Pollination and pollinator health in agricultural landscapes

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Pollinators and Pollination in European Agriculture

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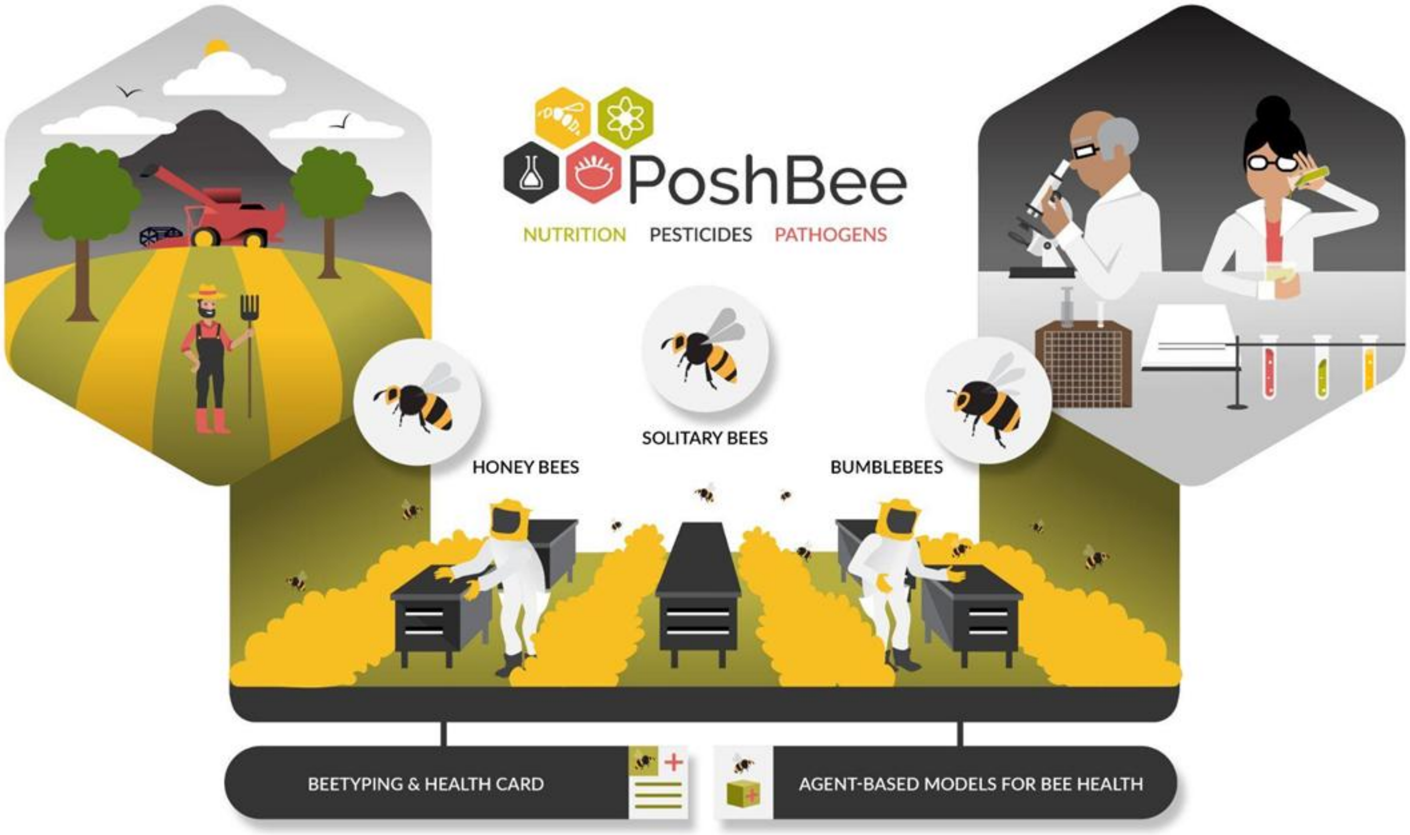
The PoshBee Consortium (2018-23, EU Horizon 2020)



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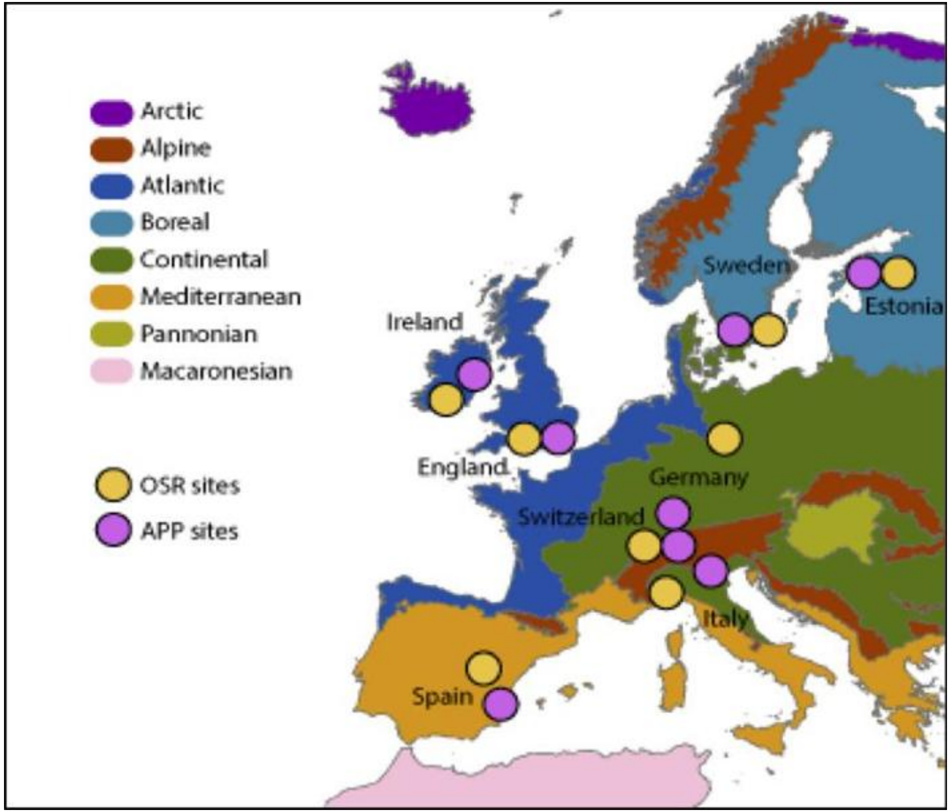
The PoshBee Site Network



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Landscapes of pesticide risk

Pollinators:

- Are exposed to multiple pesticides
- Encounter these pesticides in different ways

Bumble bees as indicators

Pesticides in their stored pollen

Relate this to how they:

- **Grow**
- Survive
- Reproduce

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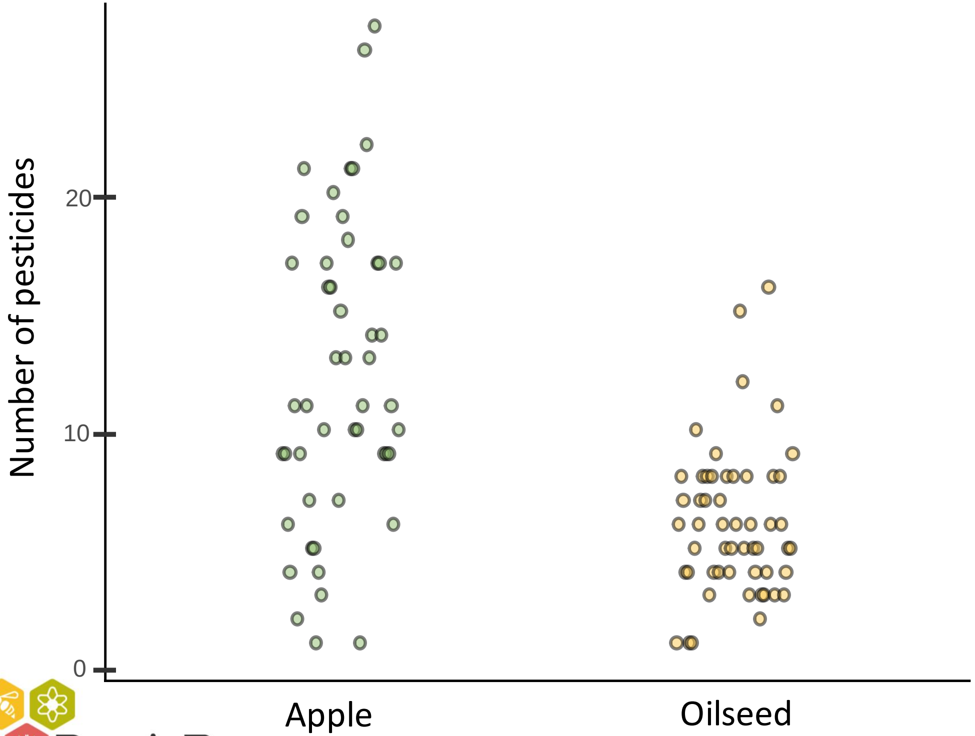
Photos by Maj Rundlöf

Bees are exposed to multiple pesticides



Colonies contained, on average, eight different pesticides and up to 27 in one sample.

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Calculating pesticide risk

Amount | Toxicity

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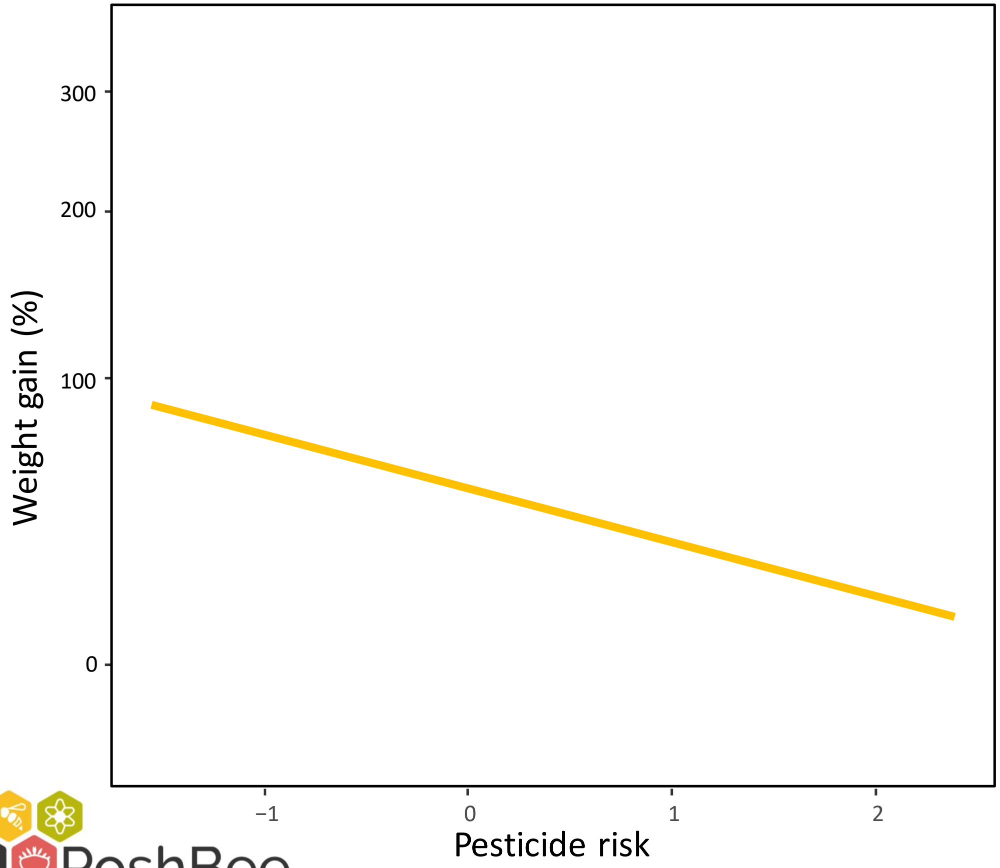
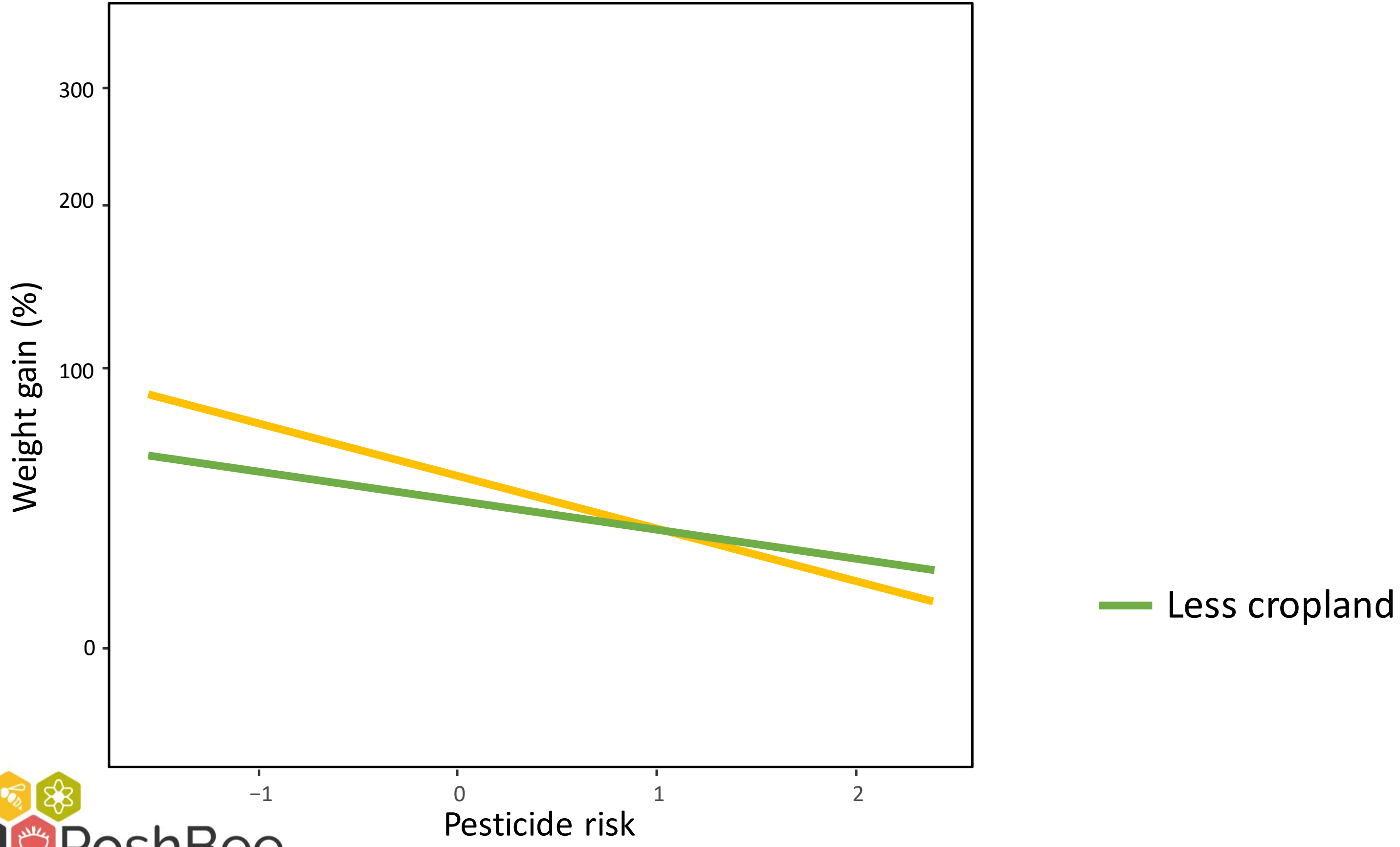
Pesticides stunt bumblebee colony growth



Semi-natural habitats buffer pesticide effects



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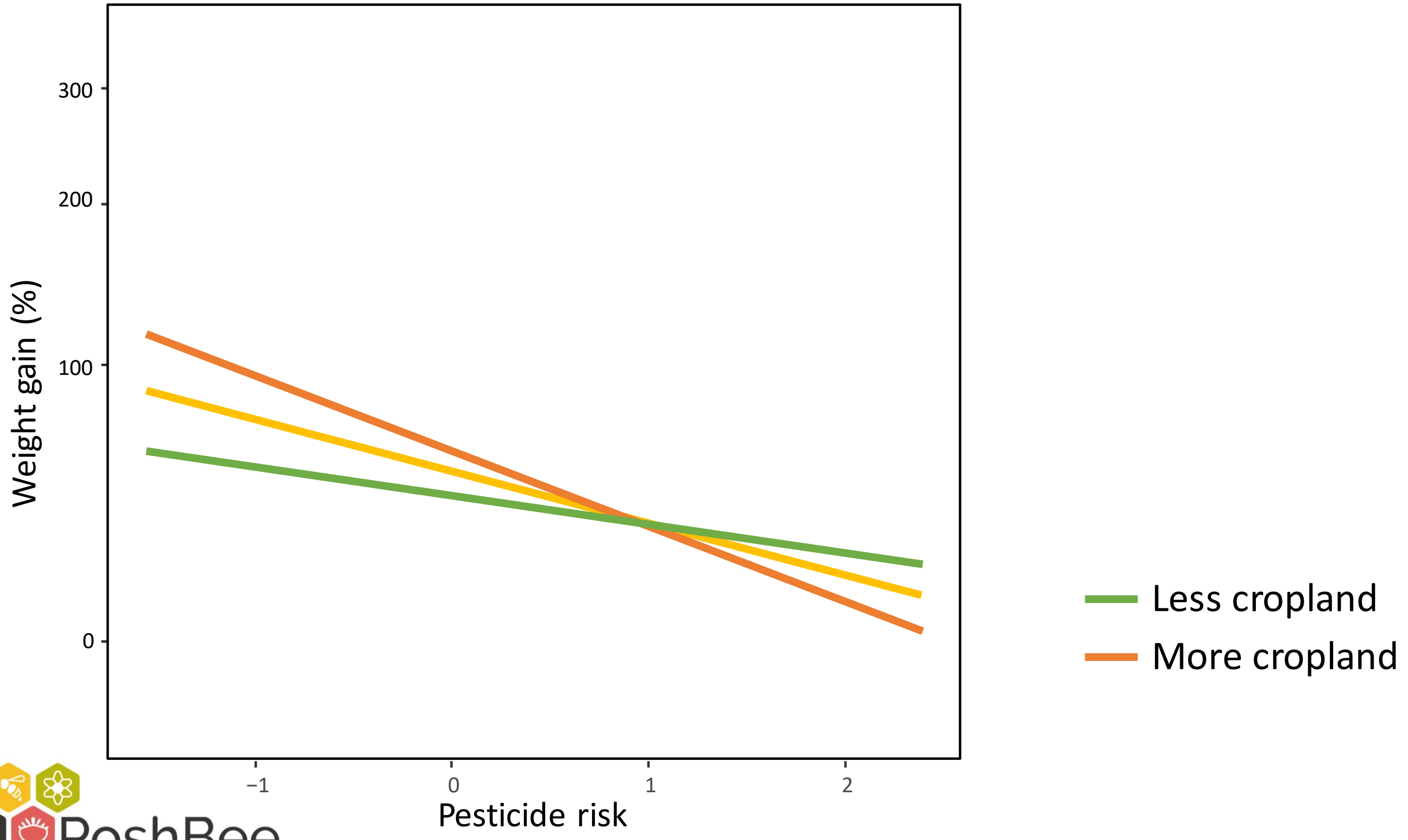
Semi-natural habitats buffer pesticide effects



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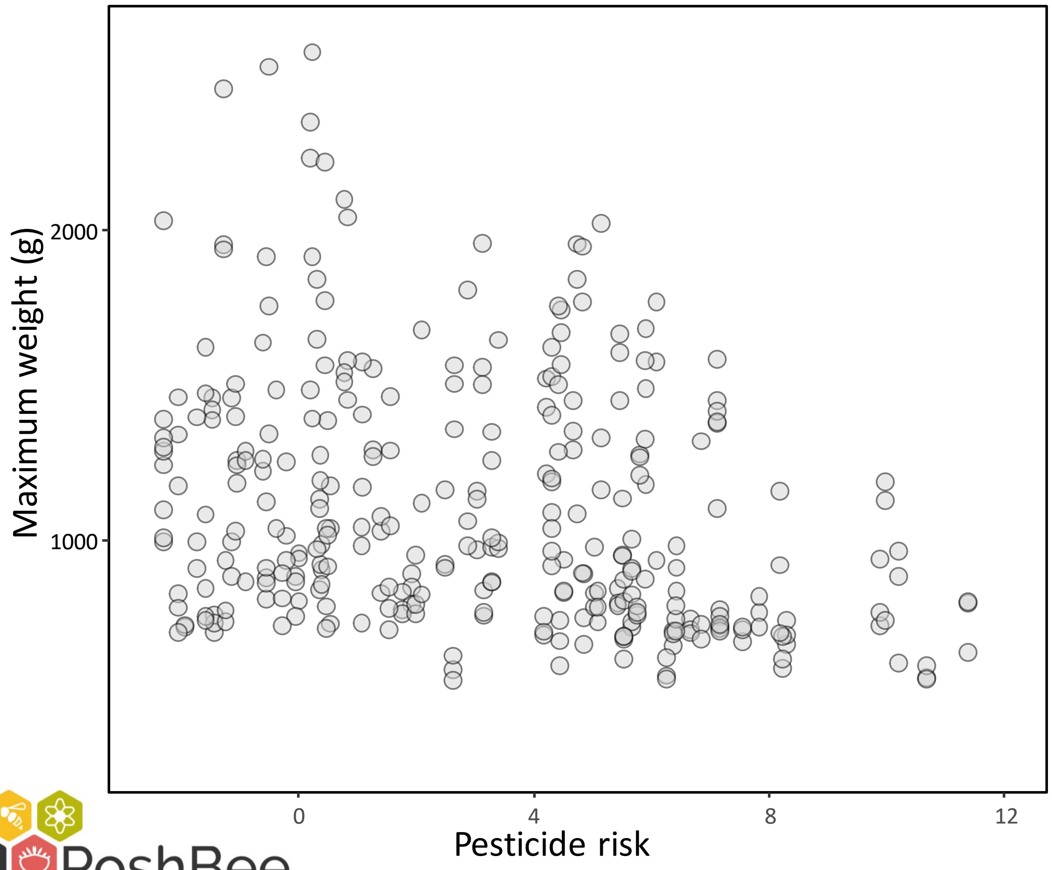
Can we use these data to protect bees?



Specific Protection Goals (SPGs) outline what needs to be protected, where, when, and with what level of certainty.

316 colonies from 106 sites.

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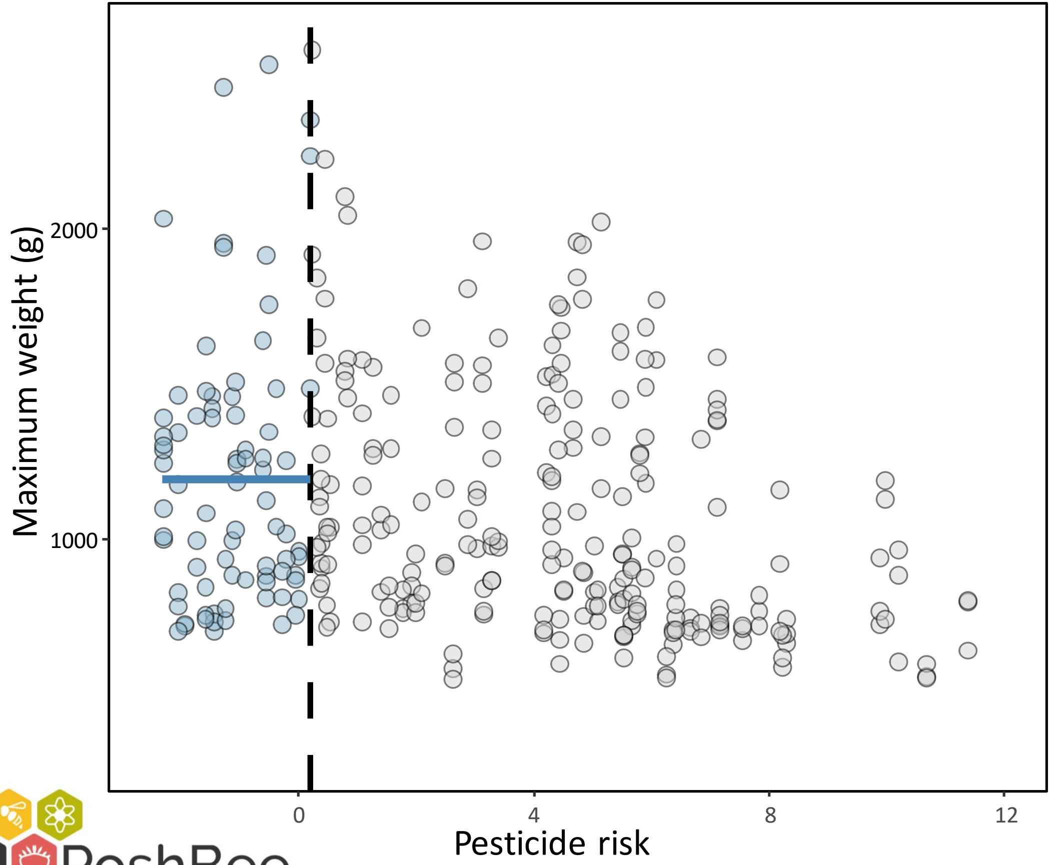
Can we use these data to protect bees?



Specific Protection Goals (SPGs) outline what needs to be protected, where, when, and with what level of certainty.

Baseline

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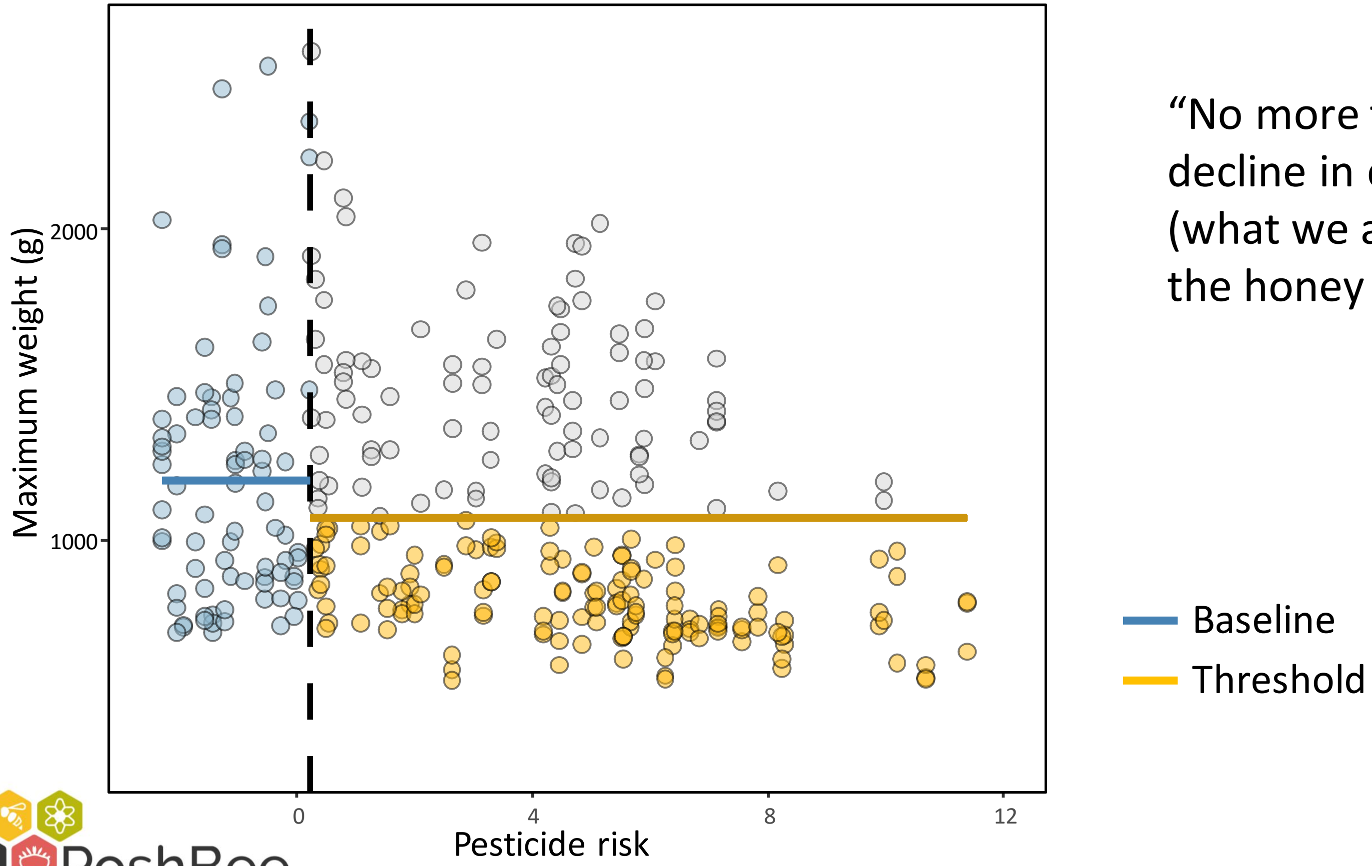
60% of colonies would fail protection goals



"No more than a 10% decline in colony weight" (what we already have for the honey bee).

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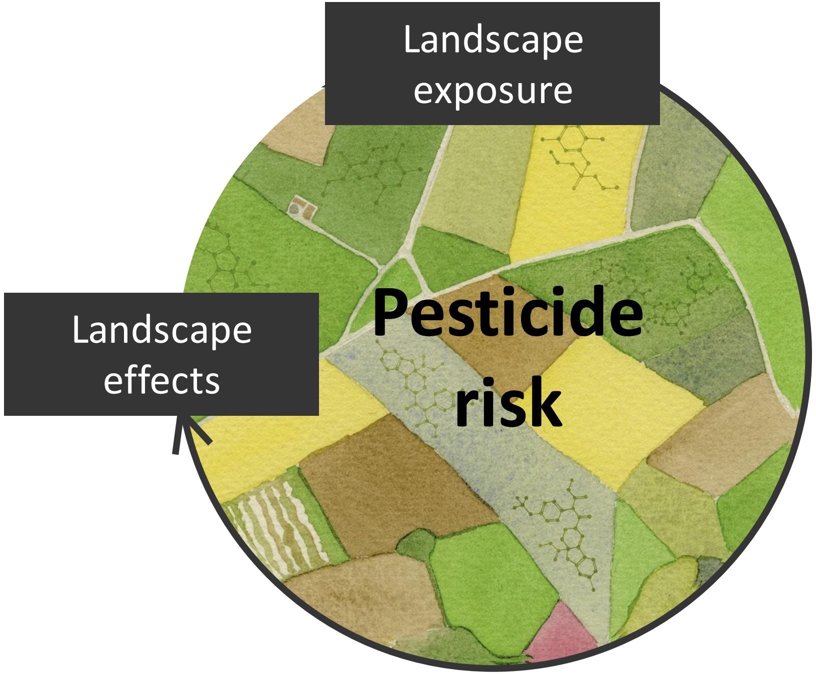
Moving forward: long-term monitoring is essential

Monitoring must feed into the regulatory framework

‘Pesticide risk’ is a useful development:

- Could prioritise ‘high-risk’ landscapes
- Accounts for mixtures
- Works for different bee species

Knapp et al. 2023. *Nature Ecology and Evolution*.



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Protecting pollinators from pesticides

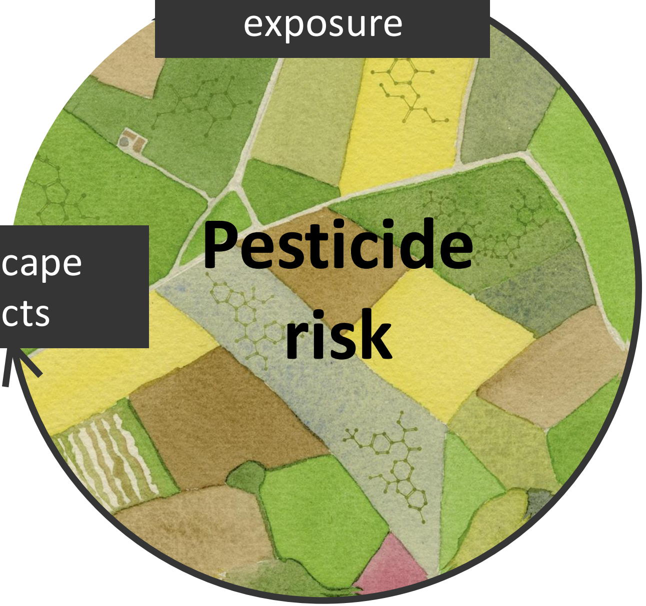
Systems-based risk assessment for pollinators

Developments based on science and policy

Model species, tools, methods

Landscape exposure

Landscape effects



Thank you for your attention

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