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A multilevel analysis on pollination-related policies

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ABSTRACT

The paper explores pollination from a multilevel policy perspective and analyses the institutional fit and interplay of multi-faceted pollination-related policies. First, it asks what the major policies are that frame pollination at the EU level. Second, it explores the relationship between the EU policies and localised ways of understanding pollination. Addressed third is how the concept of ecosystem services can aid in understanding the various ways of framing and governing the situation. The results show that the policy systems affecting pollination are abundant and that these systems create different kinds of pressure on stakeholders, at several levels of society. The local-level concerns are more about the loss of pollination services than about loss of pollinators. This points to the problem of fit between local activity driven by economic reasoning and biodiversity-driven EU policies. Here we see the concept of ecosystem services having some potential, since its operationalisation can combine economic and environmental considerations. Furthermore, the analysis shows how, instead of formal institutions, it seems that social norms, habits, and motivation are the key to understanding and developing effective and attractive governance measures.

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1. Introduction

Pollination is an ecosystem function that indirectly affects several ecosystem services, among them provisioning services such as food production and recreation services, including landscape aesthetics (Kuussaari et al., 2008; Lindemann-Matthies et al., 2010). The loss of pollinators has received a lot of concern globally on account of its consequential meaning for human well-being (Aizen et al., 2008; Eilers et al., 2011; Lautenbach et al., 2012). According to the International Risk Governance Council, the loss of pollination can result in depletion of biodiversity; climate risks; and social and economic risks: threats to food security, rural development, and industry (IRGC, 2009).

The reasons for pollinator loss are not fully understood, but some drivers have been identified by Potts et al. (2010): changing land-use patterns, chemicals used in agriculture, diseases, invasive species, climate change, fire and overgrazing, and introduction of non-native plants. These drivers are mutually dependent, and the interaction among individual drivers is still poorly understood (Schweiger et al., 2010). These complexities, the intermediary role of pollination, and interaction among multiple drivers lead not only to intriguing scientific questions but also to challenging governance situations.

This paper explores pollination from a multilevel policy perspective. It addresses the policy status of pollination by posing three major questions. First, what are the major policies that frame pollination at the EU level? Second, how does this EU-level framing differ from the ways in which pollination is framed at the local and regional levels? Finally, what do these different framings mean for governance and for ecosystem services thinking? Our ultimate aim is to clarify whether the different pollination-related policy contexts fit together and, if they do not, what policy challenges these conjectural cases of imperfect fit create.

We begin by contextualising pollination in the framework of ecosystem services. After that, we will describe the theoretical and methodological approaches applied in the analysis, before illustrating the results and conclusions from the study.

2. Pollination leading to ecosystem services

One of the most studied links between pollination and ecosystem services is the connection between agriculture and pollination (Garibaldi et al., 2011; Scheper et al., 2013), and issues of economic valuation and concern over food safety have gained special attention (Gallai et al., 2009; Byrne and Fitzpatrick, 2009; Lautenbach et al.,
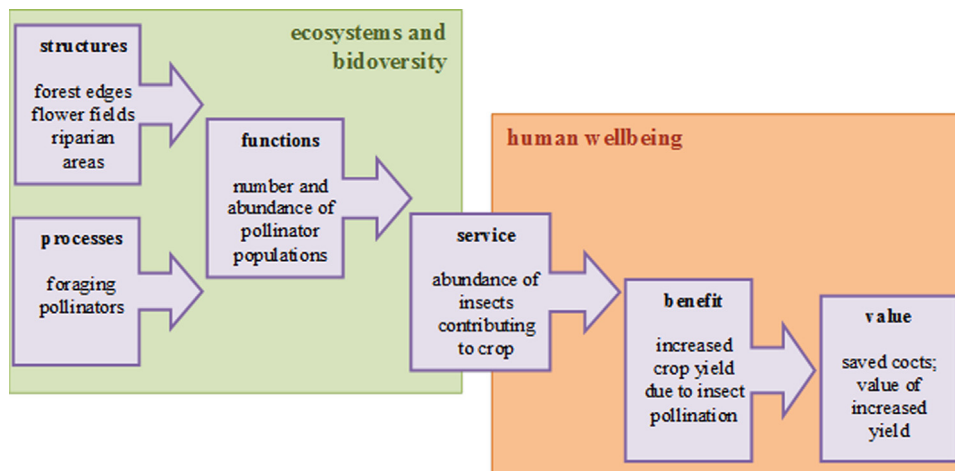
Fig. 1. Ecosystem-services cascade model applied for pollination (figure taken from Maes et al., 2012: 154).

2012). The total economic value of insect pollination globally has been estimated at €153 billion, equivalent to 9.5% of the value of crop production. Within Europe, the estimate is that ~10% of the total economic value of food production, or €22 billion, including €14.2 billion for the European Union, is dependent upon insect pollination. Complete pollinator loss would translate into a production deficit of 40% for fruits and 16% for vegetables, on top of current consumption levels (Gallai et al., 2009). Fig. 1 illustrates well how ecosystems and biodiversity are linked to the provisioning of these services, benefits, and values (cf. Cowling et al., 2008; Braat and De Groot, 2012).

The cascade model[1] shown by Fig. 1 focuses on wild pollination, but insect-mediated pollination can take two forms: (1) managed bees (mostly honeybees but also bumblebees) kept for the purpose of pollination and/or honey production and (2) wild pollination involving the biodiversity of native pollinating insects, including bees, hoverflies, butterflies, etc. It is possible to take a societal perspective on the benefit of pollination by making a division between (1) the benefit for agriculture in terms of improved crop yield and (2) the benefit for the wild pollinator community in supporting of wild plants' biodiversity. It is clear that the improvement in crop yields is a simple economic benefit for society, while the societal benefit for wild plant biodiversity depends on how this issue is valued from a societal perspective. The interaction between the individual elements and generic scale is shown in Fig. 2.

In Fig. 2, the unbroken arrows represent pollination and the broken arrows refer to drivers threatening pollinating insects. The arrows can be explained thus: Arrow 1 means that the pollination delivered by native insects facilitates high plant biodiversity in areas of nature. Arrow 2 refers to native pollinating insects' facilitation of crop and tree pollination. Arrow 3 indicates that managed pollinators can facilitate crop and tree pollination. The arrow labelled '4' refers to how managed pollinators may facilitate pollination of wild plants and thereby enhance plant biodiversity. Arrow 5 represents the potential for managed pollinators to outcompete native pollinators, transmit infections, and disturb the dynamics of the complex pollinator–plant interaction network and thereby impair biodiversity. Arrow 6 points to the possibility of agriculture and forestry threatening natural habitats' biodiversity via physical land use, pesticide application, nutrients, etc. Finally, arrow 7 indicates that agriculture and forestry may threaten managed pollination by such means as pesticide application.

We will return to the topic of ecosystem services when analysing the various ways of framing the pollination. Before this, we describe the theoretical tools we have used in our analysis.

3. Governance, framing and institutional fit, scale, and interplay

Governance is a concept with multiple meanings (Rhodes, 2000; van Kersbergen and van Waarden, 2004; Schout and Jordan 2005). Here we favour the approach presented by Kooiman (2003): 4:

Governing can be considered as the totality of interactions, in which public as well as private actors participate, aimed at solving societal problems or creating societal opportunities; attending to the institutions as contexts for these governing interactions; and establishing a normative foundation for all those activities. Governance can be seen as the totality of theoretical conceptions on governing.

Such an approach highlights the role of multiple stakeholders, their values and the interconnectedness between these (Pierre, 2000). It also pays attention to the institutional background of the governance issues and the multilevel character of governance processes. Yet we will also challenge Kooiman's definition, by exploring the idea of a societal problem. The above definition does not highlight the fact that societal problems can have multiple meanings, which may be quite different between actors.

We will approach this issue with the concept of framing. According to Entman (1993): 52, framing is '[t]o select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation'. Entman emphasises conscious choice-making by actors as do also Schön and Rein (1994): xiii by stating that individuals and institutions draw on frames '[i]n order to give meaning, sense, and normative direction to their thinking and action in policy matters'. As noted by van Hulst and Yanow (2014): 1, frame is an important analytical tool for understanding mismatches between policy intentions and practices. By utilising the concept of framing, our aim is to show how reality and problem definitions are tied to various actors' values and bodily involvement yet also to the ways governance institutions have been organised.

In Kooiman's theory of governance, the concept of image is relevant for framing. Images, which are based on values, are needed for steering the goal-setting, and they aid in orientation to the

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[1] Introduced by Haines-Young and Potschin (2010).