POLLINATORS AS INDICATORS IN POLICY AFFECTING THE LANDSCAPE AND ENVIRONMENT

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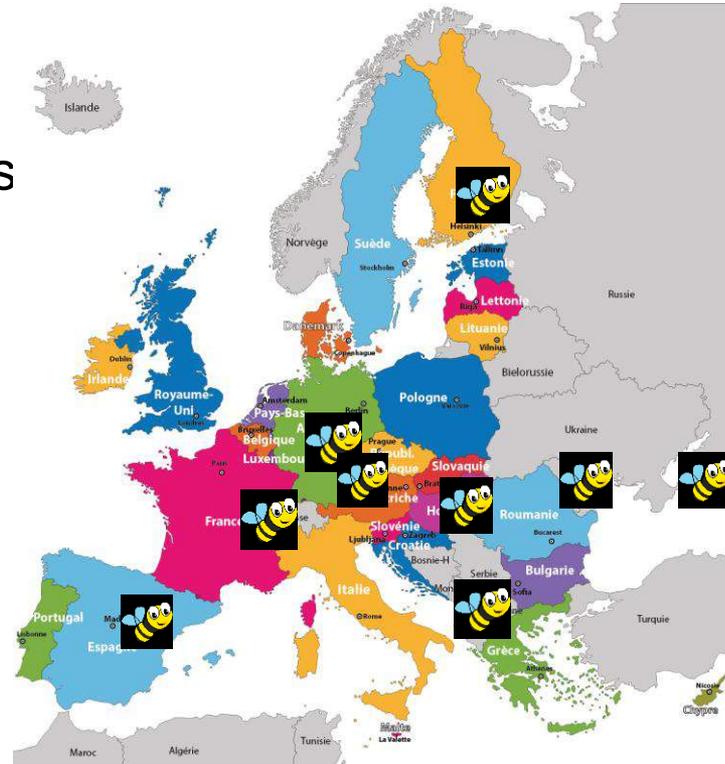
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BeeLife, European Beekeeping Coordination

Association created by professionals of the beekeeping sector

Open to every association linked to bees, pollinators or beekeeping

9 countries more than 20 members

Follow regulatory issues linked to pollinators, environment and landscape

Context

Land use intensification, primarily by agriculture, is identified by IPBES as the number one cause of biodiversity loss.

Recently a study claims that EU Agriculture is not viable for the Future (Pe'er et al. 2019)

Beekeepers discover emerging risks in agriculture, e.g.:
- Melliferous/Polliniferous flowers that do not produce any nectar or pollen
- Contamination of beekeeping products in natural areas
- Being expelled from a region as soon as trees in orchards come to bloom

Context

Biodiversity loss - e.g. Hallmann et al 2018

Environmental health/pollution - many publications

Society demand: Civil society is increasingly demanding public authorities to establish more transparent forms of accountability.

Policy effectiveness

Numerous policies affected: Common Agricultural Policy, Habitats directive, Pesticide authorisation and use, etc.

A number of impact indicators are already proposed to monitor the sustainability of the landscape

Indexes already proposed

- Butterfly Index - https://www.eea.europa.eu/data-and-maps/daviz/european-grassland-butterfly-indicator-2#tab-chart_4

- Farm Bird Index/Forest Bird Index

- Amonia, NOx and SOx emissions

- Soil erosion

- Water quality

Data can be found here: https://stats.oecd.org/Index.aspx?QueryId=77269

Pollinator Index

= objective tool to monitor the real performance of public policies and their impact on the environment

Pollinator Index is a proxy indicator for:

1) pollination services

2) environment quality and health

3) the sustainability of policies implemented in land management.

Guild	Foraging							Nesting			Phenology		Sociality		
	Localization		Range (m)			Diet breadth									
	CP†	non-CP	<500	500-3000	>3000	specialist	generalist	wax	soil	plant	seasonal	continuous‡	nonsocial	weakly social	highly social
honey bees	■				■		■	■				■			■
stingless bees	■		■	■			■					■			■
bumble bees	■			■		■	■	■	■			■		■	
other bees	■		■	■		■	■		■	■			■	■	
social wasps	■			■			■	■	■	■	■			■	■
solitary wasps	■					■			■	■	■		■		
other insect pollinators*		■	NA	NA	NA	■		NA	NA	NA	■	■	■		

*principally flies, butterflies and beetles: taxa distinguished by non-central-place foraging behavior and free-foraging larvae
†central-place
‡may refer either to perennial colonies (e.g. honey bees) or annual colonies that are active throughout all or most of the growing season (e.g. bumble bees)
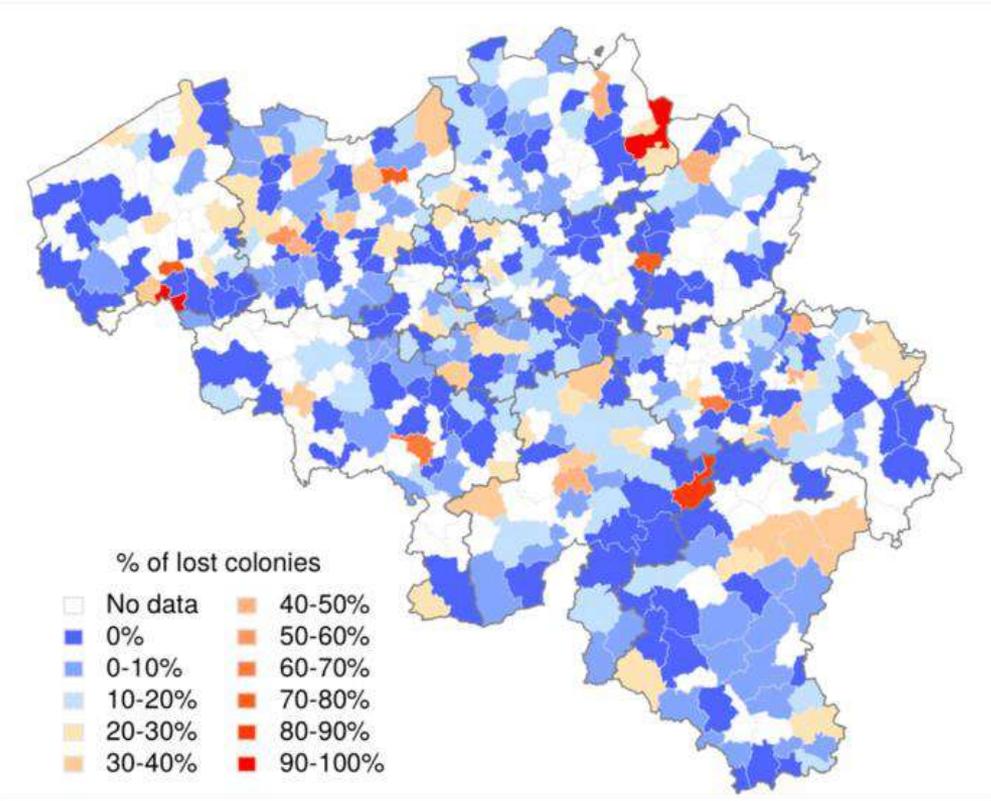
Source: Sponsler et al., 2019 *Sci Tot Envi*

What is there in the Pollinator index?

a) **rate of winter and/or summer HB colony losses** (e.g. van der Zee et al. 2012, 2015, Brodschneider et al. 2016, 2018, Grey et al. 2019)

Source: BE Results of COLOSS questionnaire 2017-18

What is there in the Pollinator index?

b) **wild pollinators abundance and richness** (e.g. Hallmann et al. 2017; Lebuhn et al. 2013, including the butterfly index)
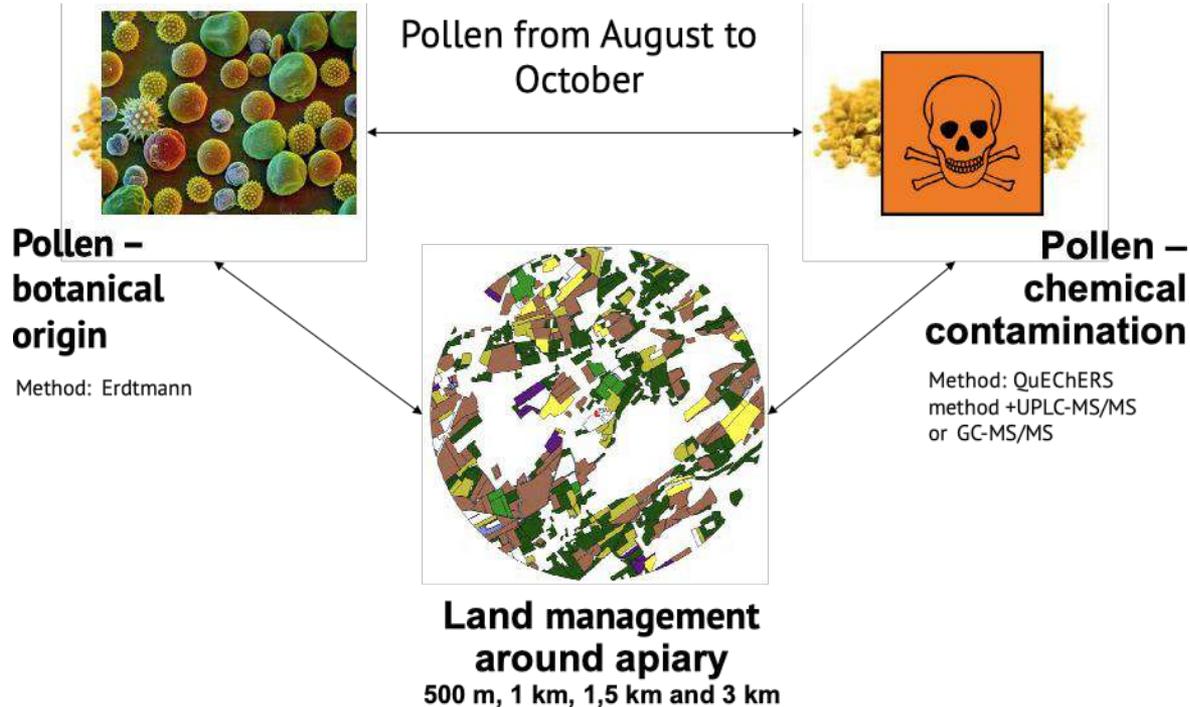

Pan trap

Malaise trap

New technology developed under **EU project IoBee** may help in the future

What is there in the Pollinator index?

c) HB collected pollen pellets botanical origin and contaminant content (e.g. Simon-Delso et al. 2017; Porrini et al. 2003)

What is there in the Pollinator index?

d) **location and period of beekeepers/naturalists complaints** - institutional involvement

e) **determination of the amount of honey/pollen produced per km²** (incl. Productivity per colony) - beekeeping socioeconomics

What is there in the Pollinator index?

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d) **location and period of beekeepers/naturalists complaints** (beekeeping socio-economics)

e) **determination of the amount of honey/pollen produced per km²** (incl. Productivity per colony) - beekeeping socioeconomics

f) other

Objectives measures for policy makers/land managers

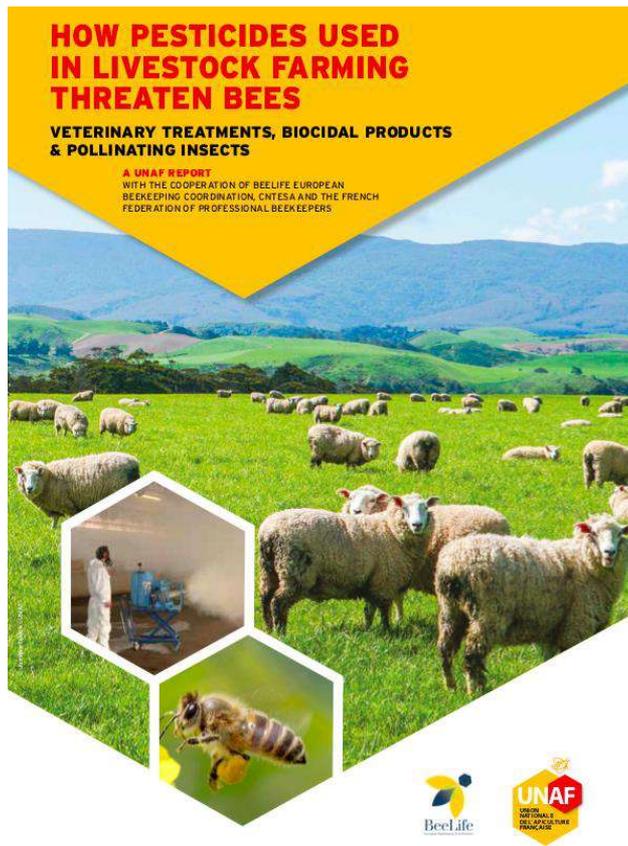| Measurements	Examples of information provided
Pollinator abundance and richness	● efficiency of policy measures aiming at multiplying food resources and habitat ● pollination potential
Botanical abundance and richness of the area	● efficiency of policy measures aiming at multiplying food resources ● Indication of economic viability of producers depending on pollinators
Periods in the year with lack of resources	● efficiency of policy measures multiplying food resources in time
Level of pollution of the area	● efficiency of policy measures reducing the environmental risks of pollutants ● calibration of risk assessment procedures
Efficiency of the policy implementation and enforcemente	● Allows to identify possible unexpected or unwilling (illegal?) events in real time

Open possibilities for improvement of public policy

If considered an **"impact indicator"** of public policy it allows:

- the establishment by decision makers of **goals and strategies**
- pointing at the **tactics** to achieve them
- **calibration of public spending** towards improving measures/policies that target pollinators
- identification of **shortcomings** in the implementation and enforcement of policies
- the increase of **transparency** in policy results
- tool to verify if **public money** is invested for the preservation of **public goods**

Examples/practical cases coming from EU

HOW PESTICIDES USED IN LIVESTOCK FARMING THREATEN BEES

VETERINARY TREATMENTS, BIOCIDAL PRODUCTS & POLLINATING INSECTS

A UNAF REPORT
WITH THE COOPERATION OF BEELIFE EUROPEAN BEEKEEPING COORDINATION, CNTESA AND THE FRENCH FEDERATION OF PROFESSIONAL BEEKEEPERS

Version EN
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Challenges of the Pollinator Index

Its <u>development</u>:
- It requires the whole **pollinator community** (incl. beekeepers, bee researchers, naturalists) to work hand in hand to build it

If we achieve to propose a methodology - **standardisation** required

Matching the Pollinator Index (**landscape** indicator of performance) with specific measures carried out by **individuals** (most frequent logic of public policies)

Future of the Pollinator Index

The European Commission would like to develop such an index - launch of the Pollinators Initiative in 2018

BeeLife has been requesting the Pollination Index and proposing methodology for it

If researchers out there are willing to develop it, BeeLife would like to contribute to the process.

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Thank you for your attention !

"Anything that can be imagined, can be real"
Walt Disney

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