



EU POLLINATORS INITIATIVE

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

PORTUGAL



STRATEGY



Bee strategy (2018-2030)



INITIATIVES



Rural



Urban



Private sector



NATIONAL RED LISTS

Threatened species



RAISING AWARENESS



Citizens



Schools children



Farmers & beekeepers

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Portugal has no national or local plan or strategy for the protection of wild pollinators. The national apiculture programme (Programa Apícola Nacional 2017-2019) does not include any measures for wild pollinators.

Pollinator research is increasing in Portugal, particularly in the field of taxonomy, following the actions linked with the publication of the first Invertebrate Red Data Book for mainland Portugal, which is focused on terrestrial and freshwater invertebrates for mainland Portugal. No specific training actions for pollinator taxonomy are known other than general academic training. Some research is being carried out regarding the economic value of pollination services to agriculture, but the causes of pollinator decline are poorly studied.

There are no specific plans for the protection of wild pollinator species or their habitats. No specific initiatives were found to prevent the decline of wild pollinators. However, some projects on farms that promote autochthonous vegetation in green corridors and other green infrastructure are currently taking place.

The NGO Quercus has engaged in public awareness on pollinators for the last four years. In addition, several initiatives engage in awareness raising activities that include pollinators.

Information from Madeira and the Azores was included as far as was possible in the scope of this project, but the fiche is mainly focused on Portugal mainland.



STRATEGIES FOR WILD POLLINATORS OR ANY OTHER SIMILAR PLANS

There is no national, regional or local strategy for the conservation of wild pollinators in Portugal.

According to [ICNF](#) (Instituto para a Conservação das Florestas e Natureza), the responsible governmental body for nature and forest policies, such a strategy is desirable and the institution is well aware of the seriousness of wild pollinators decline. The implementation of a national strategy will depend on coordination with other government sectors, such as the agricultural sector, and the availability of resources, including sufficiently qualified human resources.

There is a national plan for honeybees: the [Programa Apícola Nacional 2017-2019](#) (National Apiculture Program). However, this plan does not include measures to prevent unintended negative impacts on wild pollinators such as competition for floral resources and possible transmission of pathogens.



IMPROVING KNOWLEDGE OF POLLINATOR DECLINE, ITS CAUSES AND CONSEQUENCES

RED LISTS ON POLLINATORS AND DATA ON POLLINATOR POPULATIONS

The collection of information for the Invertebrate Red Data Book recently began in Portugal, in a project managed by the Ministry of Environment and funded through the [Fundo Ambiental](#) and the EU Cohesion Fund¹. It is focused on terrestrial and freshwater invertebrates for mainland Portugal. The data to be collected include all main pollinator groups. The risk of extinction will be evaluated according to IUCN criteria. The project started in June 2018 and it is planned to run until August 2021. A total of 12 surveys are planned at 200 sampling points in the 61 Sites of Community Importance of the Natura 2000 network. The surveys will have the duration of seven days, taking place twice a month.

¹ Operational Programme for Sustainability and Efficient Use of Resources (POSEUR)

The general public can join six of these [scientific surveys](#) as a strategy to promote environmental awareness. The information will be published on a [website](#).

In 2018, a list of records was published of 680 bee species from mainland Portugal, adding over 300 species to previous records (Baldock et al 2018). Five species appear to be endemic to Portugal. The study highlights that more studies should be done, especially in the north of the country, and estimates that the total number of bee species in Portugal could be as high as 700.

A list of the terrestrial and marine biota from the Madeira and the Azores archipelagos was published in 2008 (Borges et al 2008) and in 2010 (Borges et al 2010), respectively. Both include the classification used for most arthropod groups according to [Fauna Europaea](#), with the distribution of all species and subspecies in the islands and the colonization status of each species. Additional taxonomic effort is needed to provide a reliable estimation of arthropod biodiversity in the archipelagos of Madeira and Selvagens. Information on the distribution and taxonomy of all terrestrial species listed are available online in the [Azorean Biodiversity Portal](#) hosted by the University of Azores. For many species, this website provides photos and systematic information, and offers a platform for biogeographical and macroecological research on islands.

A Masters thesis (Rocha 2017) documented 66 species of wild bees found in an urbanized green space (Tapada da Ajuda) in the municipality of Lisbon.

POLLINATOR MONITORING SCHEMES

According to ICNF, there is no governmental wild pollinators monitoring scheme. However, a monitoring scheme is planned to be developed after the publication of the Invertebrate *Red Data Book*.

[TAGIS - Centre for the Conservation of Portuguese Butterflies](#) have a good centralized database of butterfly data. There is some indication that grassland species are in decline (Agência Lusa 2019). A monitoring scheme plan for diurnal butterflies is being prepared. This work is supported by the European project [ABLE - Assessing Butterflies in Europe](#). The project will collect data in a standardized way into the [European Butterfly Monitoring Scheme](#) (eBMS) database (Silva 2019).

Four major open platforms connect the public and the scientific community on the promotion and study of biodiversity:

- [Naturdata](#). This is a web-based project established in 2009 to develop a free, open access database concerning Portuguese biodiversity. It aims to collect information about taxonomy, ecology, morphology and distribution of all species in Portugal. It is the biggest database in Portugal on this subject and it is an independent project. It works in close partnership with many national and international organizations and individual universities and institutes. It is possible for the public to share pictures on the website and exchange information in an online forum.
- [BioDiversity4All](#). With the mission to catalogue the Portuguese biodiversity and raise public awareness on the subject, the website enables anyone to register sightings of any species within the Portuguese territory, thereby educating and raising awareness to biodiversity. It has more than 1,400 users and partners in Portugal.

- [Portuguese Node of GBIF](#). Hosted by the [ISA - Instituto Superior de Agronomia](#) (School of Agronomy) since September 2015, it promotes the participation of national institutions in the network to ensure that data is globally and freely available worldwide on the GBIF infrastructure. Since 2016 the Portuguese node is in charge of the portal [Biodiversity Data Portal of Portugal](#), providing free information on biodiversity from national and foreign institutions that publish occurrence data through GBIF.
- [Portal da Biodiversidade dos Açores](#) (Azorean Biodiversity Portal). This is a regional e-infrastructure hosted by the University of Azores and provides a large number of specialized services supporting research, policy and education. It relies on a comprehensive literature survey as well as unpublished records from recent field surveys in the Azores. The public can participate by sending pictures on species to the scientific committee.

RESEARCH INITIATIVES

There is not much research on threats to wild pollinators taking place in Portugal - a key knowledge gap is impacts from habitat loss and fragmentation as well as impacts from pesticides and parasites.

The Competence Centre for Beekeeping and Biodiversity ([Centro de Competências da Apicultura e Biodiversidade](#)) research programme includes research on the ecosystem services of pollination and pest control. The research combines landscape ecological scenarios on a regional scale with population models of focal species of pollinators and other beneficial arthropods to enable better management of these ecosystem services and better understanding of the impacts of stressors. It also investigates the environmental impacts of beekeeping.

The following EU funded research projects focus on pollination services for agriculture:

- **Project [POLL-OLE-GI](#) - Pollinator Protection and Ecosystem Services in the SUDOE Region: the role of Green Infrastructure in the Sustainability of Oleaginous Agroecosystems**
 The project, still in progress, (2016-2019), aims to analyse the current status of pollination services and strengthen the abundance and biodiversity of pollinators and the pollination ecosystem service in the most important oleaginous crops of the European SUDOE region. It evaluates the implementation of natural and semi-natural green infrastructures in agricultural fields, with adapted vegetation, who act like islands for refuge and source of resources. The area includes Southern France, Spain, and Portugal. The project aims to increase pollinators diversity and increase sunflower crop productivity.
 Portuguese partner: [CFE - Centro de Ecologia Funcional](#) (*Centre for Functional Ecology* - Department of Life Sciences, University of *Coimbra*).
 Funding: INTERREG-SUDOE program.
- **Project [PoliMax](#) - Promoting and increasing the efficiency of insect pollination in apple, pear and cherry trees**
 This project intends to analyse the effect of different densities and population of pollinators in the production of some fruit species and to evaluate this production. It also intends to study strategies, like green infrastructures, to promote pollinators biodiversity. It intends to raise awareness amongst farmers about agricultural practices that support pollinators and to show the advantage of natural pollination for fruit quality. By the end of the project it is planned to publish a guide with

the best practices for conservation of pollinator's biodiversity aiming to increase natural pollination.

Promoter: [COTHN - Centro Operacional e Tecnológico Hortofrutícola Nacional](#)

Funding: Rural Development Programme 2014-2020.

[ICAAM - Instituto de Ciências Agrárias e Ambientais Mediterrânicas](#) (Institute of Mediterranean Agricultural and Environmental Sciences) is currently studying the impacts of forest fires on pollination networks in Mediterranean habitats.

One research project studies the impact of bumblebees introduced for crop pollination in greenhouse farming, particularly the threat of hybridization for local wild pollinators:

- **Genomic signatures of introgression between commercial and native bumblebees, *Bombus terrestris*, in western Iberian Peninsula - implications for conservation and trade regulation** (Seabra et al 2018)

In Portugal, like in other parts of the world, bumblebees have been introduced for crop pollination. The foreign origin of commercial bumblebees used in Portugal (subspecies *Bombus terrestris terrestris* and *Bombus terrestris dalmatinus*) in greenhouse farming have a negative impacts on native pollinators such as Iberian subspecies *Bombus terrestris lusitanicus*. The study (Seabra et al 2018) detected potential hybrids in the wild near the greenhouses, as well escaped commercial bumblebees, some of which were potentially fertile males. Although there are recommendations for farmers to the properly dispose of hive boxes after their use in greenhouses, there is evidence that shows that this is not done correctly. Campaigns and strategies on this specific issue should be implemented.

Promoter: [cE3c - Centro de Ecologia, Evolução e Alterações Ambientais](#) (Centre for Ecology, Evolution and Environmental Changes - Science Faculty of Lisbon University)

Funding: The financial support for this project was granted by [FCT/MCTES - Fundação para a Ciência e a Tecnologia](#) (Foundation for Science and Technology, Ministry of Education and Science) through national funds.

The project [GESVESPA](#) funded by the EU Cohesion Fund² is carrying out research identified in the Action Plan for the Surveillance and Control of the Asian Hornet (*Vespa velutina*) in Portugal. The project consortium led by INIAV includes institutions from the regional System of Incentives for Research and Technological Development (IPB, IPVC e UTAD), the Intermunicipal Communities (Alto Minho, Ave, Cávado e Tâmega e Sousa), the National Beekeeping Federation of Portugal (FNAP), and DGAV.

TAXONOMICAL EXPERTS ON POLLINATORS

Portugal has very few taxonomy specialists for wild pollinators. Despite this fact, much work has been done in this field and new species have been discovered recently. A very relevant work was done in the archipelago of the Azores. The publication of the first Invertebrate *Red Data Book*, in which the SPEN - Portuguese Entomological Society is playing an important role, will add useful information that

² Operational Programme for Sustainability and Efficient Use of Resources (POSEUR)

the scientific community can use in this area. No specific training actions for pollinator taxonomy are known other than general academic training.

Experts at the University of Lisbon:

Centro de Estudos Florestais [research group ForBio](#) – Professor José Carlos Franco

[Group III - Plant Science and Crop Production](#) - Professor Elisabete Figueiredo



INITIATIVES TACKLING THE CAUSES OF POLLINATOR DECLINE

ACTION PLANS ON SPECIES AND HABITATS

There are no specific plans for the protection of wild pollinator species or their habitats.

Management plans are currently being prepared for 19 Sites of Community Importance in the Natura 2000 network and another 40 are being approved. Many of these sites include wild pollinator habitats, but the plans do not address wild pollinator conservation directly.

FARMER AND LANDSCAPE INITIATIVES, AS WELL AS LOCAL LEVEL STRATEGIES

The [PDR2020 Plano de Desenvolvimento Rural - Medidas Agroambientais](#) (Agri-environment programme) does not include specific measures addressed at wild pollinators. Several of the funded measures are likely to benefit wild pollinators on farmland, such as support for organic farming, mosaic landscapes with traditional mixed farming, and montado agroforestry areas. Farmers in the agri-environment programme must attend compulsory training, which is particularly important as 90% of farmers in Portugal have no agricultural training, and 74% have no secondary schooling (Alliance Environnement 2019).

The project [Biodiversidade na Agricultura](#) (Biodiversity in Agriculture) aims to evaluate the suitability and impacts of measures to increase biodiversity in agricultural holdings, including butterflies (but not wild bees)³. It is promoted by the [CAP - Confederação dos Agricultores de Portugal](#) (Confederation of Farmers of Portugal), [DGADR - Direção-Geral de Agricultura e do Desenvolvimento Rural](#) (Directorate-

³ Global report - biodiversity in agriculture [link](#)

General for Agriculture and Rural Development), and the environmental NGO [LPN - Liga para a Protecção da Natureza](#).

It was not possible to identify any other targeted initiatives for wild pollinators on farmland. Some projects on farms are developing organic agriculture, restore native vegetation in green corridors and other green infrastructure, and promote beekeeping, but none of the initiatives are aimed at pollinators and they do not measure any impact on pollinators.

MEASURES ON PESTICIDES

The Portuguese [National Action Plan for the Sustainable Use of Pesticides](#) (2018-2023) includes an objective to promote the adoption of agricultural and forestry practices that protect biodiversity and auxiliary organisms, including pollinators, and monitor the effects of plant protection products on, and the risks of such products to, these organisms. Implementing bodies are DGAV, DRAP, ANIPLA, GROQUIFAR, DGADR, ICNF; APG, Beekeeping federations, farmers' and forestry producers' organisations. Planned actions include:

- awareness raising of the risks posed by PPP to bees and other pollinators and of the measures to mitigate such risks on agricultural and forestry holdings and in recreational areas,
- proposal for the adoption (in cross-compliance checks) of indicators of pesticide use in relation to the legal requirements on managing biodiversity.

Indicators of success include:

- Proportion of pesticides hazardous to bees (compared to total number of pesticides in the market)
- Number of recorded pesticide poisonings of honeybees
- Pesticide residues detected in honey

The cities of Estrela and Fornelos are pesticide-free in public areas, and Cascais has banned the use of glyphosate in public spaces.



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

TRAINING AND AWARENESS RAISING CAMPAIGNS

Campanha pelos Polinizadores (Pollinators Campaign)

This campaign is promoted by the environmental NGO [Quercus](#). Since 2015 this NGO has given numerous talks on pollinators to farmers and local communities and published information materials on the importance of pollinators. It has also engaged in raising awareness among politicians and decision makers about pollinators. In 2019 talks focused on [traditional apiculture](#), particularly aimed to those who want to develop small-scale beekeeping. The campaign is made in partnership with [Jerónimo Martins](#), a Portugal based international company specialized in food distribution and the retail sector.

One third of the municipal area of **Cascais** lies within the Sintra Natural Park, which forms part of the NATURA 2000 network. The municipality leads a series of nature conservation and awareness-raising activities, such as butterfly monitoring programmes, nature hikes and visits to local beekeepers (Wilk et al. 2019).

EDUCATIONAL CAMPAIGNS AND MATERIALS ON WILD POLLINATORS

The Portuguese [Ministério do Ambiente e da Transição Energética](#) (Ministry of the Environment and Energy Transition) supports environmental education projects through the [Fundo Ambiental](#) (Environmental Fund). However, no specific environmental education projects for wild pollinators were funded.

- [Insectos na Ordem](#). This initiative was started in Lisbon in 2010 at [MUHNAC](#) (National Museum of Natural History and Science), and it is promoted by TAGIS. It was one of the initiatives selected by the Ministry of Education and Science to integrate the program [O Mundo na Escola](#) (The World in the School) aiming to bring science closer to schools. In order to achieve this objective, the initial exhibition was adapted to travel throughout the country. [Educational games](#) were also produced. The crucial ecological role that pollinators play is highlighted as well as the threats related to the decline of their abundance. The itinerant exhibitions on the schools are funded by the national programme [Ciência Viva](#) (Living Science programme) and FCT/MCTES.
- The city of Cascais has an ongoing Environmental Education Plan, focusing on pollinators. Led by Cascais Ambiente in collaboration with the [Cascais Butterfly Zoo](#) in Quinta de Rana Urban Park, biologists visit schools to deliver lectures. School groups can visit the Butterfly Zoo and are assisted in the building and maintenance of insect nesting aids (bee hotels). The children are introduced to concepts of monitoring by analysing the abundance and diversity of the insects. The city plans to expand the initiative to urban parks (Wilk et al. 2019). The city published a book about the butterflies of Cascais ([Borboletas de Cascais](#)) in 2011.

CITIZEN ENGAGEMENT CAMPAIGNS

There are no specific citizen engagement campaigns on wild pollinators at the national level (see monitoring section for broader initiatives). One project is engaging citizens in data collection at one site:

- [EBIO - Estações da Biodiversidade](#) (Biodiversity Stations)
Also promoted by TAGIS, this project raises awareness about the importance of pollinators (among other species), allowing the public to participate in their identification and sharing the data with scientists. The project consists of a network of walking trails. Any person can visit an EBIO Biodiversity Station and actively participate and share their data on the [website](#). The EBIO network began with a TAGIS project funded by [EEA Grants](#). Other entities responsible for the stations are MUHNAC and cE3c. Most of the network was funded by local municipalities and the project aims to be expanded in Portugal.

The [Action Plan for the Surveillance and Control of *Vespa velutina*](#) in Portugal was launched in 2018. It aims to control the Asian Hornet (*Vespa velutina nigrithorax*) through a number of measures such as surveillance, capture of individuals, nests destruction and interaction with civil society using a [website platform](#).

PRIVATE SECTOR INITIATIVES FOR WILD POLLINATORS

[Jerónimo Martins](#), a Portugal based international company specialized in food distribution and the retail sector, is partnering with the NGO Quercus in the pollinators campaign (see above).

APICULTURE SECTOR INITIATIVES FOR WILD POLLINATORS

The National Beekeeping Federation of Portugal (Federação Nacional de Apicultores de Portugal FNAP), Asociación de Apicultores de Gipuzkoa, and Asociación de Apicultores de Vizkaia are partners in a project to engage the Portuguese beekeeping sector in a campaign to control the invasive alien species Asian Hornet, which is a major predator of honeybees and other social bees. The EU Interreg-funded project POSITIVE '[Conservation of Atlantic pollination services and control of the invasive species *Vespa velutina*](#)' is led by the Fundación Centro de Estudos Eurorexionais Galicia - Norte de Portugal and started in 2019. (See also FNAP involvement in the project GESVESPA listed above).

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Educational materials

[Borboletas de Cascais](#) by João Pedro Cardoso: book focuses on the importance of butterflies as indicators of environmental quality, as well as identifying areas of occurrence, distribution, and monitoring techniques.