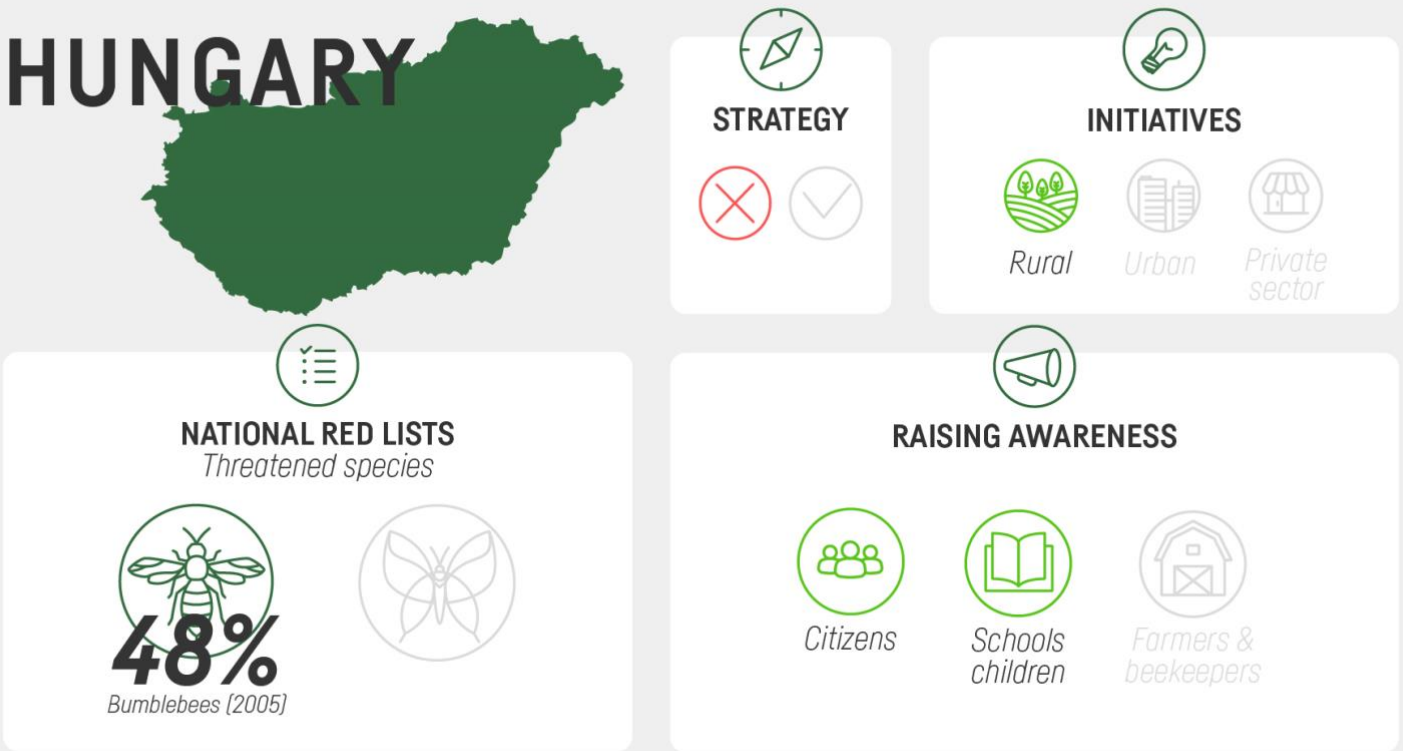
EU POLLINATORS INITIATIVE

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



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There are no national or regional strategies for wild pollinators in Hungary.

However, several of the objectives in the 4th National Nature Conservation Basic Plan are relevant to pollinators, as well as in the National Strategy for the Conservation of Biodiversity that sets out the framework for nature conservation and biodiversity protection in the period of 2015-2020.

No formal red lists of pollinators have been established. A threat assessment of bumble bees was carried out in the mid-2000s. Existing monitoring schemes focus on butterfly species. The recent establishment of the butterfly monitoring scheme is a major step forward both in terms of the methodological approach followed as well as the involvement of volunteers. A research group at the MTA Ökológiai Kutatóközpont has carried out many years of research on the impacts of agricultural land use and practices on wild pollinators.

The Rural Development Programme supports the establishment of a multi-annual crop culture that provides flower rich patches for foraging wild bees over several years. There are also agri-environment options targeted at high nature value grassland with butterflies of conservation interest.

A limited number of relevant civil society initiatives were identified, mostly organized for the nationally established Pollinators' day on 10th March 2018 and 10th March 2019.

STRATEGIES FOR WILD POLLINATORS OR ANY OTHER SIMILAR PLANS

There are currently no national or regional strategies for wild pollinators in Hungary. At the time of writing, no evidence indicating that such strategy is being prepared or will be prepared soon was found. There are however a few relevant initiatives going on, in particular the national project to map and assess ecosystem services including crop pollination ('NÖSZTÉP: Nemzeti ökoszisztéma szolgáltatás-térképezés és értékelés' - National mapping and evaluation of ecosystem services), which might help generate relevant information to move towards a more strategical approach to protecting wild pollinators.

The 4th National Nature Conservation Basic Plan 2015-2020 (developed in response to the requirements set out in Act No. LIII. of 1996 on Nature Conservation) and the National Strategy for the Conservation of Biodiversity in 2015-2020 (pursuant to the provisions of the UN Convention of Biological Diversity) include relevant objectives without focusing specifically on (wild) pollinators. Objectives/intervention areas with likely impact on pollinators include among others the following:

- Maintaining and restoring landscape diversity, green infrastructure, and ecosystem services
- Increasing the role of agriculture in the conservation of biodiversity
- Species protection and management

IMPROVING KNOWLEDGE OF POLLINATOR DECLINE, ITS CAUSES AND CONSEQUENCES

RED LISTS ON POLLINATORS AND DATA ON POLLINATOR POPULATIONS

No formal red lists have been published on the main pollinator groups, but the publication on bumblebees by Miklós Sárospataki and his colleagues can be considered as a red list. Miklós Sárospataki and his colleagues assessed the threat status of bumblebee species in Hungary

approximately 15 years ago (Sárospataki et al 2005). Of the 25 species, 12 (48%) were assessed as threatened (seven as critically endangered, three as endangered and two as vulnerable). In addition, 10 had a negative population trend. The assessment was based on bumblebee distributional data collected from private and public collections as well as from (mostly Hungarian) scientific literature (Sárospataki et al 2003). Distributional data was also collected for Megachilidae species but without making any follow-up assessments concerning their threatened status. These databases have not been updated in the past 10-15 years mainly because of the lack of financial resources.

There are a number of wild pollinators on the list of protected and highly protected species in Hungary, mainly species of the Hymenoptera and Lepidoptera groups. The full list is annexed to the Ministerial Decree of 13/2001 on protected species. The most recent update of this list relevant to wild pollinators happened in 2015 during which two species were moved to the highly protected category. The list is re-assessed every 5 to 10 years and changes are made based on expert suggestions, new research findings or other reasons such as accession of a new EU Member State. There are currently 283 butterfly species on the list (255 protected and 28 highly protected). It should be noted that 11 bumblebee species were added to the list of protected and highly protected species based on the information published by Miklós Sárospataki and his colleagues.

A checklist of Hungarian Sphecidae and Apidae species was published in 2011 (Józan, 2011).

POLLINATOR MONITORING SCHEMES

The national biodiversity monitoring scheme (NBMS) covers a few daytime butterflies and wild bees, but according to experts it does not provide comprehensive information about wild pollinators. Diurnal butterflies linked to wet habitats have been covered by the scheme since 2002. There are currently 10 species being monitored annually in 38 locations throughout the country. The population-level surveys are carried out in protected areas (used as control sites), and also sites in non-protected areas. Thus, environmental impacts can be detected. Some of the methods used (e.g. triple catch for Maculineas) are considered outdated and ineffective by experts (Szabadfalvi, unknown)

A dedicated **butterfly monitoring scheme** (BMS) has also been in place since 2016, which follows the methodology of Butterfly Conservation Europe. There are currently approximately 20 transects in the country that are monitored on a weekly basis during the season. The BMS relies on volunteers (e.g. doing transects in the vicinity of their home) but national partners are also involved (e.g. each running (at least) 1 transect in a site of particular interest or high environmental value). Since 2016 the number of transects has been increasing and the BMS is now part of the Hungarian Lepidopterists Society. In 2017, they started to transfer the data to an open and free biological database service ('OpenBioMaps') and it is also foreseen to share the data with the European butterfly monitoring network so it can be considered when calculating the butterfly index.

Additional monitoring and surveys:

- Monitoring of around 15 butterfly species listed in the Habitats Directive annexes (and not covered by the BMS). This is primarily collection occurrence records (e.g. presence-absence) but in some cases abundance data are also collected.

- Vadonleső program [~wild watch programme]: google map-based monitoring programme for citizens to help monitor easily recognisable species. As of 2019, three Lepidoptera species are covered in the programme; i.e. *Zerynthia polyxena*, *Euplagia quadripunctaria* and *Aglais io*.
- Between 1998 and 2004, bumble bees and other bee species were assessed in heath (*Luzulo Callunetum*) vegetation in two locations using traps. This initiative was discontinued because of financial reasons.

A long-term macro-moth monitoring series in forests and forest margins demonstrates a dramatic decline in species richness – the data show a loss of around 20 macro-moth species per decade from the 1960s to 2009 (Valtonen et al 2017).

RESEARCH INITIATIVES

The national project to map and assess ecosystem services (NÖSZTÉP), including crop pollination, is still ongoing as part of a larger EU-funded project coordinated by the Ministry of Agriculture. Both the supply (potential) of and demand for pollination services are being estimated and mapped on a 20x20-meter grid. This information will then be used to assess what extent pollination contributes to human well-being. The methodology applied has been calibrated to wild solitary bees and it does not allow to estimate the absolute number of pollinators but only their relative distributions. Currently this is foreseen as a one-time exercise, but the method can be replicated any time in the future.

Research carried out on pollinators is carried out by:

MTA Ökológiai Kutatóközpont – research group of Anikó Kovács-Hostyánszki, Péter Batáry, András Báldi, for example:

- bee communities of Hungarian winter cereal fields (Kovács-Hostyánszki et al. 2011)
- conservation management of bees and insect-pollinated grassland plant communities (Batáry et al. 2010)
- relationship between set-aside and insect and plant diversity in Hungary (Kovács-Hostyánszki et al. 2011)
- benefits of low input farming on biodiversity and ecosystem services at the whole farm scale (Kovács-Hostyánszki et al. 2013)
- relationships between wild bees, hoverflies and pollination success in apple orchards (Földesi et al 2016)
- effects of climate induced phenological shift of apple trees on pollinators, herbivores and natural enemies (Körösi et al. 2018)

One interviewee mentioned that competition for public research funding in general is extremely high with the field of pollinators research not being an exception.

TAXONOMICAL EXPERTS ON POLLINATORS

See above.

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

The Hungarian Rural Development Programme 2014-2020 supports pollinators in several ways:

- The non-productive investments measure provides support for habitat development: establishment of bee-pastures on arable land. This scheme supports the establishment of a multi-annual crop culture consisting of a minimum of eight species and established with an adequate mixture of species, in order to provide food for pollinating insects over a long period.
- The agri-environment-climate programme includes an option for butterfly protection in high nature value (HNV) areas. Support can be obtained for various management actions, including creation of a 6-metre wide unmown areas around fields.

A National Park is leading an initiative:

- Hortobágy National Park Directorate has established an informal cooperation with farmers aimed at protection of two pollinator species. If *Zygena laeta* or *Bombus fragrans* individuals are found on their land, the NP Directorate provides advice to farmers concerning appropriate management practices.

MEASURES ON PESTICIDES

None identified.

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

TRAINING AND AWARENESS RAISING CAMPAIGNS

The following actions have been launched:

- Pollinators' day: launched on 10th March 2018 and expanded in March 2019. This is a civil initiative launched and organised by two individuals and supported by several organisations including the Hungarian ornithological and nature conservation society and the Ministry of Agriculture. It aims to raise citizens awareness of pollinators.
- Butterfly adventures in the Őrség National Park, an event organised annually aiming to raise awareness about butterflies.

EDUCATIONAL CAMPAIGNS AND MATERIALS ON WILD POLLINATORS

A brochure 'Pollinators in our garden' was published and promoted by MTA Ökológiai Kutatóközpont in 2018. It aims to raise awareness about the importance of pollinators and promote actions among citizens and schools.

CITIZEN ENGAGEMENT CAMPAIGNS

In the context of the national butterfly monitoring scheme, continuous efforts are made to involve more volunteers, through social media, publication of leaflets etc. However, interviewees noted as a general remark that public involvement might be more difficult when it comes to insect monitoring as those species are in general more difficult to define (compared to bugs and butterflies, for example).

PRIVATE SECTOR INITIATIVES FOR WILD POLLINATORS

None identified.

APICULTURE SECTOR INITIATIVES FOR WILD POLLINATORS

None identified.

REFERENCES

Batáry et al. (2010) Effect of conservation management on bees and insect-pollinated grassland plant communities in three European countries. *Agriculture, Ecosystems & Environment* 136, Issues 1–2, 35-39 https://www.sciencedirect.com/science/article/pii/S0167880909003351

Földesi, R, Kovács-Hostyánszki, A, Kőrösi, A, Somay, L, Elek, Z, Markó, V, Sárospataki, M, Bakos, R, Varga, Á, Nyisztor, K, Báldi, A (2016) Relationships between wild bees, hoverflies and pollination success in apple orchards with different landscape contexts. Agricultural & Forest Entomology 18(1): 68-75 https://onlinelibrary.wiley.com/doi/10.1111/afe.12135

Gergely P, Gór Á, Hudák T, Ilonczai Z, Szombathelyi E (2017) Nappali lepkéink — Határozó terepre és természetfotókhoz / A Field Guide to the Butterflies of Hungary. Kitaibel Kiadó, Biatorbágy

Józan, Zs. (2011) Checklist of Hungarian Sphecidae and Apidae species (Hymenoptera, Sphecidae and Apidae). *Natura Somogyiensis* 19: 177-200. http://smmi.hu/termtud/ns/ns19/177-200.small.pdf

Kőrösi, Á, Markó, V, Kovács-Hostyánszki, A, László Somay, Ákos Varga, Zoltán Elek, Virginie Boreux, Alexandra-Maria Klein, Rita Földesi, András Báldi (2018) Climate-induced phenological shift of apple trees has diverse effects on pollinators, herbivores and natural enemies. PeerJ 6:e5269 https://doi.org/10.7717/peerj.5269

Kovács-Hostyánszki, A., Batáry, P. Báldi. A. (2011) Local and landscape effects on bee communities of Hungarian winter cereal fields. *Agricultural and Forest Entomology* 13(1): 59-66 https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1461-9563.2010.00498.x

Kovács-Hostyánszki, A., Kőrösi, Á, Orci, K M, Batáry, P. Báldi. A. (2011) Set-aside promotes insect and plant diversity in a Central European country. *Agriculture, Ecosystems & Environment* 141(3–4), 296-301 https://www.sciencedirect.com/science/article/pii/S0167880911000880

Kovács-Hostyánszki et al. (2013) Earthworms, spiders and bees as indicators of habitat quality and management in a low-input farming region—A whole farm approach. Ecological Indicators 33, 111-120 https://www.sciencedirect.com/science/article/pii/S1470160X13000654

MTA Ökológiai Kutatóközpont (2018) Pollinators in our garden. https://www.okologia.mta.hu/sites/default/files/Beporzok_a_kertunkben_online_verzio.pdf

Sárospataki, M, Novák, J, Molnár, V (2005) Assessing the Threatened Status of Bumble Bee Species (Hymenoptera: Apidae) in Hungary, Central Europe. *Biodiversity and Conservation* 14(10):2437-2446.

Sárospataki, M, Novák, J, Molnár, V (2003) Hazai poszméh- és álposzméhfajok (Hymenoptera: Apidae, Bombus és Psithyrus) UTM-térképezése és az adatok természetvédelmi felhasználhatósága (UTM mapping of *Bombus* and *Psithyrus* species). ÁLLATTANI KÖZLEMÉNYEK 88(1): 85–108. http://www.mbt-biologia.hu/gen/pro/mod/let/let_fajl_megnyitas.php?i_faj_azo=188

Valtonen, A et al (2017) Long-term species loss and homogenization of moth communities in Central Europe. *Journal of Animal Ecology* No 86 (4), 730-738. https://doi.org/10.1111/1365-2656.12687

Varga Z (2012) Magyarország Nagylepkéi /the Macrolepidoptera of Hungary, 2nd edn. Heterocera Press, Budapest.

Educational materials

None identified.