


Science and data to underpin a pollinator strategy

Koos Biesmeijer
Naturalis Biodiversity Center
The Netherlands

Bombus argillaceus

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Pollinator strategies: from many initiatives to one strategy

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Layout

NL Pollinator Strategy

From initiatives to a strategy (and back)

Information, knowledge, tools, Big data

What can we learn from each other?

Example from NL to help next steps for CoW

Learn from you for next steps in NL strategy



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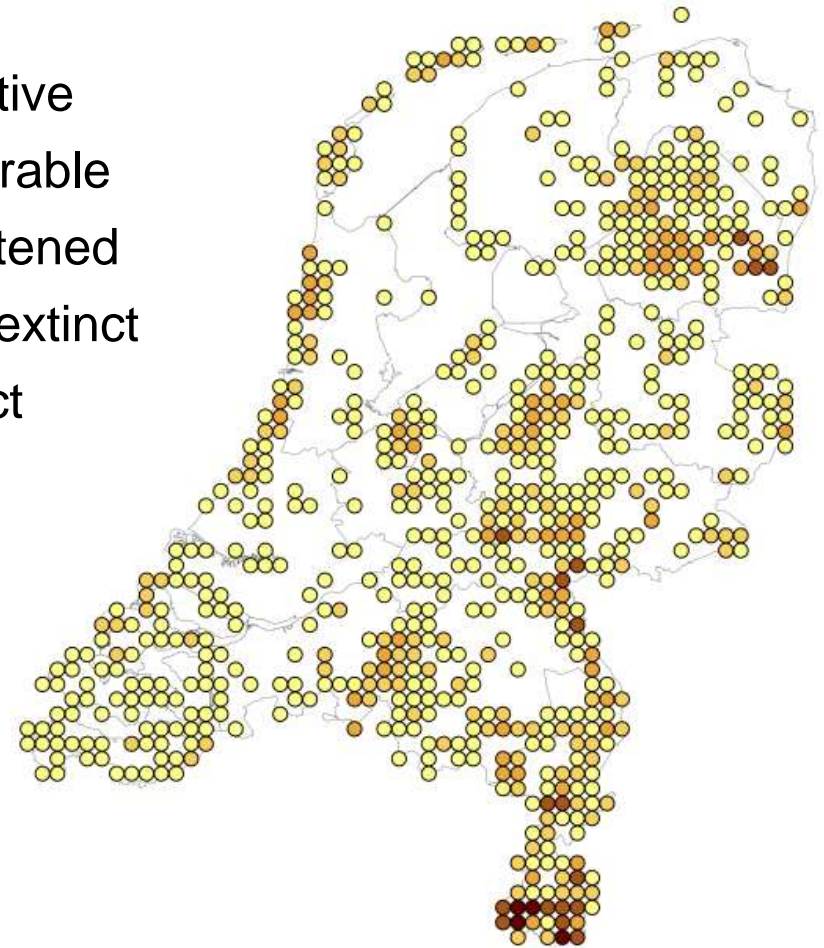
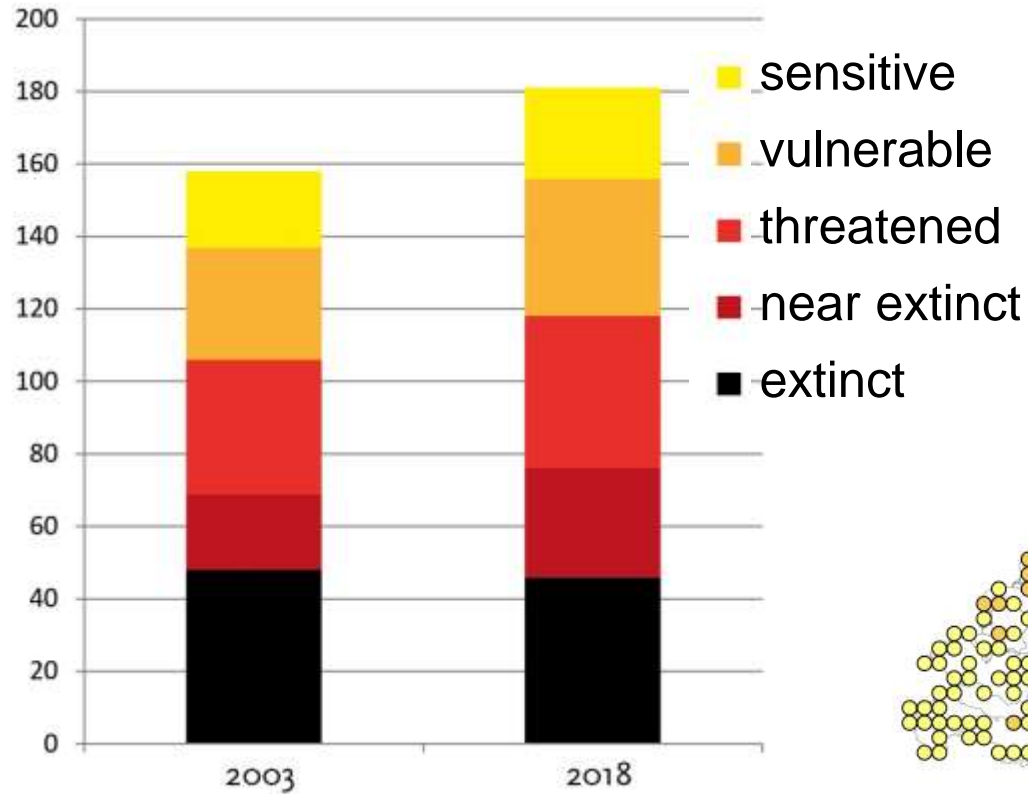
NL Pollinator Strategy: urgently needed

2018



MENNO REEMER

BASISRAPPORT VOOR DE
RODE LIJST BIJEN



55% bees on red list

Red list bees everywhere

NL Pollinator Strategy: a national issue



Nationale Bijenstrategie
Bed & Breakfast for Bees



NL Pollinator Strategy: a national issue



Nationale Bijenstrategie
Bed & Breakfast for Bees



>100 initiatives from across society

NL Pollinator Strategy: clear ambition

Nationale Bijenstrategie
Bed & Breakfast for Bees



By 2030 we will have:

Improved populations of wild pollinators

Increased diversity of wild pollinators

Improved pollination for wild plants and crops

Healthier honeybees

Layout

NL Pollinator Strategy

From initiatives to a strategy (and back)

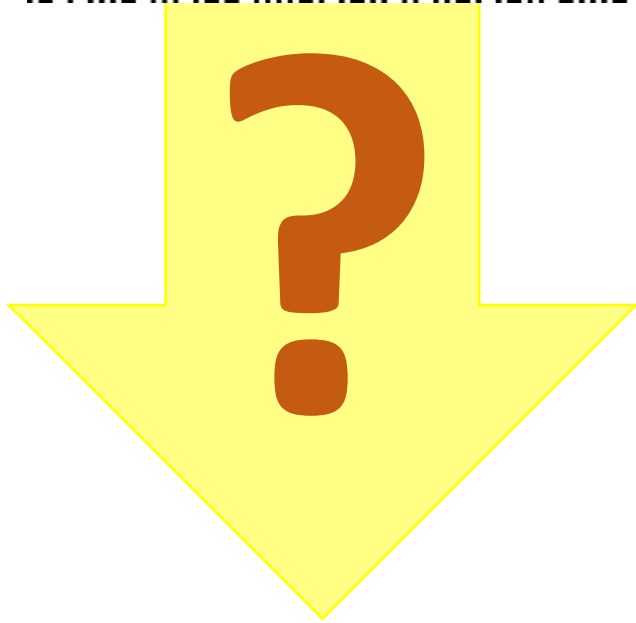
Information, knowledge, tools, Big data

What can we learn from each other?





Long list (>100) initiatives with own goals



What is the relationship ?

Do initiatives support NL strategy ?

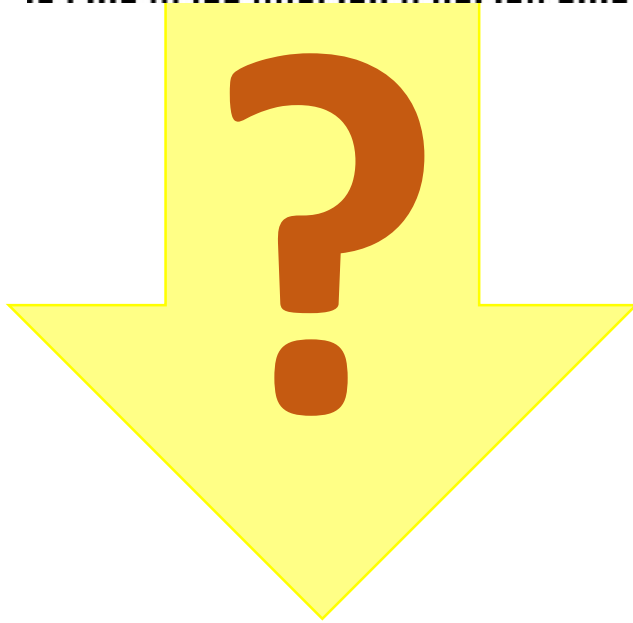
Does NL strategy support initiatives?

Nationale Bijenstrategie
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NL level strategy goals for 2023 & 2030



Long list (>100) initiatives with own goals



Analysis of NL initiatives:

1 much enthusiasm and activity

2 often no clear link to NL strategy

3 some very different goals (e.g. awareness)

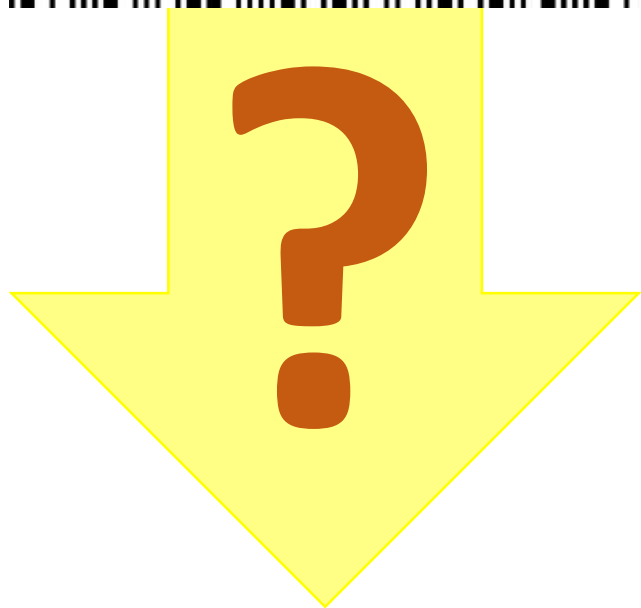
4 no guarantee for success at NL level

Nationale Bijenstrategie
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NL level strategy goals for 2023 & 2030



Long list (>100) initiatives with own goals



**What is
needed
to bridge
the gap ?**

**Information
knowledge,
data, tools
Big data, ...**

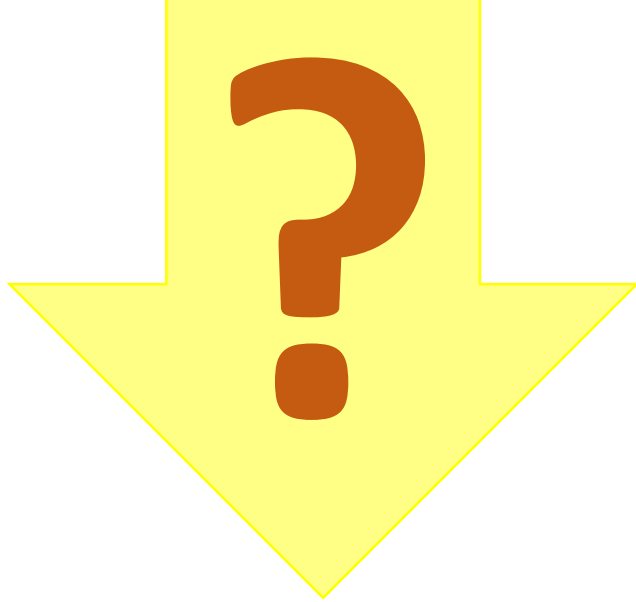
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NL strategy goals for 2023 & 2030

NL Pollinator Strategy: Big Data for Bees



Long list (>100) initiatives with own goals



How can we help initiatives? What data / knowledge do they need ?

Which tools can help bridge the gap ?

How can we measure progress ? Are there proxies for the goals ?

Nationale Bijenstrategie
Bed & Breakfast for Bees

NL strategy goals for 2023 & 2030

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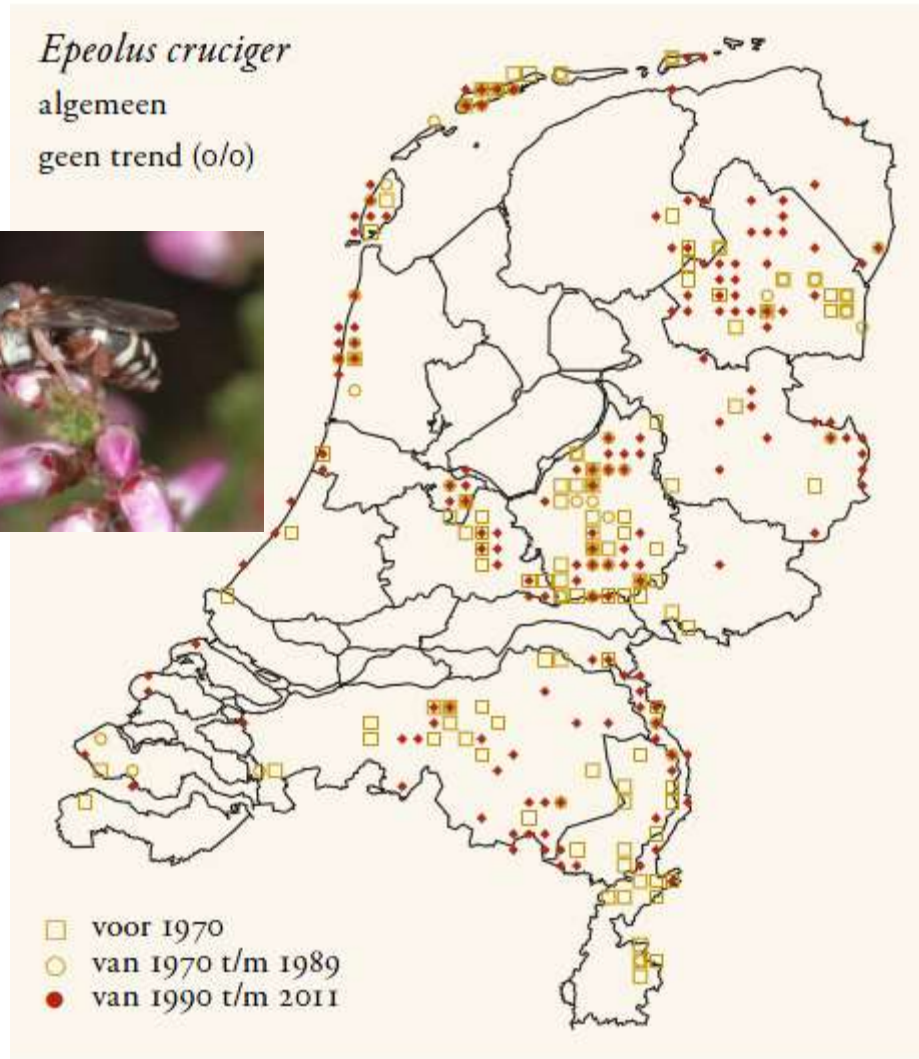
Information, knowledge, tools, Big data

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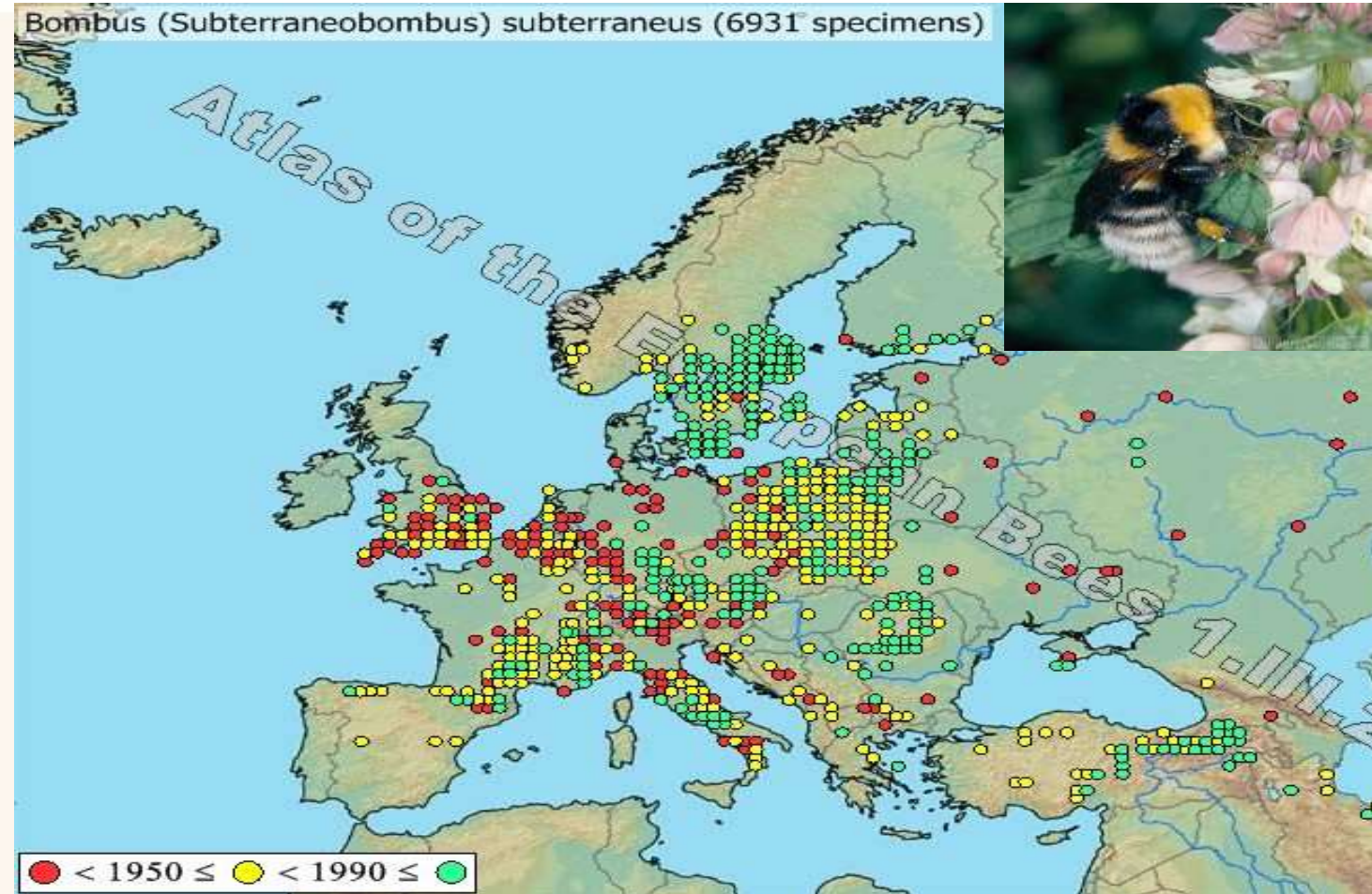


Information on species occurrence

National level occurrence records

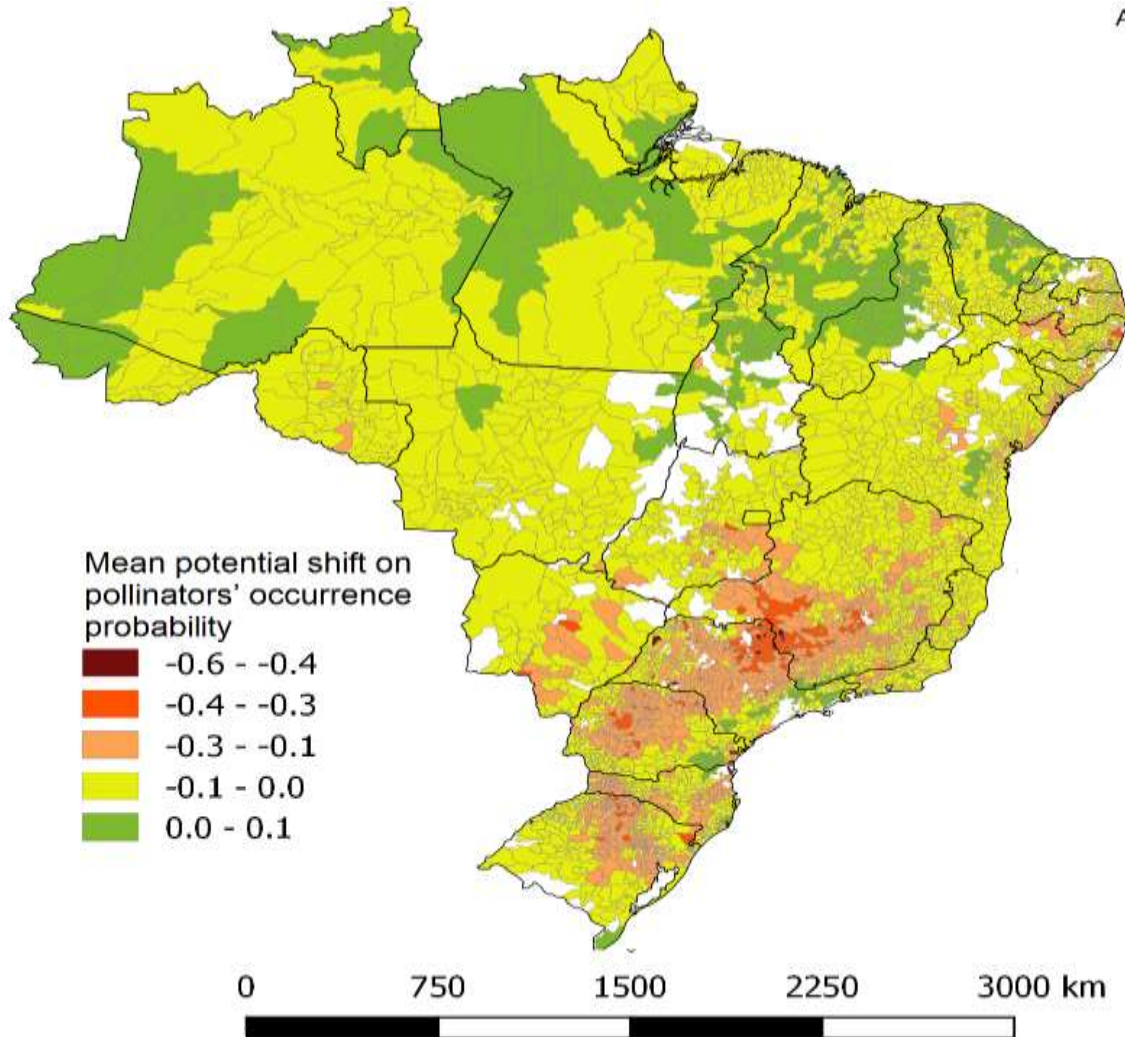


EU/World wide occurrence records

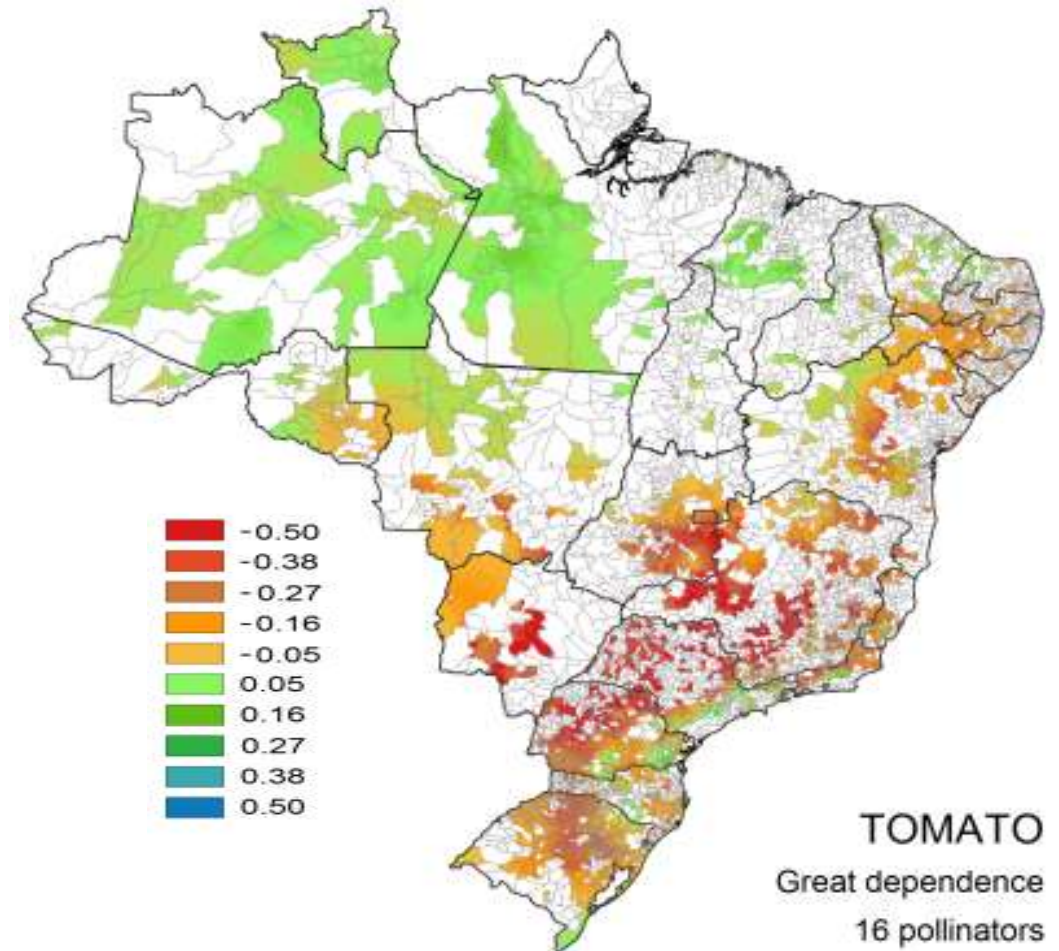


Information on future occurrence

Future shifts in crop pollinators Brazil



Future shifts in tomato pollinators in Brazil

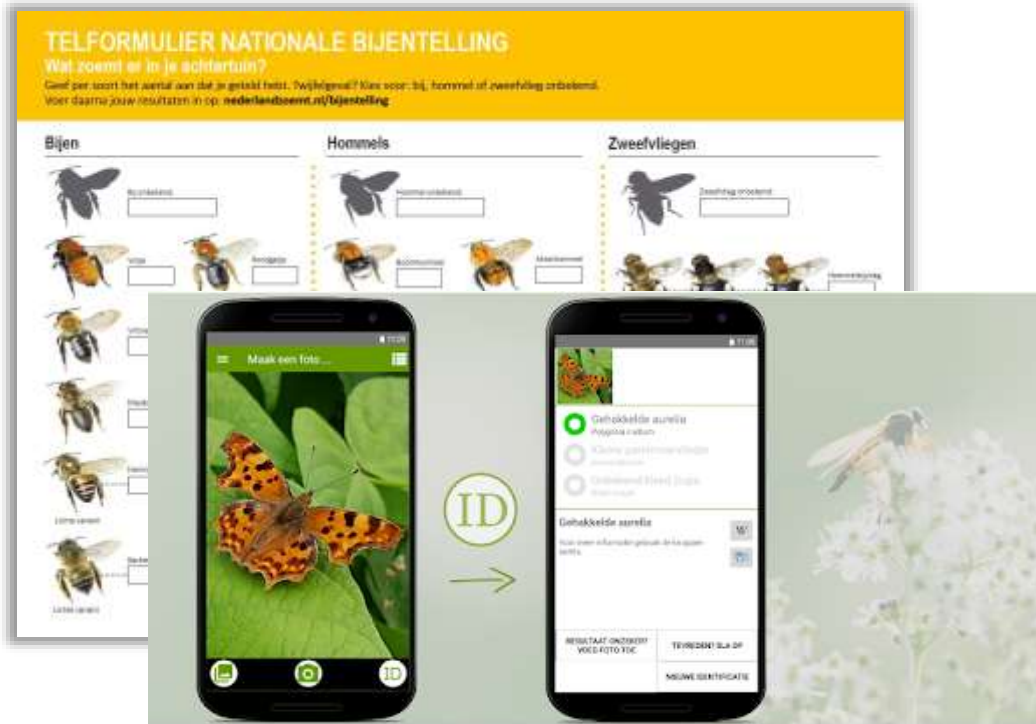


Monitoring pollinators: job for experts



Not enough experts, many countries without experts
Monitoring is hampered by lack of experts

Monitoring pollinators: citizen science



Identification tools

Identification guides
Identification app based on AI
Testing and training users

+

Campaign

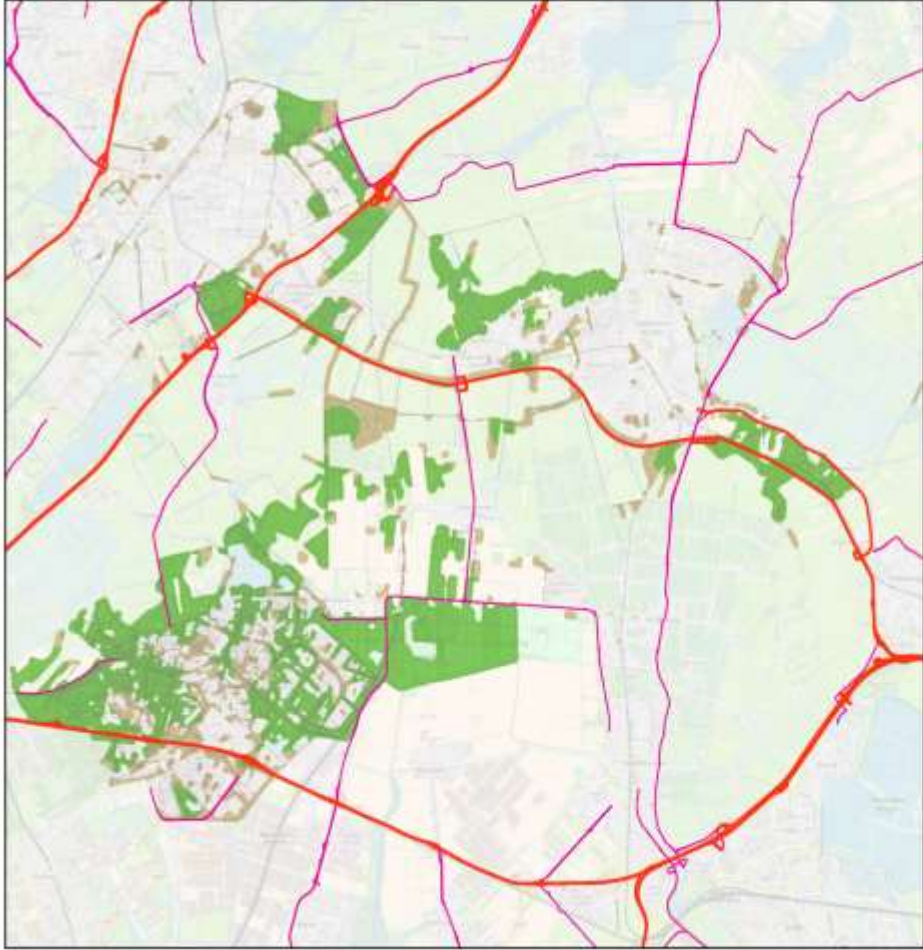
Website
TV/Radio
Blogs / Vlogs

= **44700 new records**

4369 gardens counted
Country-wide coverage
New reliable information

Designing landscapes for pollinators

Map of pollinator habitats

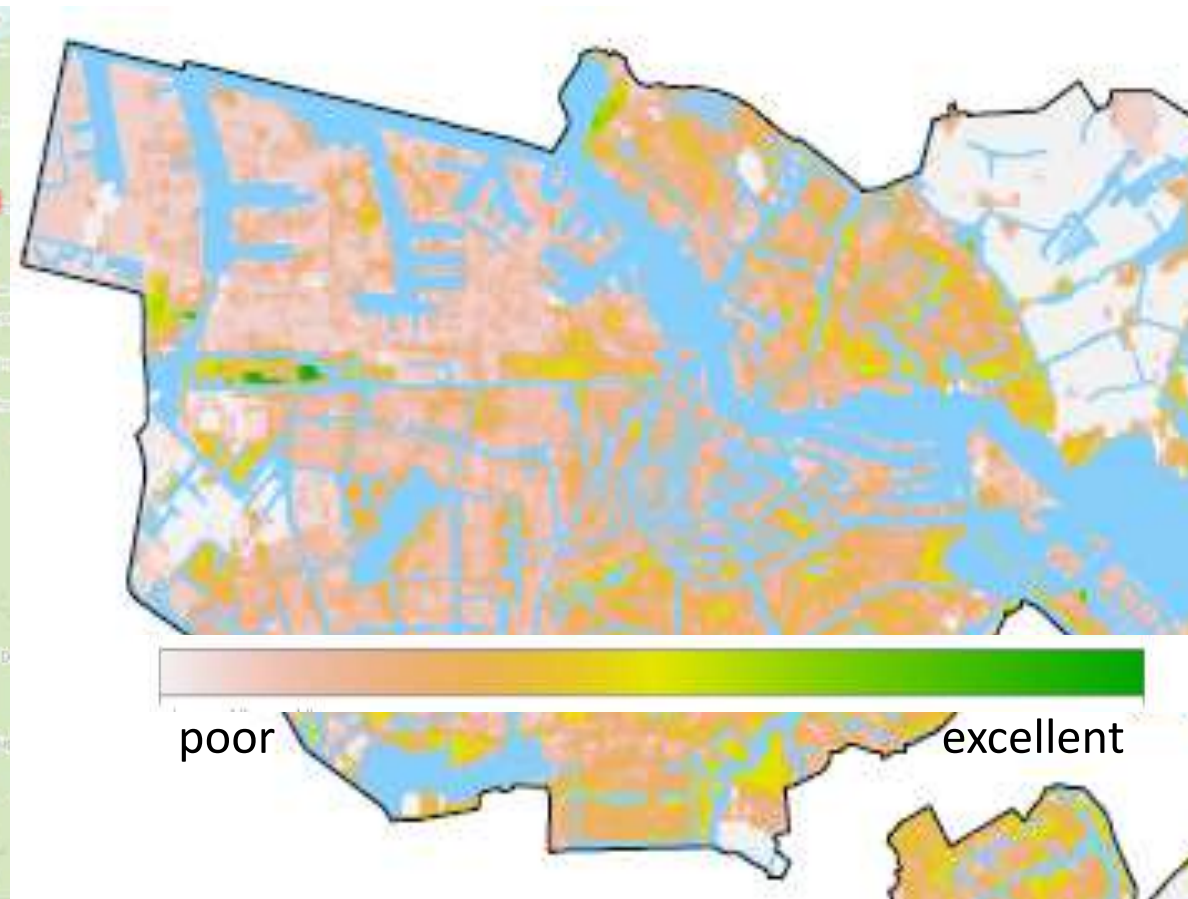


Map of current and potential pollinator habitats



**OPPORTUNITIES
FOR
POLLINATORS**

Information tool for municipalities




Soortgroep	Gevonden	Potentieel
Behangersbijen	2	4
Bloedbijen	1	12
Bonte viltbijen	0	0
Dikpootbijen	0	2
Ertsbijen	0	0
Groefbijen	8	20
Hommels	9	15
Houtbijen	0	1
Kegelbijen	0	2
Klokjesbijen	1	2
Langhoornbijen	0	0
Maskerbijen	2	8
Metselbijen	3	7
Mortelbijen	0	1
Pluimvoetbij	0	1
Roetbijen	0	1
Rouwbijen	0	1
Sachembijen	1	3
Slobkousbijen	1	1
Tronkenbijen	1	1
Tubebijen	0	2
Viltbijen	0	1
Wespbijen	4	17
Wol en Harsbijen	1	2
Zandbijen	13	35
Zijdebijen	1	4
Totaal	48	143

Occurrence + models + bee needs → tool for municipality for bee habitats, management and conservation improvement goals

Monitoring pollinator landscapes



Tool for monitoring pollinator landscapes

HERBee  www.herbee.farm

Bases for management targets and improvement

Satellite images
(every week)

+

Artificial Intelligence

=

Classify different
grasslands



Field 4455139 (2.63 Ha)

2018 KPIs

Herb species: 17

Advice

- ✓ Let herbs come to bloom by delay mowing of the whole field or specific area
- Based on best practices

Automatically generated
KPI score



I don't agree

Monitoring tools for beekeepers

Beekeepers + hive monitoring



Monitoring tools for healthy honeybees

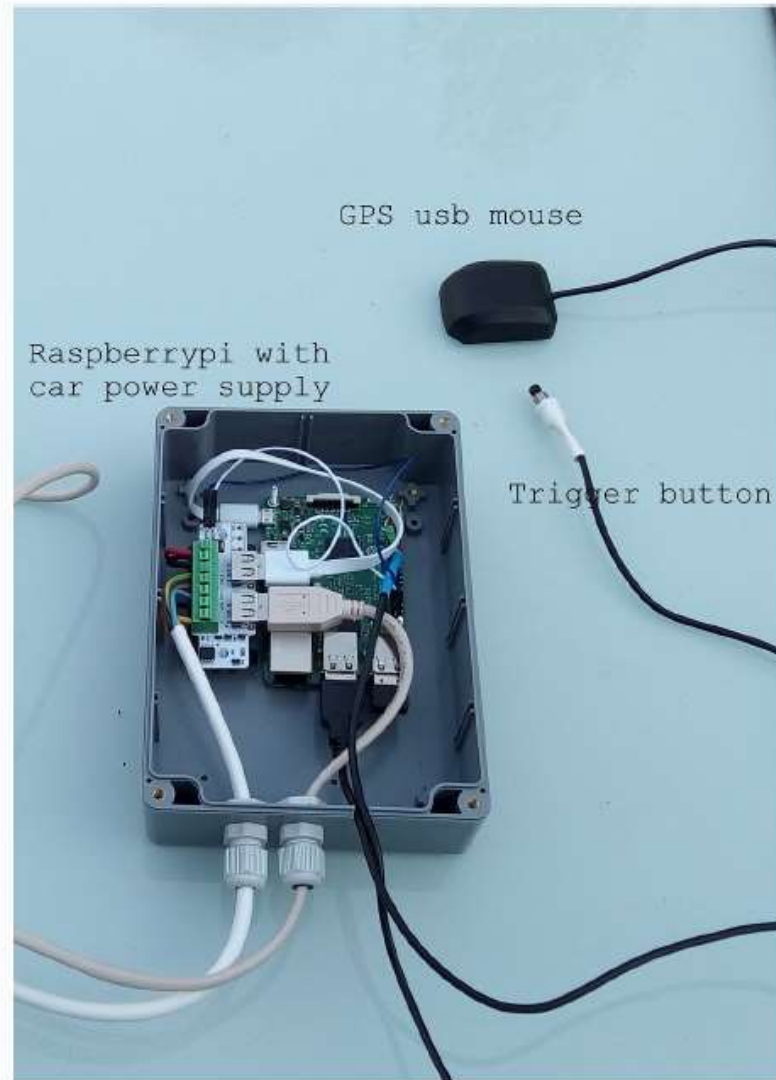
Beekeepers + hive monitoring + sensors + weather + landscape + social network



The system alerts the beekeeper !

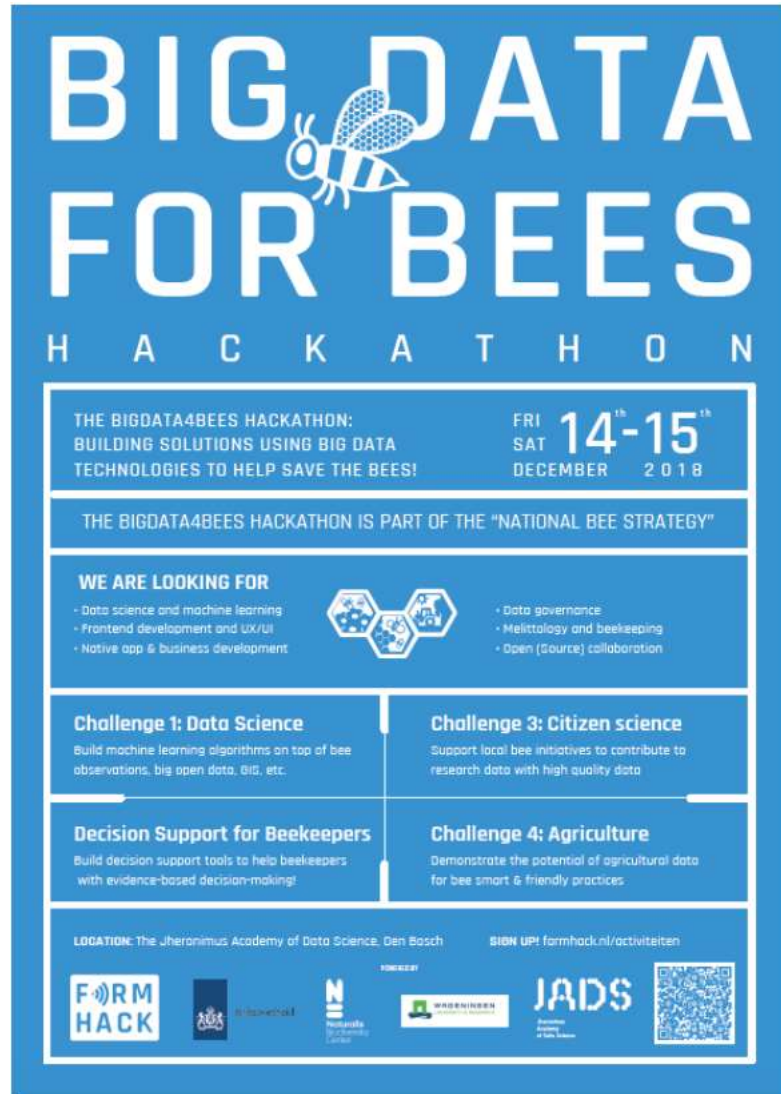
Too complex for bee professor or policy maker!

Bring in the (other) nerds



Too complex for bee professor or policy maker!

Bring in the (other) nerds



BIG DATA FOR BEES
H A C K A T H O N

THE BIGDATA4BEES HACKATHON:
BUILDING SOLUTIONS USING BIG DATA
TECHNOLOGIES TO HELP SAVE THE BEES!

FRI 14th
SAT 15th
DECEMBER 2018

THE BIGDATA4BEES HACKATHON IS PART OF THE "NATIONAL BEE STRATEGY"

WE ARE LOOKING FOR

- Data science and machine learning
- Frontend development and UX/UI
- Native app & business development

Challenge 1: Data Science
Build machine learning algorithms on top of bee observations, big open data, etc.





Challenge 3: Citizen science
Support local bee initiatives to contribute to research data with high quality data

Decision Support for Beekeepers
Build decision support tools to help beekeepers with evidence-based decision-making!

Challenge 4: Agriculture
Demonstrate the potential of agricultural data for bee smart & friendly practices

LOCATION: The Jheronimus Academy of Data Science, Den Bosch

SIGN UP! farmhack.nl/activiteiten

FORM HACK    **JADS** 

Data science and ICT experts + pollinator experts
30 hours in a sweaty room, no sleep, lots of coffee
Build solutions for complex (big) data problems



Science + data underpinning strategy



Long list (>100) initiatives with own goals

Initiatives with clearer goals linked to NL strategy



Toolbox for initiatives and governments



Better monitoring of progress towards goals

NL strategy goals for 2023 & 2030



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What can we learn from each other ?

INFORMATION
SHARING AND
COMMUNICATION

*‘dance like the
honeybees’*

COLLABORATION
IN A COALITION

*‘swarm like the
honeybees’*

MOVE IN SIMILAR
DIRECTION FOR
THE FUTURE

*‘be successful like
the honeybees’*

THANK YOU !