

Scoping document (accessed 23 September 2016 at <http://www.ipbes.net/work-programme/pollination>)

Deliverable 3(a): Thematic assessment of pollinators, pollination and food production

The scope of this assessment is to cover changes in animal pollination as a regulating ecosystem service that underpins food production and its contribution to gene flows and restoration of ecosystems. It will address the role of native and exotic pollinators, the status of and trends in pollinators and pollination networks and services, drivers of change, impacts on human well-being, food production of pollination declines and deficits and the effectiveness of responses to pollination declines and deficits. The assessment is required for enhancing policy responses to declines and deficits in pollination.

The assessment represents an early IPBES deliverable that aims to identify policy-relevant findings for decision-making in government, the private sector and civil society, as well as helping to demonstrate how an essential ecosystem service contributes to the post-2015 development agenda.

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The scope for the thematic assessment of pollination and pollinators associated with food production was agreed by the Plenary, at its second session in December 2013, together with its decision to launch the undertaking of the assessment.

The assessment scope, entailed also in Annex V to decision IPBES/2/5, is outlined as follows: Initial scoping for the thematic assessment of pollination and pollinators associated with food production

I. Introduction

1. Recognizing that it would be necessary to move forward with the work programme for 2014–2018 following its approval by the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services at its second session, the Bureau and the Multidisciplinary Expert Panel agreed to prepare, for consideration by the Plenary at that session, a number of initial scoping documents based on the prioritization of requests, suggestions and inputs put to the Platform and the deliverables set out in the draft work programme (IPBES/2/2). The present note sets out the initial scoping for the agreed thematic assessment of pollination and food production. It was developed in accordance with the draft procedures for the preparation of the Platform's deliverables (IPBES/2/9, annex), which were subsequently adopted, as amended by the Plenary (see decision IPBES-2/3).

2. II. Scope, rationale, utility and assumptions

A. Scope

2. The objective of the proposed thematic assessment of pollination, pollination networks and pollinators associated with food production is to assess changes in pollination as a regulating ecosystem service of importance for food production in the context of its role in supporting a good quality of life and biodiversity maintenance. The emphasis will be on the role of native and exotic pollinators, the status of and trends in pollinator diversity and the impact of exotic pollinators, pollination systems and population changes, including indigenous and local knowledge perspectives. Furthermore the assessment will encompass drivers of change, impacts on human well-being of pollination declines and deficits, management options to mitigate pollination declines and deficits, the effectiveness of responses to pollination declines and deficits, and effective policy responses to address declines and restore pollination functions as a basis for the provision of food and a good quality of life. The assessment will be conducted in a transparent way and involve relevant stakeholders from the start.

B. Rationale

3. An assessment of the kind proposed is required as a means of facilitating the enhancement of understanding of pollination from a wide range of perspectives, including indigenous and local knowledge systems, focusing on management options and policy responses to declines and deficits in pollination as an essential regulating ecosystem service underpinning food production and human well-being. The worldwide economic value of the pollination service provided by insect pollinators alone – mainly bees – has been estimated at an annual value in 2005 of €153 billion (\$217 billion) for the main crops that feed the world. This amounts to 9.5 per cent of the total value of the world’s agricultural food production.[\[1\]](#) The value of the service provided by pollinators other than bees has not yet been quantified. Although it is not possible to estimate a monetary value, pollination is also very important for the production of local crops and wild foods that are important for indigenous and local communities. Furthermore, honey production by pollinator bees is another source of income and/or nutrition for those communities. There are reported disruptions to pollinator systems and evidence of pollinator declines for every continent with the exception of Antarctica. The consequences of these declines could be reduced crop and wild food yields and/or quality and a parallel decline in natural plant communities.[\[2\]](#)

C. Utility

4. The proposed assessment will take into account all knowledge systems, with the aim of identifying management options and policy-relevant findings for decision-making by Governments, indigenous and local communities, the private sector and civil society in a rapidly changing field and contribute to the implementation of Aichi Biodiversity Target 14 of the Convention on Biological Diversity; demonstrate and allow for the continued review of how an essential and vulnerable ecosystem service contributes to the post-2015 development agenda; and represent an early deliverable of the Platform that highlights how the Platform can contribute to efforts to protect biodiversity and promote sustainable development.

D. Assumptions

5. The proposed assessment will be based on existing scientific literature and indigenous and local knowledge, and draw on the work of existing institutions such as the Food and Agriculture Organization of the United Nations (FAO), through its work on global action on pollination services for sustainable agriculture,[\[3\]](#) the Global Biodiversity Information Facility,[\[4\]](#) the ALARM (“Assessing large-scale risks to biodiversity with tested methods”)[\[5\]](#) the “Status and trends of European pollinators” project,[\[6\]](#) the African Pollinator Initiative,

the Indigenous Peoples' Pollinators Initiative of the Indigenous Partnership for Agrobiodiversity and Food Sovereignty, and the work of the Natural Capital Project,[\[7\]](#) including its InVEST (“Integrated Valuation of Environmental Services and Trade-offs”) modelling software for mapping and valuing ecosystem services, as well as many initiatives at the regional and national levels.

III. Chapter outline

6. It is contemplated that the results of the thematic assessment will be presented in a six-chapter report, as set out below:

7. A summary for policymakers, as set out in the procedures for the preparation of the Platform’s deliverables, will be prepared. The preparation of other possible products, such as technical reports, databases, software and management tools will also be considered.

8. Chapter 1 will include a brief review of the diversity of pollinators and pollination systems and their role in supporting food production specifically and human well-being and biodiversity maintenance more generally. It will assess the status of and trends in the biological elements and functions that interact to provide pollination services. The assessment will include the role of native and exotic pollinators, including insects and other invertebrates, bats and other mammals, birds, reptiles and other vertebrates. It will moreover take into account the role of multiple factors across spatial scales, such as plant community functional composition, pollinator diversity and specificity, climatic seasonality and fluctuations, landscape structure linked to processes of dispersal, and mobility. The assessment will include indigenous and local knowledge perspectives on pollinators and pollination systems and their benefits to those knowledge holders, as well as trade-offs between pollination processes and services and possible connections with disservices.

9. Chapter 2 will assess the drivers of change of pollinators, pollination networks and pollination services, especially those of importance for food production, including local crops, wild food plants and honey. It will include an assessment of indirect drivers of change, including trade and policies in areas such as agriculture and spatial planning. It will also assess direct drivers of change in pollination, including the risk posed by climate change, invasive species and diseases, land-use changes, changing agricultural practices, and the use of chemicals including fungicides and insecticides. The consequences of the cultivation of genetically modified plants for pollinators, pollination networks and pollination services and food production, including honey, will be assessed.

10. Chapter 3 will assess the state of and trends in pollinators, pollination networks and pollination services as keystone ecological processes and services in both human managed and natural terrestrial ecosystems. It will focus on the contribution of pollination by various pollinator populations to human well-being, based on the role of pollination in maintaining agricultural and natural biological diversity and in safeguarding communities that depend for their livelihood security on the use of natural resources, including for medicinal use. Consideration will be given to existing indigenous and local knowledge about pollinators, pollination networks and pollination services and how they contribute to the way of life of indigenous and local communities, and more generally to living in harmony with Mother Earth. Emphasis will be placed on the essential role of pollination in contributing to food security, including with regard to the quality, stability and availability of food as well as its role in income generation from the local to the global scale. The chapter will assess how the pollination deficit can be defined and what areas and agricultural systems are prone to

pollination deficits and declines. It will also include information about the perception of indigenous and local communities about this deficit.

11. Chapter 4 will assess economic methodologies for determining the value of pollination for food production and the economic impacts of declines in food-relevant pollinator populations. It will assess the extent to which the current estimates of the economic value of pollination for food production reflect the contributions of pollination to food security and development as identified in chapter 3. It will also assess methodologies and approaches for undertaking such valuations at the national and local levels.

12. Chapter 5 will assess non-economic valuation, with special emphasis on the experience of indigenous and local communities, of impacts of the decline of diversity and/or populations of pollinators. Management and mitigation options as appropriate to different visions, approaches and knowledge systems will also be assessed.

13. Chapter 6 will assess responses to risks associated with the degradation of pollination services and opportunities to restore and strengthen those services. Experience in the use of tools and methodologies for mapping, modelling and analysing options for action will be assessed based on existing work by actors such as FAO, including by assessing how ecological uncertainties can be managed and research and monitoring needs met. The existing experiences recorded by other knowledge systems will be incorporated into this chapter, contributing to the identification of management and policy options. The chapter will furthermore assess how an understanding of pollination declines and deficits can help advance practices and policies, particularly for land-use management, horticulture and agriculture, including through innovative approaches such as ecologically intensified agriculture as well as those used by indigenous and local communities. The assessment of response options will include considerations of policy trade-offs.

[1] Helmholtz Association of German Research Centres, “Economic value of insect pollination worldwide estimated at US\$217 billion”, *ScienceDaily*, 15 September 2008. Available at www.sciencedaily.com/releases/2008/09/0809152122725.htm.

[2] Ngo, H. T., Gemmill-Herren, B., Azzu, N. and Packer, L., “The economic valuation of pollinators for Southeast Asia: Philippines and Viet Nam”, (Govind Ballabh Pant Institute of Himalayan Environment and Development and Food and Agriculture Organization of the United Nations, 2012).

[3] Bernard Vaissière, Breno Freitas and Barbara Gemmill-Herren, *Protocol to Detect and Assess Pollination Deficits in Crops: A Handbook for its Use* (Food and Agriculture Organization of the United Nations, 2011).

[4] The Global Biodiversity Information Facility provides access to over 300 million standardized primary biodiversity records globally.

[5] http://www.reading.ac.uk/caer/project_alarm.html.

[6] <http://www.step-project.net>.

[7] <http://www.naturalcapitalproject.org>.