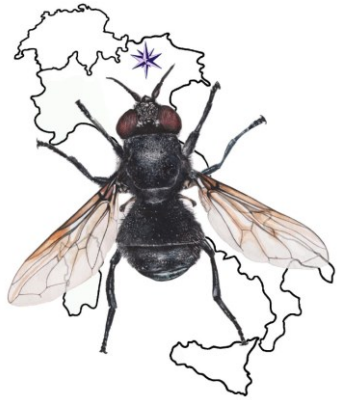


From design to implementation: insights from six years of Hoverfly monitoring

Johannes, Uhler, Juliet Aranibar, Felix Briem, Elena Früchtenicht, Hannah Hamm, Philipp Kassel, Maximilian Pink, Maximilian Sittinger, Annette Herz

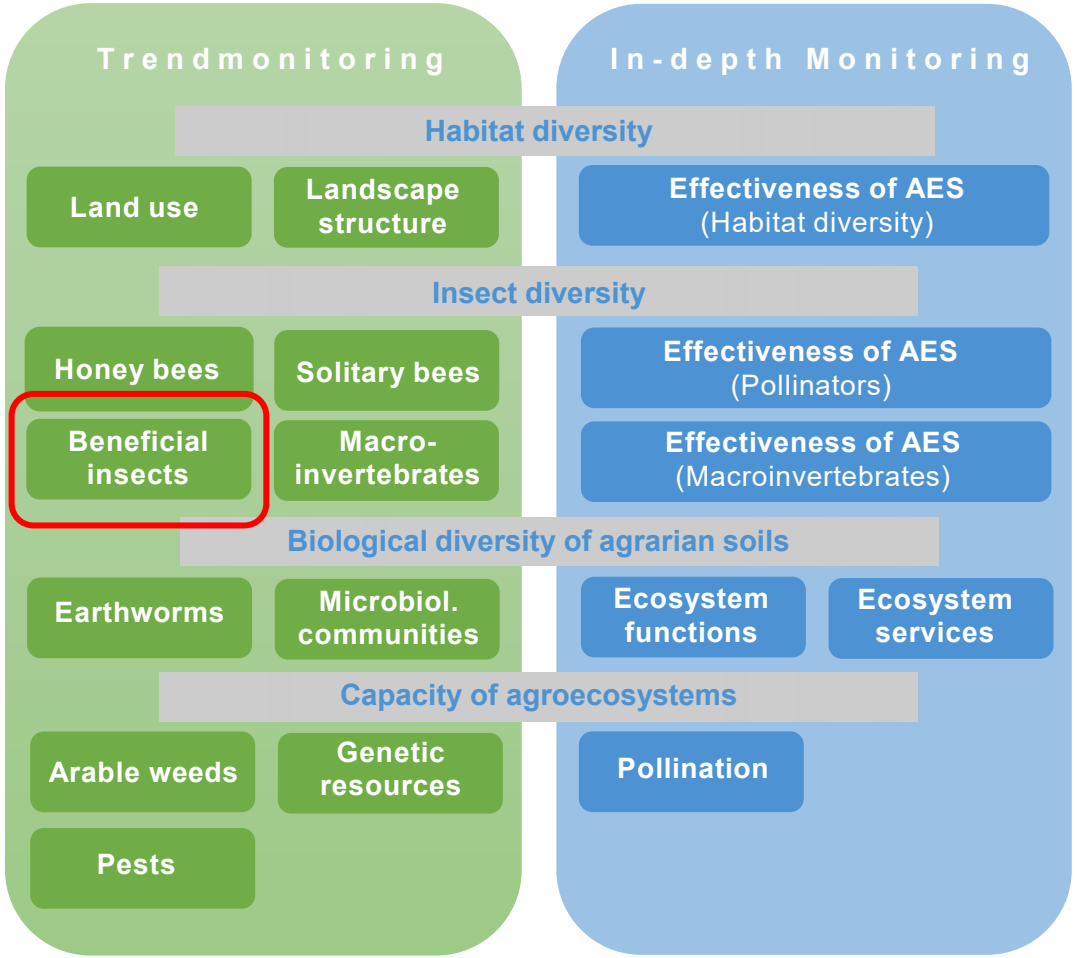
Julius Kühn-Institut (JKI), Federal Research Institute for Cultivated Plants
Institut for Biological Control
Dossenheim, Germany

13th International Symposium on Syrphidae

www.julius-kuehn.de

The National Monitoring of Biodiversity in Agricultural Landscapes

Pilot phase: 2019 - 2023





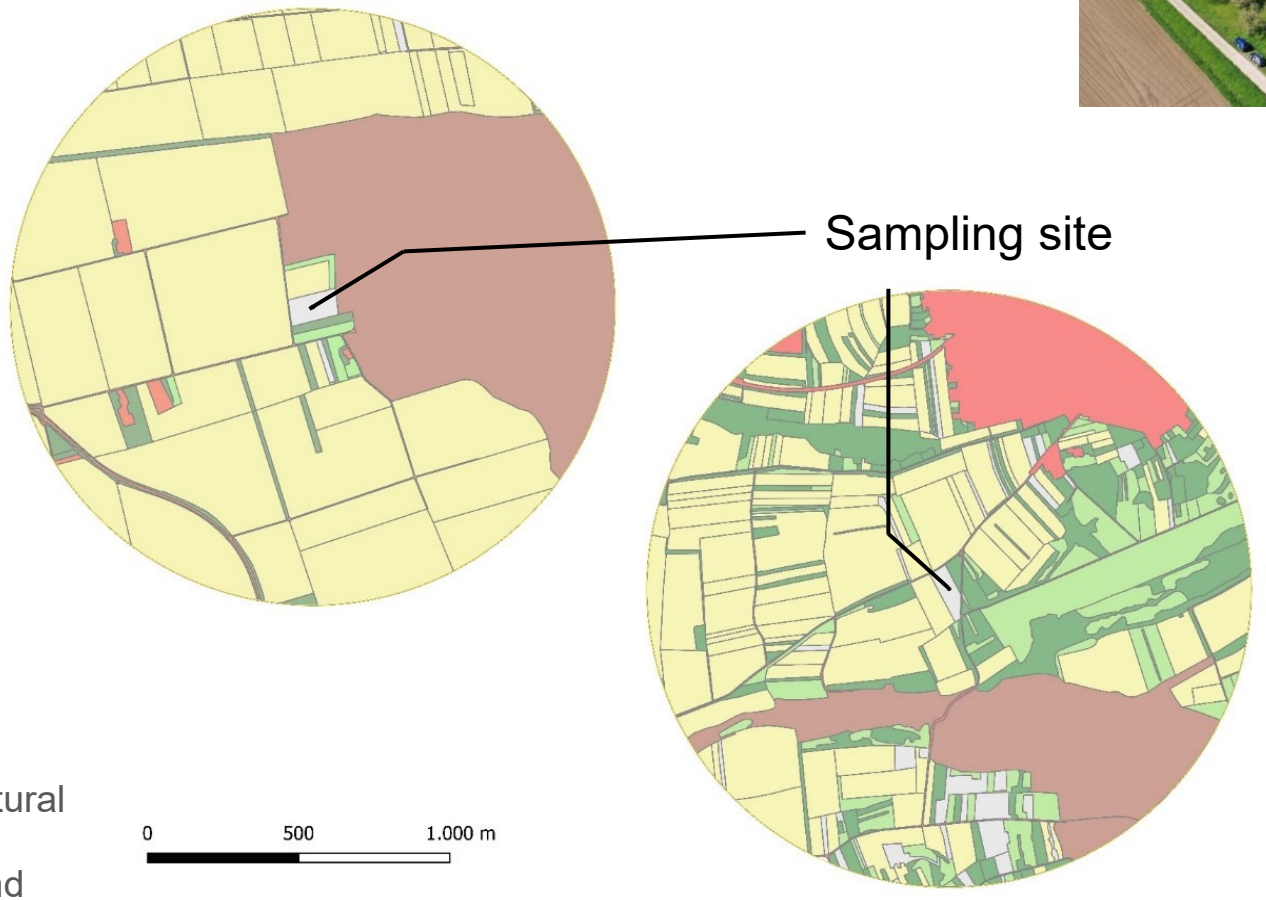
Citizen Science

Monitoring of beneficial insects in agricultural landscapes

Concept: Monitoring of beneficial insects







Setting: Meadow orchards as long-term study sites

- Low-disturbance habitats
- Low risk of land use changes (protected by law)
- Frequently maintained by dedicated conservation associations

↳ Citizen Science

Implementation

Survey of hoverflies - Core sites (6-12)

- Yellow pan traps (8/site) and
- Malaise traps (2/site) for **48h, 3x per year**
- Transect walks & sweep netting (since 2024)
- Recording abundance, species richness, species composition, and fitness

Citizen Science survey (2020-2024)

- Codling moth & parasitoids
- Flower Insect Timed Count









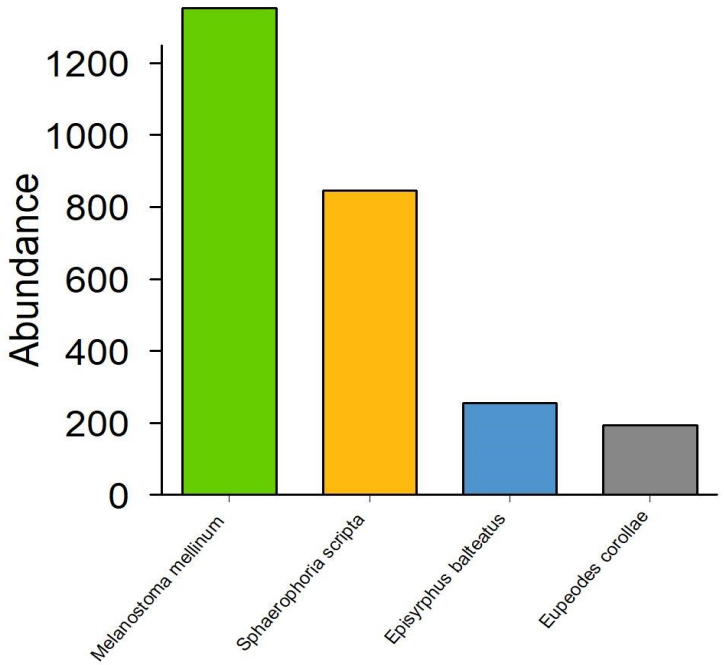
Multi-year trends

3510 individual hoverflies

>95 species

Top 2: 62% of total individuals

Top 4: 75% of total individuals









	Malaise trap	Pan trap
Abundance	2619 (74.5%)	890 (25.5%)
Species	88	57

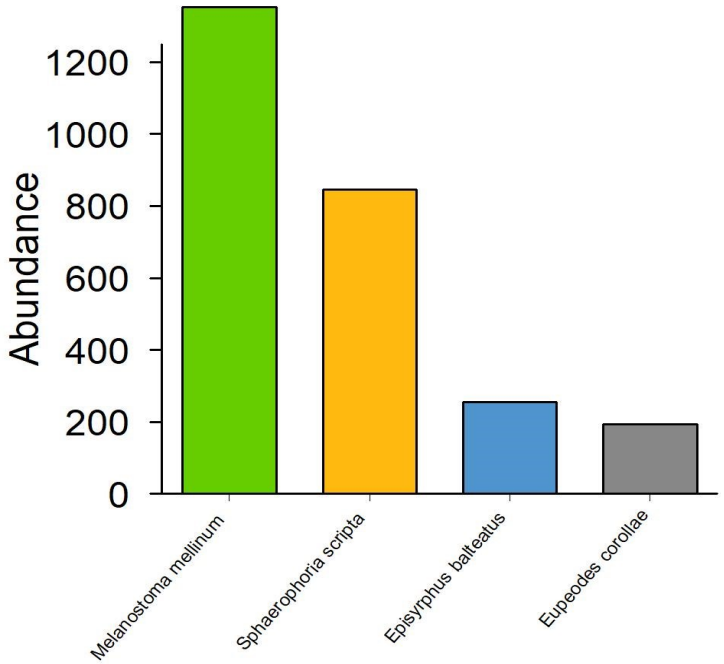
Multi-year trends

3510 individual hoverflies

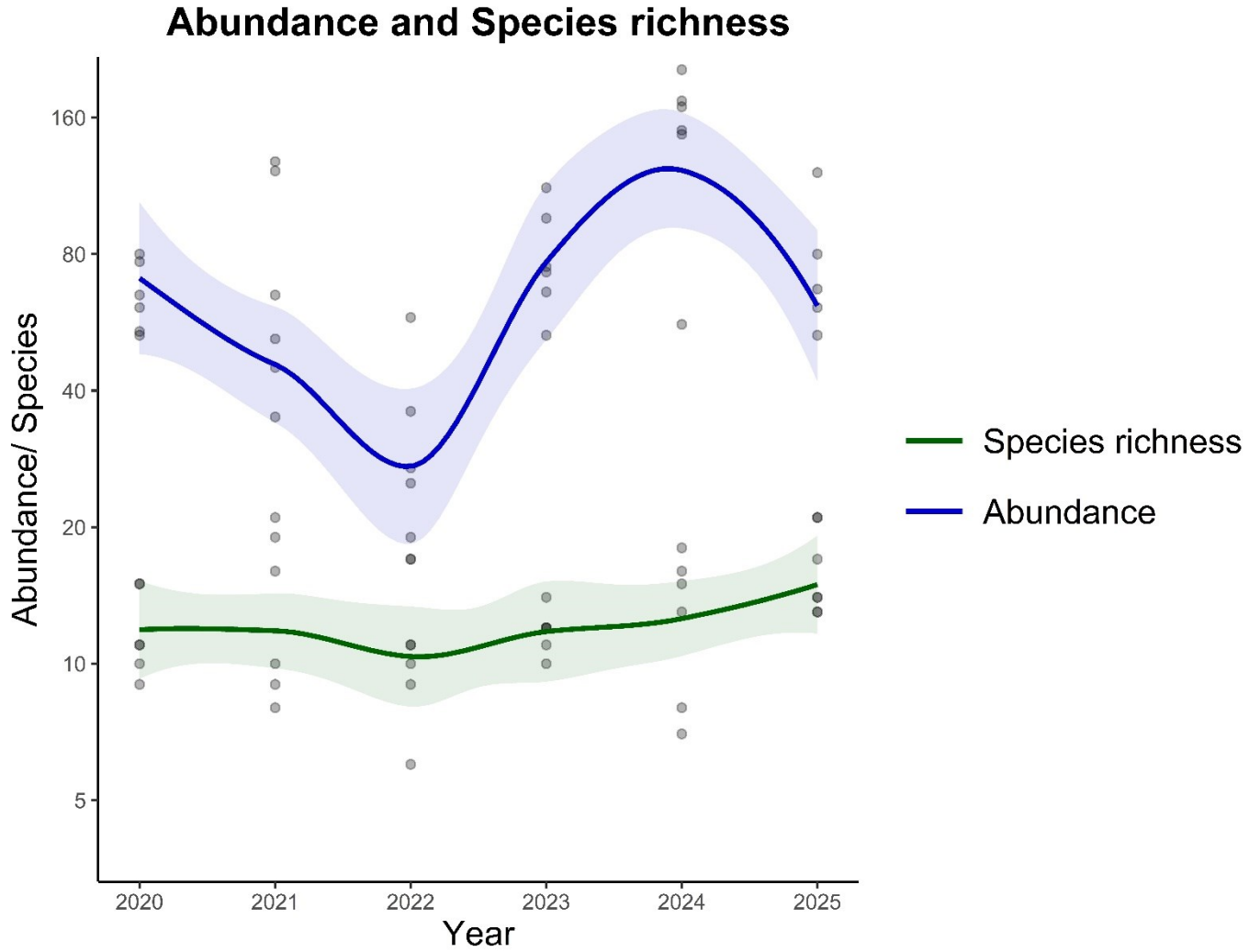
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Top 2: 62% of total individuals

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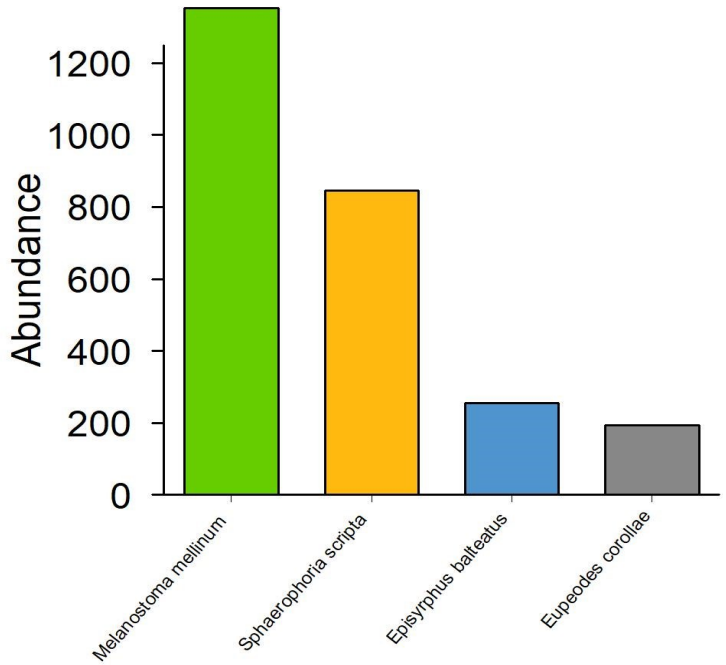
Multi-year trends

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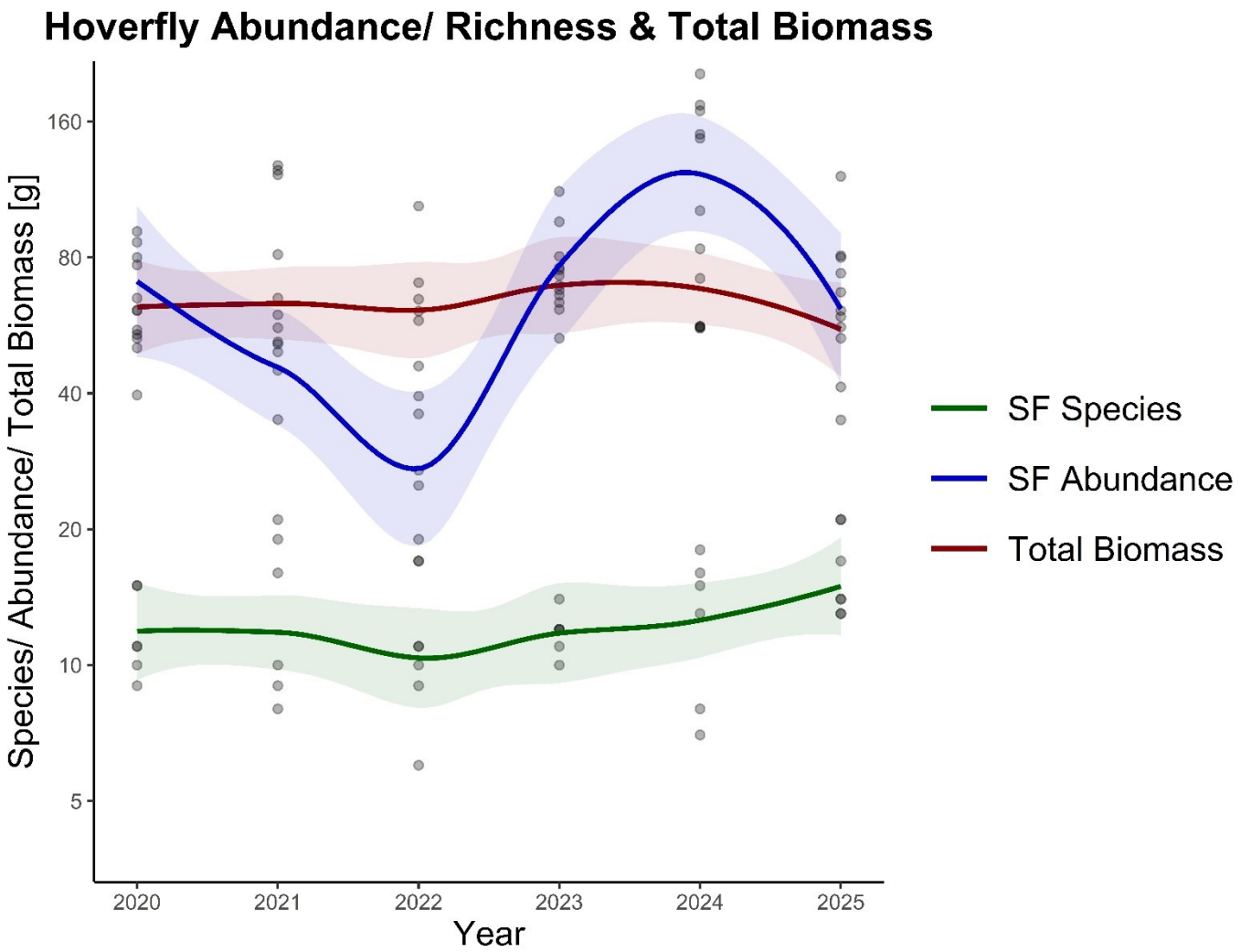
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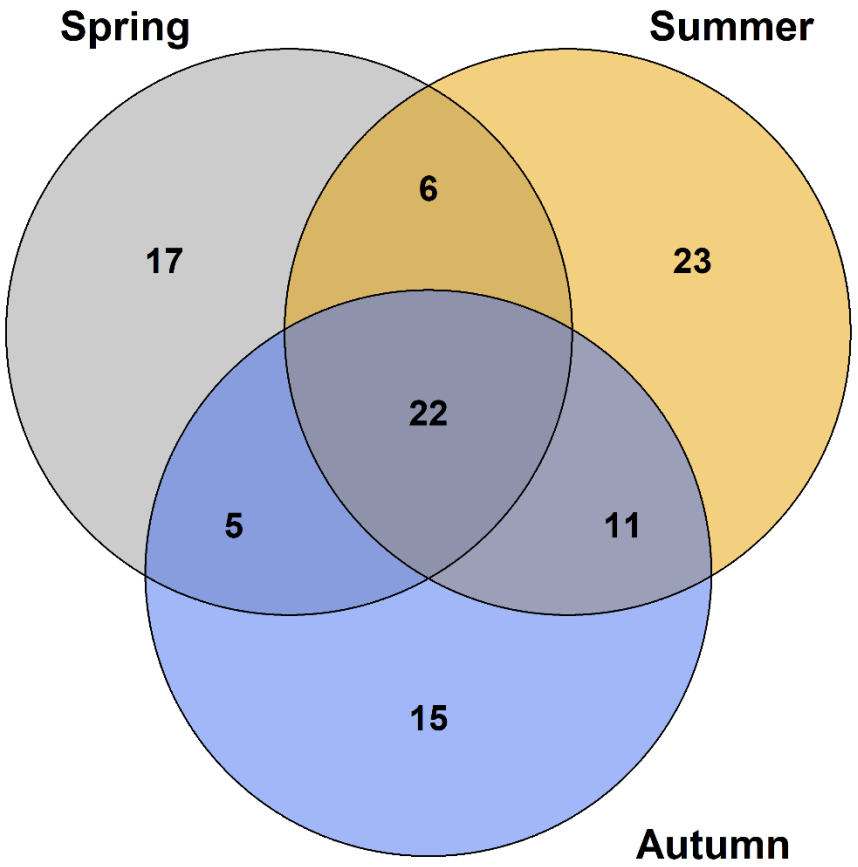
Top 4: 75% of total individuals

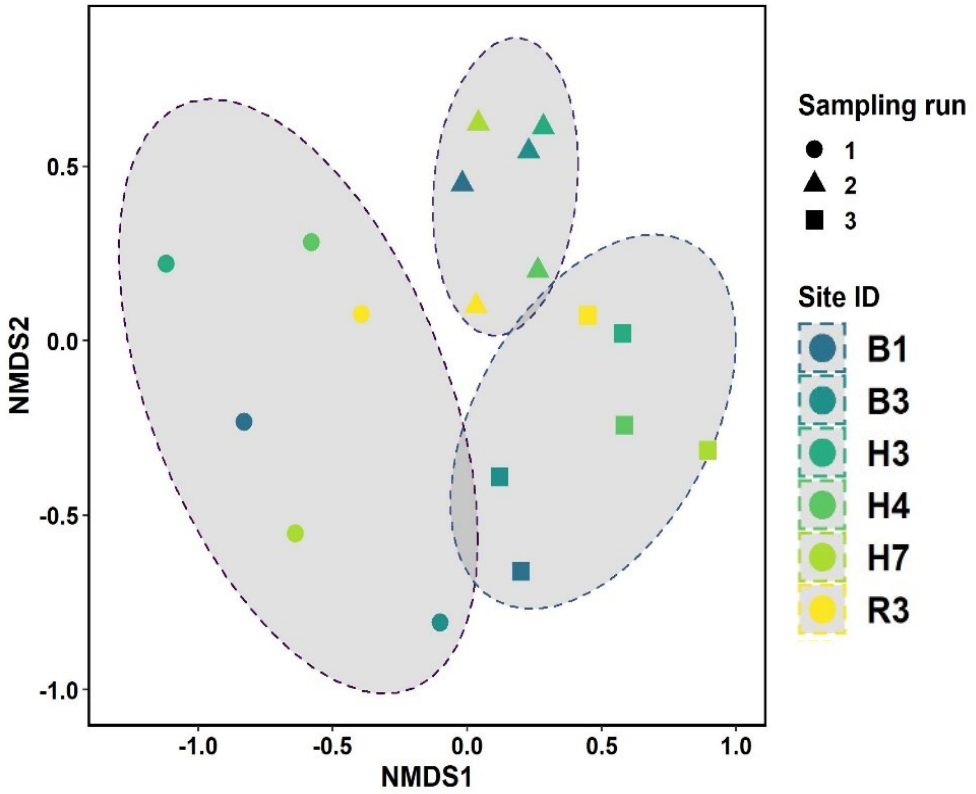




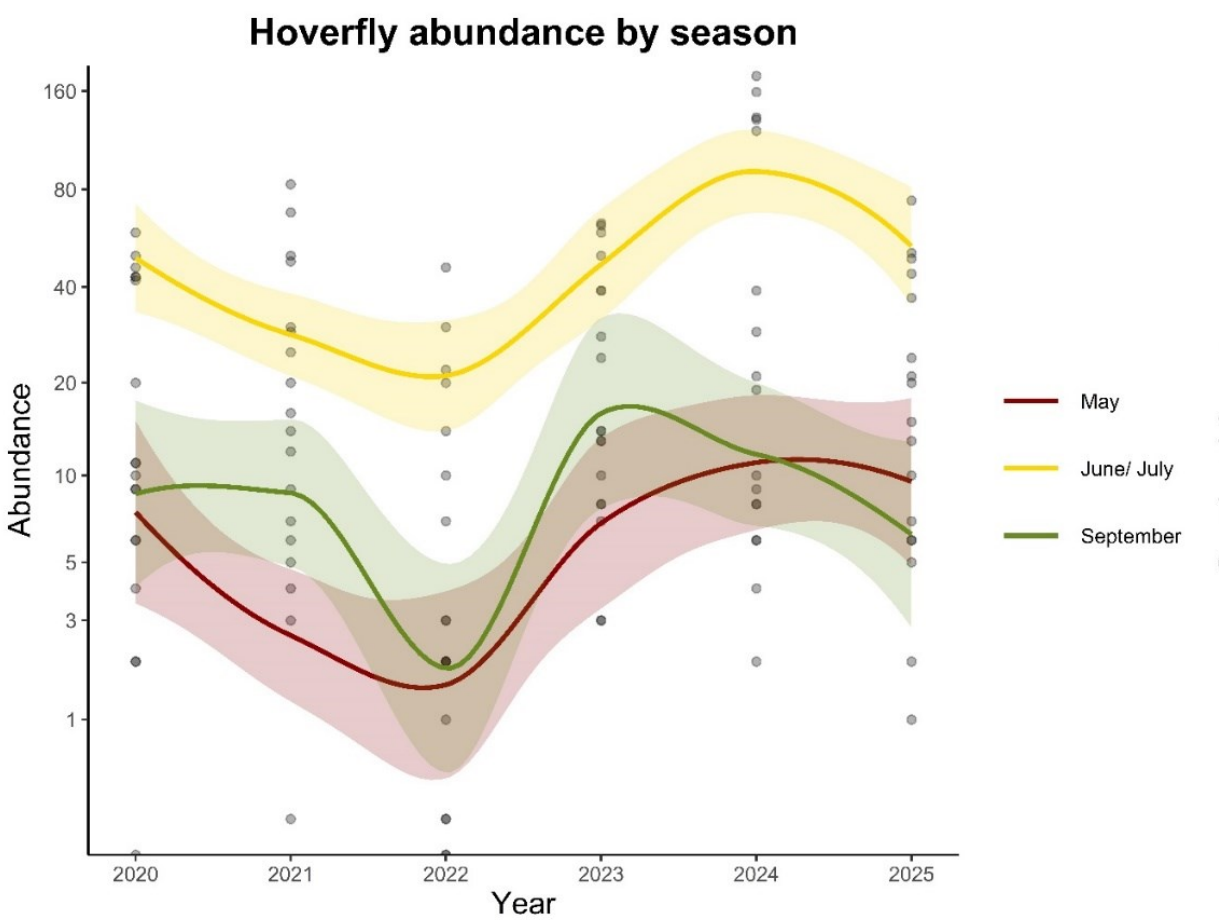


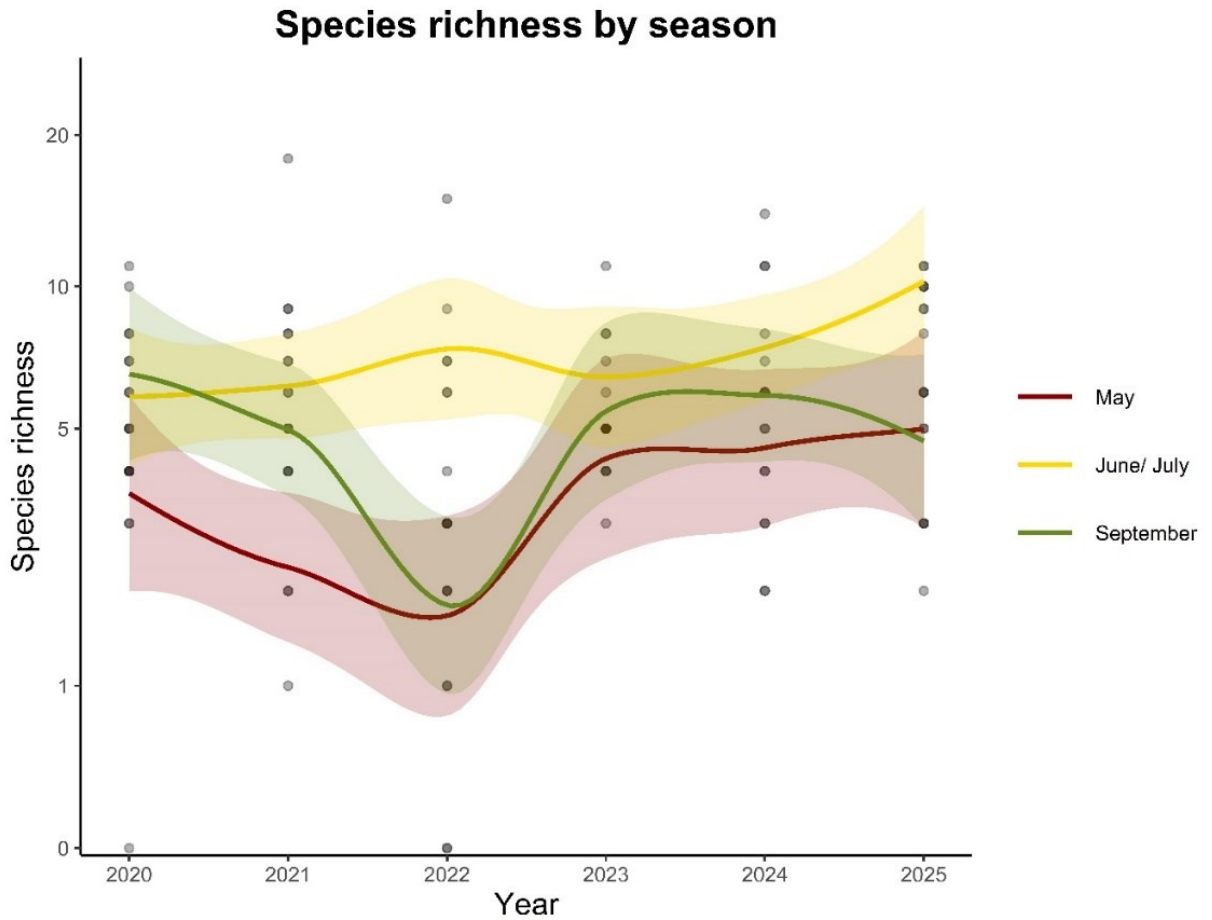
Seasonal species composition & species overlap



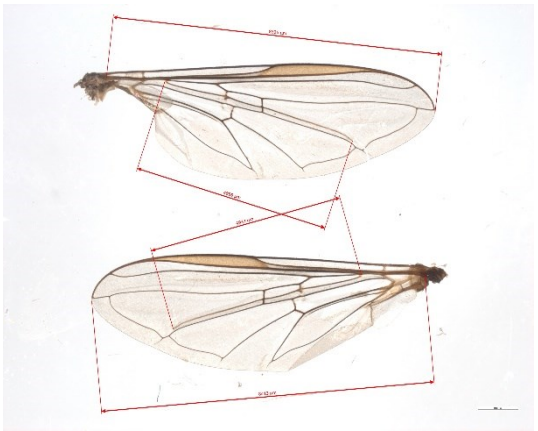


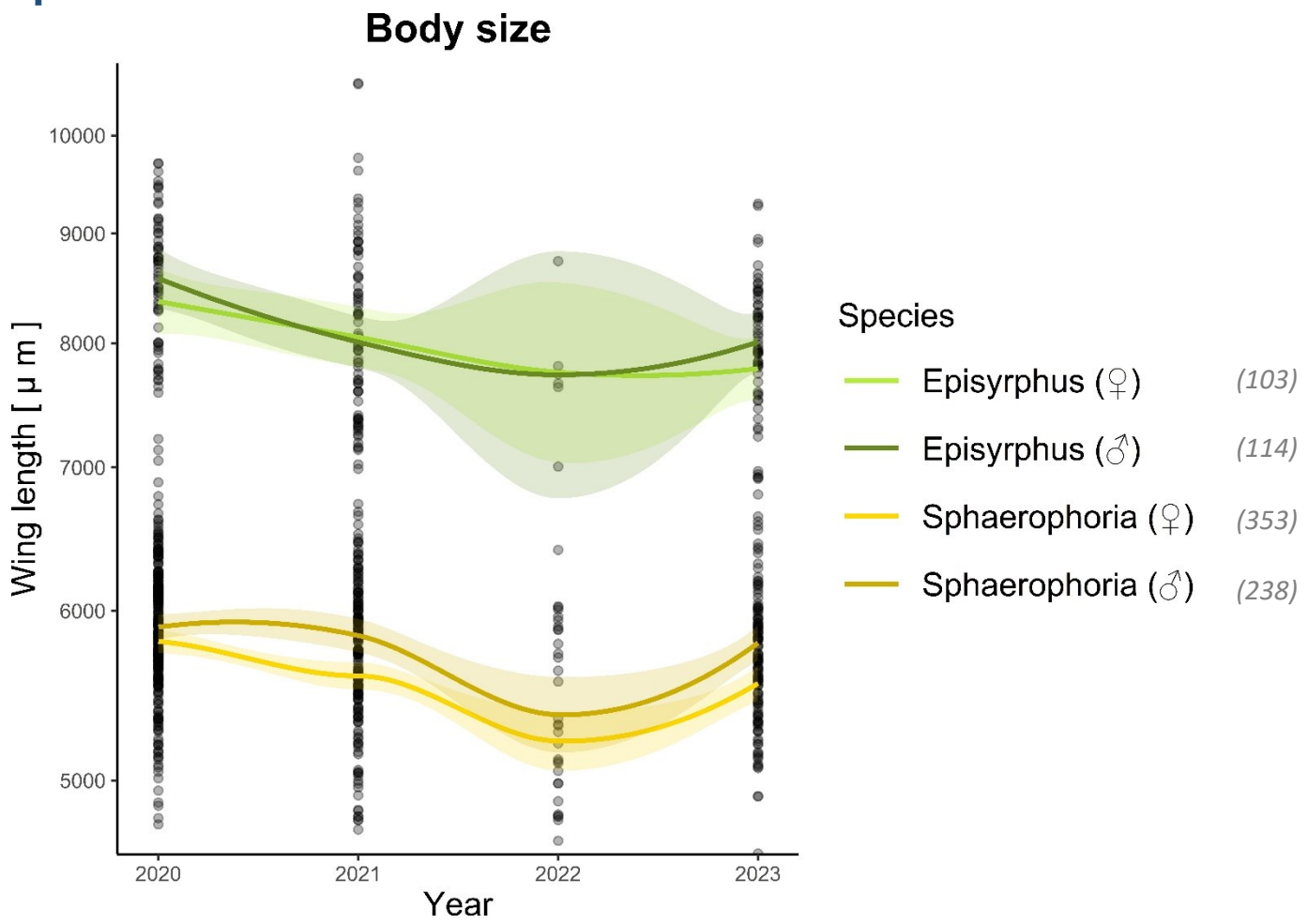
Checking for potential season-specific trends





Adding a trait-based component







Episyrphus balteatus

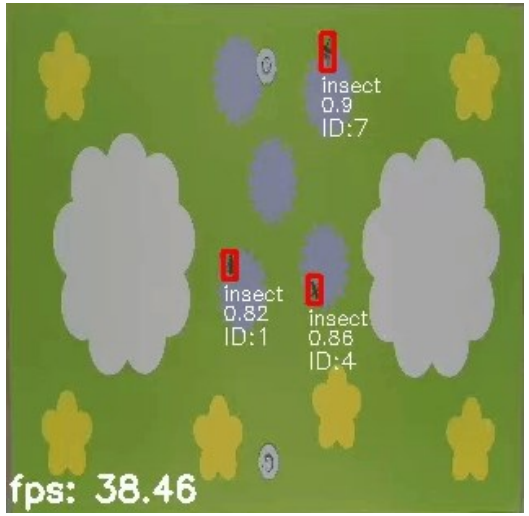




Sphaerophoria scripta

INSECT DETECT





Low cost camera trap for the automated monitoring of insects

Allows us to:

- Expand the number of monitoring sites
- Without major increase in man power/ financial commitment

Validation experiments ongoing:

- Comparing camera with conventional traps
- ➢ Capture efficiency/ species composition

https://maxsitt.github.io/insect-detect-docs/
https://doi.org/10.1101/2023.12.05.570242

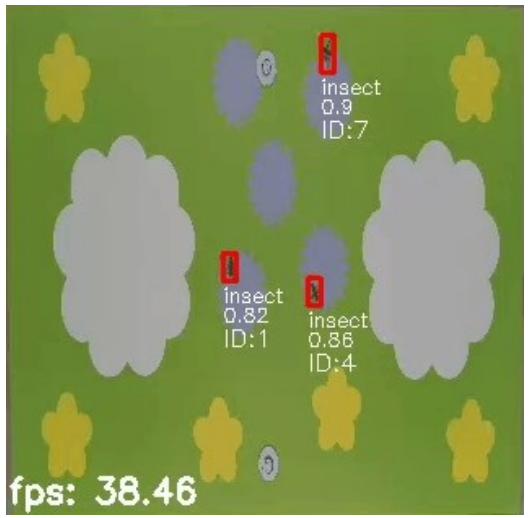


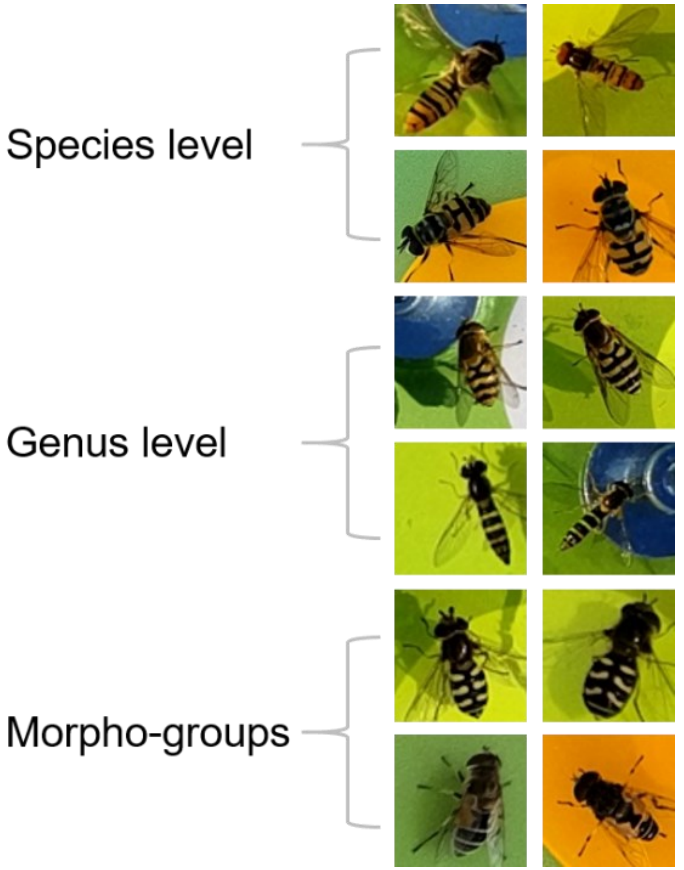
Insect Detect Docs

Key issue: Image classification

Old example from 2024





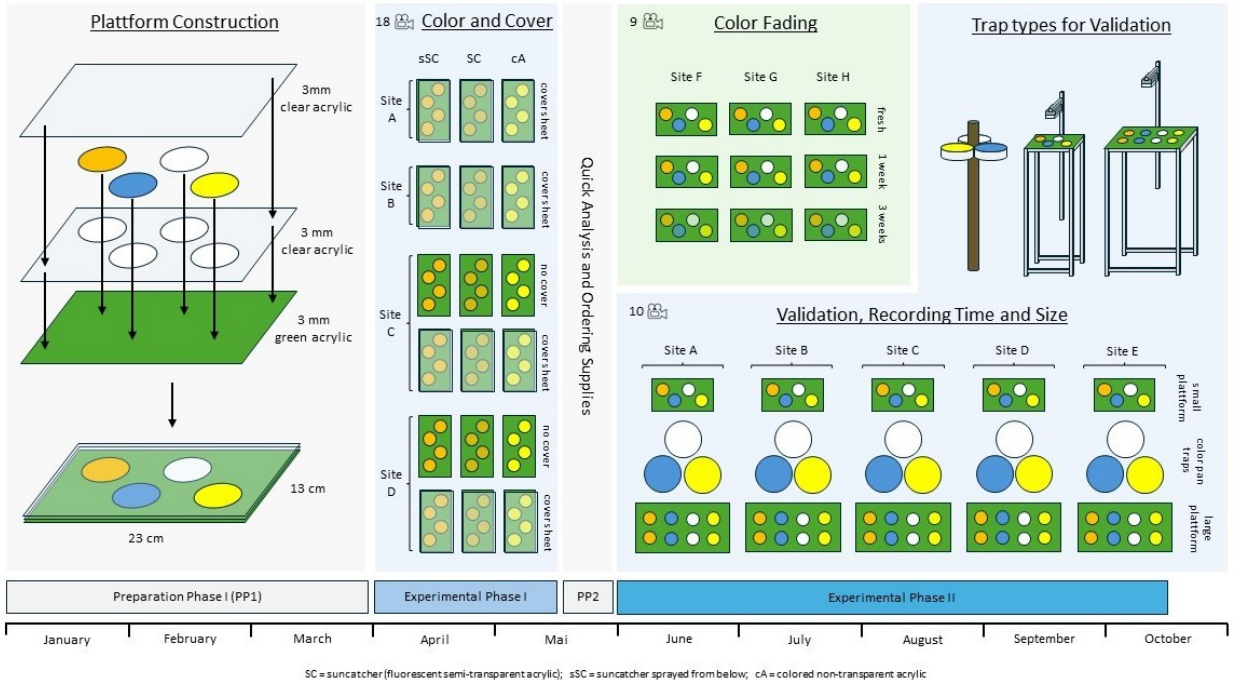


https://maxsitt.github.io/insect-detect-docs/
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Insect Detect Docs

Platform testing & validation experiments 2026





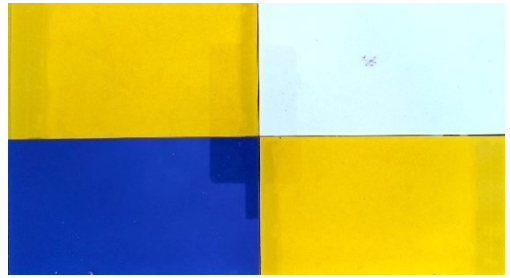




Current setup & flower platforms





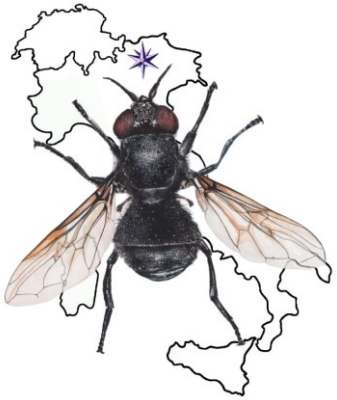












Thank you for your attention!

From design to implementation:
insights from six years of Hoverfly monitoring









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https://www.agrarmonitoring-monvia.de/