a gardening network) in 2018. The project aims to raise awareness on pollination (both honey bees and wild pollinators) and to inspire visitors to public gardens to adopt measures to support pollinators in their own gardens. Public gardens from a number of larger Swedish cities are part of the Swedish Gardens network, and also fund its resources (SEPA, 2018b).

PRIVATE SECTOR INITIATIVES FOR WILD POLLINATORS

- **The Pollinate Sweden Network ("Nätverket Pollinera Sverige")**, consisting of about 20 beekeepers, environmental NGOs, private sector, farmers, and others, is a network for cooperation, awareness raising and development of measures to support pollinators. The aim of the network is to raise awareness about the value of pollination, and to try to make sure that producers and institutions that work to support pollinators receive due credit e.g. in terms of increased profitability. In 2017-18, the initiative received funding from the Swedish Board of Agriculture (Government agency) (SEPA, 2018b).
- **Kiviks musteri** (a fruit beverage manufacturer) runs an initiative to support wild pollinators in their orchards (over 30 ha), including leaving a number of dead deciduous trees and piles of branches and planting flowering plants in between fruit trees (SEPA, 2018b).
- **Bees in the City ("Bin i Stan")** is a project run by U&We sustainability consultancy in collaboration with beekeepers and Weibulls company, aiming to engage and educate municipalities, companies and other organisations about pollination in cities. The project focuses on honeybees, but also lifts the importance of supporting wild pollinators (SEPA, 2018b).

APICULTURE SECTOR INITIATIVES FOR WILD POLLINATORS

Farmers and beekeepers sometimes collaborate to ensure there is sufficient flowering plants during the growing season (to support the beekeepers' honeybees and the farmers need for pollination). One common measure is to plant Phacelia in crops. These initiatives can also support wild pollinators by ensuring better continuity in the supply of flowering plants (SEPA 2018a April assessment).

Swedish beekeepers have started the **Swedish Bees Association ("Föreningen Svenska Bin")**, aiming to provide a platform for beekeepers to market Swedish honey and to raise consumer awareness about the role of pollination. Some of the Association's initiatives are aimed at wild pollinators, for instance an information campaign in collaboration with a large Swedish supermarket about how to turn the declining trend of wild pollinator populations. The Association has also produced information material such as the leaflet "Our friends, the pollinators", which contains information about wild pollinators and plants that are good for them (SEPA, 2018b).

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Including Bilaga (Annex) 2 - *Förteckning över åtgärdsprogram som kan vara relevanta för vilda pollinatörer*.

SEPA (2018c) *Pollinatörer och pollinering i Sverige – värden, förutsättningar och påverkansfaktorer*. [*Pollinators and pollination in Sweden - values, conditions and influence factors*] SEPA Rapport 6841, Swedish Environmental Protection Agency (SEPA), Stockholm.

Educational materials

Nature Conservation Society. Skolmaterial om bin at https://www.naturskyddsforeningen.se/skola/bin
Language: Swedish. Education materials for age groups 9, 10-12 and 13-15.

- Övningar och material för åk F-3 (age 9):
  - Min bok om vilda bin
  - Bi-sagan
  - Bi-leken
  - Bin – små flitiga trädgårdsmästare
  - Ritblad med binh
  - Filmen om naturens trädgårdsmästare
- Övningar och material för åk 4-6 (ages 10-12):
  - Tacofredag utan bin?
  - Bygg en biholk
  - Ekomellis - tack för eko-maten!
  - Instruktion: Så kan du hjälpa de vilda bina
  - Instruktion: Vildbihotell i bambu
- Övningar och material för åk 7-9 (ages 13-15):
  - Quiz: testa dina kunskaper om bin!
  - Bin och deras livsmiljö
  - Naturnyttas ordlista