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FACTSHEET

Pollination

In a nutshell

About 80% of the world's species of food plants relies on pollinators for reproduction, mainly by insects and birds.

1. Role for human well-being

Pollination by animals is essential for the growth of a large number of fruits, vegetables and seeds. Pollinator species are mainly insects but also include birds, bats and other animals. A study by Klein et al. 2007 shows that some 87 out of the 115 leading global food crops depend upon animal pollination, including important cash crops such as cocoa and coffee. Without pollinators, many of these crops can only be produced with human help via hand pollination.

2. Typical threats

Interaction between human activities and pollinators are difficult to assess and to understand. In many regions a lack of adequate data on the abundance and diversity of pollinators leads to population losses (up to 50%) before evidence to indicate a decline becomes available. However, there is a consensus that land use changes are a major threat, as they lead to (semi-) natural habitat destruction and reduced habitat diversity (e.g. monocultures). A major driver is increasing (industrial) agricultural intensification, which is causing pressure on wild pollinators. Large-scale pesticide input and the introduction of invasive species and pathogens can impact negatively on pollinator species. Other threats are environmental pollution in general and changing environmental conditions caused by climate change. Honeybees – which are not only an important pollinator but also an indicator species – are in an alarming state of decline. UNEP (2010) reports that especially in regions with high agricultural production, such as North America and Europe, but also in China and Egypt, beekeepers have faced inexplicable colony losses.

3. Example indicators

- To better understand the condition of pollinator species their abundance (individual or population/ha) in an area can be assessed. Mean species abundance is an indicator of naturalness or biodiversity intactness. It is defined as the mean abundance of original species relative to their abundance in undisturbed ecosystems.
- Changes in habitat quality can be indicated by changes in area cultivated crop species (field crop/ha) and density or changes in land use or land cover type around areas in agricultural use.
- Human dependence on crops pollinated by animals in an area can be assessed in surveys. This indicates the socio-economic importance of the pollination service.
- Indicators such as the following can be measured in order to understand pollination capacity: the number of species needed to be pollinated by animals (field crop/ha), the number of pollinator species (species/ha), the number of ecosystems important for pollinators (spatial extension), and days available for flying.
- Agricultural and environmental statistics can be a helpful source of existing indicators relating to the ecosystem service 'pollination'.

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Global sources available for national data:

- The Global Biodiversity Information Facility offers background information on pollinator species. Some countries also have their own biodiversity information facilities e.g. www.tanbif.or.tz/.
- A study by Lauterbach et al. (2012) (free of charge) provides maps on the spatial and temporal trends of global pollination benefits.

4. Example methods

For **assessing the value** of this ecosystem service:

- Factor income
- Cost based methods such as: Avoided damage costs, replacement and restoration costs
- FAO - Guidelines for the economic valuation of pollination services

For **assessing the condition** of this ecosystem service

- InVEST Pollination
- Survey for local assessment of benefits provided by insects
- FAO – Guidelines for rapid assessment of pollinators' status

5. Managing this service

Typical instruments for managing this service include:

Conservation or restoration of habitats for pollinators

- In cities such as New York habitats for native plant and pollinator communities are being restored on green rooftops or in other available spaces. See also the great pollinator project.
- Establishment of green corridors in agricultural and other landscapes.

The FAO offers a host of guidance and case studies on how to manage pollination in relation to agricultural landscapes. The report FAO - Tools for conservation and use of pollination services – Initial survey of good pollination practices, for example, provides instruments and approaches as well as best practice cases such as the following:

- Most farmers in the greater Mwanza area, Tanzania (p. 17 ff.) rely on subsistence farming. Local people's awareness of the importance of pollinators has been raised through governmental and development projects. As a result, practices ranging from protecting alternative nectar sources for pollinators, providing and protecting nesting sites to not using pesticides when pollinators are visiting the crops have been established. The benefits can be seen in better yields and in co-benefits such as biological control and erosion prevention.

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